

A REVIEW OF INDICATORS USED FOR MEASURING COMPETITIVENESS AMONG STATES IN MALAYSIA

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Abstract: *As with many developing countries in this world, Malaysia aims to achieve the status of a high-income nation. Among the steps taken that continue to be the focus are efforts to attract foreign investors into the country, which depends very much on the competitiveness of the Malaysian economy. Many studies have assessed Malaysia's level of competitiveness in comparison with other countries in the world. However, even in a country itself, the level of competitiveness varies between states. States also compete to attract investments both, from local as well as foreign investors. In view of this, this study developed a tool to assess the level of competitiveness of states in Malaysia. Since the concept of competitiveness is complex and multidimensional, the main challenge of this study is to determine tools and indicators that can measure this competitiveness and rank it accordingly. The competitiveness index should complement the competitiveness index developed by the Economic Planning Unit (EPU), namely the Malaysian Quality of Life Index (MQLI) as well as the Malaysian Urban-Rural National Indicators Network for Sustainable Development (MURNInets) by PLANMalaysia (Department of Urban and Rural Planning). Thus, the competitiveness index is described as a measurement that provides a summary of descriptive information about specific issues. This study serves as a review of the indicators' theoretical framework used to measure competitiveness based on previous studies about this area of study in comparison with MQLI and MURNInets.*

Keywords: *Competitiveness, MQLI, MURNInets, Theoretical Framework*

Introduction

Over the years, numerous studies have tried to develop and create a set of indicators to measure city competitiveness. Several sets of indicators have been identified to evaluate the quality of life and competitiveness of cities or regions. Malaysia is no exception to this endeavour. Some Malaysian government agencies have attempted to devise a competitiveness index based on certain organizational missions and objectives. The main aim behind these attempts is to measure the general public's quality of life, which in a societal context, is relation to the concept of liveability of society in a city. It is affected by the infrastructure as well as physical, social-cultural and environmental elements surrounding the life of people living in a city. Various factors contribute to the increase or decrease in a city dweller's quality of life. Thus, a model was generated to measure the quality of life and generate a competitiveness index for a city or state. Quality of life can be described as the interrelatedness between liveability, sustainability, competitiveness, and well-being in towns or states. This study reviewed two main aspects to evaluate a city's competitiveness in the Malaysian context. First, it addressed the definition and concept of city competitiveness. The second addressed the indicators used to measure the level of competitiveness in Malaysia.

Policy makers, local authorities and state governments need a form of measure to devise plans and policies for assessing the quality of life in cities or states. They must be able to identify problems faced by the city to allow them to allocate funds as well as devise and plan programs to address the issues effectively. Three set measures have been used by the Malaysia government, which are the Malaysian Well-being Index, Malaysian Urban-Rural National Indicators Network for Sustainable Development (MURNInets) and the Malaysian Family Well-being Index. The Malaysia Well-being Index was introduced by the Economic Planning Unit (EPU) and consists of 2 components, 14 elements and 68 indicators. MURNInets was implemented by PLANMalaysia under the Department of Urban and Rural Planning and it proposed 5 strategies, with 6 dimensions consisting of 22 themes and 43 indicators. Meanwhile, the National Population and Family Development Board (NPFDB) introduced the Malaysian Family Well-being Index with 7 domains and 24 indicators. Although there are various measurements conducted by some agencies, however, there are still some arguments about these measurements.

According to Abdullah (2002), Turok et al. (2004), Nasution and Hidayat (2015), competitiveness can be demonstrated by the ability and development of economic activities that can compete locally and internationally to improve the well-being and quality of life of local communities. Limited research on competitiveness focusing the state level in Malaysia. Therefore, the purpose of this study is to assess the definition and concept of city competitiveness in Malaysia. Secondly, it intends to identify appropriate indicators for measuring a city's level of competitiveness. Finally, this study intended to examine whether the existing model or policies, as adopted by certain government agencies, are suitable for measuring city competitiveness.

Literature Review

This study is basically constructed based on the review of existing literatures regarding concepts, determinants and indicators of city competitiveness. Generally, this study is undertaken by conducting a search of key words comprising the word 'competitiveness', 'concepts', 'indicators', 'imbalance growth', and 'tools', which are used to measure city

competitiveness. The search of existing literature revealed numerous articles, abstracts, findings, results and analysis. These finding are used in this review.

Definition and Concept of City Competitiveness

Competitiveness started as an important concept in microeconomics, which then grew across disciplines and is incidentally linked to the concept of quality in public administrative. Vega (2006) argued that competitiveness is associated with the potential of technology development. It affects investment in human capital and therefore, an element in education. The competitiveness concept can also be defined as the ability of a firm or organization to increase profitability compared to its competitors. This competitiveness concept can be explained from both, micro and macro perspectives. The micro level of competitiveness refers to the ability of the firm and industry, while the macro level can be explained by the city and country levels. There is a need to understand both levels of competitiveness, which are interrelated with each other. A competitive situation usually occurs in micro and macroeconomics. From the micro perspective, the concept of competition refers to the firm's ability to compete and grow continuously to increase profits. Hence, competitiveness refers to the firm's ability to produce products that meet market needs in terms of price and quality of goods. The development of firm competitiveness is strongly influenced by the competitiveness of its urban areas or in Malaysia's context, the various states in Malaysia.

The macro perspective of competitiveness is defined as an area in a city that encourages entrepreneurial development by carrying out its daily activities. The city's local authority must keep upgrading its capabilities and facilities in the city in order to attract investors to invest. With cost effectiveness, the city can encourage and help the development of firms to be competitive. Thus, competitiveness at this level refers to the quality of a city's production factors. Scott and Storper (2003) mentioned that large profits generated from the production process in an urban area contributes to the growth, prosperity and improvement of urban living by providing job opportunities and high wage rates. Moreover, it is also one of the determinants of city competitiveness, which impact the overflow of efficiency, innovation and technology. The city's ability to adapt to changes in some aspects, such as infrastructure, skilled and educated workers, creativity and innovativeness, quality of life, environmental quality, and capability of public and private institutions to attract foreign investment to increase productivity, is called competitiveness (Rondinelli, 2001).

Porter (1990) argued that city competitiveness is influenced by four main components, which are the quality of endowments, human resources, economic structures and capital. The competitiveness concept is not related specifically to firm competitiveness but encompasses the economies of scale through industry clustering. Hence, industry clustering is an indicator and determinant of city competitiveness. According to Hall and Pfeiffer (2000), urban competitiveness refers to the capability of a city to improve the quality of economic development, provide a competitive environment and effective urban planning with the availability of a knowledgeable and skilled labour force. This leads to increases in investment flow and foreign capital (Muller & Webster, 2000). Komninos, (2002) argued that a competitive city can be defined as an innovative city with a wide range of technology and knowledge to promote domestic and foreign investments by focusing on research and development (R&D), building new products, business networking and finances.

Past literature has shown that the topic of competitiveness has been the focus of various fields of study, such as economics and geography. Yet, the definition of competitiveness in these two different fields are almost similar. For example, the World Competitiveness Report - WCR (WCR, 2001), produced by the International Management Development, highlighted that competitiveness refers to a country or region's condition that is in the process of generating wealth. WCR highlighted the relationship between four competitive inputs, namely economic performance, efficient governance, human resource capability, business efficiency and infrastructure as major factors in the process of generating wealth. The IMD World Competitiveness Yearbook 2003 pointed out that competitiveness is an advantage generated by a city based on certain indicators. Meanwhile, the Competitiveness Global Report (GCR, 2001), produced by the World Economic Forum, defined competitiveness as a country's capability to achieve sustainable economic growth by focusing on appropriate policies, institutions and characteristics that promote a country's growth. According to the Organization for Economic Cooperation and Development (OECD, 2001), city competitiveness refers to a city's capability to produce goods and services that meet international standards. At the same time, the production system is able to maintain high returns through the expansion of domestic revenues and increasing job opportunities.

Based on these various definitions, it is clear that the role of firms, urban areas and countries are interrelated when achieving the competitiveness of any locality. Therefore, it can be summarised that city competitiveness can be used to explain a city's ability to develop a quality environment, which increases industrial productivity that generates higher revenue for a city in the long term. A competitive city seeks to generate sustainable economic growth while at the same time increase job opportunities and living standards of the society. While firms look at suitable locations, cities work to raise the quality of life of its inhabitants. The cooperation between industry, firms and city planners improves productivity and contributes towards economic growth and at the same time raise the society's standard of living by creating various job opportunities.

Porter (1990, 1996) had generated a diamond-shaped model to describe the competitive advantage of cities, regions and nations. Begg (1999) opined that various influences on urban economic performance can be described as competitiveness factors. In reference to Figure 1, the output side represents standard of living and quality of life. This means both variables play an important role and are relevant in the evaluation of urban competitiveness. This model is built by merging a system with various determinants, such as sectoral trends, company characteristics, business environment, as well as innovation and learning. According to Begg (1999), the application of Porter's diamond (refer to Figure 1) is not only for economic development but also for city development. Besides that, some determinants are mutually reinforcing, others are contradictory, while certain elements might be suitable for a time period.

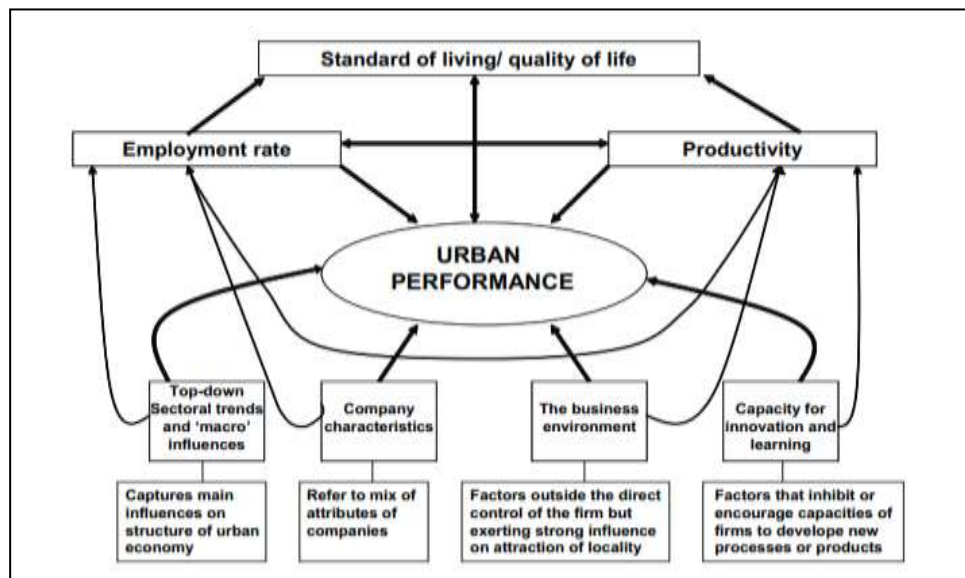


Figure 1: The Urban Competitiveness Maze (adapted from Begg, 1999)

Moreover, Yuan et al. (2017) use the element of economic strength in assessing the competitiveness of a city. A total of five indicators are used in this element such as GDP, local government revenue, foreign direct investment and others. For economic factors, high local value-added activities are the most important element for urban competitiveness. Beside economic measurement, Sassen (2018) emphasized that the social and economic environment of the city will lead to economic development from the manufacturing and services sectors. Kresl (1995) identified two determinants of competitiveness, namely economic determinants and strategy determinants, which are evaluated based on different factors. Economic determinants refer to factors of production, infrastructure, location, economic structure and urban amenities. Strategic determinants are evaluated based on government effectiveness, urban strategy, public-private sector co-operation and institutional flexibility.

Malaysia Urban Indicators Network (MURNInet)

Malaysia's population is growing rapidly and as such, urban development is gaining importance. In 2007, the Department of Urban and Rural Planning, under the Ministry of Urban Well-being, Housing and Local Government, had developed an approach to measure and evaluate a city's sustainability through the use of urban indicators. Marzukhi et al. (2011) explained that the indicators selected to measure the level of sustainability might provide brief information about a component and further explain a problem. Agency (2012) added that this system also provides opportunities for local authorities at the municipal level to increase their innovativeness, cost effectiveness and create a vision for a better city in terms of economic, socio-cultural and environmental issues.

PLANMalaysia conducted a study on urban sustainability indicators in 1998 and produced a set of urban sustainability indicators in 2002 known as the Malaysia Urban Indicators Network (MURNInet). It involves 11 major sectors covering 56 sustainability indicators of a city. These indicators were later revised based on feedback from various states since its adoption since 1998 to 2010. Following this revision, the indicators used were reduced to 40. From 2012 to

2016, MURNInets was used as a sustainability measuring tool for Malaysian cities. In 2017, the MURNInets 2.0 framework was constructed based on 5 strategies with 6 dimensions, consisting of 22 themes and 43 indicators, as shown in Table 1. It was based on the Sustainable Development Strategy developed from Vision 2020, New Economic Model (MEB), the 11th Malaysia Plan (2016-2020), the National Physical Plan Country (NPP) and National Urbanization Policy 2 (DPN2).

This assessment system is a method for measuring the city or region's sustainability, which is implemented by all local authorities in Malaysia. There is a total of 43 indicators used as an overall indication for assessing a city's sustainability under MURNInet 2.0. MURNInet was created based on a computer network framework designed to achieve four main objectives, such as assessing the level of rural-urban sustainability, identifying the strengths and weaknesses of each local authority based on identified indicators, proposing opportunities and potential improvements for enhancing the sustainability of a rural-urban region and monitoring the implementation of a defined action plan. The intention to set up a set of indicators to analyse sustainable development might have several positive impacts on the public (Marzukhi et al., 2011). By using the set of data bases as a main reference point for evaluating a city's sustainability, various sets of indicators were generated. The analytical findings can be used by local authorities to plan and focus on the process of problem solving and key issues in the planning and development of a city.

According to Agency (2012), an indicator system is used to evaluate the progress of a city's development. It provides a lot of important information about a city. Marzukhi et al. (2011) also argued that this indicator system ensures that the target of a city's development can be achieved within a certain period. Hence, the indicator system can be used as a tool for monitoring a city's developmental progress as well as qualitatively or quantitatively explain trends in the development process.

After analysing the indicators used in MURNINet, this study argued that there are some pertinent drawbacks with MURNInet 2.0 when analysing urban sustainability issues. Some data representing certain indicators are state level data, while others are from local authorities. This mixture gives an inaccurate analysis of a particular city's development. It is argued that instead of focusing on local authorities, it is much more appropriate to analyse it at the state level because at this level, the problem with data can be solved. Table 1 shows detailed dimensions, themes and indicators used to construct MURNInet 2.0 in 2017.

Table 1: Dimension, Themes and Indicator of MURNInets 2.0

Dimension	Themes	Indicators
Competitive Economy	Economic Growth	Job growth rate
	Poverty	Poverty rate
		Urban poverty rate
	Private Investment	Private investment growth rate
Sustainable Environmental Quality	Quality Of Environment	River water quality index
		Air quality index
	Risk Management	Number of initiatives for disaster risk management
	Environmental Management	Percentages of solid waste per capita
		Number of initiatives for environmental management
	Environmental education	

Sustainable Community	Home	Percentage of achievement for affordable housing by state targets
	Public Facilities and Recreation	Percentage of residential coverage within 400 meters of community amenities
	Quality of Life	Ratio of complaint cases with respect to civil disturbance per 10000 people
		The proportion of water borne diseases and vectors per 10,000 people
		Percentage of food business premises with a grading
		Percentage of public toilets with five stars
		Happiness index
	Security	Percentage of crime decrease index
Demography	Dependent ratio	
Optimal Use of Land And Natural Resources	Land Use Change	Percent change in non-residential area
	Municipal Development	Municipal rate
		Ratio of public open space compared with 1000 residents
		Percentage of application for field gazettement
	Housing	Residential property overhang
	Forest Rehabilitation and Tourism Development	Retention of permanent forest reserves
Programs / activities / tourism development initiatives		
Efficient Transportation and Infrastructure	Utility Efficiency	Daily domestic water consumption per capita
		Daily consumption of electricity per capita
		Reduction of water disruption case
		Unlimited water loss rate (nrw)
		Reduction of power supply disruption case
		Broadband coverage rate
	Solid Waste Management	Annual rate of recycling
		Percentage of frequency of domestic solid waste collection
	Transportation	Number of integrated public transport terminals/stations
	Waste Management of Sewage	Percent of homes have sewerage services
Effective Governance	Delivery System	Percentage of resident satisfaction on the services of local authorities
		The number of community co-operative programs implemented by local authorities
	Institutional Strengthening	Percentage of achievement collection of local authority results
		Percentage of maintenance expenditure as compared to the total expenditure of the entire local authority
		The percentage of expenditure (managing and development) of local authorities
	Enforcement and Monitoring	The percentage of approved planning permission applications comply with local development plans / plans
		The number of executions of integrated enforcement operations carried out with local authorities

Source: <http://murninetsv2.planmalaysia.gov.my/cms/>

The Malaysian Well-being Index

Besides MURNInets, several other indices have been created by various agencies to assess and measure liveability, sustainability, competitiveness and well-being of society. The Malaysian Quality of Life Index (MQLI), which was introduced in 1999, is one of them. In 2011, the Economic Planning Unit (EPU) in the Prime Minister's Department released the last report for MQLI. This index was later replaced in 2013 by a new study called Malaysian Well-being Index (MWI). MWI comprises 2 composites, 14 components, and 68 indicators, as shown in Table 2. Both MQLI and MWI were created to measure Malaysians' quality of life, in terms of the liveability and quality of life of society. The Malaysian Well-Being Index is more inclusive and specific as a benchmark for Malaysia in efforts to achieve a sustainable and high-income developed country.

Table 2: Composite, Components and Indicator of Malaysia Wellbeing Index

Sub Composite	Components	Indicators
Economic wellbeing	Transport	Road Development Index (RDI)
		Private motorcars & motorcycles per '000 population
		Road length per capita
		Rail ridership
	Communication	Fixed and mobile telephone line subscriptions per '000 population
		Internet subscribers per '000 population
		Number of hotspot locations
		Number of domain name per '000 population
	Education	Pre-school participation rate
		Primary school participation rate
		Secondary school participation rate
		Tertiary participation rate
		Literacy rate
		Percentage of graduate teachers in primary schools
		Percentage of graduate teachers in secondary schools
		National Average Grade (UPSR)
		National Average Grade (SPM)
		Number of lecturers with PhD
		Primary education survival rate
	Secondary education survival rate	
	Income Distribution	Real per capita income (GNP) (RM)
		Gini coefficient based on disposable income
		Incidence of poverty
Working Life	Trade disputes	
	Man-days lost due to industrial action ('000)	
	Industrial accidents	
	Average working hours	
Social wellbeing	Housing	Percentage of low-cost housing units to bottom 40%
		Percentage of households with treated water
		Percentage of households with electricity
		Percentage of households with garbage collection services
		Crowdedness (no. of persons per room)
	Leisure	Number of households with paid TV subscription ('000)
		Domestic hotel guests per '000 population
		Recreational parks visitors per '000 population
		Cinema goers per '000 population
	Culture	Membership in public libraries per '000 population

		Number of Istana Budaya visitors per '000 population
		Number of museum visitors per '000 population
		Number of Kompleks Kraf visitors per '000 population
Governance		Percentage of corruption cases prosecuted
		Number of e-payment transactions (million)
		Percentage of cases solved by Biro Pengaduan Awam
		Percentage of e-Filing users
Public Safety		Crime rate per '000 population
		Road accidents per '000 vehicles
Social Participation		Percentage of registered voters per population aged 21 years and above
		Number of registered nonprofit organizations per '000 population
		Number of registered residents' associations
		Membership in RELA and Rakan Cop per '000 population
Health		Life expectancy at birth
		Non-communicable disease cases per '000 population
		Infant mortality rate per 1,000 live births
		Maternal mortality rate per 100,000 live births
		Number of beds in hospitals per '000 population
		Doctor to population ratio
		Hospital waiting time for outpatients (minute)
Environment		Air quality (Percentage of station with API<50)
		Water quality (Percentage of clean river monitored)
		Percentage of forested land
		Quantity of scheduled waste generated (tonnes/year) per population
		Maximum mean temperature
Family		Divorce rate (Percentage of population aged 18 and above)
		Domestic violence cases per '000 population
		Juvenile crimes (Percentage of population aged 10 -18)
		Mean monthly household income
		Household debt per capita
		Dependency ratio

Source: Economic Planning Unit

Conclusion

It can be concluded that local authorities face various difficulties in generating data for evaluating the urban competitiveness issue. Past literature has shown that the majority of indicators used to evaluate urban competitiveness focused on productivity, output and investment trends. The major problem is the lack of appropriate quantitative data. However, if data are available, it might not show the performance of one particular city. For example, most data for the city of Johor Bahru is related to Johor, while Georgetown is related to Penang.

The index created by MURNInets shows the liveability, sustainability and competitiveness of local authorities. Due to the problem of data availability at the local authority level, certain data used to measure the index were taken from state data. This produced confusion and inaccurate measurements due to differences in datasets used. In the Malaysian context, the empowerment of local authorities is limited compared to the state government in terms of decision-making, budgeting, development plans and so on. The Malaysian Well-Being Index was developed to measure the liveability and quality of life of Malaysian citizens as a whole, though it might not look into every Malaysian state individually.

There is an imbalance in growth among Malaysian states, which is indicated by each state's GDP per capita. It is a big difference between the highest and the lowest GDP per capita for each state in Malaysia. To ensure the gap of imbalance in growth among Malaysian states is narrowed, some policies suggested by this study should be considered and implemented. This study had reviewed the indicators and indices implemented in Malaysia and suggested a better model for measuring competitiveness at the state level.

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