Modeling the Philippine Cities' Competitiveness Toward a Sustained Development Amid COVID-19 Pandemic

Reymund B. Flores[1]

ABSTRACT

Cities and urban centers are viewed as drivers of regional and national development. The COVID-19 pandemic and the subsequent enhanced community quarantine (ECQ) implemented by the Philippine government and related public mobility restrictions imposed had resulted to closure of businesses – from the micro, small, and medium enterprises (MSMEs) sector to several major industries in regional and provincial centers across the country. In the current crisis, it is argued that urban centers play a crucial role in sustaining the country's competitiveness. Thus, we should not limit our understanding of cities competitive on rankings alone. Assessing the vital signs of competitiveness in terms of the underlying fundamentals that ultimately drive these results and providing prescriptions to address the economic challenges we are facing in this time of pandemic are also necessary. It is then at this level that the interrelationships of the four pillars of competitiveness – *economic dynamism, government efficiency, infrastructure, and resiliency,* should be understood better. Applying the structural equation modeling (SEM) approach, this study analyzes the interrelationships of these four pillars of competitiveness using the Cities and Municipalities Competitiveness Index (CMCI) data from 2017-2019. Through model development and analysis, the findings in this study provide direction for Philippine cities in framing their development agenda and recommendations for local government officials and development planners on what to prioritize in attaining and sustaining local competitiveness particularly in this very challenging time.

Keywords: *competitiveness of cities, Philippine competitiveness, competitiveness indicators, Philippine cities competitiveness*

[1] Independent Researcher; Assistant Professor of Politics and Public Administration/Governance, *West Visayas State University, Iloilo City* | Doctor of Public Administration, *National College of Public Administration and Governance, University of the Philippines Diliman. <email: greatmund@gmail.com | reymund.flores@wvsu.edu.ph>*

INTRODUCTION

Cities compete with each other in many different fields. It is for this reason that tools for benchmarking and "Index of Competitiveness" are becoming more relevant. Since its establishment in 2011, the Philippine National Competitiveness Council (PNCC) has been mandated to promote and develop strategies and push for the implementation of the action agenda for competitiveness. The Cities and Municipalities Competitiveness Index (CMCI), developed by PNCC, is an annual ranking of Philippine cities and municipalities based on Michael Porter's (2004) framework. Porter's competitiveness focused on the idea of productivity defined as output per unit of input. According to him, competitiveness is the ability of firms to thrive in a business environment (Porter 1990). He also said, "national competitiveness" corresponds to the economic structures and institutions of the state for economic growth within the structure of global economy.

Following the same lens, "local competitiveness" is viewed as how well cities or municipalities know their resources and how these resources are used to improve the standard of living. Henceforth, it is argued that through productivity improvement, cities and municipalities can have greater opportunity to raise their citizens' standard of living; thereby, could contribute to the country's economic development, particularly in this time of pandemic.

At present, the Philippines' general understanding of competitiveness is limited to the descriptive findings of PNCC, specifically the ranking of cities and municipalities based on an overall competitiveness score. The overall competitiveness score is determined by the sum of scores on the four main pillars – economic dynamism, government efficiency, infrastructure, and resilience, which pool data from several sub-indicators. The higher the score of a city or municipality, the more competitive it is (CMCI Website). Hence, this study was conceptualized to provide better understanding of the interrelationship of these four main pillars of competitiveness of Philippine cities to guide city government officials and planners in framing their development agenda and what to prioritize in attaining and sustaining the city/urban-competitiveness and development which are deemed useful in keeping local and national economic activities.

Specifically, it aimed to:
1. Analyze and interpret the three-year (2017, 2018, and 2019) Philippine competitiveness index data; and
2. Provide recommendations to local government officials and planners, on what to prioritize, in attaining and sustaining LGU-competitiveness.

The findings in this study are based from the 2017, 2018, and 2019 datasets (the scores/ratings of Philippine cities) of the four pillars of competitiveness as determined in CMCI. Using these datasets for analysis of the interrelationships of these four indicators is essentially important in understanding the general standpoint of Philippine economic development. Generally, because there is a growing consensus that nation-states are not really the only relevant operational and economic units in the new economy. The cities and their regional environments are now considered key players in the global economy.

Moreover, this study can provide inputs to institutions working for national competitiveness like the PNCC to also assess and track the country's performance in terms of the underlying fundamentals that ultimately drive competitiveness as an outcome. It is at this level of underlying fundamentals that policies, backed by data-driven analysis, have to intervene in order to make a sustainable development in the country's standard of living over time.

URBAN COMPETITIVENESS AND NATIONAL DEVELOPMENT

The competitiveness of firms is normally defined by their ability to sell their products in contested markets (Turok, 2005:25). A competitive city is identified as one with relatively high per capita incomes or employment and features as a prominent goal of development agencies on how to increase economic development (Turok, 2005). It is in this context that competitiveness, according to Turok (2005), should be viewed as encompassing three key determinants of growth and prosperity; namely, the ability of a city's firms to sell their products in contested external markets *(trade)*, the value of these products and the efficiency with which they are produced ('productivity'), and the extent to which local human, capital and natural resources are utilized (e.g., the "employment rate").

The importance of the concept of competitiveness has increased rapidly in recent years, with the issues surrounding it becoming more empirically refined and theoretically complex at the same time (Porter, 1990, 2000; Huggins and Izushi, 2011). Porter (1990) defined national competitiveness as an outcome of a nation's ability to innovate in order to achieve, or maintain, an advantageous position over other nations in a number of key industrial sectors. In his early study, Porter (1990) linked national competitiveness to productivity and, principally, a nation's ability to innovate.

The comprehensive competitiveness of a city is the result of economic, political, and cultural forces playing their roles together (Pengfei, N. and Kresl, P.K., 2010). Hence, it is a function of complex interrelationships of variables. It should not be reduced to any single one of them. Moreover, there remains unresolved questions about the factors and forces underlying these features, and how the concept should be deeply measured and understood.

The role of the cities as spatial unit of organization has pulled attention of governance scholars and practitioners of competitiveness at the local level. From this spatial perspective, Porter's (2000) major contribution was to take a micro-level understanding of the conditions determining firm competitiveness, such as the capacity to innovate, and apply it to the territorial unit – like a city. It is Porter's (2000) notion of the microeconomic determinants of prosperity and wealth generation, as opposed to determinants related to monetary exchange rates and the like, that is at the heart of the concept of local competitiveness.

Of relative similarity, there is also growing consensus in the Philippines that cities are primary spatial units that compete to attract investment. In urban center or city level, knowledge

is circulated and transferred, resulting in agglomerations or clusters of industrial and service sector enterprises. Yet, the Philippines ranks 103th among 189 countries according to the World Bank's *Doing Business 2016 Report*.

The 2010 Global Urban Competitiveness Report presented an analysis on why some cities are more competitive while others are less competitive. The observation indicates that cities with leading comprehensive competitiveness tend to have high scores in each of the aspects, and do not have any distinct disadvantages in any other components. Some cities have high ranks in some of the indices, but are restricted by other aspects. Therefore, their comprehensive competitiveness ranks remain low. Obviously, in order to improve their comprehensive competitiveness, cities should focus on balanced development and leverage their competitive advantages.

The quality of urban living environment contributes to a city's competitiveness by attracting and cultivating talented individuals (Pengfei, 2012). This means that high quality living environment plays an important role in attracting and cultivating high-quality talent as well as the maximum application of their abilities. Competitive places have developed diverse, multidimensional ways to attract mobile workers as well as mobile investment. Benchmarks, including knowledge metrics, innovation indices, and report cards, are increasingly common and increasingly critical to the monitoring of key features of economies and societies whose factors of production and of success are highly mobile (Malecki, 2007). While nations can only do much to facilitate these adjustments, the primary burden of action always falls on the shoulders of city leaders. Hence, the city's leadership and policymakers need to grasp the nature of "place competition" and the critical roles of knowledge in the strategies of the most competitive places in order to sustain the economic activities despite the pandemic.

COMPETITIVENESS INDICATORS FOR CITIES

Cities have been engines of productivity and growth throughout history. The massive and rapid urbanization of countries, particularly in Asia, suggests that the role of cities is even more essential in the overall economy of nations and regions, their future growth, and competitiveness. Moreover, it is important to recall that early Asian prosperity was also driven by cities. The World Economic Forum (WEF) defined the city's competitiveness as the set of factors – *policies, institutions, strategies and processes* –that determines the level of a city's sustainable productivity (2014). Here, WEF argues that sustainability encompasses economic, environmental, and social issues.

A city competitiveness index is becoming very useful for benchmarking and understanding how they behave in relation with other cities. Indicators and Indices can help measure the level of competitiveness of a city. Measuring certain key urban indicators and providing relevant comparisons through benchmarking analysis allows stakeholders of the city to make appropriate decision to achieve their specific objectives. In the Philippines, the PNCC measures the cities and

municipalities' competitiveness using four indicators – *economic dynamism, government efficiency, infrastructure, and resiliency.*

The PNCC associates *economic dynamism* to the city's activities that create stable expansion of business and industries and higher employment. It recognizes that localities are at the center of economic activities. These business expansion and job creation are easily observable in local settings. *Government efficiency* refers to the quality and reliability of government services and government support for effective and sustainable productive expansion. This factor looks at government as an institution that is generally not corrupt, able to protect and enforce contracts, and apply moderate and reasonable taxation and is able to regulate proactively. PNCC measures local *infrastructure* indicator of competitiveness by looking into the physical building blocks that connect, expand, and sustain a locality and its surroundings that enable the provision of goods and services. In 2017, PNCC introduced *resiliency* in measuring the cities and municipalities competitiveness. Generally, this indicator attempts to look into the capacity of a locality to facilitate businesses and industries to create jobs, raise productivity, and increase the incomes of citizens over time despite of the shocks and stresses it encounters. This implies that the role of local governments is critical in ensuring a competitive environment to make businesses sustain their profits, create jobs, and increase the productivity of its people. In order for localities to be able to do this, it must be resilient in its infrastructure, governance, social and environmental systems.

However, in spite of the relevance of cities in this new century, Vegara (2016) explained that Urban Science concepts and methodologies are still going through a major evolution. We need also to take note that many of the great challenges that cities are facing do not have corresponding major framework for analysis. This makes comparing initiatives and performance of different cities difficult to measure. Hence, this study gained interest at modeling the scores of Philippine cities in these four indicators, using the CMCI datasets from 2017 to 2019, to provide new meaning in competitiveness interpretation other than using the CMCI rankings as a form of benchmarking.

It is at this point that the SEM structure **(Figure 1)** is advanced to analyze the interrelationships of the four pillars of competitiveness of Philippine cities.
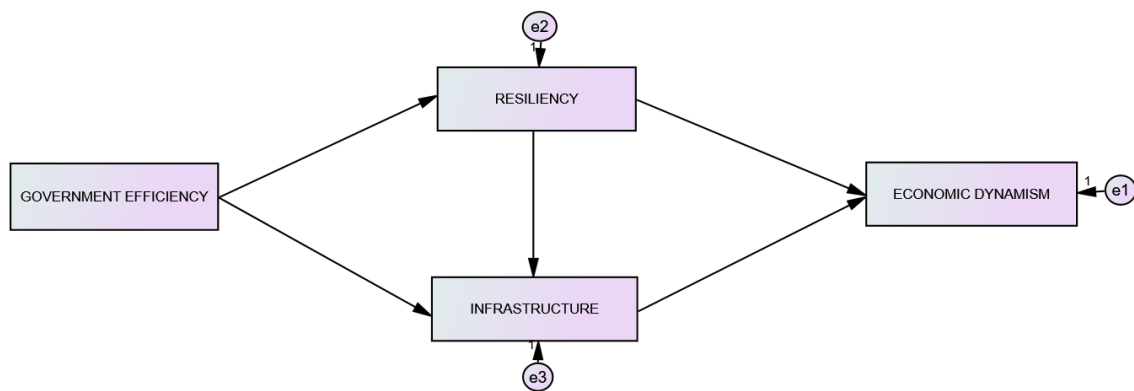
Figure 1. *SEM Structure for Data Analysis*

The concept aims to provide policymakers with a basis to make data-driven decisions on where action is needed to sustain competitiveness in a given situation, particularly in emergency situations or during this period of pandemic. The model stands in the idea extracted from the World Bank's *2013 Doing Business Publication* that says, "since rules and regulation that government imposes on markets and companies have long been a natural focus of competitiveness analysis, thus, rules matter." Following this idea, urban governments need to focus more attention on how to institutionalize proactive regulation and efficient design, promote growth and development through transparency and accessibility, and shape better-functioning institutions with reasonably efficient design to build infrastructure support and sustainability for markets to enhance local economic dynamism.

METHODOLOGY

This is a scientific, non-experimental study that systemically investigated the interrelationships of the four pillars of competitiveness measured by PNCC in its Annual CMCI reports. The study used the structural equation modeling (SEM) approach in the data analysis.

Frequency counts of cities from each clustered geographical area was used to describe the pattern of the number of cities included in the top ten in each CMCI indicator. Three-year data sets (2017, 2018, and 2019) from PNCC's Annual CMCI reports for Philippine cities were used in quantitative data analysis. A systematic review of literatures in urban competitiveness served as basis in framing the model or SEM structure for analysis. Hence, this research is largely quantitative in its generic sense, but embedded qualitative analysis – specifically systematic review through desk-archival research.

SEM is a *"second generation"* multivariate method used to assess the reliability and validity of the model measures. It allows simultaneous analysis of all the variables in the model instead of analyzing them separately. The main reason for using SEM approach in this study is that, the simultaneous evaluation of the model construct relationships is possible. Evaluation need not to be performed in sequential steps. The approach likewise provides flexibility for the researcher to compare observed data with the theory. Lastly, instead of doing path analysis using the traditional regression procedures, the use of SEM for path models enables the researcher to generate output for measures of model-fit, and modification indices.

In data analysis, standardized maximum likelihood estimation was used in SEM analysis. SEM standardized path coefficients and model-fit analyses were done using IBM® SPSS® AMOS software version 21 to analyze the interrelationships of the four pillars of cities competitiveness namely: government efficiency, resiliency, economic dynamism, and infrastructure. Normative Fit Index (NFI), Tucker Lewis Index (TLI), Comparative Fit Index (CFI), and Goodness of Fit Index (GFI) were used for model-fit analysis. The analysis of the goodness of fit of the SEM structure used in this study is shown in Table 8 *(See Annex D)*.

The next section outlines and discusses the key findings of and takeaways from this study.

RESULTS AND DISCUSSIONS

Urban/cities competitiveness index serves as essential baseline for city and regional leaders and managers to better understand the performance of their own area in relation with other cities/regions according to various indicators in a precise moment of time. Through this competitiveness index, cities can take advantage of the opportunity to also learn from other cities and benefit each other. The city's leadership/management can discover, through benchmarking, how they can compete and cooperate with other cities and look for integrated strategies and solutions to achieve their respective objectives.

In the Philippines, cities are concentrated in NCR and Luzon areas. There is a total of 33 Highly Urbanized Cities (HUCs); and 112 Component Cities (CCs) included in the CMCI rankings in 2017, 2018, and 2019 respectively *(See Tables 1 and 2)*. Of this total, 16 (48.5 %) HUCs are located in NCR; 5 (15.1 %) in Luzon; 6 (18.2 %) in Visayas; and 6 (18.2 %) in Mindanao. For component cities, 52 (46.4 %) cities are in Luzon; 33 (29.5 %) in Visayas; and 27 (24.1 %) in Mindanao.

Table 1. **Frequency Distribution of Highly Urbanized Cities in the Philippines According to Geographical Area**

Geographical Area	2017-2019	
	Number of Cities	*%*
NCR	16	48.5
Luzon	5	15.1
Visayas	6	18.2
Mindanao	6	18.2
Total	**33**	**100**

Table 2. **Frequency Distribution of Component Cities in the Philippines According to Geographical Area**

Geographical Area	2017-2019	
	Number of Cities	*%*
Luzon	52	46.4
Visayas	33	29.5
Mindanao	27	24.1
Total	**112**	**100**

Number of Top Performing Philippine Cities in the Competitiveness Index from Each Geographical Area

More cities from the National Capital Region (NCR) are top performing in the four-pillars of competitiveness index among highly urbanized cities (HUCs) in the Philippines from 2017-2019.

From 2017 to 2019, more cities from NCR are among the top performing cities HUCs in all four CMCI indicators. Six to seven Metro Manila cities were included in each of the four indicators of competitiveness during this three-year period. This suggests that being part of the primary international entry point in the country is an advantage for cities in Metro Manila which have already established governance mechanisms and strategies to be more attractive to markets and keep a dynamic economic environment.

Moreover, it is observed that cities from Luzon are seldom ranked within the top ten performing HUCs in the areas of *infrastructure* and *resiliency*.

Figures 2 to 5 show the comparative frequencies of cities from NCR, Luzon, Visayas, and Mindanao in the top ten HUC rankings of four CMCI indicators.
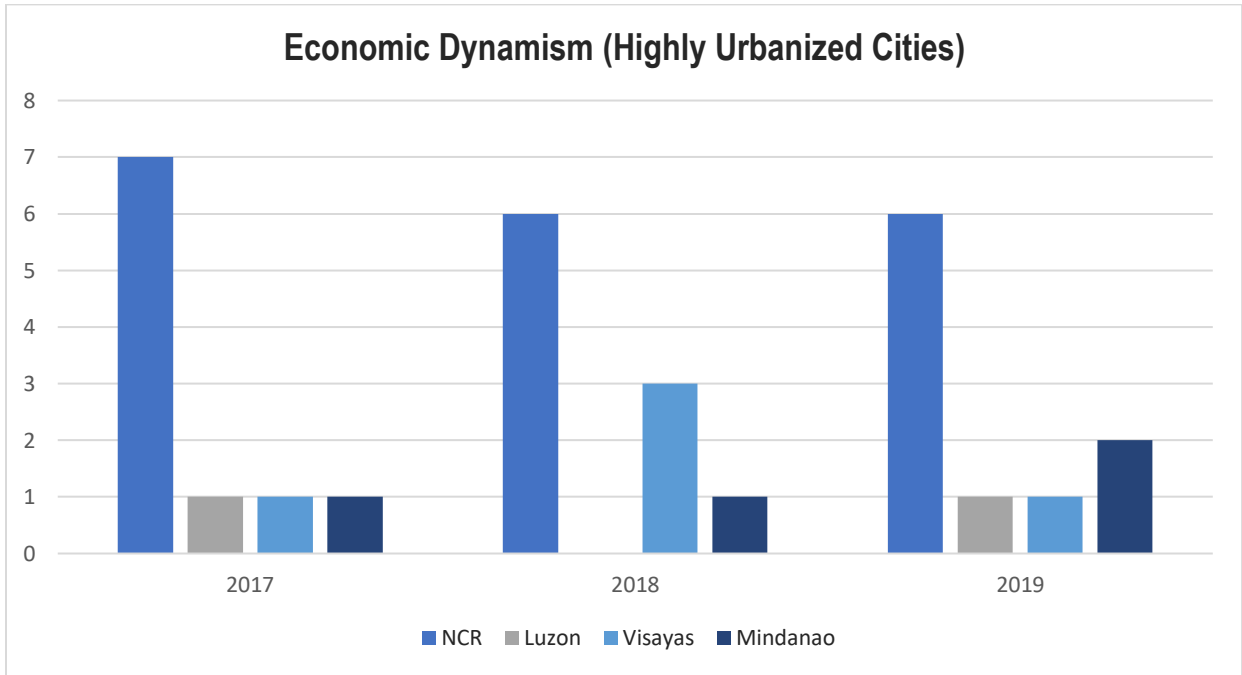

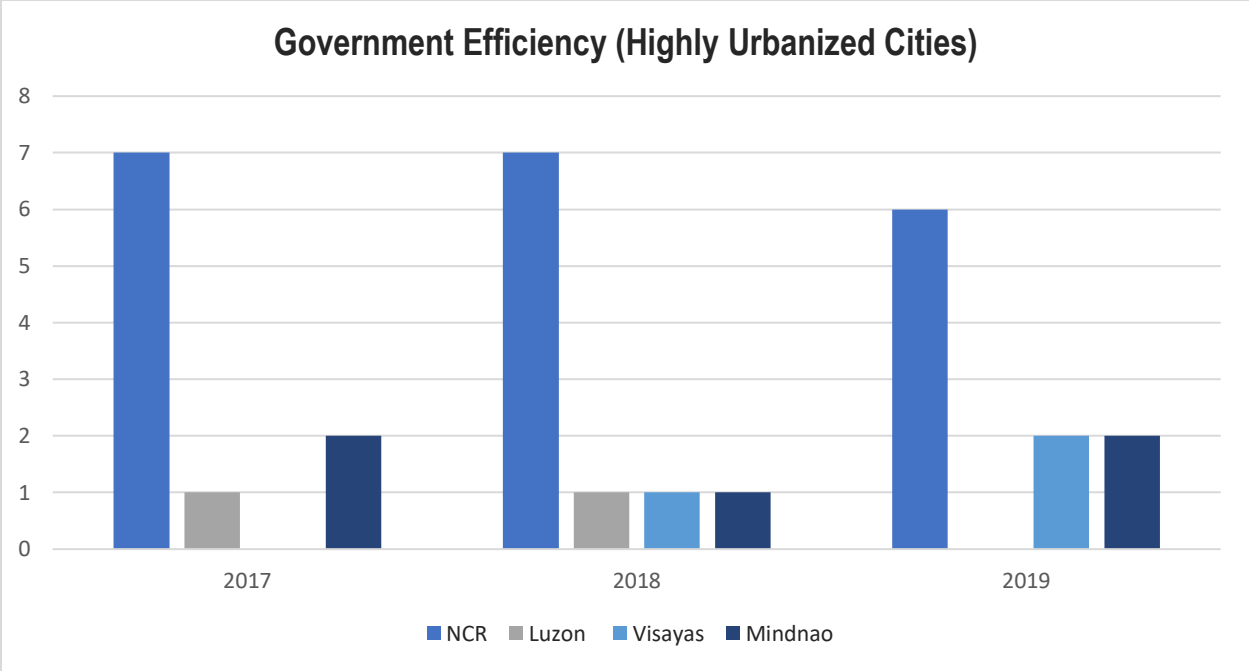**Figure 2.** *Number of HUCs from their respective areas included in the top ten for Economic Dynamism*

Figure 3. *Number of HUCs from their respective areas included in the top ten for Government Efficiency*
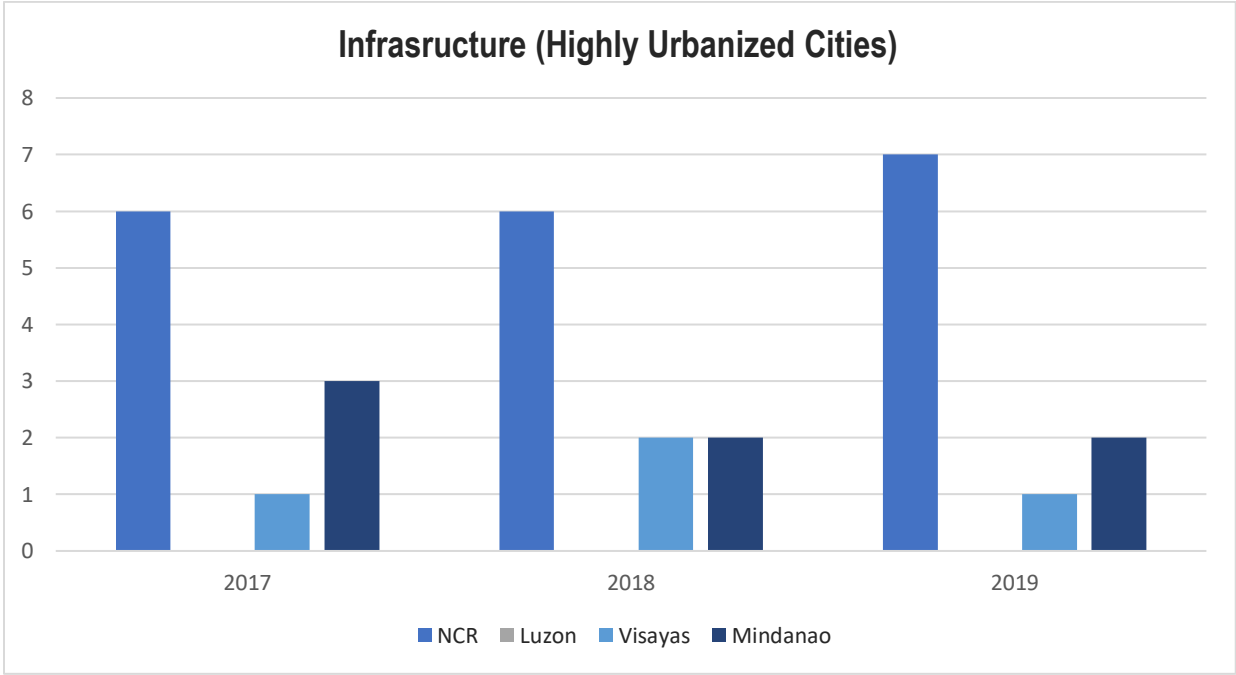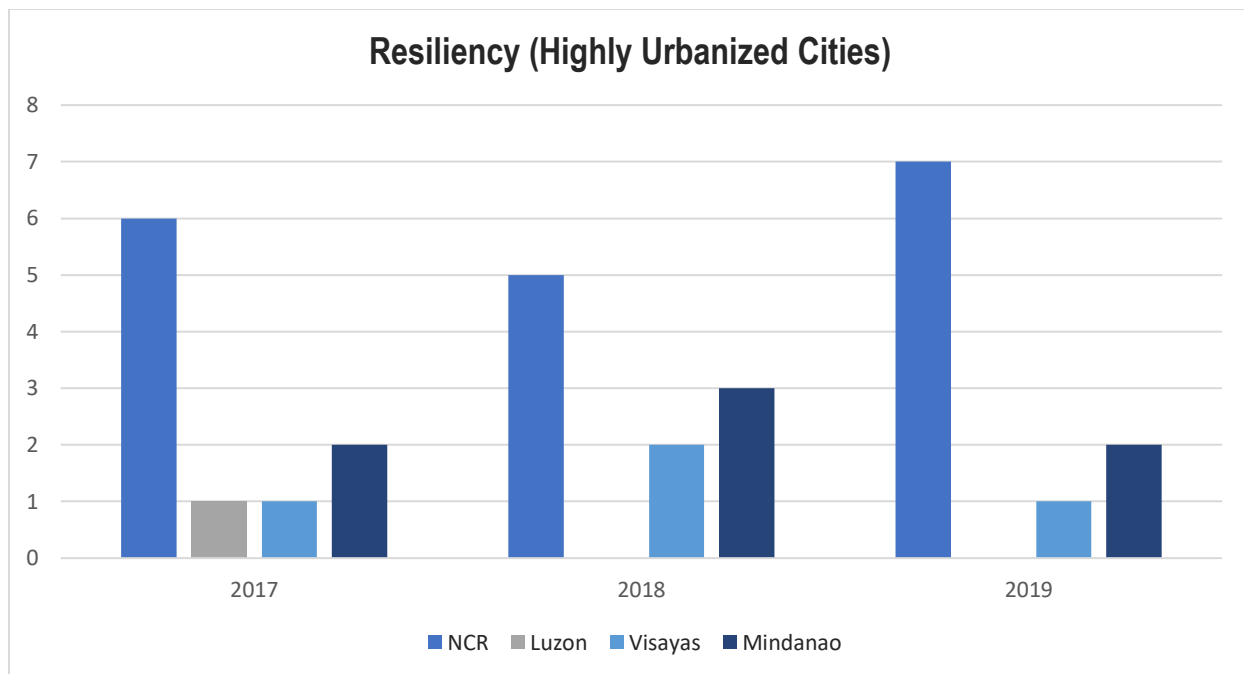

Figure 4. *Number of HUCs from their respective areas included in the top ten for Infrastructure*
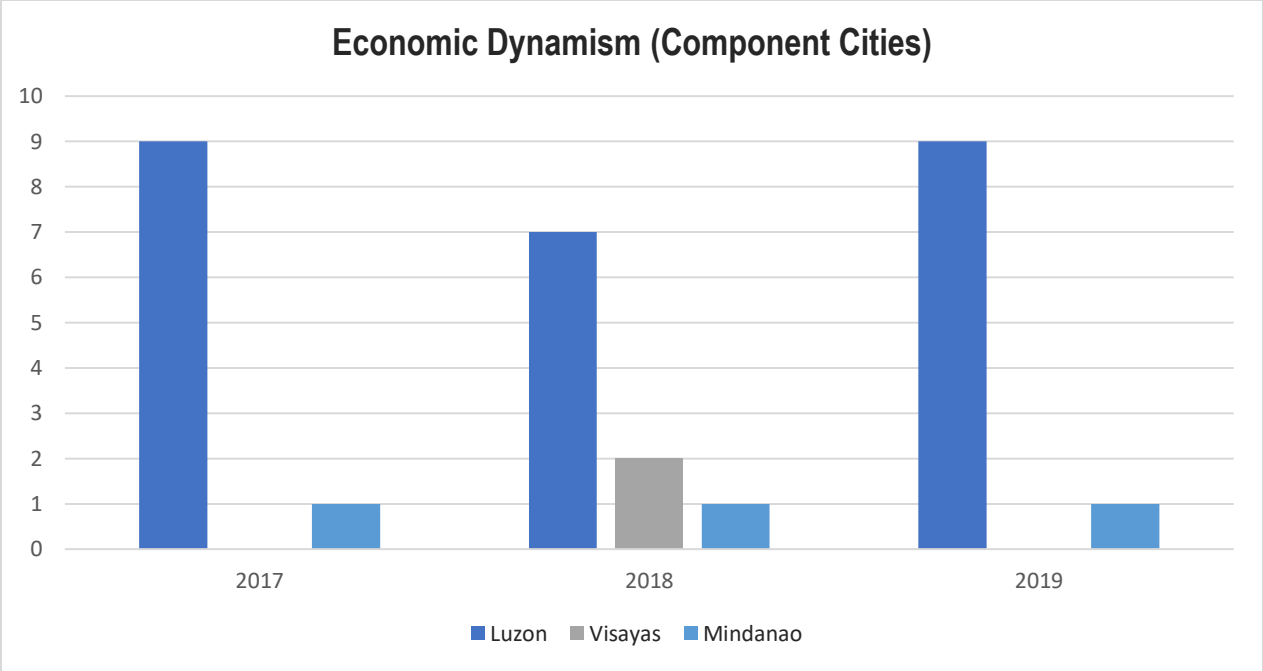
Figure 5. *Number of HUCs from their respective areas included in the top ten for Resiliency*

Most of the competitiveness index top performing component cities (CCs) in the Philippines from 2017-2019 are from Luzon.

From 2017 to 2019, component cities from Luzon (particularly those within Metro Manila periphery) are among the top in all four CMCI indicators. Seven to nine CCs in Luzon are ranked within the top ten in economic dynamism. It can be noted that there is a significant increase in the number of CCs from Luzon in the 2019 (from five in 2018 to nine in 2019) CMCI ranking in terms of government efficiency. Moreover, there is an increasing pattern in the number of CCs from Luzon which are ranked in the top ten for infrastructure.

During this three-year period, cities in the Visayas were not able to ranked within the top ten in the following indicators: Economic Dynamism (2017 and 2019), Government Efficiency (2019), Infrastructure (2018 and 2019), and Resiliency (2018 and 2019) while there are about one or two cities in Mindanao which are among the top performing cities in some competitiveness indicators on a particular year.
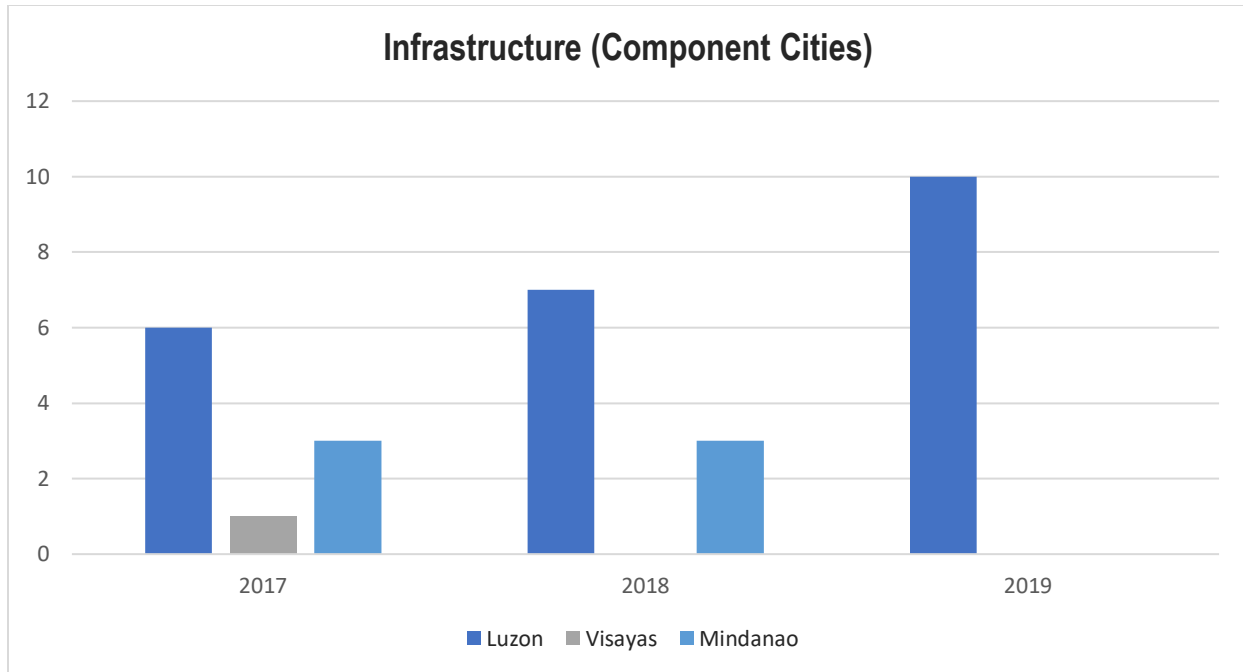
Figures 6 to 9 show the comparative frequencies of cities from Luzon, Visayas, and Mindanao in the top ten CC rankings of four CMCI indicators.
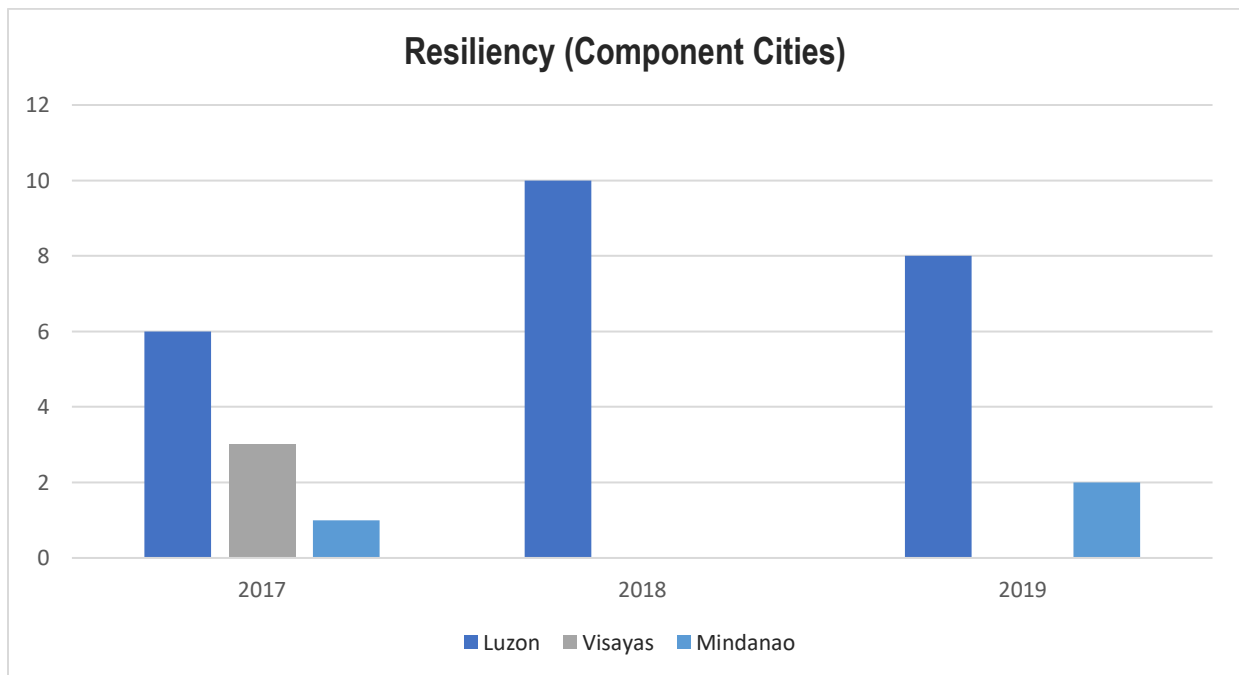
Figure 6. *Number of CCs from their respective areas included in the top ten for Economic Dynamism*
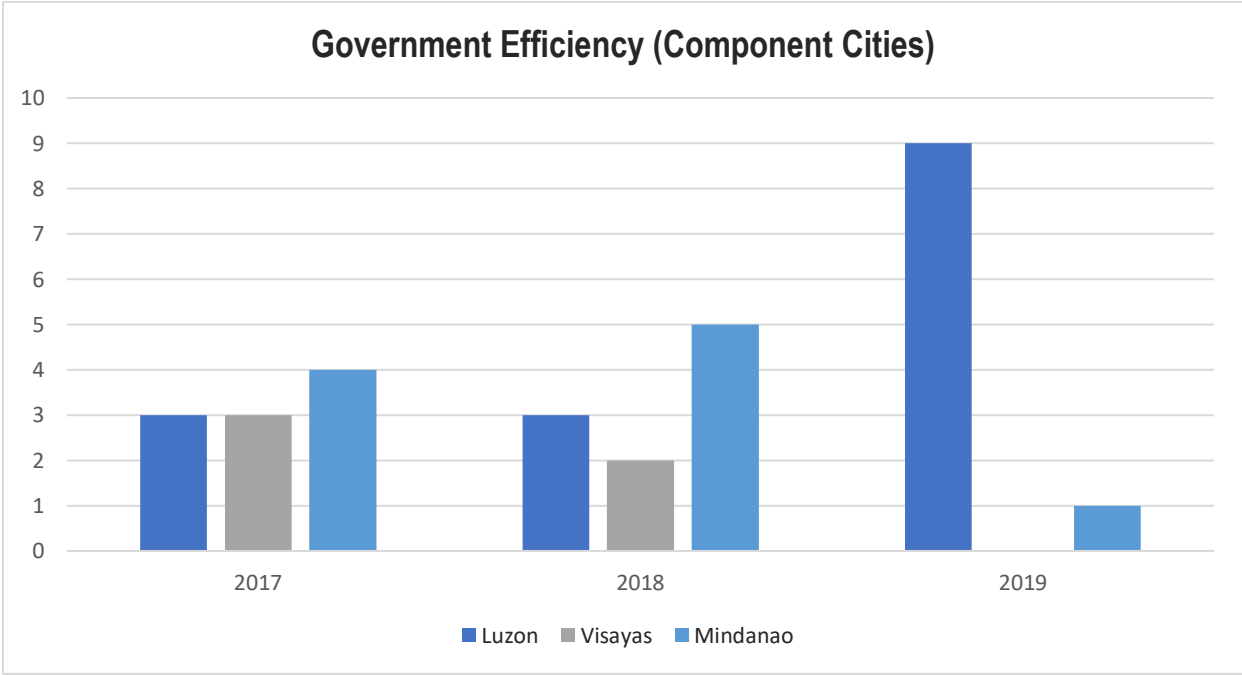
Figure 7. *Number of CCs from their respective areas included in the top ten for Government Efficiency*

Figure 8. *Number of CCs from their respective areas included in the top ten for Infrastructure*

Figure 9. *Number of CCs from their respective areas included in the top ten for Resiliency*

Interrelationships of the Four Pillars of Competitiveness of Philippine Cities (2017-2019) and their Policy Implications

Other than capturing local differences, these four pillars of CMCI have been able to enhanced the frequency of benchmarking, point out the areas of improvement for a particularly city to improve their competitiveness, and highlight good practices that are easily replicable in some other cities.

This section presents the key takeaways in SEM analysis of the Philippine HUCs and CCs' CMCI scores from 2017 to 2019. The overall model path coefficients for each year are presented in Annex A, B, and C respectively.

When the [local] government becomes more efficient, the more likely it can build/facilitate better infrastructures to support a dynamic economic environment. The results of the simultaneous regression and path analysis of the three-year period datasets showed that *government efficiency* has significant effect to *infrastructure* **(See Table 3)**. This means that as the city government becomes more efficient better infrastructures to support local economic growth and expansion will more likely improve. Simpler entry regulations could encourage the creation of more new firms that would eventually result to new jobs in the formal sector. Moreover, according to the World Bank (2013), economies at varying income levels and in different regions saw noticeable increases in the number of new firm registrations after implementing such reforms, such as in business registration. In relation to this, within-country studies have confirmed the positive association between improvements in business registration and registration of new firms (World Bank, 2013). Efficiency in local tax collection is also essential to support public infrastructure which are important for the growth of local markets.

Thus, the city's leadership needs to have a clear vision of the city's direction in order to get the basics right. This involves thinking of a regulatory framework to improve the city's business climate which involves stable and prudent fiscal policies, including efficient and simple taxation; a flexible labor market; openness to trade and foreign investment; and simple and transparent business regulation – is the primary lesson for good public policy (WEF, 2014).

Table 3. **Standardized Regression Weights (Maximum Likelihood Estimates) Summary between** *Government Efficiency* **and** *Infrastructure*

Year	Estimated β	C.R.*	P**	Label
2017	0.45	5.5.07	<0.000	**Significant**
2018	0.52	5.435	<0.000	**Significant**
2019	0.86	15.048	<.0.000	**Significant**

β (standardized regression coefficient); *c.r.>1.96 (<-1.96); **p<0.05

With more infrastructure support for hosting businesses and industries, cities are more likely to experience dynamic economic activities. The results of the simultaneous regression and path analysis of the three-year period datasets showed that when there is improvement in *infrastructure* support cities will more likely have an increase in *economic dynamism* *(See Table 4)*. Public infrastructures such as schools, hospitals, courts, roads, seaports, and airports help businesses and society to become more productive and better off (World bank, 2006). In contrast, when the quality and accessibility of infrastructure services are poor, companies' productivity and growth suffer (World Bank, 2010). This means that the existence of the right infrastructure supports for market expansion could foster dynamism in the Philippine cities' economy.

Table 4. Standardized Regression Weights (Maximum Likelihood Estimates) Summary between *Infrastructure* and *Economic Dynamism*

Year	Estimated β	C.R.*	P**	Label
2017	0.73	11.362	<0.000	**Significant**
2018	0.68	10.346	<0.000	**Significant**
2019	0.75	12.564	<0.000	**Significant**

β (standardized regression coefficient); *c.r.>1.96 (<-1.96); **p<0.05

The more efficient the government is, the more likely the city will perform better in the resiliency indicator. To increase competitiveness, [city] governments of emerging economies need to promptly and efficiently implement structural reforms. The right mix of priorities requires tailoring to specific conditions and stages of city development (WEF, 2014). These reforms are necessary to build their resilience against future external shocks, allow a more efficient allocation of resources, and facilitate the transition toward more productive activities (WEF, 2014). Those that are flexible and adapt quickly to changing conditions are successful cities.

The results of the simultaneous regression and path analysis to the model using the three-year period datasets revealed that *government efficiency* has significant effect to *resiliency* *(See Table 5)*. This supports the idea that as the efficiency in [local] governance improves the city's performance (score) in the indicators of resiliency is likewise improving. However, it is important to note that resiliency here is primarily based on the existence and documentation of outputs; and adherence to the national DRRM policies and mandates to local governments which are generally true to all local government units.

Table 5. Standardized Regression Weights (Maximum Likelihood Estimates) Summary between *Government Efficiency* and *Resiliency*

Year	Estimated β	C.R.*	P**	Label
2017	0.60	8.919	<0.000	**Significant**
2018	0.69	11.497	<0.000	**Significant**
2019	0.57	8.393	<0.000	**Significant**

β (standardized regression coefficient); *c.r.>1.96 (<-1.96); **p<0.05

Resiliency has less likely influenced the notion of competitiveness among Philippine cities. Climate change exacerbates nature loss, which in turn reduces our resilience to climate change and its impacts. Incorporating the sustainability/resilience goals and design into each stage of the infrastructure asset cycle, particularly in the early stages of strategy and design has been a successful strategy (WEF, 2020). Another element of a successful strategy according to WEF (2020) is environmental considerations. Establishing the goals and expected outcomes in conjunction with a predetermined set of sustainability and resilience drivers are relevant to the city's competitiveness. These considerations include mitigating effects of natural disasters and climate change, climate resilience, ensuring efficient energy utilization during construction and operation phases, optimizing use of natural resources, optimizing land use, waste minimization/ design optimization.

Interestingly, during this three-year period, *resiliency* was found to have no significant effect to improvement in the *infrastructure* supports for markets (except in 2017) and *economic dynamism **(See Tables 6 and 7)**.* The results suggest that an increase in resiliency score does not significantly mean that a city has more likely have better infrastructure to attract more business or an improving economic environment.

While it is believed that the role of local governments is critical in ensuring a competitive environment to make businesses sustain their profits, create jobs, and increase the productivity of its people, the present component of resiliency being measured is limited to the existence of the following local government's output: Organization and Coordination – Land Use Plan, Disaster Risk Reduction Plan, Annual Disaster Drill, Early Warning System; Resiliency Financing – Budget for DRRMP, Resiliency Reports – Local Risk Assessments, Resiliency Infrastructure – Emergency Infrastructure, and Utilities; Resilience of System – Employed Population, Sanitary System.

By looking into this, the quality of the outcomes of these plans and outputs have not yet captured in the assessments as it is argued that in order for localities to be able to do this, it must be resilient in its infrastructure, governance, social and environmental systems (cmci.dt.gov.ph). This could be the reason why *resiliency* has not significantly associated to *economic dynamism* or having a better *infrastructure* supports for markets.

A social system shows resilience when it can absorb temporary or permanent shocks and adapt to quickly changing conditions without compromising its stability (World Bank, 2014). Hence, it would seem logical enough to assume that the notion of resilience will be analyzed according to how localities react to and recover from shocks (Martin & Sunley, 2015). Moreover, the implications of these shocks in the spatial dynamics of economic growth and development over time also need to be assessed.

Table 6. **Standardized Regression Weights (Maximum Likelihood Estimates) Summary between *Resiliency* and *Infrastructure***

Year	Estimated β	C.R.*	P**	Label
2017	0.21	2.587	0.010	**Significant**
2018	0.07	0.774	0.439	**Not Significant**
2019	-0.07	-1.266	0.205	**Not Significant**

β (standardized regression coefficient); *c.r.>1.96 (<-1.96); **p<0.05

Table 7. **Standardized Regression Weights (Maximum Likelihood Estimates) Summary between *Resiliency* and *Economic Dynamism***

Year	Estimated β	C.R.*	P**	Label
2017	0.00	0.015	0.988	**Not Significant**
2018	0.06	0.933	0.351	**Not Significant**
2019	0.04	0.684	0.494	**Not Significant**

β (standardized regression coefficient); *c.r.>1.96 (<-1.96); **p<0.05

CONCLUSIONS

Sub-national competitiveness indicators, like that of CMCI, provide both the national and local governments with standard measures that allow objective domestic comparisons in positioning the country against other economies in the region and the world. These indicators have been essential assessment tools in positioning the competitiveness of our national economy.

However, due to COVID-19 there is an ongoing rapid change acceleration in how people live, work, and consume. It is in fact faster than most societies are prepared for. While it is believed that building the city's economic resilience largely depends on the local government's efficiency and capacity to strengthen the fundamentals of its local economy, there is a need to change the

way we should appreciate resiliency among cities and urban areas. Resiliency, as an indicator of competitiveness, should attempt to see to it that it looks into the capacity of a locality to facilitate businesses and industries to create jobs, raise productivity, and increase the incomes of citizens over time despite the shocks and stresses it encounters. Local public managers are therefore challenged to understand *"what-to-reform and how-to-reform"* to boost competitiveness in this time of pandemic; and for the "next normal." Adaptation needs to be given urgent priority not only to prepare for the possible occurrence of another dangerous climate change related hazards in the future but also to eliminate the resilience deficit we face today.

In the context of pandemic and other economic risks, public economic managers and policymakers need to adopt prudent regulations that will accomplish the desired outcome in the most efficient way; that have measurable positive impact in facilitating interactions in the marketplace; that adapt to changes in the environment; that are proportionate to the problem they are designed to solve; and, that are clear and accessible to anyone who needs to use them in order to improve efficiency and sustain the economy. Health systems are vital to security, resilience and growth. They form part of countries' critical infrastructure. At the population level, health underpins productivity. Well-functioning health systems enable countries to respond to, and recover from, natural and human-induced disruptions. Hence, for cities to be resilient and sustainable, urban plans need to be designed, evaluated, and approved using a health lens.

Lastly, with the current scale, complexity, and urgency of the situation, if governments and industries are to ensure business continuity, protect employees, and shore up supply systems for the future, they need to find new approaches particularly in knowledge sharing and achieving better outcomes in working together as never before.

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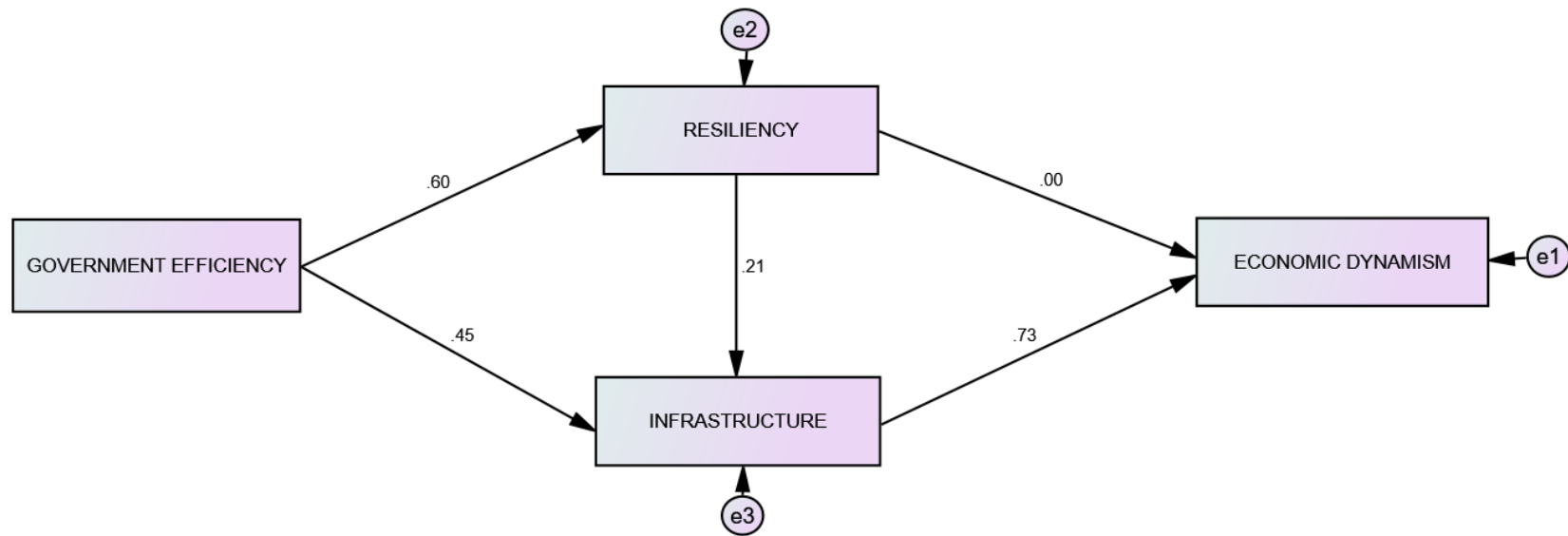
(ANNEX A)

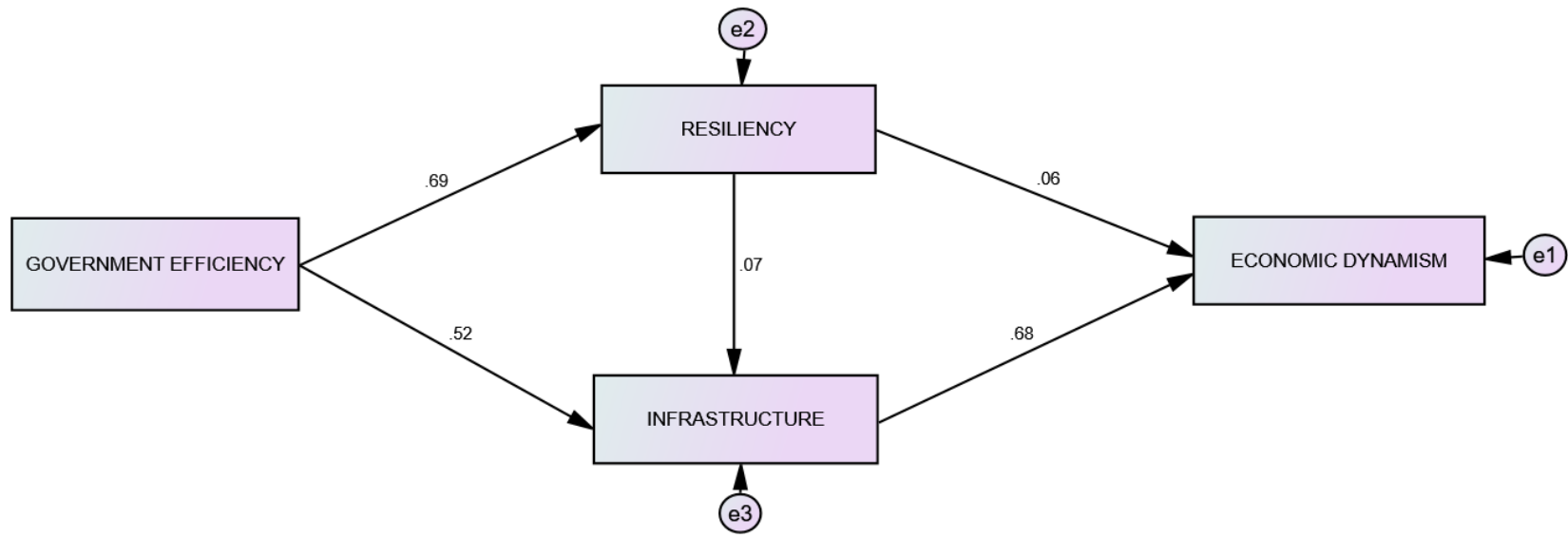**Figure 10.** *Overall Path Coefficients (2017 Datasets)*

(ANNEX B)

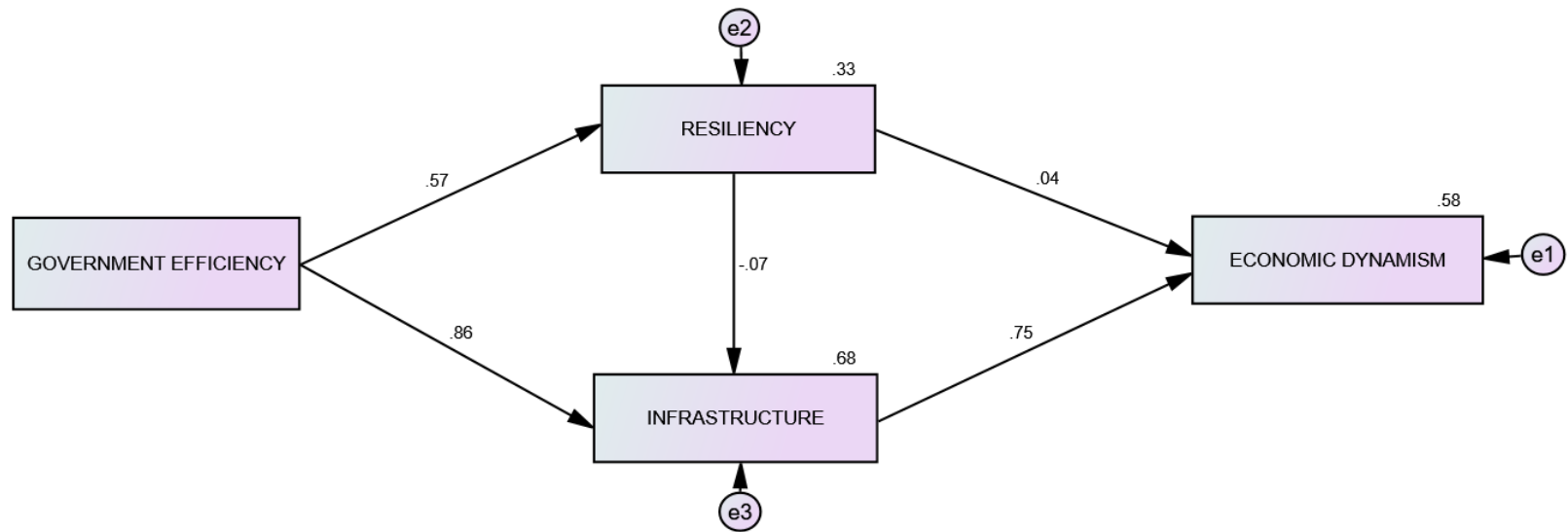**Figure 11.** *Overall Path Coefficients (2018 Datasets)*

Figure 12. *Overall Path Coefficients (2019 Datasets)*

(ANNEX D)

Table 8 **Model Fit Summary Baseline Comparisons using the 2017, 2018, and 2019 CMCI Datasets**

Measures of Fit	Recommended Value	2017 Value of the Model	2018 Value of the Model	2019 Value of the Model
NFI	≥0.90	1.00	0.99	0.98
TLI	≥0.90	1.00	0.99	0.91
CFI	≥0.95	1.00	1.00	0.99
GFI	≥0.95	1.00	1.00	0.98

NFI – Normative Fit Index
TLI – *Tucker Lewis Index*
CFI – *Comparative Fit Index*
CFI – *Goodness of Fit Index*