

Philippine Competitiveness 4.0: Reimagining local economic development (LED) in the digital revolution

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Abstract

The advent of the fourth industrial revolution challenged major conceptions of economic development and necessitated the need for a new level of competitiveness among national and local governments. The Philippines was able to adapt given its skilled and low-cost labor, as well as initial forays into e-governance and internet connectivity (World Bank, 2020; Dadios, et al., 2019). But technology evolves faster, and the looming pandemic has upended economic gains in the past decade particularly for local economies (OECD, 2020). Major challenges include readiness for remote learning and work, expansion of the online economy, and cybersecurity threats. The researchers argue that economically competitive LGUs should be smart and digitally adaptable as reflected in the CMCI. The study re-imagines LED in the digital revolution and enriches existing literature anchored on Porter's national competitiveness (1990). Using document analysis and qualitative examination of CMCI indices from 2011 to 2019, the researchers propose an expanded framework integrating new competitiveness indicators into the current index. This is not a panacea, but will help maximize opportunities brought by the digital revolution and enable a more inclusive perspective on economic productivity. It would also open prospects to reduce policy fragmentation in shaping competitiveness and raising regional smart competitiveness.

Keywords: competitiveness, economic development, digitization, smart communities

Introduction

The advent of the fourth industrial revolution in 2005 challenged major conceptions of economic development and necessitated the need for a new level of competitiveness among national and local governments. The Philippines was able to adapt given its skilled and low-cost labor, as well as initial forays into e-governance and internet connectivity; but without technological sophistication and inadequate access to internet connectivity, the Philippine economy has yet to maximize the gains of this new revolution (World Bank, 2020). So while the economy significantly grew in the past decades, it could have reached greater heights had technology been strategically utilized to enhance productivity and competitiveness.

With the looming pandemic, these hard-earned gains has been upended especially for Philippine local economies. Major challenges are ensconced in what is called “good enough” access—shaped by limited, unequal, and constrained access to digital technologies¹ (Uy-Tioco, 2019). This then brings forth a slew of digitally-enabled problems: poor readiness for remote learning and work, unregulated expansion of the online economy, and the prevalence of cybersecurity threats.

Digital readiness and adaptability have become necessary conditions for economic development and enhanced competitiveness. This is not only true for national economies but increasingly for local communities as well. Such perspective is still anchored on the enduring idea that cities are engines of growth, while municipalities provide the necessary support to ensure that local communities would continue to contribute to holistic development.

Given this context, the central question pursued by this study is phrased as such: how do we design / re-imagine local economic development (LED) in the digital age? In essence, making LED more responsive

to the changing times, that is, the advent of the digital revolution. The proposition made in this study is simple: LED can be reimagined and redesigned to respond to the digital age by incorporating tools and measures that require smartness and digital adaptability through the Cities and Municipalities Competitiveness Index (CMCI). In its two-decade existence, there is value in examining and assessing the gains of the country's pioneering and enduring competitiveness framework with the broader goal of utilizing it as an effective policy and decision making tool.

We utilized the “Rachel Gisselquist 10-Question Framework for Evaluating Indexes (2014)” to assess CMCI; particularly focusing on the first six (6) questions in her framework. This is coupled by document analysis and qualitative assessment of the CMCI measures and indicators. Some limitations of the study should be noted—we focused on examining the measures and indicators outlined in the index as well as the descriptions for the CMCI provided in its official website. We also examined publicly available documents, i.e., CMCI official website, government legislative bodies (Senate and Congress), and the Official Gazette to obtain pertinent and related CMCI / competitiveness documents. Due to time constraints, the researchers focused on the qualitative assessment of the index. Further studies may pursue a deeper examination of the CMCI following this framework.

The paper is outlined as follows: a literature review, the methodology utilized for the study, followed by the discussion of study findings. The discussion of finding answers each of Gisselquist's six (6) questions and provides a subsequent analysis. This is further synthesized in the final section, together with conclusions and recommendations on both research and policy advocacy aspects.

Review of related literature

Cities and municipalities rely on local economic development (LED) to spur their economies forward. Central to effective LED is competitiveness and more recently, literature noted the need to embrace the tools that digital transformation offers. This is reflected in enhanced measures for local competitiveness but also governance trends that rely on “smart” tools to improve public service delivery. Digital transformation and its antecedent technologies bolsters local strategies and accelerates the processes towards sustainable LED. Anchored on Michael E. Porter's competitiveness theory, the literature first delved into defining competitiveness and how this has transitioned in the digital age. Selected competitiveness indices are examined to determine how they measured competitiveness in the digital age which would be useful later on in assessing the Philippines' Cities and Municipalities Competitiveness Index (CMCI).

The final part described the digital economy in the Philippines, specific policies that impact this budding environment, and necessary enhancements that need to be undertaken to maximize productivity and competitiveness gains in the digital age. The researchers observe that the CMCI is an important tool to help local government units (LGUs) reimagine LED amid the digital revolution and utilize the same to spur local growth towards national development.

Defining competitiveness

Competitiveness is often associated with industrial firms and business organizations. More recently, it became an important concept for public sector governance. Countries and their governments are keen to become competitive as it spells success and development. The advent of new public management and mechanisms intended to reinvent public-private sector relationships have also contributed to the discourse of competitiveness. More so, the increasing importance of cities in driving economic growth and rapid urbanization broadened our focus on competitiveness (WEF, 2014).

But what exactly entails competitiveness? A macroeconomic perspective would point us to its fundamentals – interest and exchange rates, government deficits and surpluses, national incomes. It could

also be attributed to the endowment of natural resources, the abundance of labor, or the strength of government policies and management practices. Harvard Business School Professor Michael Porter debunked these ideas and argued that “the only meaningful concept of competitiveness at the national level is productivity... high and rising standard of living for its citizens (1990).”

His proposition offers a microeconomic lens, the concept of competitiveness, one where the interaction of companies to their chosen locations would affect levels of productivity, and successfully convert comparative into strategic competitive advantage. This affirmed the value placed by Porter on location— “ultimately competitive regions and cities are places where both companies and people want to locate and invest in (Kitson, Martin, & Tyler, 2004).”

Regions and cities compete against each other to offer the most productive environment for business (Porter, 2002). In the course of the competition, regions and cities are able to establish clusters and bring together interconnected companies, special service providers, firms in related businesses, and associated institutions such as schools and universities, trade associations, laboratories, etc. in a particular field to also cooperate. Porter posited that clustering offers a new way of revitalizing commercial activity towards economic development, setting public policy, and understanding national and local economies (2002). Since there is cooperation, it also opens spaces for broader participation in building the economy.

Other complementary definitions for competitiveness at the local level also emerged. The National Competitiveness Council of Ireland agreed with Porter that competitiveness is shaped largely by growth in productivity; but in the short-run, the Council also considered the important role played by policies on pricing, wages, and exchange rates in shaping the productivity of domestic firms and their resulting competitive performance. Competitiveness and the city’s sustainable productivity is also determined by “the set of factors – policies, institutions, strategies and processes (WEF, 2014).” These may include strategic approaches to various local factors to economic performance such as building regional assets, utilizing unique concentrations of occupational and labor market skills, cultivating the value of civic capital, networking and linkages, and responding to changing socio-economic conditions (Audretsch & Walshok, 2013).

Measures of competitiveness in the digital age

One of these changing conditions is digital transformation. The entrenchment of globalization, expansion of international trade, and significant advancements in technology made competitiveness more complex but equally, it is an indispensable tool towards economic growth and development. Definitions did not change in the digital age, but it was broadened to measure for innovation and digital readiness, for instance. This has become common alongside policies that cultivate competitiveness despite the absence of clear theoretical justifications (Rondo-Bovetto & Saliterer, 2007).

Different reports and indices from the global, regional, and domestic standpoints, as well as various government sources, incorporated measures and standards to capture the state of digital competitiveness. In several more, indicators of digital adaptability and utilization among national government agencies and sub-national government units have also been integrated (ITU, 2009; ECA; IMD).

One example is the United Nations (UN) e-Government Survey of Digital Government (UNDESA, 2020). The report released in 2020 is a biennial ranking on e-governments among UN member states which are based on three most important dimensions – telecommunication infrastructure index, online service index, and human capital index. The report provided insights on how current governments are utilizing technologies in their interactions with their citizens. More and more governments are adapting technologies in their governance with 65% of the member-states surveyed already located in the high e-government index (EGDI). Even the Philippines, globally ranked 77th in the EGDI, is considered high in the e-government index.

Two indices related to enhancing the foundations of e-governance are found in the UN e-Gov Survey of Digital Government: the telecommunication infrastructure index (TII) and the online service index (OSI). TII looks at the level of access of internet users and measures this through an average of four (4) composite indicators: estimated internet users per 100 inhabitants, number of mobile subscribers per 100 inhabitants, active mobile broadband subscription, and number of fixed broadband subscriptions per 100 inhabitants. As the demand side is enhanced through better internet connectivity, the supply side of e-governance would also have to be improved. OSI measures this part by looking into the level of accessibility and utility of government websites.

A government website serves as the central window of governance to its people, investors, and visitors. The presence of a website alone with static information would only be repository and does not even provide bare minimum service. In a competitive city, an efficient and active website is necessary. It improves local productivity and even bolsters its image to external cooperators and potential partners. Under the OSIⁱⁱ, a higher “ability of the website” to provide services and respond to the needs of its constituents makes it more efficient. Productivity reaps the rewards.

Meanwhile, the Global Power City Index (GPCI) ranks a predetermined list of cities based on six urban functions that will give a general picture on their ability to attract people, capital, and enterprises from around the world. The ranking of the city's ‘magnetism’ is based on at least 70 indicators detailing their economy, research and development, cultural interaction, livability, environment, and accessibility. Some notable indicators relate to digital competitiveness such as access, scores of access, content, and future technologies under the WEF Networked Readiness Index under the Livability Function; while the Economy Function requires a closer look into the ease of doing business, majority of which refer to electronic or digital services. Under the Innovation Function, a city’s magnetism is measured by the number of patents, prize winners in the fields of science and technology, and the number of start-ups, to name a few.

In a broader perspective, the quality of e-governance and digital readiness are central to achieving the One ASEAN Community as this is powered by digital services articulated in the ASEAN Digital Master Plan (ASEAN, 2021). The five-year ASEAN Digital Master Plan, which serves as the blueprint for digital connectivity in the region, hopes to achieve the following outcomes:

- Increase the quality and coverage of fixed and mobile broadband infrastructure through a national policy incentive for digital inclusion and the improvements in fixed and mobile broadband subscriptions;
- Increase the quality and use of e-government services putting emphasis on the need to increase digital productivity of the public sector; and,
- Address main barriers to deriving full benefits from digital technology among businesses and citizens (i.e., lack of digital skills, high prices, relevant services and content and lack of available connectivity).

ASEAN recognized the uneven level of digital infrastructure across the region. Singapore leads the pack with advanced digital connectivity: 90% of the population are already connected to the grid, using an average internet connection speed of 66.82 mbps, way higher than the world average of 42.70 mbps and double the speed of majority of its regional neighbors (We Are Social, 2019). The same global report shows that at least 208 million Southeast Asians have yet to be online while internet speeds for those connected are ranging from 17 to 35 mbps. Speed, however, does not hinder Southeast Asians from spending time online as all six (6) countries included in the survey spend more than the global average of 6:54 hours in the internet. The same numbers would be true for mobile connectivity, spending more than the global average of 3:39 hours.

These numbers reflect the ubiquity of online connectivity and the imperative for governments to significantly improve their online services. It boosts efficiency and productivity as people can do it while working on other chores or activities. Digital technology helped mitigate the impacts of COVID-19 economically and socially. But it also proved to be a litmus test for the strength and readiness of digital economies—ASEAN member-states with relatively better digital infrastructures have performed much better than those which lag behind. Addressing challenges in digital competitiveness is integral to improving local competitiveness. Maximizing the benefits of digital technology to improve the local economy is imperative in the digital age.

Assessing assessments: why?

Measuring competitiveness at the local level has become an important tool to understand the degree of economic productivity and level of economic sophistication within and among countries. Porter’s work as well as the continued indexation undertaken by different international organizations helped shape the discourse and the impact of competitiveness to governance. In the Philippines, we developed our own index—the Cities and Municipalities Competitiveness Index (CMCI), further discussed in a separate section here in this paper. The index is pioneering and insightful given the wealth of data it has acquired since 2011. A looming question is its impact on policy making and programmatic interventions. While it has encouraged more local governments to improve their ordinances and investment opportunities, one has yet to see a largescale influence of its gains at a broader scale or at the national level. This would be a tough ask of course, but if we are intent on making genuine reforms towards better local economic development, these hard questions must be confronted.

Assessing indexes or existing assessments are nothing new. In research, we often assess the strength and validity of the survey tools used at different levels of implementation. The same is true for several measurements and indicators. Gisselquist observed how governance indexes have worked and affected overall goals to improve “governance” as a concept and practice. Critiques are broad—technical challenges that impede effective measurement of a certain concept, differences in appreciation of the measured concept, and the difficulty of measuring other components of a certain concept. In the case of governance, corruptions perception has been used to measure corruption—lacking but still the closest we can do for now. This is why Gisselquist proposed a 10-question framework to provide an initial guide to assessing the effectiveness of our existing measurements or indices (2014). This way, formulators can be reflective on the work they do and the goals intended to be accomplished.

For Wigfield and Alden (2018), they note the value of incorporating the voices and views of the subject we aim to measure or we risk further entrenching their “invisibility” in the society as reflected in their assessment of the “social inclusion index” in a Northern English City. This is true for measures that seek to understand complex socio-economic concepts such as social isolation, conflict or violence, or socio-economic participation. Can the same be observed for competitiveness indexes? It could be to a certain extent since the capacities of different local governments to cope and promote their competitiveness are varying and dependent on certain structural and institutional factors. This brings to mind Villamejor-Mendoza’s study on LGUs and their CMCI ranks (Villamejor-Mendoza, 2020)—already wealthy and better positioned LGUs rank higher in competitiveness index compared to their poorer, under-developed counterparts. More than just looking into numbers, Wigfield and Alden (2018) note the need to explore the subjects deeper through conversations and meaningful interactions.

Towards this end, we find the observations of the OECD fitting: “there is no single perfect measure,” as this is often hinged on which aspect of competitiveness is measured, the levels of support, and level of disaggregation of data points to name a few (Durand & Giorno). This context motivated us to evaluate the strength of CMCI and provide for subsequent recommendations later on.

Methodology

A qualitative analysis was adopted for this research. We intend to evaluate the CMCI and subsequently integrate smart and digitally adaptable indicators in the existing framework anchored on our proposition that LED should be reimagined amid the digital revolution. Rachel Gisselquist's 10-Question Framework for Evaluating Indexes (2014) serves as the main evaluative method for the CMCI. The Gisselquist framework was primarily developed to evaluate and serve as a guide in designing governance indexes; but the author notes that it can also "consider composite indicators on topics other than governance." Evaluating indexes will help policymakers, practitioners and researchers "to systematically develop and/or evaluate the best tool(s) for their purposes (p. 514)." She cautions against using the framework as a mechanism to determine which index is objectively weaker or less valid since "there can be many 'good' indexes because different tasks require different measures."

Of the 10 questions, Gisselquist advises that researchers may focus on the first six (6). As such, we utilized the same to critically evaluate CMCI. They are as follows:

- (1) *What precisely does it aim to measure?* This pertains to concept specification or a conceptual definition for local competitiveness. Specific evaluative factors from John Gerring (1999) as outlined in Gisselquist (2014, p. 517) include:
 - a. familiarity (i.e., how familiar is the concept to the lay or academic audience)
 - b. resonance (i.e., does it "ring"?)
 - c. parsimony (i.e., length of the term and its list of defining attributes)
 - d. coherence (i.e., consistency and logic)
 - e. differentiation (i.e., boundedness, operationalization)
 - f. depth (i.e., accompanying properties shared by instances with the definition)
 - g. theoretical utility (i.e., usefulness of the concept within a wider field of inferences)
 - h. field utility (i.e., usefulness of the concept within a related field)
- (2) *Does the operational definition capture the concept?* This pertains to content validity and the presence of an operational definition. Gisselquist notes that operation definitions "should identify the components to be included in the measure and specify how these components are put together in a manner that is consistent with the core concept." For CMCI, this refers to the pillars or categories used to further define or characterize local competitiveness.
- (3) *How good is the data?* The "goodness" of the data refers to its reliability and validity and completeness. Here we examine whether multiple sources for a particular data would provide the same estimates, hence its reliability. It is valid if it measures accurately what it intends to measure. Completeness of data is a concern especially since the data for CMCI is gathered annually.
- (4) *Is the measure and its subcomponents transparent and replicable?* One of the basic principles of good social science research is replicability, or the ability of other researchers, experts and/or practitioners to independently evaluate the information, data and/or findings of a certain study.
- (5) *How sensitive and robust is the measure to different data and design choices?* It is understood that different datasets and methods can result in different values, but the main principle is that researchers understand the extent of these variations. They are also able to explain the potential impact of their conscious data and design choices, and put forward the need to justify these choices or ask for further feedback towards redesign.
- (6) *Does the measure allow the analyst to address key questions of interest?* This question seeks to determine whether the index is able to capture empirically what is under investigation.

This is illustrated in the conceptual framework below:

Each stage of evaluation is assisted by document analysis, “a systematic procedure to analyze documentary evidence and answer specific research questions (Bowen, 2009).” This is applicable for both printed and electronic (i.e., computer-based and Internet-transmitted) materials. Particular documents reviewed and assessed for this study include policies and memoranda released by national government agencies about or for CMCI and LED. We also included pertinent webpages, particularly that of CMCI and the NCC. It is expected that analyzing documents as “social facts” would help enrich the study because “the researcher can corroborate findings across data sets and thus reduce the impact of potential biases that can exist in a single study (Bowen, 2009; Gross, 2018).”

Philippine competitiveness unpacked

The country’s increased involvement in global value chains and its booming business process outsourcing (BPO) industry proved to be significant drivers of domestic growth. Coupled with large overseas Filipino workers’ (OFW) remittances, the local economy remain productive. Sustainability and inclusivity remain elusive goals to be achieved even with significant economic growth during the 2010s. It was on this same decade that the national government adopted competitiveness as a framework towards securing growth and its gains. A number of policies and issuances have since been signed into law to bolster the government’s focus on competitiveness both at the local and national levels. Several have been updated in recent years to enable local competitiveness to further thrive and respond to the changing times.

The Department of Interior and Local Government (DILG) sets out the Guidelines on Promoting Local Economic Development and Investment Promotion (LEDIP) and Establishment of LEDIP Office/Unit in all provinces, cities, and municipalities under DILG Memorandum Circular (MC) 2020-167ⁱⁱⁱ. This is an expanded circular of a Memorandum Circular 2010-113 which only covered provinces and cities. The 2010 Circular enabled the creation of a local economic and investment promotion officer (LEIPO). The new circular also renamed LEIPO into LEDIPO to emphasize the role of the local economic development aspect functions the office.

The creation of the LEDIP office is aimed to enhance the competitiveness of the economy. The LEDIP primarily acts as the in-charge office in the ‘facilitation, preparation, coordination, and execution of local economic development and investment promotion policies, programs, projects, and activities’. The office also provides a support mechanism for the growth of the micro, small, and medium enterprises (MSMEs) and for public-private investment projects. An accompanying policy, the MC 2020-167 broadly outlined the proposed functions, sub offices, and standard competencies of personnel required for the LEDIPO. However, the creation of the LEDIPO is only encouraged as funds to support the creation of the office will be sourced out from the local funds.

Republic Act 11293 also known as the Philippine Innovation Act^{iv}, which was enacted in 2018, takes a ‘whole-of-government’ approach in driving innovation toward the center of Philippine development policies bringing in the business sector, micro, small and medium-sized enterprises, the research and development sector and the other sectors. Some of the salient features in the Republic Act 11293 is the creation of the National Innovation Council, which is the highest decision-making policy-council that sets out the country’s innovation goals. The President acts as the Chairperson with 24 members. The National Economic and Development Authority acts as the Vice Chairperson. The National Innovation Council Secretariat will be assigned under the NEDA.

A national program to support micro, small and medium enterprises (MSMEs) in their internationalization will be one of the strategic directions. Addressing innovations at the local level, the Philippine Innovation Act will also focus on developing regional hubs, provinces or sectors in clusters like the MSMEs, startups, large firms and/or academic institutions. The Act mandates the local governments to create an innovation program using different innovation instruments (Sec .16). One example of how local governments can support the law is the establishment of innovation centers on

several priority themes like food security, health, and notably, digital economy. A roadmap detailing the vision, goals and strategies will be articulated through the National Innovation Agenda and Strategy Document (NIASD).

Another legislation is the Republic Act 11337 or the Innovative Start Up Act^v, which sets out a national comprehensive support and benefits program to foster start-up growth. The Department of Trade and Industry (DTI), Department of Science and Technology (DOST), and the Department of Information and Communications Technology (DICT) shall be the primary government agencies responsible for developing a Philippine Startup Development Program and a Startup Investment Development Plan. Section 9 of the Act states the promotion for the creation of the Philippine Startup Ecozones or Special Economic Zones. Local governments can use these locators so they can also maximize the benefits of having start-up ecozones in the country.

In terms of execution, the creation of the National Competitiveness Council (NCC) through Executive Order (EO) 44 in 2012. The Council serves as the main body advising the President on all policy matters affecting competitiveness of the business sector, recommending legislations to boost competitive performance, and spearheading strategies to improve the country's international competitiveness ranking (NCC, n.d.). This was preceded by Public-Private Sector Task Force on Philippine Competitiveness through EO 571, s. 2006.

The Cities and Municipalities Competitiveness Index

The Cities and Municipalities Competitiveness Index (CMCI) is the annual ranking of Philippine local government units (LGUs), born alongside the creation of the NCC. CMCI has become a vital tool to provide for more evidence-based strategies for competitiveness, through the vital assistance of Regional Competitiveness Councils (RCCs) and the United States Agency for International Development (USAID). It is based on Porter's framework for national and regional competitiveness (1990), which relies on productivity and location. When LGUs understand their resources and employ strategies to improve their standards of living, thereby creating their own competitive advantage. The CMCI has various measures and indicators, mirroring Porter's insight that "almost everything matters for competitiveness."

In particular, it is based on four pillars: economic dynamism, government efficiency, infrastructure, and resiliency (DTI-CMCI, n.d.). Economic dynamism is the concrete representation of productivity as it refers to activities that create a stable environment for businesses and industries, as well as higher levels of local employment. Government efficiency is characterized by the quality and reliability of government services and local policies to support effective and sustainable economic expansion. Anti-corruption policies and the ease of doing business are key areas to look into. Infrastructure involves inputs to production such as transportation, roads, communications, and human capital formation as these are essential to bolstering local productivity. Resiliency is the capacity of LGUs to create jobs and sustain productivity amid shocks and vulnerabilities encountered. Recently, the CMCI Team added innovation as its fifth pillar of competitiveness. It measures the presence of start-ups, facilities and financing for innovation, patents registration, internet capability, and information technology utilization. Pillar scores are combined to create the overall competitiveness score.

LGUs are ranked based on their overall competitiveness scores, with higher scores indicating better levels of competitiveness. To be specific, five LGU categories are ranked: provinces (largest political structures in the country), highly-urbanized cities (minimum population of 200,000 and annual income of PhP 50 million), component cities (does not meet the criteria for HUCs), 1st to 2nd class municipalities (average

annual income of PhP 45-55 million or more), and 3rd to 6th class municipalities (average annual income of PhP 15 to 44.99 million) .

Almost a decade into existence, CMCI has contributed to the development of investment and productivity mindset among local governments. The incentives offered to the top competitive LGUs have encouraged significant improvements in creating more stable local environments for businesses. New commercial hubs outside Metro Manila, Cebu and Davao have emerged such as Bacolod, Iloilo City, and Cagayan de Oro. Even municipalities have stepped up and created more dynamic local economies. But while the country is poised for growth based on its economic expansion and increased foreign investment prospects (Valencia, 2018; Mercurio, 2017), there is greater room to improve. This year, the country experienced its steepest decline in competitiveness, ranking 52nd out of 64 countries in the World Competitiveness Index (Ibanez, 2021). This is the lowest ranking for the past five years.

Definitely, improved local productivity and increased competitiveness significantly contributes to national development but this has to be harmonized with effective coordination at the national and local levels, improved governance quality, and increased investments on key public goods and human capital (Balisacan, Hill, & Piza, 2006; Shrader, 2016). This is effectively demonstrated by the country's poor performance in world rankings but also by our reactive response to economic shocks, as exhibited amid the onslaught of the coronavirus pandemic. The pandemic may have weakened economic performances across the globe, but this should not be treated in isolation as systemic challenges to holistically develop productivity and standards of living have derailed the country's progress for the longest time.

A recent measurement of the relationship between CMCI, human development index (HDI), and poverty incidence (PI) among Philippine LGUs show that “competition appears to drive better performance among inherently competitive highly-urbanized cities, which are found to have high HDI, low poverty incidence and high internal revenue allotment (IRA) (Villamejor-Mendoza, 2020).” This emphasizes how competition, even with its noblest intentions, have inadvertently left behind already low performing LGUs and broadened the gap between rich and poor LGUs. With more challenges ahead, prospects for pandemic recovery and our foray into a broader digital economy, there is much work to do especially on crafting a more sustainable local economic development (LED).

Philippine competitiveness in the digital age

Competitiveness remains a valuable tool to drive sustainable productivity and overall economic development. In particular, it allows LGUs to develop a more holistic and strategic perspective for LED. CMCI is an important tool for driving better competition policies at the national and local level. But the researchers noted its lack of focus on innovation and the role of digital technology in local governance. While an innovation pillar has been belatedly developed, this requires concrete assessment as to its responsiveness to the evolving development needs of local governments today.

The previous sections discussed the ubiquity but also the value of measuring digital readiness as an enhanced indicator for local competitiveness. In the Philippines, the digital economy covers 10.1% of the gross domestic product (GDP) (IMD, 2021; CPBRD, 2020; PSA, 2021). Of the 10.1%, Infrastructure comprises the major contribution at 74.4%. The Philippine Statistics Authority refers to Infrastructure as the physical materials and organization that support the digital economy. Infrastructure refers to satellites, computers, recorders, and even cameras. E-commerce is also an important feature in the digital economy at 22.9%. Digital media like music, film, and any creative content that can be accessed through digital apparatus is at 2.7%.

The Philippines lags behind in the overall performance of 2020 IMD World Digital Competitiveness Ranking, ranking 57 down from 55 in 2019 (CPBRD, 2020; IMD, 2021). The ranking measures the capacities and readiness of countries in exploring digital technology in driving economic growth. The

ranking is built on these major factors - knowledge, technology, and future readiness. Each major factor has different subfactors for a total of 51 criteria.

In the Knowledge factor or its know-how to use the technology, some of the strength areas are for graduates in science, female researchers, and high-tech patent grants. But the overall weakness is on the educational assessment for PISA-Math. For Technology factor or referring to the conditions to which the technology is enabled, overall weaknesses are for starting a business and enforcing contracts. The overall strength is for the investment in telecommunications. Future readiness refers to the level of preparedness to adopt technology and willingness to participate. Under Future Readiness, internet retailing has the lowest score.

Different reports have indicated that technological infrastructure remains to be a factor in increasing digital competitiveness (CPBRD, 2020; ASEAN, 2021; DOST). But more than the technological infrastructure, it is the level of use and access of people to technology which makes it critical to the success of the digital economy and in effect, the local competitiveness as a whole.

Evaluating the CMCI: An Exploratory Assessment

For this section, the researchers utilize six (6) primary questions under the Gisselquist 10-Question Framework for Evaluating Indexes. This was designed to evaluate governance and other corollary indexes with the primary aim of identifying areas to improve, refining indicators, and enhancing the index as a policy tool. It does not seek to determine whether an index is weak or less valid since indexes are designed to measure different aspects of a certain concept. As such, the discussion began with exploring the intention and purpose of the CMCI, followed by examining the “goodness” of the data, as well as the processes of measuring and obtaining the specific data utilized in the index. The assessment is capped off by evaluating whether the measure allows the analyst to address key questions of interest.

Several parameters observed while conducting the assessment include the following: the researchers focused on the first four (4) pillars of CMCI since these have been utilized at least in the past five (5) years and therefore has complete data. The researchers recognize the fifth pillar of innovation, however it has yet to be implemented, so it was left out of the observation. Further, the researchers intend to examine the questions with digital readiness as a primary criteria in mind. This provides the linchpin for the analysis in the next section as well as the concrete policy recommendations by the end of this paper.

What precisely does CMCI aim to measure and does the operational definition outlined in CMCI capture the concept of competitiveness?

Competitiveness in the CMCI ranking is based on the four pillars that are subdivided into 40 composite indicators. Competitiveness is a layered concept and taking account Porter’s framework that being competitive is being productive, local competitiveness is making efficient use of available resources to produce at least twice from its input.

The researchers looked into each of the operational definitions of the five competitiveness pillars and tested the question whether it has captured the concept of competitiveness. The first pillar, Economic Dynamism, is operationally defined as referring to the activities on ‘expansion’ and ‘employment’ in the locality. Economic Dynamism is treated as the most ‘concrete representation’ of productivity in the locality. CMCI is clear that business expansion and entrepreneurial spirit can be easily observable measures. One can look at the measures of the number of approved business permits for both new and renewing business applications and number of declared employees for both new and renewing business applications.

The second pillar is Government Efficiency. It refers to the quality and reliability of government services and government support for effective and sustainable productive expansion. In its conceptual definition, CMCI also emphasizes that government efficiency is not ‘corrupt’ and ‘able to enforce contracts’. Further, a government efficiency also implies that it has moderate and reasonable taxation, something that is favorable for local businesses. Based on the abovementioned definition, there are no clear identifiers that further describe government efficiency. ‘Reliability’ and ‘quality’ may need to be further agreed and operationally defined as these are open to contesting concepts.. ‘Enforcing contracts’ and ‘reasonable taxation’ may also be internalized as to how it creates a clear connection to government efficiency.

The next step is to look at the indicators under the Government Efficiency category. Most of the indicators under this category merely ask the presence and absence of critical policy documents. These range from comprehensive development plans and local investment code. What is notable is it also looks into the capacities of institutional sectors like schools, police, health which can help enable conditions for businesses to thrive. However, most of these indicators refer to the physical count and a ratio of population. A better appreciation is to see whether the indicators will likely lead to a better outcome. For example, does the number of policemen in a locality reflect the lowering of total crime incidence in the city or is the crime incidence an indicator under peace and order? Does the number of schools and teachers reflect the quality of education based on national assessment scores? Going back to the operational definition of Government Efficiency as to the concepts of quality and reliability, a more nuanced indicator may be added. Indicators that will reflect on government’s enforcement on contracts’ and ‘reasonable taxation’ may be inputted.

The third pillar is Infrastructure which refers to the physical building blocks like roads, health and communication facilities, transportation, and even the number of automated teller machines. Most of the indicators under this category are verifiable and observable since they have concrete objects of verification. For example, measuring existing road networks can mean interconnectivity. The number of schools and clinics can mean better services. A particular mention under this category is the number of cable, internet, telephone companies/mobile service providers, which reflects the ICT readiness of a locality. This indicator however is limited to physical count and does not provide other information on the whole ICT readiness of a locality. It is challenging if it is directly related to improvement of Information Technology Capacity.

As this information reflects local economic development in the digital age, CMCI may further provide more indicators not only in terms of facility count but also on the level of use and access of these facilities by a population or a segment of population. The primary objective is whether these facilities contribute to the productivity outcome of end-users and institutions. The UN e-Gov Survey can inform CMCI on what possible globally accepted measures can be localized into the CMCI system. ICT readiness of cities and governments can be reflected on the government website. The level of sophistication and efficiency of the government’s website in terms of services to the citizens help build a strong case of digital-ready and more productive and competitive Philippine local governments.

The fourth pillar is the Resiliency whose proxy indicators under this category can be in the absence or presence of the planning documents (i.e. comprehensive land use plan (CLUP), local risk assessments, disaster risk reduction plan (DRRMP), emergency hardware (i.e. early warning systems and emergency vehicles) and trained personnel. To operationalize and define Resilience capacity, proxy indicators become the main challenge. What is mostly asked is the absence or presence of plans and hardware. It oversimplifies the notion of concepts of resilience and institutional capacities. A key suggestion is to look at the implementation rate of CLUP and DRRMP plans over time? How many participated in the annual drill over time? Process indicators can be part of the input to capture a rather complex concept like resilience and capacities.

How “good” is the data utilized in CMCI?

Compared to other social sciences indexes (e.g., corruption perceptions, good governance, press freedom, human development), measuring for competitiveness is quite straightforward. It relies largely on economic data often captured at the national and local levels (e.g., macroeconomic fundamentals, employment, demographics). More specific types of data such as those related to ease of doing business, commercial growth, and economic costs to name a few, could also be obtained if a locality is assiduous in data gathering and data-driven policymaking.

The other half of obtaining data is the quality of the data collected. Researchers and practitioners often describe data as “good” if it is reliable, valid, and complete (Haradhan, 2017; Bajpai & Bajpai, 2014). Reliability is characterized by the stability of the data, i.e., do we have faith in the data obtained from the use of a certain instrument? Data gathered has to be consistent and precise; the same data gathering process can be repeated under different circumstances and trust that the measuring tool controls for random error (Haradhan, 2017). There are quantitative and qualitative aspects to reliability and for this exploratory study, we rely heavily on the qualitative acceptability of the data—the researchers’ approach is consistent even across different researchers and different projects.

We observe that CMCI data are qualitatively reliable. A large section of the data points are obtained from disaggregated versions of national data where national-level data collecting agencies have organized regular data mining, then this should be consistent. In particular, several data point come from the Philippine Statistics Authority (PSA), Bangko Sentral ng Pilipinas (BSP), Departments of Health (DOH), Education (DepEd), Labor and Employment (DOLE), the Interior and Local Government (DILG), to name a few. For locally-sourced data, the CMCI data collection survey asks LGUs to refer to specific local offices such as Planning and Development, Budget, Engineering, and Disaster and Risk Resiliency. It can also be obtained from local planning documents, majority of which from the Comprehensive Land Use Plan (CLUP), while some others are from plans about disaster and hazards, transportation, and economic investments.

The qualitative reliability of local data rests on the fact that local offices often follow the standards, measures, and data collection procedures adopted at the national level. But while these are norms, concrete policy guidelines have yet to emerge. Separate legislations which require local data provide for data gathering procedures. Some data therefore are effectively gathered, while some others are not. Further, monitoring for the regularity of data gathering seems logistically difficult given the sheer number of LGUs across the country. A good example would be CLUP. The law requires that it should be regularly monitored and evaluated by the Housing and Land Use Regulatory Board (HLURB), with LGUs updating the plan every five (5) years (Executive Order No. 72, 1993). However, the planning process is fragmented (PDF, 2015; Raymundo, 2015) while many LGUs have yet to update their land use plans or even formulate one (Ombion, 2020). Coordination between the national and local levels is also a challenge, especially given the fact that a national land use plan is nowhere to be found (Corpuz, 2012). This affects the data reliability as some CLUPs are not regularly updated and consistent across LGUs.

A general observation also showed that CMCI data is less reliable quantitatively. While existing documents and index explanatory notes outline sources of data, it does not provide for reliability tests. It could be that several data points have been obtained from national sources that we take it for its face value. But at least for self-assessed data, reliability tests are important. As noted in the qualitative assessment, there are no clear benchmarks to compare the quality of data gathered. This is at least tested for a number of data points that directly reflect digital readiness or adaptability (e.g., number of internet service providers, number of mobile service providers). Measures of central tendencies show varying means and standard deviations. While this is not enough to conclude unreliability as more specific statistical tests would be necessary, an engaged researcher would ask why far-flung LGUs suddenly have

higher number of ISPs and MSPs compared to urban centers. It also does not account for standard errors or confidence intervals. If we intend to make CMCI more useful in policymaking and decision making, then every effort must be undertaken to harmonize the measuring for competitiveness with the principles of data science.

We also examined for the validity of data or the capacity of the instrument to measure what it intends to measure and how well it does so. It expects truthfulness of the data and may be assessed in four dimensions: face, content, criterion-related, and construct. At face value, CMCI is valid. It is straightforward in measuring local competitiveness. In terms of content, it is also valid. The comprehensiveness of the measures and indicators which cover all known aspects of local competitiveness illustrated its content validity. We observed however, that majority of the questions derive descriptive data. This is helpful in establishing the scenario of local competitiveness, assessing immediate competition needs at the local level, and ranking the competitive performances among LGUs.

But if a practitioner or researcher intends to develop theories, test theoretical constructs, or even examine the depth of relationships among indicators or populations sampled, then CMCI data requires enhancement. This pertains to construct validity. Criterion-related capacities of CMCI are also limited as of the moment. One can account for present performance based on current rankings, but a more pressing question in terms of policymaking and development planning is the index's predictive ability. For instance, the EIU Hotspots Index projects current data to determine which global cities would serve as economic hubs by 2025, while GPCI regularly compares the longitudinal magnetism of their power cities (e.g., accounting for what changed, what remained relative to the power index they utilize). While comparisons can be undertaken given CMCI data, a more comprehensive analysis and its implications to policy and decision making have yet to be undertaken.

Finally, completeness of the data is characterized by comprehensiveness. There should be no gaps and missing information as these may affect the quality of the data and the accuracy of the assumptions made in the whole index. A general observation shows that several LGUs have incomplete entries (e.g., zero, N/A). While this is understandable since data gathering capacities across LGUs are varied and uneven, efforts to close this gap should be done to ensure that more complete data would be gathered in the future. It would also improve the credibility of CMCI and would even open avenues for international benchmarking and comparative analysis.

There is significant value in ensuring the “goodness” of CMCI data. As a pioneering and sustained effort in documenting the competitiveness and LED performance of LGUs, it opens opportunities for more effective data-driven policy and decision making in the Philippines. Further, good quality data elevates the public discourse on local competitiveness. It moves beyond an incentives scheme to entice better performance among LGUs towards more concrete and coordinated planning among LGU tiers and between the national and local levels.

A previous project in Central Visayas brought together local governments, civil society, private sector, and the academe in coordinating public investments on roads and other public infrastructure to generate better LED^{vi}. The project relied heavily on data sharing and coordinated plans among different stakeholders. The same is true for the bottom-up budgeting (BUB) innovation which also utilizes grassroots data to inform budget policy at prioritization both at the local and national levels. CMCI can be utilized for these kinds of endeavors. Because it is more comprehensive and all-encompassing, it would encourage convergence amid oft-fragmented development initiatives that prevail in the country.

Moreover, clear measures for digital readiness have yet to be integrated in the current four-pillar set-up. The only clear data sets that pertain to digital readiness are those about internet service provision and mobile services connection. Some data also refer to the presence or adoption of e-BPLS software and the

utilization of ATMs and mobile banking. But then again, the data are more descriptive and less inclined to measure readiness to smart technologies and digital transformation. The inadequacy and weak integration of smart indicators in the current CMCI affects the goodness of the data given that majority of international indexes already account for this.

Are the measures and subcomponents under CMCI transparent and replicable?

Transparency is an important research principle because it allows academics and non-academics alike to “enter the conversation as equals.” SAGE Handbook describes transparency as the “shared belief that ‘researchers have an ethical obligation to facilitate the evaluation of their evidence-based knowledge claims’ by making their evidence, analysis, and research design public.” It has three dimensions: data, analytic, and production transparency. Data transparency opens access to evidence and empirical findings and allows other scholars to expand, improve, and extend the lines of research. Transparency in analysis means ensuring that other scholars can access measures, analytic design, and tools; while production transparency publicizes research design and methodological choices made by the researchers.

Among scholars, transparency is quite a divisive issue. On one hand, it allows for non-authoritative scholarship and broadens the intellectual exchange; on the other, it may compromise the confidentiality of the data and may open research to further vulnerabilities which may affect overall scholarship. Even then, a certain level of transparency must be achieved to deepen scholarship.

CMCI measures and subcomponents are transparent because the CMCI website allows explains the background and theoretical underpinnings of the index as well as its methodology. It also has a data portal that ensures researchers and practitioners can generate much needed data which can be replicated and/or utilized for specific studies germane to competitiveness, productivity, and/or LED. It can also be crosschecked with national data, if the data set was obtained from national data collecting agencies. These are steps in the right direction. The current initiative to open these data for research among external scholars and practitioners adds another layer of transparency to CMCI.

Again, some concern is raised for self-assessed data. It can be said that self-assessments operate on a virtue of trust. But an objective mechanism to validate these data, for instance triangulation or peer review, may help improve the level of data and production transparency. This concern is founded on the assumption that CMCI is utilized to provide incentives to high-performing, competitive LGUs, and self-assessments have tendencies to be self-serving and self-affirming.

How sensitive and robust are these CMCI measures to different data and design choices?

Sensitivity analysis is defined as “a financial model that determines how target variables are affected based on changes in other variables known as input variables... referred to as what-if or simulation analysis... a way to predict the outcome of a decision given a certain range of variables (Kenton, 2020).” It is often employed for cost-benefit or cost-efficiency analysis, as well as other planning models.

It is observed that CMCI does not have clear mechanisms to undertake sensitivity analysis. Looking into the methodology shows that the choice of weights for each pillar, i.e., 25% for each of the four pillars, eschews sensitivity and biases^{vii}. What happens if we revise the weights and place greater significance on one pillar over the others? Would these affect ranking or the perspective and definition of local competitiveness too?

If we are to base solely on Porter’s framework of competitiveness (1990), then greater weight should be placed on economic dynamism because this covers his original thesis on competitive advantage. He utilized a microeconomic lens to determine the productive and competitive capacities of individual firms and organizations, and how these feeds into building their advantage against their peers. Government efficiency is important but corollary only to the capacity of individual companies (1979) and more

recently clusters (2000; 2002), to take advantage of what their location has to offer. Resiliency is subsidiary to government efficiency as well as infrastructure. Extending the analysis to include the recently added pillar on innovation, Porter would argue that technology should be taken as a neutral element (1990). It could make or break a competitive strategy and advantage depending on the capacity of the executives and organizations to utilize these tools. In sum, Porter relied thoroughly on productive and economic capacity.

While difficult and ambitious, it is necessary to improve the credibility and usefulness of indexes. Scenario-building would help us see the motivations behind our data and design choices by examining the index from the purview of a spectator or outsider.

Does the CMCI measures allow the analyst to address key questions of interest?

Overall, the CMCI allowed analysts to address key questions of interest. But this is limited to an exploratory and descriptive perspective. An analyst intent on deepening their understanding of Philippine local competitiveness would have to work on these raw data sets to get more compelling insights on LED. This is not to say that CMCI is invalid. In fact, it is a good baseline tool to measure LED, productivity and local capabilities, not only competitiveness. The robustness of the measures and indicators allow the analyst to get a bird's eye view. On a more specific perspective, questions as to competitiveness in the digital age has yet to be fully integrated and expounded in the current set-up. More purposive indicators are necessary to measure not only the presence of digital technologies and infrastructures but how exactly do these aid LED, productivity, and competitiveness as a whole. The telecommunication infrastructure and the online service index from the UN e-Gov Survey of Digital Government are good sources of indicators that can be localized provided these can be agreed and local data are available and easily accessible. Finally, we have to encourage and empower our practitioners, policymakers, researchers, and even non-academics to move beyond utilizing indexes for incentives towards something that is more useful and sustainable. We need to see competitiveness not only as a goal (as exemplified in the origin EOs 571 & 44), but also a valuable mechanism to deepen development and improvements in the lives of Filipinos.

CMCI in the digital age

The previous discussions responded to our research question: how do we design / re-imagine local economic development (LED) in the digital age? This was done by examining and assessing the CMCI using Rachel Gisselquist's 10-Question Framework for Evaluating Indexes (2014); particularly focusing on the first six (6) questions in her framework. The previous discussions showed the strengths of CMCI as a tool to measure local competitiveness in the Philippines. It also cautioned against potential weaknesses which can be enhanced to improve the country's metrics for competitive performance and also to drive policy and program discourse.

Three analytic insights were culled out from the study. One, the Gisselquist Framework showed that CMCI met the conceptual and operational definitions for local competitiveness. However, when the analysis is extended to include smartness and digital adaptability, CMCI falls short given its current set of pillars and indicators. The belated inclusion of the innovation pillar may boost the conceptual and operational definition of competitiveness in the digital age. It would also meet most of the baseline measures outlined in the ASEAN Digital Master Plan but we have yet to strongly account for the depth of smartness and digital adaptability among Philippine cities and municipalities.

This brings us to the next insight: the quality of data relies mostly on descriptive indicators and eschews from more complex, in-depth analysis of local competitiveness. As noted in the discussions, the measures and indicators are numbers, amounts, and presence-versus-absence of certain data sets. It allows for nominal ranking of competitive performance but does not dig deeper and ask the more difficult questions that ground our understanding of local competitiveness. We return to the concept of good-enough access

by Uy-Tioco (2019). In terms of absolute values and counts, one can note that the Philippines is digitally ready. High internet and social media penetration rates, as well as counts for ISPs and MSPs may give us that picture in mind. But when asked about the quality of these connections and access, we see a more complex developmental challenge that would not be addressed merely by incentives but would need smart policy interventions.

This is why improving the complexity, depth and quality of CMCI data would aid in crafting better policy tools because the major agency tasked to be the chief executive's main advisory arm is able to muster the power of data and technology as part of the overall competitiveness strategy. In the final analysis, the researchers humbly put out the observation that CMCI has yet to become a valuable tool to drive public discourse and empower local policy and decision making on local competitiveness.

Conclusions and Recommendations

The research reimagined LED in the digital age by assessing the primary tool to measure for local competitiveness—CMCI. There is a need to incorporate tools and measures that require smartness and digital adaptability in the current CMCI. And in incorporating these tools and measures, a separate pillar as was recently done by the CMCI organizers would be helpful, but a more purposive integration of certain smart and digitally adaptable aspects should also be found in the other four (4) pillars. It should be noted that smartness and digital adaptability are not standalone characteristics, rather they are enablers of existing indicators.

The study also put forward three analytic insights. first, CMCI met the conceptual and operational definitions for local competitiveness but not smartness and digital adaptability, given the current set of pillars and indicators. Second, the quality of data relies mostly on descriptive indicators and eschews from more complex, in-depth analysis of local competitiveness. Finally, CMCI has yet to become a valuable tool to drive public discourse and empower local policy and decision making on local competitiveness. Since this is exploratory, the objective to effectively assess the index may benefit from further analysis and extended research from other scholars.

In view of the foregoing, the researchers put forward several research and policy recommendations. They are as follows:

Research:

- (1) In the process of evaluation of CMCI pillars and indicators using Gisselquist 10-Question Framework for Evaluating Indexes, there has been notable absence in terms of indicators that help map out the scope and capacities of cities and towns in maximizing digital productivity. The authors recommend to further study the possibility of including general acceptable indicators that will help measure the digital productivity and competitiveness. The telecommunication infrastructure and the online service index from the UN e-Gov Survey of Digital Government are good sources of indicators that can be localized provided these can be agreed and local data are available and easily accessible.
- (2) The study would benefit from a more empirical examination of selected measures particularly for assessment questions on data “goodness” and transparency given the exploratory nature of this research. A larger team and longer timetable to undertake this initiative would be necessary. It would also be instructive on the side of DTI-CMCI to continue the initiative if the broader intent for the index is to become a policy tool.

- (3) It would also be important to study possible mechanisms to undertake sensitivity analysis for CMCI measures and indicators; examine the processes for data collection and treatment; and move beyond the awards-orientation towards a more policy-directed approach for CMCI.
- (4) More than just adding the innovation pillar, it may be more effective to transform most of the measures into purposive data points. Instead of measuring descriptively, CMCI can begin measuring for growth rates, probabilities, and relationships between indicators. Digital adaptability and smartness of LGUs do not rely on standalone innovation, but more so on applying the benefits of technology as strategies for LED, productivity and competitiveness.

Policy:

- (5) The researchers also recommend for CMCI to strengthen institutional coordination with other agencies that are implementing the national programs on information communications technology, in particular the Department of Information Communications and Technology. The main purpose is to adopt existing standards and convergence of efforts to reduce fragmentation and streamline data gathering and collection from the LGUs.
- (6) Optimizing the gains from big data obtained from the index since 2011, it would be high time for the DTI-CMCI Team to establish a Competitiveness thinktank or policy analytics group. An existing policy team within the DTI may be expanded to specifically look into the available data and formulate more evidence-based approaches and programs for institutionalization. This could work alongside other economic productivity agencies in crafting regional/ locally-sensitive development plans, including those for infrastructure, connectivity, and transportation. These would aid in organizing more effective regional economic clusters and fully realize the findings in the CMCI.

The country is still in its nascent stage in digital revolution as more opportunities and groundwork will still be created as evidenced in the different rankings. Technology however is dynamic and new changes in technology or technological disruptions can often cause governments, business sectors, and society to struggle as technology that is being used today can be obsolete tomorrow. In pursuit of competitiveness, digital productivity is to be enhanced. Managing digital competitiveness informs the whole competitiveness outlook. Critical measures that will enable digital productivity will help inform the extent of competitiveness in the CMCI index. ###

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Endnotes

ⁱ Uy-Tioco (2019) further characterizes this by the intermittent and limited access of the working poor, the cultivation of distributors and providers as neoliberal subjects and the digital labour provided for the global economy.

ⁱⁱ The Online Service Index looks into the ‘ability of the website to apply for building permits online’, ‘ability to apply for business licenses or patents online’, ‘ability to apply to pay for any government-related fees’, ‘ability to pay for any government related fees,’ ‘ability to pay for water, energy bills online’, and ‘ability to register online for a new business’ among other 148 questions. These six abilities become more favorable for business transactions as they cut transaction time and ensure the ease of doing business.

ⁱⁱⁱ Refer to these specific documents: Department of Interior and Local Government Memorandum Circular 2020-113. Designation of Local Economic and Investment Officer. October 13, 2010; Department of Interior and Local Government. Memorandum Circular No. 2020-167. Guidelines on Promoting Local Economic Development and Investment Promotion and Establishment of LEDIP Office/ Unit in All Provinces, Cities, and Municipalities. December 09, 2020.

^{iv} Republic Act 11293. An Act Adopting Innovation as Vital Component of the Country’s Development Policies to Drive Inclusive Development, Promote the Growth and National Competitiveness of Micro, Small, and Medium Enterprises, Appropriating Funds Therefor, and For Other Purposes. Enacted April 17, 2019

^v Republic Act 11337. An Act Providing Benefits and Programs to Strengthen, Promote, and Develop the Philippine Startup Ecosystem. Enacted April 26, 2019

^{vi} This project was titled Coordinating Roads and Infrastructure Investments for Development (CR+ID) facilitated by The Asia Foundation and the Australian Embassy under the Coalitions for Change Program (CfC). Read more about it here: <https://asiafoundation.org/wp-content/uploads/2016/07/Coordinating-Roads-and-Infrastructure-Investments-for-Development-CRID.pdf>

^{vii} More details here: <https://cmci.dti.gov.ph/about-method.php>