CHAPTER I

INTRODUCTION

1.0. Background of the Study

The Philippines is an important case study for examining how economic resources evolve over time because of the seemingly weak impact of economic growth and development in reducing poverty and other social problems. Growth and development is widely viewed as its natural state and expected to persist over time. (Zamowitz, 1996).

Economic growth deals with the increase in the level of output, while economic development is related to the increase in output coupled with improvement in social and political welfare of people within a country. Therefore, economic development encompasses both growth and welfare values. On the other hand, human development measures the access the population has to wealth, jobs, education, nutrition, health, leisure and safety, political and cultural freedom; while economic development is a measure of a country's resources and how it is generated. Evidently, economic development is the process by which a region or nation improves the economic, political, and social well-being of its people; and a policy intervention endeavor with aims of economic and social well-being of people.

The development of a country has been associated with different concepts but generally encompasses economic development policies in three major areas; (1) Government undertaking to meet broad economic objectives such as price stability, high employment, sustainable growth, and economic efforts which include monetary and fiscal policymaking; (2) Programs that provide infrastructures and services such as highways, parks, affordable housing, crime prevention, and K-12 education; also (3) Job creation and retention through specific efforts in business finance, marketing, neighborhood development, workforce development, small business development, business retention and expansion, technology transfer, and real estate development. (Pritchett, L., et.al. 2013).

For instance, report shows that the full-year inflation for 2016 settled at 1.8%, below the government's target range of 2% to 4% but higher than the 1.4% of 2015. The volatility in prices could affect the overall welfare of Filipino families, particularly the poor. Therefore, the Philippine government needs to promote more resilient practices for production to minimize the impacts of climate-related shocks. (Dela Paz, 2017). As of April 2017, unemployment fell to a historic low of 4.7% in 2016, as 1.4 million net jobs were created. However, the Philippines' 18% underemployment level has remained broadly unchanged over the last ten years, reflecting the prevalence of informality and related job-quality concerns. (www.worldbank.org). The reality is that economic developers do not typically create jobs but facilitate the process for existing businesses. Hence, the economic developer must make sure that there are sufficient economic development programs to assist businesses in achieving their goals. Those types of programs are goal-oriented and can be local, regional, and national in nature.

Generally, the goals of economic development attempt to solve issues in higher productivity, political systems that represent the preferences of the citizens, the extensions and opportunities of rights to all social groups, and the proper functionality of institutions and organizations that are able to attend more technically and logistically complex tasks. These processes describe the country's capabilities to manage its economy, policy, society, and public administration. With this in mind, economic development is typically associated with improvements in a variety of indicators such as literacy rates, life expectancy, employment rates, etc. (Pritchett, L., et.al. 2013).

There are various types of macroeconomic indicators used by economists and investors to assess the relative economic advancement of a given region or nation. In general, a country's economic performance is usually measured in terms of its gross domestic product. Gross Domestic Product (GDP) in the Philippines posted a 6.4 percent growth in the first quarter of 2017 with the country's projected population reaching 104.1 million. (https://psa.gov.ph). Policymakers on economic development also closely follow and interpret economic data released, looking at the indicators relative to expectations as an indication of the outlook and direction of the economy, which can affect policy making. The policymakers' reaction to the release of economic indicators depends on the indicator itself and on the structural changes in the economy. The most relevant, timely, and reliable indicators have the biggest impact. Most Policymakers and economists talk about where economy is headed by paying attention to economic indicators and may apply fiscal or monetary policies to change the course of the economy.

As stated by Philippine Statistics Authority (PSA), there are two main criteria in the choice of economic indicator; economical and statistical. The economic criteria by de Leeuw, 1991 and Yap, 2001 as quoted by Zhang and Zhuang, 2002 are based on the economical rationales. The following are the major economic indicators in the Philippines useful in constructing a statistical index:

a. Gross Domestic Product (GDP)

b. Purchasing Power of the Peso

c. Inflation Rate

d. Labor Force Participation Rate

e. Employment Rate

f. Unemployment Rate

g. Underemployment Rate

h. Population (in million)

i. Birth Rate

j. Death Rate

Statistical index measures the power of a variable or group of related variables such as the economic indicators over a specified time. It is a statistical number used as economic barometer for judging the pulses or tendencies and for gauging the effect of changes of economic status of a region or a country. Statistical index number is a specification- and estimation-free number of the optimal quantities observed in time period. It contains no unknown parameters and said to be exact if the index is constructed and evaluated at the optimum without error. (Mathematics for Commerce, Economics, and Business notes). The Human Development Index (HDI) is commonly used as a composite statistical index of life expectancy, education, and GDP indicators while the Multidimensional Development Index (MDI) encompasses indicators in terms of percentage in population in sanitation facilities, internet users, water sources, telephone lines, GDP, cellular subscriptions, undernourishment rate, adolescent fertility rate, maternal mortality ratio, infant mortality rate, and forest land area which both indexes used to rank regions or countries and often framed in terms of whether people are able to do desirable things in their life. The Philippines slightly improved in human development but in a slow pace ranging from 0.664 to 0.668, (hdn.org.ph), and -0.61213 in terms of multidimensional development, (Cambel, 2016). So far, the only existing index for every province or region in the Philippines is the Human Development Index (HDI). HDI has been criticized on a number of grounds including the measurement error of underlying statistical method, and the changes in formula which lead to a severe miss-classification in the ranking of human development.

Development determines how economically, socially, culturally, or technologically advanced a region or country is. By studying economic development, one can measure how developed a particular region or country compared to other regions or countries in order to modify economic development programs in that region or country. Economists, investors, and policymakers use a series of indicators to compare the development of one region or country against another with the aid of an index number. Hence, statistical index measures the development or relative changes in an economy of a region or a country.

In accordance with the economical and statistical criteria, all major economic indicators were selected in this study in order to apply the analysis and construct a statistical index in every region in the Philippines. The multidimensional scaling analysis technique is considered useful in this study to reduce dimensionality, also to understand and determine such underlying information of variables that explain the pattern or trend of proximities within the dataset which is very useful in formulating a composite index.

1.1. Statement of the Problem

After years of economic, business related, and social well-being problems, there is an increased attention towards the economic development in the Philippines. In this context, economic indicators play an important role since they provide information that state the past, current, and future of a country's economy. Choice of indicators to be included in the composite index, weighing system, and transformation technique are some of the considerations that need to be addressed in an index construction. Among the existing indexes, Human Development Index (HDI) can be regarded as the only measure used in the Philippines that concentrate on the essential aspects of human development. As it just focuses on the basic dimensions of human development, it does not take into account a number of other important dimensions of development such as the economic development. Moreover, economists identified three (3) sources of data error for this index which are due to: (i) data updating, (ii) formula revisions, and (iii) thresholds to classify a development status. Also, businessmen, investors, entrepreneurs, etc., are looking for a reliable measuring tool that is very helpful in assessing comparison and decision-making process for the purpose of evaluating certain aspects of business or company's operations and even economic trends in a particular region. Thus, this study is conducted to formulate a statistical index using the major economic indicators which could serve as a measure of the performance of a region's economic development in the Philippines.

1.2. Objectives of the Study

The main objective of this study is to apply multidimensional scaling (MDS) analysis and construct a statistical index using the major economic indicators in the Philippines.

Specifically, this study aims:

1. To identify the variables with high similarity or correlation in every region in the Philippines using multidimensional scaling (MDS) analysis.

2. To validate the statistical index construction results using bootstrap resampling technique.

3. To rank the regions according to the constructed statistical index values.

4. To present the provincial ranking of Human Development Index (HDI) in the Philippines.

1.3. Significance of the Study

The goal of this study is to conduct an analysis and formulate a statistical index as an alternative measure of a region's performance using the major economic indicators in the Philippines through a classical multidimensional reduction method. This study would serve as a catalyst for greater awareness of the Philippine community by revealing regions that have an equal distribution among its population in terms of economic resources and opportunities, as well as for greater source of knowledge among policymakers from government and non-government organizations (national, regional, and local), economists, businessmen, and academe by providing a comprehensible framework in formulating and adopting appropriate economic development policies for assessing economic and human development, and business-related issues, and for adjusting such policies in case of inflationary situations. Moreover, this study can be used as reference by students and researchers for future related studies.

1.4. Scope and Limitation of the Study

This study focused only on the application of multidimensional scaling (MDS) analysis and applied to major economic indicators in constructing a statistical index in every region in the Philippines. The regions that are subject for the statistical index construction are the following; National Capital Region (NCR), Cordillera Administrative Region (CAR), Ilocos Region (REGION 1), Cagayan Valley (REGION 2), Central Luzon (REGION 3), Southern Tagalog: CALABARZON (REGION 4A), Southern Tagalog: MIMAROPA (REGION 4B), Bicol Region (REGION 5), Western Visayas (REGION 6), Central Visayas (REGION 7), Eastern Visayas (REGION 8), Zamboanga Peninsula (REGION 9), Northern Mindanao (REGION 10), Davao Region (REGION 11), SOCCSKSARGEN (REGION 12), Bangsamoro (ARMM). The coverage of data is from the year 2006 to 2015, obtained from the Regional Quickstat Editions report of Philippine Statistics Authority (PSA) official website. The independent variables are the following major economic indicators; gross domestic product, purchasing power of the peso, inflation rate, labor force participation rate, employment rate, unemployment rate, underemployment rate, population, birth rate, and death rate. The researcher considered these indicators since these are vital in every region's economy and most commonly used by any other government agencies. Furthermore, presentation of rankings was made possible with the constructed index and Human Development Index (HDI) since some of the indicators (life expectancy rate, education attainment, and GDP) were commonly used in the construction of both indexes for every province or region in the Philippines. The importance of using these variables is to construct a statistical index and to analyze the status of economic development in every region in the country. Statistical software was used in this research.