



Faculty of Economics and Business

**ON THE SEARCH OF SOCIAL PROGRESS IN MALAYSIA:
EVIDENCE FROM AN ALTERNATIVE MEASURE OF
WELL-BEING INDICATOR**

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**Bachelor of Economics with Honours
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**ON THE SEARCH OF SOCIAL PROGRESS IN MALAYSIA: EVIDENCE FROM
AN ALTERNATIVE MEASURE OF WELL-BEING INDICATOR**

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This project is submitted in partial fulfilment of
the requirements for the degree of Bachelor of Business Economics with Honours
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Statement of Originality

The work described in this Final Year Project, entitled
**“ON THE SEARCH OF SOCIAL PROGRESS IN MALAYSIA: EVIDENCE
FROM AN ALTERNATIVE MEASURE OF
WELL-BEING INDICATOR”**

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ABSTRACT

ON THE SEARCH OF SOCIAL PROGRESS IN MALAYSIA: EVIDENCE FROM AN ALTERNATIVE MEASURE OF WELL-BEING INDICATOR

By

Tan Suk Chinn

As the importance of measuring well-being is increasingly acknowledged, many related studies were conducted and began to tell how well a country has developed. Malaysia as one of the Asian countries has carried out a few studies on its well-being status, but it is still relying much on the well-being indicator like Human Development Index (HDI) that built by the foreign country. Therefore, this study plays a vital role in targeting the social progress in Malaysia with a well-being measurement constructed, the Societal Satisfaction of Life Indicator (SSLI). In the study, the yearly social-based data is collected and interpolated to quarterly basis data for the period of 2009Q1 – 2018Q4. Subsequently, the study is then to develop a composite indicator with a leading characteristic. The findings showed that the constructed SSLI averagely leads about 5.75 quarters and is able to outperform the HDI. Besides, it can capture more significant events that will have an impact on social progress. Hence, the constructed SSLI can help the policymakers in growing social progress and the country with responsive policies implementation.

ABSTRAK

MENGENAI PENCARIAN PROSES SOSIAL DI MALAYSIA:

KETERANGAN DARI LANGKAH ALTERNATIF

INDIKATOR YANG BAIK

oleh

Tan Suk Chinn

Oleh sebab pentingnya untuk mengukur kesejahteraan yang semakin diakui, banyak kajian yang berkaitan telah dilakukan untuk mengenalpasti kemajuan sesebuah negara. Malaysia sebagai salah sebuah negara Asia pun telah melakukan beberapa kajian mengenai status kesejahteraannya, tetapi masih banyak bergantung pada petunjuk kesejahteraan seperti Indeks Pembangunan Manusia (HDI) yang dibina oleh negara asing. Oleh itu, kajian ini memainkan peranan penting dalam mensasarkan kemajuan sosial di Malaysia dengan pengukuran kesejahteraan yang dibina, iaitu *Societal Satisfaction of Life Indicator (SSLI)*. Dalam kajian ini, data berasaskan sosial tahunan akan dikumpulkan dan diinterpolasi kepada data asas suku tahunan untuk tempoh 2009Q1 - 2018Q4. Selain itu, kajian ini adalah untuk mengembangkan indikator komposit dengan ciri-ciri utama. Hasil kajian menunjukkan bahawa SSLI yang dibina secara rata-rata mencapai sekitar 5.75 suku dan mampu mengungguli HDI. Indikator yang dibina ini juga berkemampuan untuk mengesan peristiwa penting yang akan mempengaruhi kemajuan sosial. Oleh itu, SSLI yang dibina ini dapat bertindak sebagai pembuat dasar dalam meningkatkan kemajuan masyarakat dan negara dengan pelaksanaan dasar yang responsif.

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Secondly, I am thankful to have my family members for encouraging me whenever I felt worried and anxiety, whether if I am able to complete this Final Year Project (FYP) smoothly within this semester. Also, I would like to thank my cousin for giving me advice and suggestions while I was conducting this study.

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LIST OF ABBREVIATION

HDI	Human Development Index
WHI	World Happiness Index
WS	Water and Sanitation
SMDW	People Using Safely Managed Sanitation Services
EDU	Education
TEN	Tertiary school enrolment
HEA	Health
MLE	Life Expectancy at Birth
SH	Shelter and Housings
VaT	Value of Transaction
NSPS	National Security and Public Safety
RoC	Road Crashes
SC	Social Connections
HP	Number of Subscribers of Fixed and Cellular Phone
TRAN	Transport
ROD	Road Density
ENV	Environment
FORE	Forest Area
DEMO	Demographic
CDR	Crude Death Rate
ECO	Economy
GNP	Gross National Product

GOV	Governance
CORR	Control of corruption
CE	Civic Engagement
VT	Voter Turnout
WOS	Women Status
WP	Women in parliament
SOM	Social Opportunity and Mobility
FL	Female Labour Force Participation Rate
FAM	Family
DiVo	Divorces Registered

CHAPTER 1

INTRODUCTION

1.0 Introduction

Since the formation in 16th September 1963, Malaysia has been increasingly performing well in its development, proved by its annual GDP performance. Malaysia's economic performance has recently been ranked among the top 30 countries in Asia and top 3 among ASEAN countries. However, are the citizens of Malaysia happy with their living conditions within these few years? Is the actual welfare of the citizens improved alongside the economic development of Malaysia? To answer that, this study is concentrated on the Malaysian quality of life by constructing several potential social indicators. Since more economists are increasingly acknowledging the significance of the measurement of well-being, there has been several related studies being conducted, including, but not limited to, the study on the economic well-being, subjective well-being, and sustainable well-being. Among the studies, a relatively few were focused on the well-being status of Asian countries, especially developing countries like Malaysia. It is due to the lack or insufficient of data compiled by these countries. As a result, researchers have been facing difficulty in setting up a good indicator for measuring the well-being status.

Nevertheless, ever since the acknowledgement of the importance of measuring the well-being, developing countries, including Malaysia, aim to create indicators to measure the well-being status of the society. For the case in Malaysia, several indexes were developed to become indicators such as the Malaysian Wellbeing Index,

Malaysian Family Wellbeing Index, Malaysian Urban Rural National Indicators Network on Sustainable Development, Malaysian Shari'ah Index, with subsequent upgrades to make them more efficient. Although these indexes do assist a country in understanding its well-being status, this study on the other hand will assist the policymakers to monitor and make ever-better decision to improve the societies' welfare. Chapter 1 of this study consists of the background of the study, problem statement, general and specific objectives of the study, significance of the study, and the scope of the study.

1.1 Definition of Well-Being

In general, the term of well-being is being broadly used and explained with different definition by academics and researchers. Therefore, there is no concrete explanation for this term. In most of the studies and articles, the term of well-being can be substituted with the term of happiness, welfare, quality of life, or life satisfaction. According to OECD (2013a), despite the lack of agreement on the definition of well-being, those definitions from various academics and researchers can be broadly categorized into these three groups:

- i. General definitions with no information on likely components of well-being;
- ii. Component definitions either by breaking down well-being into a few parts and classifying these parts into domains or dimensions or by recognizing the key characteristics important in the evaluation of well-being;
- iii. Focused definitions that directly or indirectly point out the few components of well-being.

Well-being refers to one's living experience or perception, of how well his or her living is (Naess, 1999). Specifically, it is a state of feeling happy or being healthy and prosperous (Davis, 2019). These statements are also agreed upon and supported by Pollard and Lee (2003) whereby well-being can be defined by one's happiness. Nevertheless, Pollard and Lee further elaborated and described well-being being on a continuum that ranges emphatic to contrary, such as how the self-respect of an individual is measured. Also, they explained the well-being in the terms of living standard of an individual, presence of feeling blues, or in a collective manner whereby there is shared understanding. Overall, the concept of well-being can be explained subjectively in which well-being can be engendered via intra- and interpersonal relationships (Pouw & Baud, 2012).

Besides explaining well-being using happiness concept, there is a must for well-being to objectively account for the material, relational, and cognitive capabilities in establishing individual needs and goals (Pouw & Baud, 2012). New Economics Foundation (2008) defined well-being as a dynamic state where ones have the capability to work, to create, to build good solid relationships as well as to engage in contribution to the community. When one can attain goal lines of his or her own and or the society, this helps to enhance the individual welfare. Even when he or she has a sense of belonging in society, his or her welfare will be enhanced as well. Kahn and Juster (2002) found that well-being surveys have employed one or more of three classifications of well-being: life satisfaction, health and ability or disability, and composite indexes of positive functioning. Here, these component definitions show a classification of well-being that include life satisfaction, health, community

engagement et cetera, which are being studied to measure the well-being status of the targeted country in most of the studies.

Simply put, well-being is commonly referring to a good outcome in which people are perceiving a good living (Centers for Disease Control and Prevention, 2018). According to Dodge et al. (2012) who conducted a study on defining well-being, concluded that well-being is a construct with multiple aspects. As the well-being concept is broadly used in several studies, it can be explained in different dimensions and perspectives such as economic, social, psychological, etc.

1.1.1 Definition of Economic Well-Being

Economic well-being is one of the main dimensions in measuring the overall well-being of a nation. According to the Council on Social Work Education (2016), economic well-being is referred as the existence of both present and future financial security of an individual. Here, the present financial security will be ones' capabilities to fulfil or access their basic daily needs, to be educated, to be healthy, to be employed, and able to control over their monetary daily assets as well as to make economic decisions. Meanwhile, the future financial security will be achieved when one is able to generate and/or maintain a stable and sufficient income, to achieve financial targets, and to cope with the financial shocks during the lifespan.

1.1.2 Definition of Social Well-Being

World Health Organization (WHO) explains social well-being as a vital main dimension of the overall well-being of a nation. It is a dimension that measures society

in term of the circumstance and ability to function. It is also the main dimension that measures health along with the physical and mental aspects (Salehi et al., 2017). According to Davis (2019), social well-being is achieved when one has the capability to develop social skills such as communication, positive and meaningful communion and social connections with others et cetera. With these social skills, an individual can build emotional well-being and cope with the challenges of daily lives.

1.2 Measurement of Well-Being

Based on OECD (2013b), well-being is found to be a complex phenomenon that includes a myriad of components to form a completed framework. Besides, it is found that there is a strong correlation between most of its components. This statement is also supported by many researchers with their findings, including Abu Bakar et al. (2015a) whose findings show that the sustainable well-being is concerned with three different dimensions of well-being, namely economic well-being, social well-being, and environmental well-being. These components are the main puzzles that shape and answer the question of how well the people live. As the overall well-being consists of multiple dimensions, OECD (2013b) presents three crucial pillars to measure the welfare of the society, which are the quality of life, the material living conditions or known as the economic well-being, and the sustainability of the socio-economic and natural systems.

Moreover, social sciences also assume that there are three crucial philosophical methods to determine the well-being of a society (Brock, 1993; Diener & Suh, 1996):

- i. The first approach is concerning the good life to normative ideals, such as cultural, philosophical, religious et cetera. According to Diener & Suh (1996), religious beliefs will assist people in achieving a better life, an indicator that ones' well-being will be better.
- ii. The second approach is basically reliant on the satisfaction of an individual. According to Land (1996), the well-being of an individual theoretically will be better when one is satisfied with his or her life.
- iii. The last approach is regarding the experiences of an individual.

Besides these approaches which are assumed to be included when measuring well-being, each index or measurement of well-being will have different indicators. For instance, the Millennium Ecosystem Assessment explains well-being with five dimensions regarding the human well-being, such as basic material for good living, free to make choice and action, health, positive social connections, as well as security (Carpenter et al., 2009). Social Indicators (SI) is another measurement of social well-being in which is more focusing on social functioning. According to U.S. Department of Health, Education and Welfare (1969), it is labelled as a "statistic of direct normative interest which facilitates concise, comprehensive and balanced judgements about the condition of major aspects of society" (p. 97). As stated by Land (1996), SI was created to form groupings that display quantities and or occurrences, in addition, is able to be tested by anyone at anywhere. As below shows the strengths and weaknesses of SI which presented by Diener and Suh (1996):

Table 1: Strength and Weakness of Social Indicators

Strength	Weakness
<ul style="list-style-type: none"> - SI is objectivity. - SI is often reflective of the normative ideals. - SI can observe the whole societal wellbeing aspects that have no linkage to the economic aspects. 	<ul style="list-style-type: none"> - SI is fallibility. - As SI is regularly selected in an ad hoc fashion, this often causes disagreement among the researchers in determining which variables are chosen and how the variables are weighted. Therefore, this results in decision-making to become subjective.

There is a disagreement against SI, stating that an objective measure does not reflect the actual feeling of the individuals towards their well-being (Andrews & Withey, 1976; Campbell et al., 1976). This disagreement has proved in certain studies like Campbell et al. (1976) as well as Diener and Suh (1996), with a finding indicates that the relationship between objective factors and one's declared level of perceived well-being is merely at a limited degree.

According to Dłużewska (2015), many researchers like Cummins et al. (2003), Prescott (2001), and others see the environment as one of the crucial indicators that help to determine the well-being of a nation. Prescott (2001) weights both the environment and humans' components an equal weight by mentioning that:

'The underlying hypothesis of wellbeing assessment is that sustainable development is a combination of human wellbeing and ecosystem wellbeing. Human wellbeing is a requirement for sustainability because no rational person would want to perpetuate a low standard of living. Ecosystem wellbeing is a requirement because the ecosystem supports life and makes possible

any standard of living. Although trade-offs between the needs of people and the needs of ecosystems are unavoidable, they must be limited' (p. 4).

In his study, "ecosystem well-being" is presented as another category, indicated by the capability of the environment in supporting the life among the livings and its adaptability to any changes at the same time to provide a broad range of options and chances for the future. As ones' material living is highly depending on the biological and physical environment, it is undeniable that the environment is a must to be included when measuring the well-being of a nation (Dłużewska, 2015).

1.3 Historical Background of the Well-Being

The term of well-being was being used and analysed via monetary valuation when the term of Gross National Product (GNP) was being introduced to estimate the output of a country in term of monetary value in the 1930s (Shea, 1976). Soon, GNP was transformed to Gross Domestic Product (GDP) to measure the final products and services value in a country. Here, an assumption of higher consumption indicates better well-being the society of the country is. Therefore, a country with a higher GDP means its well-being status is greater than those with a lower GDP (Cummins et al., 2003). This well-being concept is primarily authored by Simon Kuznets who was an economist (Dłużewska, 2015). According to Wilson (1972),

The science of economics was seen 'as nearest the core of any problem concerning the quality of life because the quality of life of any individual or community can in a direct and simple way be related to the income' (p. 131).

This statement is agreed upon as income level do have a correlation with one's living standard, associated with education level, healthcare et cetera. When one has a higher

income, his or her welfare will be considered better due to the accessibility of better healthcare and education. Therefore, countries with higher GDP are able to provide better education and/or healthcare for their people as compared to poor countries (Lai, 2000).

However, when there is an argument that GDP is no longer a good instrument to measure well-being, several indicators beyond the GDP are created as a measurement of the development of a country regarding the well-being. One of the famous indexes is the Human Development Index (HDI) which was developed by a Pakistani economist named Mahbub ul Haq in 1990 to measure the development of the country. Specifically, it measures the overall achievement of a country in the dimensions of economic and social which are traditionally indicated by attainment of education level (expected years of schooling, mean of years of schooling for education), health (life expectancy), and living standard (Gross National Income per capita for standard of living). Every year the annual report of HDI will be published by the United Nations Development Program (UNDP), which calculates the HDI of every country and rank them accordingly. Therefore, HDI is one of the greatest instruments to keep track of a country's development level because its indicators are typically responsible for economic development (Roser, 2014; The Economic Times, n.d.).

In order to determine the human development level for each country, the UNDP has assigned each country into three groups of human development. Firstly, if a country obtained a score of 0.5 and below for its HDI, it means the country has a

low achievement level in human development. Secondly, if the HDI of a country scores between 0.5 and 0.8, it means that the country has a moderate achievement level in human development. Lastly, if a country scores 0.8 and above, it indicates that the country has a high achievement level in human development (Riley, 2019).

1.4 Well-Being Indexes in Malaysia

In Malaysia, there are a few measures of well-being developed to identify the societal status of well-being. Firstly, the Malaysian Wellbeing Index (MWI) that focuses on economic and social dimensions, Malaysian Family Wellbeing Index (MFWI) that concerns mainly on the conditions of a household, Malaysian Urban Rural National Indicators Network on Sustainable Development (MURNInets), and a few indicators in Islamic perspective. These indexes are respectively under control and monitored by Economic Planning Unit (EPU), National Population and Family Development Board Malaysia (NPFDB), and Federal Town and Country Planning Department (FTCPD) which are the government agencies.

According to Md. Dali et al. (2017), the Malaysian Quality of Life (MQoLI) was developed by EPU since 1999 to study and measure the impact of economic development on the well-being status among the Malaysian citizens. It is the index that is prior to the Malaysian well-being indexes mentioned as above, except MURNInet. At the same year, EPU had published the first Malaysian Wellbeing Report (MWR), MQLR 1999 to gauge the selected social indicators, including health, education, family life, housing, income and distribution, social participation, public safety, environment, transport and communications, and working life. After three

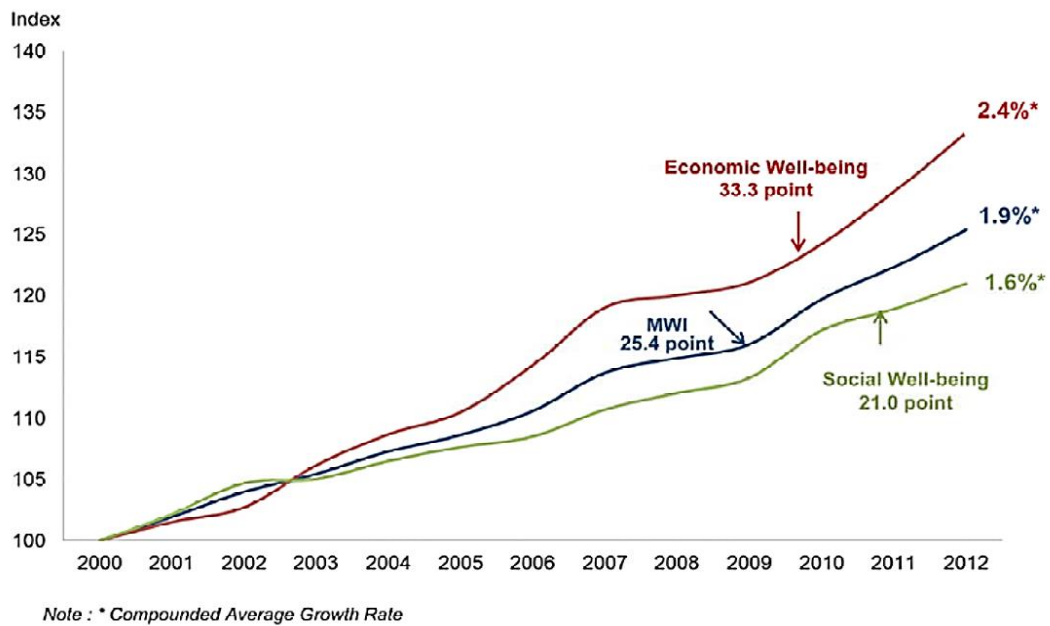
years, the second report MQLR 2002 was published to investigate the alterations of the quality of life between 1990 - 2002, applying 1990 as the base year. Meanwhile, this report aimed to estimate the quality of life in the metropolis along with the perception of the citizens towards the government's efforts in enhancing it (Md. Dali et al., 2017).

Next, the third publication is MQLR 2004, followed by MQLR 2011 (Abu Bakar et al., 2015a). However, in the year 2011, MQoLI was substituted by MWI which later began its measurement since 2013. Therefore, MQLR 2011 is the last report published, using a total of 45 indicators assigned under 11 components. According to MQLR 2011, the results showed that the overall MQoLI recorded an improvement from 2000 to 2010 that is a rise of 11.9 points using the year 2000 as the base year. This increase was majorly attributed to the component of education that showed a tremendous rise of 20.4 points, followed by transport and communications by 20.3 points, and housing by 15.7 points (Md. Dali et al., 2017).

Ever since the former well-being indicator, the number of components and type of indicators has changed and updated continuously from the earliest report to the latest report, from 38 indicators from ten components to 45 indicators from 11 components. This is to seize the socio-economic fabric of the multi-ethnic society in Malaysia so that the quality of life can be better estimated (Abu Bakar et al., 2015a). As stated, MWI was established in 2013 based on certain indicators that are locally and internationally recognized. It consists of a total of 68 indicators from 14

components which are assigned under economic well-being and social well-being (Md. Dali et al., 2017).

Figure 1: Malaysian Well-being Index, 2000-2012.



Source: EPU (2013).

Based on Figure 1, it shows the performance of MWI for the period of 2000 to 2012. Overall, it recorded a significant improvement in the performance of the MWI over the 12 years, attributed to the development and enhancement of the government policies in Malaysia. This is a good sign as the society has improved their living conditions which they can access better education, health, housing and transportation (The Star Online, 2013). According to the MQLR 2013, it was noted that the MWI mounted by 25.4 points from 2000 to 2012. As reported, it was increased annually by 1.9%. This increase is credited to a rise of 33.3 points in the economic wellbeing and a rise of 21.0 points in the social wellbeing (The Malaysia Reserve, 2017). Among the

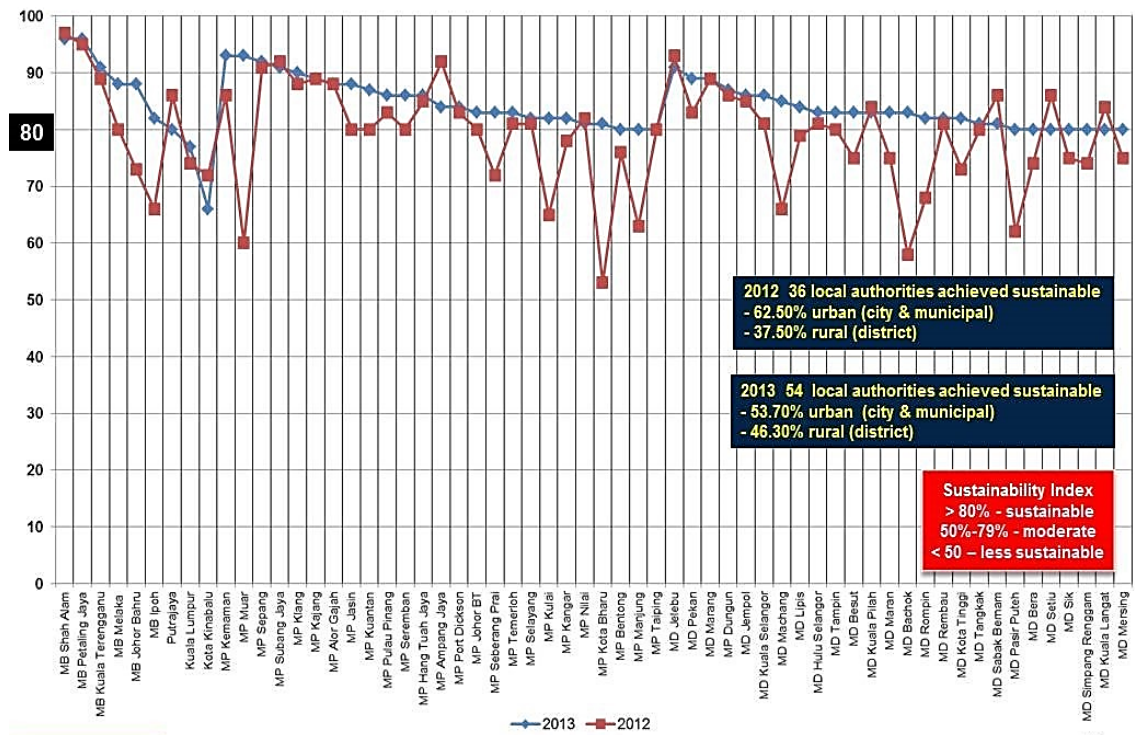
68 indicators, both the components of transport and housing recorded the highest rise by 36.9 points while the component of the family recorded the least increment by 4.6 points (Md. Dali et al., 2017).

In the year 2011, NPFDB (also known as LPKKN) established MFWI with 24 indicators from 7 domains, studying on the recent welfare of the Malaysian families. Meanwhile, this government agency then began with a study namely the Malaysian Family Well-Being Index Study 2011. Over the years, this study is being reviewed and renamed as Indeks Kesejahteraan Keluarga 2 (IKK2). Under this study, the MFWI applied the value of 10 as the highest tally for each family aspect. If the score obtained in each family aspect is high, the welfare of a family will be better (Md. Dali et al., 2017). According to the news Borneo Post Online (2017), the MFWI is at a moderate level of 7.33 out of the maximum scale of 10 in 2016. This score is considered as moderately high, and thus, this average is good. According to Minister of Women, Family and Community Development, it is attributed to the domain of Family and Religion that recorded the highest (8.04) among the other domains, followed by Family Safety (7.96), Family Relationship (7.90), Family and Community Engagement (7.84), Family Health (7.18), Family Economic (7.05), Family and Communication Technology (6.38), and Housing and Environment (6.24) (Borneo Post Online, 2017).

FTCPD had created Malaysian Urban Rural Indicators Network (MURNInet) in 1998 which aimed to investigate the sustainability status of an urban area with a set of urban indicators. In 2011, this indicator is then reviewed and renamed as Malaysian

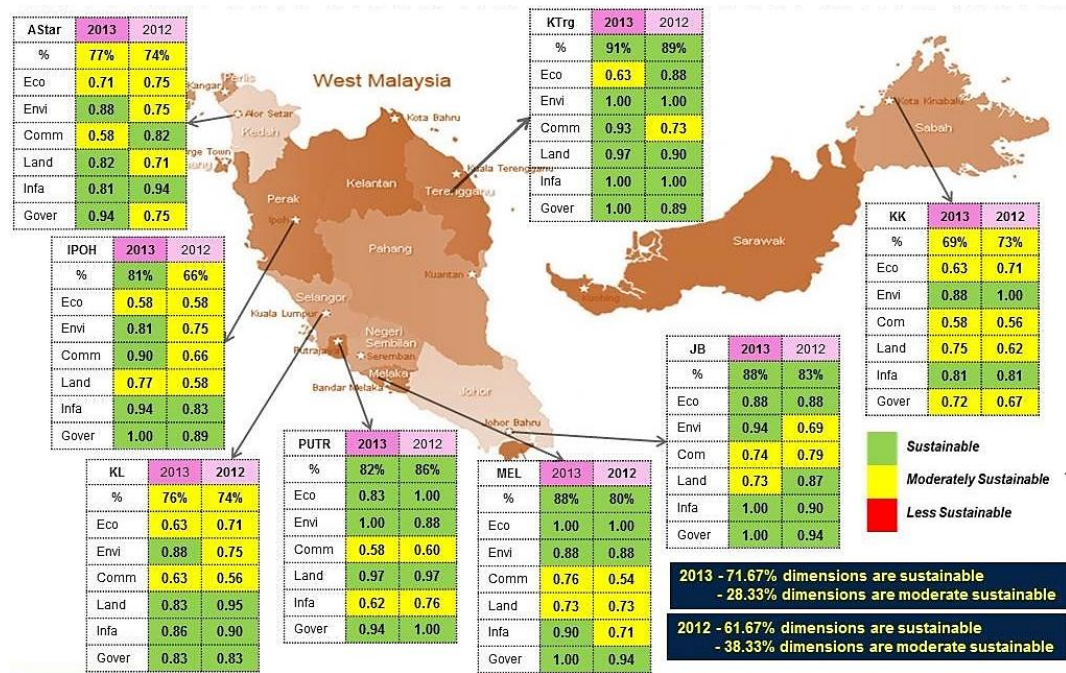
Urban Rural National Indicators Network on Sustainable Development (MURNInets). The components of MURNInets is upgraded from 55 indicators from 11 sectors to 36 indicators from 6 dimensions or 21 themes. In terms of percentage, above 80% is considered as sustainable while below 50% is considered as less sustainable (Md. Dali et al., 2017). Based on Figure 2 and 3, it is known that Malaysia is at a moderate sustainable level.

Figure 2: Sustainable Cities Index, 2013-2014.



Source: FTCPD (2014).

Figure 3: Selected Sustainable Cities Index for Malaysia, 2013-2014.



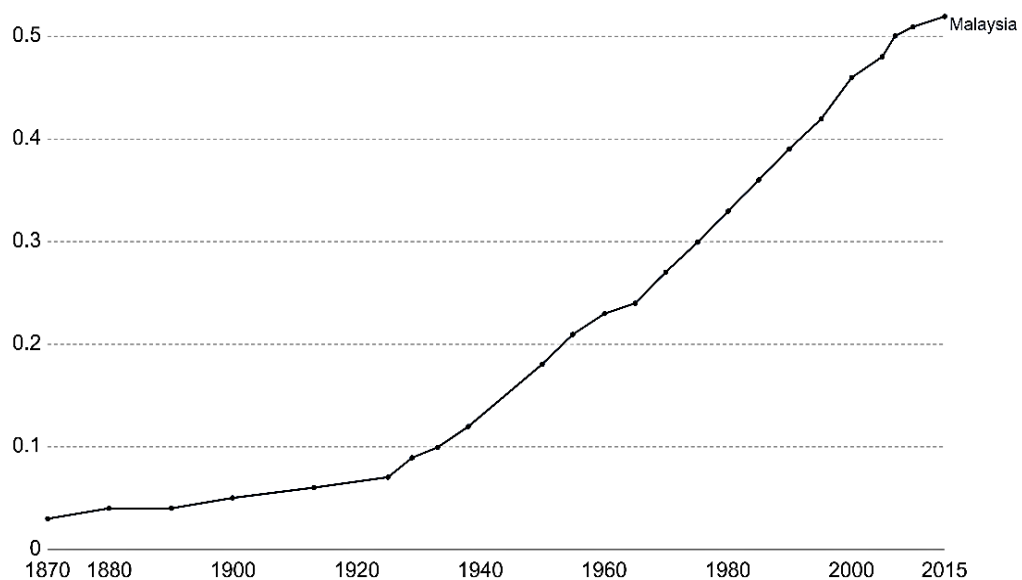
Source: FTCPD (2014).

1.5 Human Development Index (HDI) Performance in Malaysia

Since the establishment of HDI in 1990, UNDP has begun its calculation of HDI for Malaysia from the past to the current year to measure the Malaysian overall achievement. Overall, the Malaysian HDI recorded a stable rise over these years. Looking at the historical HDI (referring to Figure 4), Malaysia has recorded a significant increase from 0.569 in 1980 to 0.795 in 2015 using the original three key dimensions: long and healthy life, accessibility to education, and a decent living standard. The increased HDI value indicates that Malaysia has improved its achievement level at a medium human development that is within the score of 0.5 to 0.8. This is due to the fact of an increase in the life expectancy at birth, mean years of schooling and expected years of schooling as well as Malaysia’s gross national income (GNI) per capita during that period.

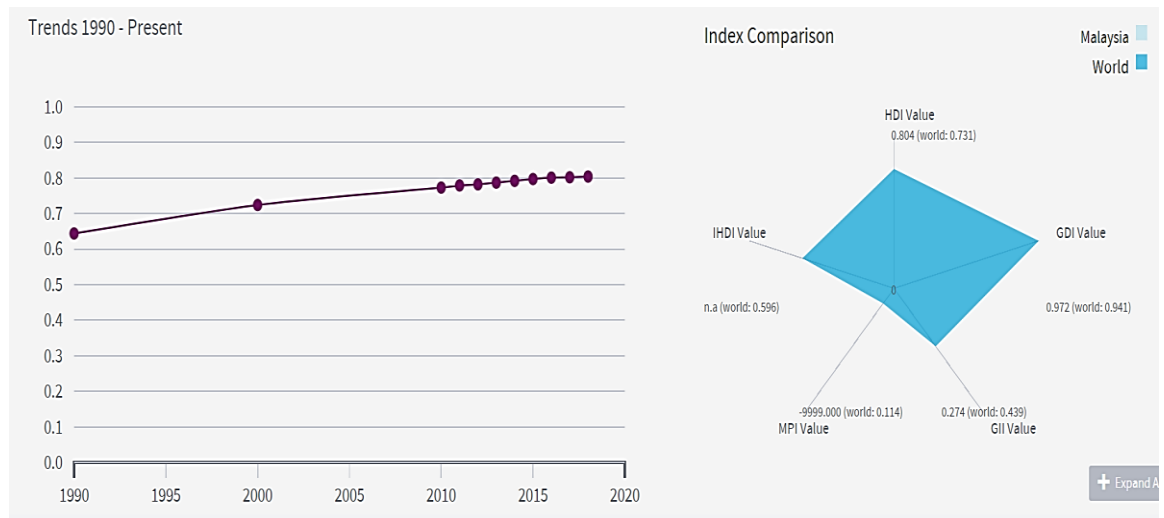
Along with global development, the UNDP reviewed the ready components and upgraded HDI by adding certain indicators that motivate human development. In the latest HDI, there 13 main indicators which include education, health, demography, human security, gender, income or composition of resources, trade and financial flows, mobility and communication, poverty, inequality, socio-economic sustainability, environmental sustainability as well as work, employment, and vulnerability (UNDP Human Development Reports, 2019). Based on Figure 5, the performance of HDI for Malaysia increased stably from 0.643 (1990) to 0.804 (2019) using the latest HDI with 13 indicators. This indicates that Malaysia has successfully improved its development from a medium human development level to a high human development level, attributed to the further improvement in healthcare, education, employment et cetera.

Figure 4: Historical Index of Human Development of Malaysia, 1880-2015.



Source: Roser (2014).

Figure 5: Human Development Indicators for Malaysia, 1990-2019.

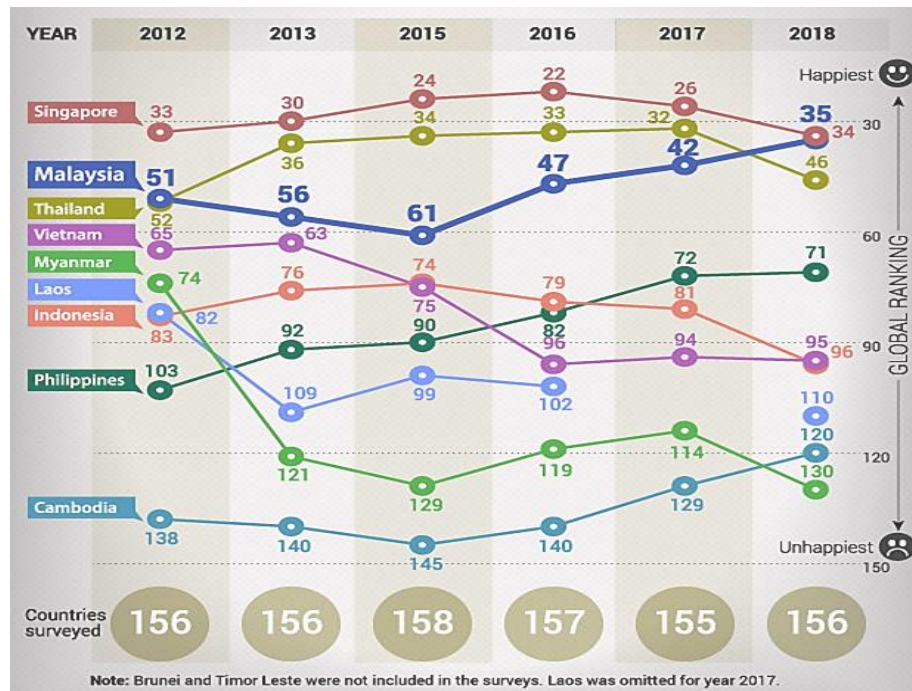


Source: UNDP (2019).

1.6 World Happiness Index (WHI) Performance in Malaysia

In the third quarter of 2011, the Global Happiness Council has created the WHI that is used for measuring the national happiness on the basis of the ratings of respondents on their livings. Starting from 2012, the first report of WHI was published, consisting of the happiness level and well-being status of the countries around the world including Malaysia. The WHI is built up from a few variables, such as Gross Domestic Product (GDP) per capita, social support, healthy life expectancy, freedom to make a life choice, generosity, perceptions of corruption, and unexplained happiness (Hugo, 2020). As shown in Figure 6, Malaysia is one of the Southeast Asia countries with a record of high happiness level. Overall, the ranking of WHI for Malaysia recorded a fluctuation which it declined steadily from 2012 to 2015 but increased gradually until 2018.

Figure 6: Southeast Asia's Happiest Countries, 2012-2018.

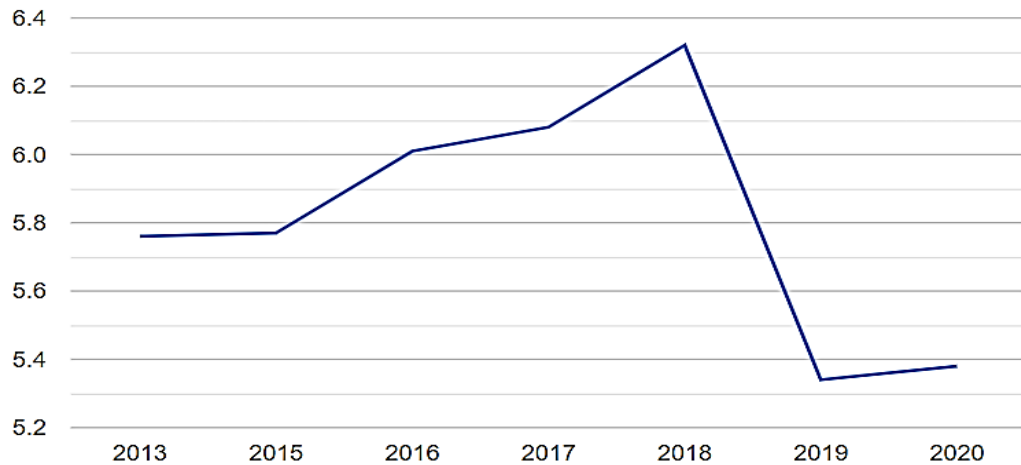


Source: The Global Happiness Council, various issues.

Despite that, the value of WHI for Malaysia recorded a rise from 5.76 in 2013 to 6.322 in 2018 in which is shown in Figure 7. In 2019, the WHI value slumped to 5.339, but it then ballooned slowly to 5.38 in the year 2020. According to Feiya (2019), the sharp decline in 2019 was probably attributed to the rising crime rate, especially in the large city like Klang, Kuala Lumpur, Johor Bahru, Petaling Jaya, Kuching, and Penang. Additionally, it can be attributed to other reasons, for instance environmental pollution that affects public health. In the second quarter of 2019, there was serious river pollution in Pasir Gudang, credited to the chemical waste. This incident not only brought negative impacts to the clarity of the river water and the marine lives but also the citizens surrounding in terms of health and revenue. As reported, about 35 victims were very sick and showed the symptoms of vomiting, fainting, and breathing difficulties after inhaling methane gas created from the incident. Also, the river

pollution brought a huge financial loss to the fishermen as the fish population in the river was reduced, thus, the catch rate dropped.

Figure 7: Happiness Index for Malaysia, 2013-2020.



Source: The Global Happiness Council (2020).

1.7 Problem Statement

Even though the Human Development Index (HDI) for Malaysia recorded an improvement over the years, it has been disagreed that HDI is able to measure the actual well-being of the citizens. This is because HDI is basically and admittedly a summary measurement of achievement levels that is limited in human capital development. Besides, the HDI has no or fewer capabilities to reflect other well-being factor or qualitative factor like empowerment movements, human security, cultural identity, and political freedoms et cetera (Chappelow, 2019; Riley, 2019). In other words, the HDI merely focuses on human expansion instead of the overall well-being. Other than that, it does not take into account the income distribution (Riley, 2019), which is considered to be a vital economic indicator for well-being measurement. Due

to these limitations, the HDI can merely measure a part of the well-being status of a country.

Unlike the HDI that measures human development, the World Happiness Index (WHI) focused on the emotional aspect of well-being. Therefore, the WHI estimates the happiness level of society using the subjective measure of well-being captured from primary research approach. Since it is a regional-based mass research conducted by the Global Happiness Council upon a generic WHI framework, the possibility of having sampling bias could not be ruled out, as well as certain irrelevancy of the WHI framework in reflecting the Malaysian setting which is multi-cultural in nature. The resulting implication is that the WHI could be either overestimate or underestimate the true representation of social progress in Malaysia. In this sense, the present WHI is plausibly useful to be served as a baseline understanding of the level of national happiness, but it is still far beyond a good proxy of social progress for Malaysia.

Apart from that, it is gradually perceptible that a human development model merely based on economic progress is imperfect. If a community fails to meet fundamental social needs, equip citizens to enhance their living standard, preserve nature, and/or provide chances for its citizens, it is considered unsuccessful. Inclusive growth entails both economic and social progress to measure how well is the health of an economy (Porter, 2015). Therefore, the Social Progress Index is developed to measure the capacity of a country in the provision of social and environmental needs to the citizens. Nevertheless, for the case of Malaysia, it will be a great challenge to

analyse the social aspects of the well-being as its measurement of societal well-being aspects will be slightly complicated as compared to other countries. This is because the society in Malaysia consists of different races and languages as well as diversified culture and religion.

1.8 Objectives of the Study

1.8.1 General Objective

This study is aimed to develop an indicator of social progress to be served as an alternative measure of social well-being or social progress in Malaysia.

1.8.2 Specific Objectives

The followings are the specific objectives of the study:

- i. To construct a composite Societal Satisfaction of Life Indicator (SSLI) for social progress measurement in Malaysia;
- ii. To identify the baseline (reference) chronology of social progress in Malaysia;
- iii. To examine the leading power of the constructed SSLI in measuring social progress in Malaysia; and
- iv. To examine the directional accuracy of the constructed SSLI in predicting the social progress in Malaysia.

1.9 Significance of the Study

Since the global release of the significance of studying the well-being of own society and country, it motivated the country planners, researchers, and academics to develop several indicators that measure well-being for their country or other countries that they

are interested to test on. However, it is quite challenging to measure the actual status of societal well-being due to rapid changes in society, especially in the society of Malaysia that consists of different races and cultures. Therefore, the study can be considered as a relevant and useful study as it aims to measure the Malaysian social progress by constructing a composite social indicator.

Other than that, the study will bring a myriad of advantages, especially to the policymakers as well as the future researchers in their studies. As the study will ensure a better analysis of the social status of well-being among Malaysian citizens, the findings will enable the policymakers to pay full attention to make decision and plan to improve the well-being status in Malaysia via several strategies and policies. At the same time, the government are able to effectively and efficiently review and weight how big is the impact of the macroeconomic policy towards the well-being among the citizens. As a result, an augmentation of the policies will be easier and need not to take a longer period to review, to analyse, to plan, and to improve the current policies. Moreover, the study will be also a useful guide for the government to plan for the budget allocation to improve the citizens' living standard.

Besides being beneficial to policymakers, the study will be also helpful to the planners of the infrastructure project who wishes to account for advantages in terms of health and time, instead of emphasizing on the investment returns. Through the study, the infrastructure project planners will have the information to take actions to improve the standard of living by planning some alternative projects. For instance, the project of building the high-speed railway not only will help to reduce the

environmental pollution due to the decreasing number of cars used on the road, but also enable resident to commute from a location to another location at a lesser cost and a shorter duration. Hence, the infrastructure projects planned not only can help to boost the development of the country, but also to upgrade the quality of life among the society.

Furthermore, the study will be a useful reference for future researchers who intend to conduct a related study. As there are many possible aspects of the measurement of well-being, more researches are being done to review and upgrade the estimation of the existing well-being indicators of a country. Here, the study can be a steppingstone for other researchers to construct a better composite indicator that can efficiently explore the overall development of a country.

1.10 Scope of the Study

Even though the Economic Planning Unit and other planning departments of Malaysia has developed some indexes for measuring the well-being of the society, the aim of the study is to construct a composite indicator in the social dimension. The potential social indicators include water and sanitation, health, education, environment, economy, housing, government, infrastructure, demographics et cetera, which the data is sourced from The World Bank, Knoema, CEIC database, Department of Statistics Malaysia et cetera. This study mainly focuses on the case of Malaysia for the years 2009-2018.

1.11 Organization of the Study

The conducted study is to develop a Societal Satisfaction of Life Indicator for targeting the social progress in Malaysia. This study consists of 5 chapters. Chapter 1 will consist of the introduction and background of the study, problem statement, objectives, as well as the significance and scope of the study. Next, Chapter 2 will illustrate both theoretical and empirical reviews on the related studies. Chapter 3 will explain the methods and measurements that will be adopted in this study for the conduction of the empirical analysis, this chapter will also contain a description of the data. Chapter 4 will be the analysis of the empirical findings of the study while Chapter 5 will be the conclusion.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Over the years, Growth Domestic Product (GDP) has been one of the top popular topics to study, as higher GDP is believed to be able to help to lead a good life. However, this statement is being disputed because GDP cannot be considered as a truly good measurement for well-being. This is because GDP does not measure the education standard, health, happiness, etc. (Inflab, 2018). At the same time, the importance of determining well-being status is also increasingly acknowledged among the economists. Therefore, several indicators beyond GDP were created to measure the countries' welfare.

In this chapter, there are 3 sections divided. Section 2.1 will present the theoretical reviews which mainly focus on the indicators and indexes of well-being developed with the components of social aspects. Besides, this section is to review and to construct a composite social indicator for the measurement of social progress in Malaysia. Section 2.2 will represent the empirical evidences related while section 2.3 will be the conclude for Chapter 2.

2.1 Theoretical Reviews

Before reviewing the well-being indicators and indexes of Malaysia's and foreign countries', there is a need to study and analyse the original indicators of Social Progress Index (SPI) to realize the objective of the study. According to Social Progress

India & Institute for Competitiveness (2016), the SPI was introduced by the nonprofit Social Progress Imperative that helps to mark the countries' social progress and to examine the extent to which social needs have fulfilled among the people. The index consists of 54 indicators from 12 components that are grouped under three pillars, such as Basic Human Needs, Foundation of Wellbeing, and Opportunity. As shown below is the framework of SPI:

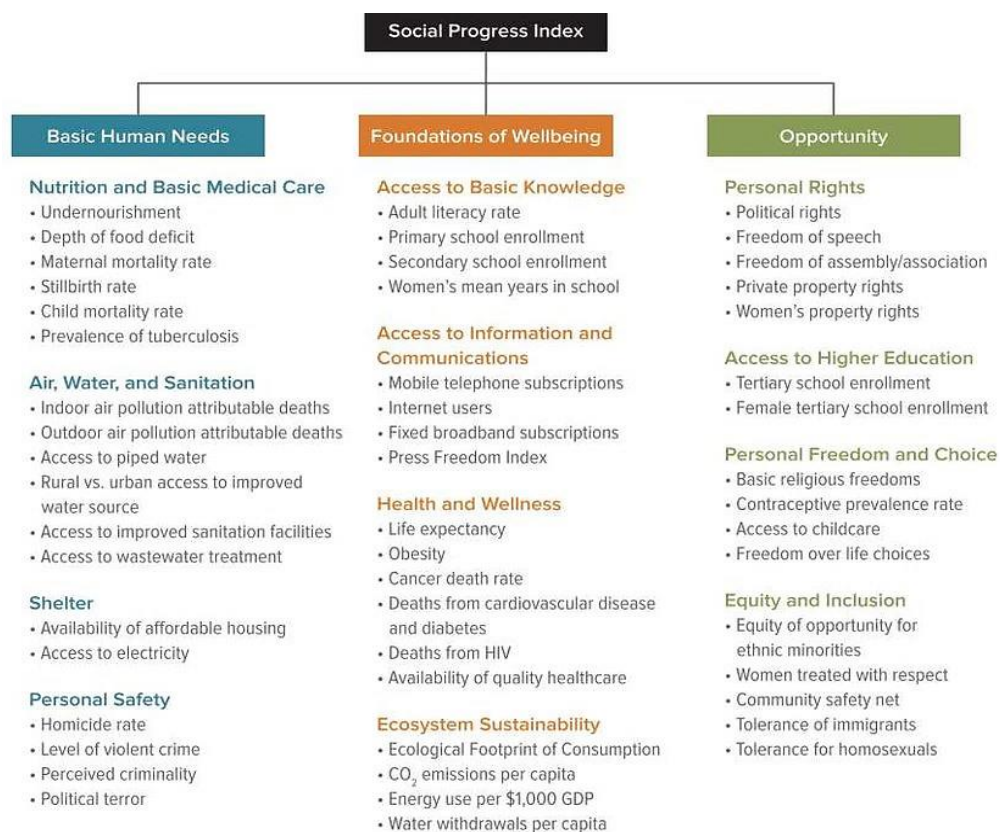


Figure 8: Framework of Social Progress Index

2.1.1 Reviews on Well-Being Index Construction with Primary Research Approach

Happiness Index that was found by Walden University contains a total of 26 indicators from ten domains. The ten domains are community, education, arts, and culture,

environment, health, psychological well-being, social support, time balance, governance, material well-being, and work. Among these domains, social support can be considered as one of the required social indicators other than community, government, work, environment, etc. that included in the SPI and other well-being indexes.

Since the year 1999, the Economic Planning Unit (EPU) has introduced the Malaysia Quality of Life Index (MQoLI) to measure the Malaysian status of well-being. This index is then built up with 37 indicators from 12 domains that include education, environment, health, income and distribution, housing, family life, working life, public safety, transport and communications, urban services, recreational and culture, and social participation. As compared to the SPI, the components in social aspects like family life, public safety, recreational and culture, social participation as well as urban services are absent in the SPI. Hence, these domains can be the suggested indicators for measuring the Malaysian social progress for the study.

Next, the Federation of Canadian Municipalities has created Quality of Life (QOL) to measure the well-being status for its country. This index is built up with eight domains with a total of 44 indicators. The domains include community affordability, community participation, community safety, community stress, health of community, quality of employment, population resources, and quality of housing. From the domains, it is found that the community categories, especially the components of community safety, community stress, health of community, and

community participation are crucial in measuring the societal well-being and should be included as one of the social progress indicators for the study.

Apart from that, the Organization for Economic Co-operation and Development (OECD) has developed 'social indicators' that consists of 33 indicators from 15 categories and are grouped under eight dimensions. Here, the dimensions include command over goods and services, education and learning, employment and quality of working life, health, personal safety, physical environment, social environment, and time and leisure. These dimensions can be the suggested indicators for developing the social progress measurement of Malaysia, especially the component of working life quality which SPI is lacked.

Sustainable Society Index (SSI) is introduced by a non-profit organization namely Sustainable Society Foundation with the objective of promoting and helping the societies across 154 countries to achieve sustainable development. SSI is containing a total of 21 indicators grouped under eight categories from three dimensions of well-being, which are economic well-being, environmental well-being, and human well-being. Under human well-being, it consists of the categories of basic needs, personal development health as well as well-balanced society, while climate and energy, natural resources as well as nature and environment are categorized under the environmental well-being. Meanwhile, transition and economy are categorized under the economic well-being. Referring to the components of SPI, their difference is that SPI is lacking the concerns about the natural resource. Hence, the component

of natural resource can be the suggested indicator sub into the environment indicator for the study.

2.1.2 Reviews on Well-Being Index Construction with Secondary Research Approach

According to Abu Bakar et al. (2016), the Malaysian Wellbeing Index (MWI) that developed by Economic Planning Unit (EPU) consists of two sub-composites, which are economic wellbeing and social wellbeing. In these two sub-composites, there are 14 components and a total of 68 indicators. Under economic wellbeing, the components include communication, education, income and distribution, transport as well as working life. Meanwhile, under social wellbeing, the components include culture, environment, family, government, health, housing, leisure, public safety, and social participation. Compared to the SPI, the components of social aspects here are completely different which the SPI does not include the components of family, culture, leisure, public safety, and social participation. Thus, these components can be included as the social progress indicators of the study.

Next, Malaysian Ummah Development Index (MUDI) is a development index created by that Institute of Islamic Understanding Malaysia (IKIM). Its main purpose is to measure Islamic-based development (Wan Hasan, 2018). It consists of 21 indicators that categorized under three main dimensions, such as Economic Development Index, Social Development Index, and Spiritual Development Index respectively. Here, the indicators under both Social and Spiritual Development Indexes are more in relation to the social aspects. Under the Social Development Index,

the indicators are categorized under the components of education, family, and health while the indicators under Spiritual Development Index are categorized under crime, education, economy, and the pillars of Islam (Wan Hasan, 2018).

In 2005, Economist Intelligence Unit (EIU) has introduced Economist Quality of Life Index that can be correlated to the subjective surveys on satisfaction towards life. This index contains a total of nine indicators from nine domains, that are material well-being, climate and geography, community life, family life, health, political stability and security, political freedom, gender equality, and job security. As compared to the SPI, almost all of the domains of Economist Quality of Life Index that are categorized in the social aspects are not listed in the SPI, except the component of health. Therefore, these domains can be the suggested social progress indicators for Malaysia, especially gender equality.

According to Henderson (2000), Calvert-Henderson Quality of Life Indicators is jointly developed by a group of practitioners and scholars from government agencies. It is the first state of a comprehensive effort that aimed to redefine the overall quality of life with a systems approach. The resultant of this index is based on 12 indicators grouped under three dimensions such as social, economic, and environmental. The 12 indicators include health, shelter, public safety, national security, recreation, human rights, education, income, energy, environment, economy, and infrastructure. In the SPI, it also includes the indicators in the aspects of health, shelter, human rights, education, energy, and environment. The remaining indicators that may have potential

to measure the societal well-being like infrastructure, public safety, national security, etc. can be considered in examining social progress for Malaysia.

In 1972, Measurable Economic Welfare (MEW) was created by William Nordhaus and James Torbin to make an adjustment on the measurement of total national output by adding certain items (Tejvan Pettinger, 2017). MEW is built up with nine indicators from nine domains that are real income, employment prospects, job satisfaction, housing, education, life expectancy and quality of life, happiness levels, environments, and leisure time. Here, the components of life expectancy and quality of life, happiness levels as well as leisure time are the social indicators that the SPI does not include, and thus, these social indicators are then suggested to improve the measurement of social progress of the study.

Other than that, Child and Youth Well-Being Index (CWI) which was developed by Kenneth C. Land to investigate how faring is the U.S. children. It consists of a total of 28 indicators that assigned under seven domains, such as family economic well-being, social relationships, health, safety or behavioral concerns, educational attainments, community engagement, and emotional or spiritual well-being. Its built-up indicators have differed with the measurement of SPI in which CWI has paid more attention to family, emotional or spiritual well-being, social participation, etc. other than merely health and education.

Since the year 2002, the Australian Bureau of Statistics (ABS) has introduced Measures of Australia's Progress (MAP) to test the influence of the aspects of the

economy, environment as well as society on the progress of its country (Community Indicators Consortium, 2017). MAP resultants are based on 26 indicators from four domains (economy, society, environment, and governance). Referring to the SPI's indicators, it does not include the indicators in social aspects like economy, social connections, governance, political participation, and public safety.

Index of Social Progress that introduced by Estes is quite different from the SPI in their measurement respectively. In the Estes's social progress index, it has 48 indicators from ten domains that include educational, health status, women status, defense effort, economic, demography, geography, political participation, cultural diversity, and welfare effort. Compared to the SPI, among of the focuses of the Estes's Index of Social Progress are economic, demography, geography, culture diversity, and welfare effort that are absent in the measurement of the SPI. Besides, the SPI only includes a few indicators regarding the women status but in separate components, while the Estes's Index of Social Progress focuses mostly on the status of women and sees it as one of the domains.

Moreover, Index of Social Health (ISH) was developed by Marc Miringoff and his associates at Institute for Innovation in Social Policy of Fordham University in the year 1985 (Miringoff et al., 1999). This index is to examine the social well-being in U.S., using 16 social indicators, such as child poverty, child abuse, infant mortality rate, crime trends, affordable housing, income inequality, homicides, food insecurity, teenage suicide, teenage drug abuse, high school dropouts, unemployment, weekly wages, health insurance coverage, poverty among the elderly, out-of-pocket health-

care costs among the elderly, and alcohol-related traffic fatalities. The absent indicators in the SPI are psychological well-being and income equality which should be concerned and adopted as one of the social progress indicators for the study.

Since 2001, Ministry of Social Development of New Zealand had published New Zealand Social Development Report annually which records the well-being and the quality of life measured across the countries over years using economic and environmental indicators. This report consists of a total of 43 indicators from ten well-being components that are civil and political rights, cultural identity, economic standard of living, health, knowledge and skills, leisure and recreation, paid work, physical environment, safety, and social connectedness. Compared to the SPI, both share the similar indicators such as health, education as well as the environment in their measurement respectively while the remaining indicators in the report can be the suggested indicators of social progress for the study.

2.1.3 Reviews on Well-Being Index Construction with Primary and Secondary Research Approach

The Legatum Prosperity Index was developed by Legatum Institute and was used to study the national prosperity based on economic, institutional as well as social welfare for 149 countries. This index also assists the government of every country in their policy-making task in order to develop their countries (Legatum Institute Foundation, 2019). Besides, Legatum Prosperity Index records the annual ranking of the countries that are formed according to nine pillars, such as business environment, education, economic quality, governance, health, natural environment, personal freedom, safety

and security, and social capital, using 104 indicators from 33 components. Among these pillars, economic quality, education, health, natural environment, personal freedom, safety and security, and social capital are more likely to be considered as social progress indicators. As compared to SPI, both economic quality and social capital are absent in SPI in which can be a consideration to be added as one of the social progress indicators for the study.

2.2 Empirical Evidences from the Past Studies

2.2.1 Reviews on Related Studies in Asian Countries

Ahmad and Selvaratnam (2015) studied the relationship between Malaysian Quality of Life (MQLI) and Gross Domestic Product (GDP) from 1990 to 2010 for Malaysia. In the study, the MQLI was calculated using the indicators of culture and leisure, education, environment, family life, health, housing, income and distribution, public safety, social participation, transport and communication, and work environment. To examine the connection between MQLI and GDP, Ordinary Least Squares (OLS) approach was used in the study, using the method of backward elimination. The results showed that the index is significantly and positively correlated to the distribution of education, health, income as well as on economic growth in Malaysia. Besides, the findings indicated a great impact from the government expenditure on the components, and thus, this is considered to be vital in enhancing the sustainability and equitable economic growth.

Besides, Abu Bakar et al. (2016) had reviewed the design of the well-being indicators of Malaysia, including the Malaysia Quality of Life Reports of 1999, 2002,

2004 and 2011 as well as Malaysia Wellbeing Report 2013. In the study, they adopted document analysis and qualitative analysis to respectively review the components and indicators of these reports as well as to investigate the formulation processes' strengths and restrictions and the rationales of selecting certain components and indicators in the separated reports. The findings showed that there are gaps in the objective estimation of the quality of life and well-being towards the enhancements in the future reports.

Moreover, the determinants of economic well-being in India was being studied by Basu (2005). In his study, he separately analysed and compared the economic well-being of 16 major Indian states over the 4 period points (1970s, 1980s, 1990s, and 1997). Basu (2005) used economic well-being index (EWBI) computed by 14 indicators as the dependent variable while the independent variables were Quality of Governance Index (QGOI), Financial Decentralization Index (FIDI), Plan Outlay (PLOU), Structural Characteristics (STCH), and population. For methodologies, Basu (2005) used factor analysis, coefficient of variation, model of $EWBI^k = \frac{\sum F_j \lambda_j}{\sum \lambda_j}$, simple regression model, simple pooled estimation model, panel data regression, as well as fixed effect estimation model. As findings, coefficient of variation results showed zero tendency of income convergence among the Indian states during the period of study. Meanwhile, the panel data model results found the robustness of governance coefficients and policy factors. Nevertheless, the measure of fiscal decentralization is not significant in the fixed effects model. In short, the institutions standard and policy environment positively attributes the economic well-being level.

Apart from that, Vial et al. (2011) conducted a study on whether the entrepreneurship helps in improving the economic well-being in Indonesia for the period of 1997 – 2007. Entrepreneurship participation, primary employment, secondary employment, income, consumption per capita, assets as well as household characteristics such as age, gender, marital status, household size, family structure, and geographical location are the variables used in the study. Correlation matrix and simultaneous quantile regressions were adopted in the study for testing all the correlation as well as the significance of the variables. From the findings, the entrepreneurship from the lower class may temporally boost the short-term well-being but might have difficulty in sustaining the long-term well-being with income even lower than the primary employment. Whereas, the entrepreneurship of middle or upper class is able to boost both short-term and long-term well-being as more income ensure more consumption and assets and the income gap between entrepreneurship and primary employment has become smaller.

Other than that, Mullis (1992) conducted a study of whether the measures of economic well-being can predict the psychological well-being for the period of 1966 - 1981 in Indonesia. In his study, he used permanent income, annuitized net worth and economic demand from household as his variables in relation to a comprehensive measure of economic well-being before comparing with the conventional economic well-being. In his study, Mullis (1992) used correlation analysis as a method to test the data set from National Longitudinal Surveys. As a result, he found that the measure of economic well-being is strongly correlated with happiness. Besides, he also used a multivariate regression analysis using the multivariate model. In his finding, he

obtained a positive result that the economic well-being is able to predict the psychological well-being significantly.

2.2.2 Reviews on Related Studies in Western Countries

Osberg and Sharpe (1998) studied the economic well-being index (IEWB) for Canada within the period of 1971 – 1997. To form the index, adjusted personal consumption per capita, government expenditure per capita, value of per capita unpaid labour, capital stock per capita, R&D stock per capita, natural resource wealth stock per capita, human capital stock per capita, net foreign debt per capita, social costs of environmental degradation (CO₂ emissions) per capita, poverty intensity, Gini coefficient for after-tax income, unemployment, illness, single-parenthood poverty, and poverty in old age (OLD) were used as the components of IEWB. In addition, Genuine Progress Indicator (GPI), Measure of Economic Welfare (MEW), Index of Social Health (ISH), and GDP per capita were used to compare with the IEWB trends. The results showed that the economic well-being of Canadians has increased but at a slower rate than the real GDP per capita for the last 25 years. Within 1971 and 1995, GPI recorded 11.7 % of increase, MEW recorded 23.1 %, and ISH recorded 14.3 %. Meanwhile, 8.7 % of increase in IEWB represented a smaller rise than of other three alternative indicators.

Moreover, Osberg and Sharpe (2001) have conducted a study of comparing the trends in both GDP and economic well-being by focusing the impact from social capital for selected OECD countries (Australia, Canada, Germany, Norway, Sweden, United Kingdom, and United States) within the period of 1971 – 1996. Variables

involved were similar to Osberg and Sharpe (1998) which are adjusted such as personal consumption, recent government expenditure, value of unpaid labor, capital stock, R&D stock, natural resource wealth stock, human capital stock, net foreign debt, CO2 emissions, poverty intensity, Gini coefficient for after-tax income, unemployment, illness, single-parenthood poverty, poverty in old age, and GDP per capita. Nevertheless, the variable of natural resource wealth stock per capita and Human capital stock per capita were excluded. From the results, the economic well-being level rose at a slower rate compared with the real GDP per capita over the 25 years. Besides, the trends in economic well-being are similar to GDP per capita trends in Norway, but cyclically different with the trends in GDP per capita in Australia and Canada, heavily depending on GDP per capita in U.S. and U.K., and are sensitive to the relative weighting in Sweden.

In 2002, Osberg and Sharpe repeated the study regarding the economic well-being index for selected OECD countries for the period of 1980 - 1999. However, Osberg and Sharpe (2002) has excluded Germany in their study and used four main variables such as consumption per capita with its 4 indicators, wealth stock per capita with 6 indicators, distribution of income with 2 indicators, and economic security with 4 indicators to develop economic well-being index and compare with GDP per capita. In their study, they adopted a composite indicators' approach to form two different weightings of the well-being index model, that are well-being index of equal weighting and well-being index of alternative weighting. In their findings, Osberg and Sharpe (2002) obtained similar results with their previous study in 2001 on the comparison of GDP trends and economic well-being trends for OECD countries. The

economic well-being level ballooned at a slower rate than the GDP per capita over the 20 years. The economic well-being trends are similar to GDP trends in Norway, but cyclically different with the GDP trends in Australia and Canada, heavily depending on GDP per capita in U.S. and U.K., and are sensitive to the relative weighting in Sweden.

Another year later, Osberg and Sharpe (2003) focused in the well-being index of an individual, instead of the overall well-being, in the field of labor market for 16 OECD countries (Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, New Zealand, Norway, U.S., Netherlands, U.K., Sweden, and Switzerland) for the period of 1980 – 2001. Moreover, they also involved the relationship testing between Labor Market Well-being index (ILMW) and unemployment in their study. Therefore, scaling methodology was used towards the four main variables such as labor market income (LMI), human capital (HC), labor market equality (LME), labor market security (LMS), and the unemployment rate to develop the ILMW. Via the equal weighting model, the overall ILMW was mounted among the 16 OECD countries. However, the results implied that the unemployment rate has no relationship with the ILMW. In addition, it is found that the changes over time in ILMW are negatively and weakly related to the changes in unemployment rate.

Looking at the case in Italy, Berloff and Modena (2012) studied the economic well-being of the country by focusing on the income insecurity and intergenerational inequality for the period of 1995 - 2007. Besides, they carried a comparison of the economic well-being of Italy with its state namely Lombardy within the period studied

in their research. To conduct their study, income insecurity, unemployed plus temporary workers, labor force, stock value of fixed capital, R&D annual expenses, average expenditure per years of schooling, educational attainment of the population aged 15 or more, Gini coefficient, and intensity of poverty were used as the variables. As a methodology, Berloff and Modena (2012) adopted the IEWB approach developed by Osberg and Sharpe but enlarged the dimension of economic security and inequality. As a result, they found that the well-being of Italy was advanced but at a slower rate than GDP, due to the facts of decreasing employment security and equality in the distribution of income. This finding was more pronounced in Lombardy than in the country.

Unlike Osberg and Sharpe (1998, 2001, 2002, 2003), Osberg and Sharpe (2005) studied on the economic well-being index for OECD countries within the year 1980 to 2001 with an additional testing of whether IEWB can replace the index of log per capita income as the component of "command over resources" in Human Development Index (HDI). Even though the study emphasized on the importance of inequality and insecurity to economic well-being, Osberg and Sharpe adopted the methodology of scaling each component linearly to the [0,1] interval in their study for the testing purpose. Therefore, all the variables that determine the IEWB (consumption flows, wealth stocks, equality, and economic security) were equally weighted in the model. HDI, GDP per capita, as well as life expectancy were also used as the variables in the study. From the results, it was found that comparisons between specific pairs of countries often change when using equally weighted IEWB as the measure of "command over resources" in HDI (HDI-IEWB) rather than using GDP

per capita as the measure of “command over resources” (HDI-GDP). According to Osberg and Sharpe (2005), IEWB can reflect the differences in inequality and insecurity better than GDP when incorporated with HDI.

Besides studying on the overall well-being, Osberg and Sharpe (2008) focused on the study on the economic security in Nova Scotia, Canada within the period of 1981-2007. In their study, they adopted the CSLS approach and the methodology of scaling and aggregation to estimate and develop the index of economic security using the Linear Scaling Technique. For the components involved, Osberg and Sharpe used the four main indicators of economic security in their study, such as unemployment rate, illness, single parent poverty, and elderly poverty. In addition, the variable of healthcare expenditure, divorce rate, and population were also used as the explanatory variable of the economic security index. The result of the study showed a drop in economic security in Nova Scotia within the year 1981 and 2007, which was associated with a sharp rise in illness.

The study studied by Galinha and Pais-Ribeiro (2011) was mainly investigating about which are the predictors of subjective well-being for the global over two-month interval. Variables involved in the study were global subjective well-being, life satisfaction in domains, positive and negative state affect, positive and negative trait affect, comparison standards, depression, anxiety and stress, life events, and socio-demographic variables. Galinha and Pais-Ribeiro (2011) used Keiser-Meyer-Olkin test, Bartlett’s Test of Sphericity, correlation analysis, and regression analysis using a stepwise method for analyzing which variable is more statistically

significant in predicting the subjective well-being. In their finding, the intrapersonal factors (Life Satisfaction in Domains, Negative State Affect and Positive State Affect) are the significant main predictors of Global SWB.

2.3 Concluding Remarks

In a nutshell, Chapter 2 has theoretically and empirically reviewed on the literatures regarding the well-being indexes. After reviewing the indicators of well-being indexes, it can be concluded that the indicators of social aspects that are not included in the SPI can be added as a new indicator of social progress for the study. As shown in Table 2.1, it summarizes the theoretical review. Besides, major empirical reviews show the construction of well-being indexes and indicators are not only to measure the welfare of the targeted countries, but also to test if the index is significant. As below shown in Table 2.2 is the summary of the empirical reviews on constructing well-being indexes.

Table 2: Summary of Theoretical Review

Social Indicators	Primary Data					Secondary Data											
	Social Progress Index (SPI)	Sustainable Society Index (SSI)	Social Indicators, OECD	Quality of Life (QOL), FCM	Malaysia Quality of Life (MQoLL)	Happiness Index	Legatum Prosperity Index	The Malaysian Wellbeing Index (MWI)	Malaysian Ummah Development Index (MUDDI)	Economist Quality of Life Index	Calvert-Henderson Quality of Life Indicators	Measured Economic Welfare (MEW)	Child and Youth Well-Being Index (CWI)	Measures of Australia's Progress (MAP)	New Zealand Social Development Report	Index of Social Progress, Estes	Index of Social Health (ISH)
Access to Information and Communication	/				/			/							/		
Child Status															/		/
Community affordability				/													
Community / Social Participation				/	/	/		/		/			/				
Community Stress				/													
Culture and Religion					/	/		/	/						/	/	
Demographic				/												/	
Economic		/	/			/	/	/	/	/	/		/	/	/	/	
Education	/	/	/		/	/	/	/	/	/	/	/	/	/	/	/	/
Emotional Well-Being / Happiness Level											/	/					
Energy	/	/									/						
Environment	/	/	/		/	/	/	/			/	/	/	/	/		
Family					/			/	/	/		/		/			
Food	/	/															/
Gender Equity		/								/							
Geography										/						/	
Governance		/				/	/	/					/				
Health	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Human Rights	/										/						

Social Indicators	Primary Data						Secondary Data										
	Social Progress Index (SPI)	Sustainable Society Index (SSI)	Social Indicators, OECD	Quality of Life (QOL), FCM	Malaysia Quality of Life (MQoLI)	Happiness Index	Legatum Prosperity Index	The Malaysian Wellbeing Index (MWI)	Malaysian Ummah Development Index (MUDDI)	Economist Quality of Life Index	Calvert-Henderson Quality of Life Indicators	Measured Economic Welfare (MEW)	Child and Youth Well-Being Index (CWI)	Measures of Australia's Progress (MAP)	New Zealand Social Development Report	Index of Social Progress, Estes	Index of Social Health (ISH)
Income Distribution Equity	/	/			/		/								/		/
Infrastructure										/							
Leisure and Recreation			/		/	/	/			/	/			/			
National Security						/				/					/		
Personal Freedom	/					/											
Personal Safety	/	/	/			/											
Political / Civic participation													/		/		
Psychological Well-Being					/												/
Public Safety				/	/	/	/	/	/	/	/	/	/	/	/		
Quality of Life											/		/				
Quality of Working Life			/	/	/		/				/						
Shelter and Housings	/		/	/	/					/	/						/
Social Capital						/											
Social connections												/	/	/			
Social support					/												
Transport				/			/										
Urban services				/													
Water and Sanitation	/	/												/			
Welfare Effort															/		
Women Status	/														/		
Work-Life Balance					/									/			

Table 3: Summary of Literature Review for the Past Studies

Author (Year)	Data	Methodology(s)	Finding(s)
Osberg, L. & Sharpe, A. (1998)	<ul style="list-style-type: none"> • Secondary data, Time-series data • Countries: Canada • Sample period: 1971 - 1997 • Variables: <ul style="list-style-type: none"> - Adjusted personal consumption per capita (C) - Recent government expenditure per capita excluding debt charges (G) - Value of per capita unpaid labor (UP) - Capital stock per capita (K) - R&D stock per capita (R&D) - Natural resource wealth stock per capita (NR) - Human capital stock per capita (HC) - Net foreign debt per capita (D) - Social costs of environmental degradation (CO2 emissions) per capita (ED) - Poverty intensity (LIM) - Gini coefficient for after-tax income - Unemployment (UR) - Illness (ILL) - Single-parenthood poverty (SP) - Poverty in old age (OLD) - Genuine Progress Indicator (GPI) - Measure of Economic Welfare (MEW) - Index of Social Health (ISH) 	<ul style="list-style-type: none"> • Weighting approach • Model of Economic Well-being Index: $IEWB = (0.4)[C + G + UP] + (0.1)[K + R\&D + NR + HC-D-ED] + [(0.1875(LIM) + (0.0625)Gini) + [(0.0694)UR + (0.1040)ILL + (0.0540)SP + (0.0226)OLD]$ 	<ul style="list-style-type: none"> • The economic well-being of Canadians has increased at a slower rate than real GDP per capita over the last 25 years. • Within 1971 and 1995, GPI recorded 11.7 % of increase, MEW recorded 23.1 %, and ISH recorded 14.3 %. Meanwhile, 8.7 % of increase in IEWB represented a smaller rise than of other three alternative indicators.
Mullis, R.J. (1992)	<ul style="list-style-type: none"> • Primary data • Countries: Indonesia • Sample period: 1966 – 1981 • Variables: <ul style="list-style-type: none"> - Permanent income - Annuitized net worth - Household economic demands 	<ul style="list-style-type: none"> • Correlation analysis • Multivariate regression analysis using the multivariate model: $Y_t = b_0 + b_1ECONWB + b_kCFK$ 	<ul style="list-style-type: none"> • Correlation analysis result found that the measure of economic well-being is strongly related to happiness. • Economic well-being is a statistically significant predictor of psychological well-being

Table 3: Summary of Literature Review for the Past Studies (Continued)

Author (Year)	Data	Methodology(s)	Finding(s)
Osberg, L. & Sharpe, A. (2001)	<ul style="list-style-type: none"> • Secondary data, Time-series data • Countries: OECD countries (Australia, Canada, Germany, Norway, Sweden, United Kingdom, and United States) • Sample period: 1971 - 1996 • Variables: <ul style="list-style-type: none"> - Adjusted personal consumption per capita (C) - Recent government expenditure per capita excluding debt charges (G) - Value of per capita unpaid labor (UP) - Capital stock per capita (K) - R&D stock per capita (R&D) - Net foreign debt per capita (D) - Social costs of environmental degradation (CO2 emissions) per capita (ED) - Poverty intensity (LIM) - Gini coefficient for after-tax income - Unemployment (UR) - Illness (ILL) - Single-parenthood poverty (SP) - Poverty in old age (OLD) - GDP per capita 	<ul style="list-style-type: none"> • Weighting approach • Model of Economic Well-being Index: $IEWB = (0.4)[C + G + UP] + (0.1)[K + R\&D + -D-ED] + [(0.187 (LIM) + (0.0625)Gini] + [(0.0694)UR + (0.1040)ILL + (0.0540)SP + (0.0226)OLD]$ 	<ul style="list-style-type: none"> • For at least 2 different sets of relative weights, economic well-being has increased at a slower rate than real GDP per capita over the last 20 years. • In Norway, trends in economic well-being are similar to GDP per capita trends. • In Australia and Canada, the trends differ with the trends of GDP per capita cyclically. • In U.S. and U.K., the trend depends heavily on GDP per capita or a broader IEWB. • In Sweden, the trend is very sensitive to the relative weighting of consumption per capita, wealth stock per capita, distribution of income, and economic security.
Berloffo, G. & Modena, F. (2012)	<ul style="list-style-type: none"> • Secondary data • Countries: Italy • Sample period: 1995 - 2007 • Variables: <ul style="list-style-type: none"> - Income insecurity (unemployed plus temporary workers and the labor force) - Stock value of fixed capital - R&D annual expenses - Average expenditure per years of schooling - Educational attainment of the population aged 15 or more - Income inequality (Gini coefficient) - Intensity of poverty (SST) 	<ul style="list-style-type: none"> • IEWB approach by Osberg and Sharpe with larger dimension of economic security and inequality. 	<ul style="list-style-type: none"> • The well-being advanced at a slower rate than GDP, resulted from the decreasing employment security and the reducing equality in distribution of income, which was pronounced more in Lombardy.

Table 3: Summary of Literature Review for the Past Studies (Continued)

Author (Year)	Data	Methodology(s)	Finding(s)
Osberg, L. & Sharpe, A. (2003)	<ul style="list-style-type: none"> • Primary data • Countries: 16 OECD countries (Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, New Zealand, Norway, U.S., Netherlands, U.K., Sweden, and Switzerland.) • Sample period: 1980 - 2001 • Variables: <ul style="list-style-type: none"> - Index of Labor Market Well-being (ILMW) - Labor market income (LMI) - Compensation per employee - Compensation per hour - Human capital (HC) - Labor market equality (LME) - Earnings inequality - Low-wage employment - Labor market security (LMS) - Unemployment risk - Health risk - Poverty in retirement - Unemployment rate 	<ul style="list-style-type: none"> • Scaling Methodology • Model of equal weighting: $ILMW = (0.25)LMI + (0.25)HC + (0.25)LME + (0.25)LMS$ 	<ul style="list-style-type: none"> • Overall, the ILMW has increased among the 16 OECD countries. • However, there is no relationship between the unemployment rate and the ILMW. • The changes over time in ILMW are negatively and weakly related to the changes in unemployment rate.
Osberg, L. & Sharpe, A. (2005)	<ul style="list-style-type: none"> • Secondary data • Countries: OECD countries (Australia, Canada, Norway, Germany, Sweden, U.K., and U.S.) • Sample period: 1980 - 2001 • Variables: <ul style="list-style-type: none"> - Consumption flows - Wealth stocks or accumulation - Equality or income distribution - Economic security - Human Development Index (HDI) - GDP per capita - Life expectancy 	<ul style="list-style-type: none"> • Methodology of scaling each component linearly to the [0,1] interval. 	<ul style="list-style-type: none"> • Comparisons between specific pairs of countries often change when using equally weighted IEWB as the measure of “command over resources” in HDI (HDI-IEWB) rather than using GDP per capita as the measure of “command over resources” (HDI-GDP). • IEWB can reflect the differences in inequality and insecurity better than GDP when incorporated with HDI

Table 3: Summary of Literature Review for the Past Studies (Continued)

Author (Year)	Data	Methodology(s)	Finding(s)
Osberg, L. & Sharpe, A. (2002)	<ul style="list-style-type: none"> • Secondary data, Time-series data • Countries: OECD countries (Australia, Canada, Norway, Sweden, U.K., and U.S.) • Sample period: 1980 - 1999 • Variables: <ul style="list-style-type: none"> - Consumption per capita (A) - Wealth stock per capita (B) - Distribution of income (C) - Economic security (D) - GDP per capita 	<ul style="list-style-type: none"> • Composite indicators approach • Model of equal weighting: $Well-being\ index = 0.25*A + 0.25*B + 0.25*C + 0.25*D$ • Model of alternative weighting: $Well-being\ index = 0.7*A + 0.1*B + 0.1*C + 0.1*D$ 	<ul style="list-style-type: none"> • For at least 2 different sets of relative weights, economic well-being has increased at a slower rate than real GDP per capita over the last 20 years. • In Norway, trends in economic well-being are similar to GDP per capita trends. • In Australia and Canada, the trends differ with the trends of GDP per capita cyclically. • In U.S. and U.K., the trend depends heavily on GDP per capita or a broader IEWB. • In Sweden, the trend is very sensitive to the relative weighting of component A, B, C and D.
Vial, V., Hanoteau, J. & Prévot, F. (2011)	<ul style="list-style-type: none"> • Secondary data, Panel data • Countries: Indonesia • Sample period: 1993 – 2007 • Variables: <ul style="list-style-type: none"> - Entrepreneurship participation - Employment (Primary employment & Secondary employment) - Income - Consumption per capital - Assets - Household characteristic: <ul style="list-style-type: none"> ○ Marital status ○ Gender ○ Age ○ Household size ○ Family structure ○ Geographical location. 	<ul style="list-style-type: none"> • Economic Well-being model: $Well - Being_{it} = a + b.Entrepreneurshi + c.1^{st}job_{it-1} + d.2^{nd}job_{it-1} + f.Entrepreneurshi * 1^{st}job_{it-1} + g.Entrepreneurshi * 2^{nd}job_{it-1} + h.Controls_{it} + k.Yearummies_t + e_{it-1}$ • Correlation matrix • Simultaneous quantile regressions 	<ul style="list-style-type: none"> • Entrepreneurship from the lower class may temporally boost the short-term well-being but might have difficulty in sustaining the long-term well-being with income even lower than the primary employment. • Whereas, the entrepreneurship of middle or upper class is able to boost both short-term and long-term well-being as more income ensure more consumption and assets and the income gap between entrepreneurship and primary employment has become smaller.

Table 3: Summary of Literature Review for the Past Studies (Continued)

Author (Year)	Data	Methodology(s)	Finding(s)
Basu, S.R. (2005)	<ul style="list-style-type: none"> • Secondary data, Panel data • Countries: India • Sample period: 1970s – 1997 • Variables: <ul style="list-style-type: none"> - Per capita income - Per capita NSDP - Literacy Rate - Combined Enrolment Ratio - Infant Mortality Rate (per 1000 live births) - Life Expectancy at Birth (years) - Population per Hospital Bed (no.) - Per Capita Electricity Consumption - Post Offices (per lakh population) - Bank Branches (per lakh population) - Telephone Lines (per lakh population) - Road Length (per 100 sq.kms area) - Railway Route (per 100 sq.kms area) - Intensity of Cropping - Fertiliser Consumption - Quality of Governance Index (QGOI) - Financial Decentralisation Index (FIDI) - Plan Outlay (PLOU) - Structural Characteristics (STCH) - Population 	<ul style="list-style-type: none"> • Factor analysis • Coefficient of variation • Model of $EWBI^k = \frac{\sum F_j \lambda_j}{\sum \lambda_j}$ • Simple regression model • Simple pooled estimation model • Panel data regression • Fixed effect estimation model 	<ul style="list-style-type: none"> • Coefficient of variation result shows zero tendency of income convergence across the states in India. • QGOI is inversely related to the standard of institutions. • The relationship between institutional quality and well-being is significantly and positively strong. • Panel data regression results present that: <ul style="list-style-type: none"> - QEGI coefficient is statistically significant and negative which means a negative value of QGOI and a better institutional standard would improve the level of economic well-being. - STCH coefficient is statistically significant and negative, impelling transformation of the economy from agriculture to secondary or tertiary sectors in which is a positive contribution to economic well-being. • Fixed Effect estimation model results presents that time trend coefficient is positive and statically significant, implying positive fundamental changes in the society that can improve the well-being level. - The quality of institutions and policy environment positively affects the development outcome.

Table 3: Summary of Literature Review for the Past Studies (Continued)

Author (Year)	Data	Methodology(s)	Finding(s)
Hayhoe, C.R. & Wilhelm, M.S. (1998)	<ul style="list-style-type: none"> • Primary data • Countries: - • Sample period: July 1986 – February 1987 • Variables: <ul style="list-style-type: none"> - Mediator variables (comparison of economic outcomes and strain level) - Information variables (individual objective information, family objective information, and socioeconomic status) - Perceptual variables (individual characteristics, family characteristics, and provider role) 	<ul style="list-style-type: none"> • Modelling Perceived Economic Well-Being • Partial Least Squares Analysis models 	<ul style="list-style-type: none"> • The mediators proposed by the model performed more efficiently for the husbands than the wives. • There is only one direct path significantly to perceived economic well-being for the husband, while the wives had many direct paths significantly to perceived economic well-being.
Galinha, I., & Pais-Ribeiro, J. L. (2011)	<ul style="list-style-type: none"> • Primary data • Countries: Global • Sample period: two-month interval • Variables: <ul style="list-style-type: none"> - Global subjective well-being - Life satisfaction in domains - Positive and negative state affect - Positive and negative trait affect - Comparison standards - Depression, anxiety and stress - Life events - Socio-Demographic variables 	<ul style="list-style-type: none"> • Keiser-Meyer-Olkin test • Bartlett's Test of Sphericity • Correlation analysis • Regression analysis 	<ul style="list-style-type: none"> • The intrapersonal factors (Life Satisfaction in Domains, Negative State Affect and Positive State Affect) are the significant main predictors of Global SWB.
Osberg, L. & Sharpe, A. (2008)	<ul style="list-style-type: none"> • Primary data • Countries: Canada (Nova Scotia) • Sample period: 1981 – 2007 • Variables: <ul style="list-style-type: none"> - Economic security - Unemployment rate - Illness - Healthcare expenditure - Divorce rate - Single parent poverty - Elderly poverty - Population 	<ul style="list-style-type: none"> • CCLS Approach • Scaling and aggregation methodology • Linear Scaling Technique 	<ul style="list-style-type: none"> • The overall economic security in Nova Scotia had declined within the year 1981 and 2007, which associated with the sharp rise in illness.

Table 3: Summary of Literature Review for the Past Studies (Continued)

Author (Year)	Data	Methodology(s)	Finding(s)
Ahmad, S.Y. & Selvaratnam, D.P. (2015)	<ul style="list-style-type: none"> • Secondary data • Countries: Malaysia • Sample period: 1990 – 2010 • Variables: <ul style="list-style-type: none"> - GDP - Malaysian Quality of Life Index (MQLI) - Income and distribution - Work environment - Transport and communication - Health - Education - Housing - Environment - Family life - Social participation - Public safety - Culture and leisure. 	<ul style="list-style-type: none"> • OLS • Backward elimination method 	<ul style="list-style-type: none"> • The results showed that there were positive and significant correlation between the index and the distribution of income; health; and education on economic growth in Malaysia. • Government spending on components that has high impact needs to be emphasized to enhance the sustainability and equitable economic growth.
Abu Bakar, A., Mohamed Osman, M. Bachok, S. & Ibrahim, M. (2016)	<ul style="list-style-type: none"> • Countries: Malaysia • Sample period: 1999, 2002, 2004, 2011 & 2013 	<ul style="list-style-type: none"> • Document Analysis 	<ul style="list-style-type: none"> • Document analysis identified gaps in the objective measurement of quality of life and wellbeing towards improvements in future reports

CHAPTER 3

METHODOLOGY

3.0 Introduction

Chapter three presents the theoretical framework as well as the analytical methods that will be adopted in the study to construct a composite social indicator for Malaysia. In this chapter, it is assigned to 14 sections. Section 3.1 will be the theoretical framework of the study while section 3.2 will present the empirical model proposed for the study. Next, the following sections will be the methodologies of the study. In section 3.7, it will be the description of the data and the last section will conclude for this chapter.

3.1 Theoretical Framework for Social Well-being

3.1.1 Perspectives of Well-being

3.1.1.1 Hedonic Perspective

Based on Ryan and Deci (2001), the hedonic approach is explained by the main focus of happiness of a person with the fulfilment of pleasure without any pain present. For further elaboration in their study, this perspective was originally derived in the fourth century BC, from the happiness concept developed by Aristippus of Cyrene. Besides, this concept was explained that it has a correspondence with the utilitarianism based on the principle of greatest happiness (Mill, 1864). Here, Mill explained that the principle of greatest happiness is referring to a moral action that can improve the overall utility in the global.

In contrast, Vik and Carlquist (2017) illustrated the hedonic view is currently and frequently conceptualized as subjective well-being (SWB) with two main intrapersonal elements from the ABC model, that are the affective component (A) and the cognitive component (C). As an explanation, the affective component is more towards personality variables like positive feelings, while the cognitive component is more towards contextual variables such as thoughts or evaluative judgments on the satisfaction of life (Dinener, 1994; Schimmack et al., 2008; Tay et al., 2014). Thus, if one is satisfied, his or her subjective well-being is considered at a higher level.

3.1.1.2 Eudaimonic Perspective

According to Joseph (2019), the eudaimonic perspective was originated from Aristotle who developed the eudaimonia concept in the 4th century BC. Unlike the hedonic approach, eudaimonic approach is more than just explaining about emotion. The focus of the eudaimonic approach is mainly on self-realization in terms of the degree to which a person is completely and well-performing (Ryan & Deci, 2001). In other words, a well living requires ones to strive towards realizing own topmost potential as well as committing to the purposive and virtuous events (Huta & Waterman, 2014).

Nevertheless, there are several studies on eudaimonia explaining eudaimonic with multiple concepts and different operational definitions. According to Ryan et al. (2008), when ones are actualizing one's potential and is being fully functional while engaging in works, this describes the eudaimonia. When ones have the autonomy, personal growth, good relationships with one another, life's goals, environmental

mastery, and self-acceptance, this defines the eudaimonia (Peterson et al., 2005). Moreover, the theory of self-determination also illustrates the eudaimonic living. As described, ones with a characteristic of self-regulated, determinant of pursuing intrinsic goals and values, and well-behaviour are considered to live a eudaimonic living (Ryan et al., 2008).

3.1.2 The Hierarchy of Needs

Looking at the model of Social Progress Index (SPI), it is basically based on the hierarchy of needs. The model consists of three dimensions such as Basic Human Needs, Foundation of Human Needs, and Opportunity (Dłużewska, 2015). Therefore, this concept is best served as reference to building a composite social indicator for Malaysia. In 1943, Abraham Maslow had introduced the hierarchy of needs which is in a pyramid appearance. It consists of a total of five stages of human growth which are also known as five levels of motivational needs (Dłużewska, 2015). As below shown is the hierarchy of needs:

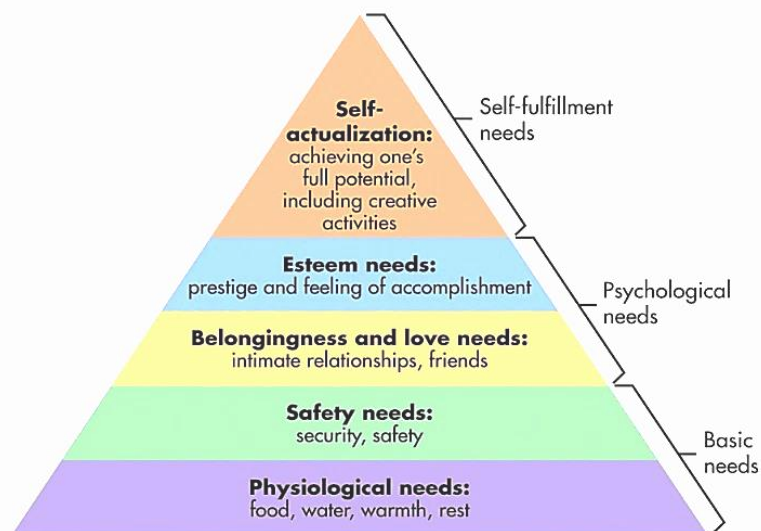


Figure 9: The Concept of The Hierarchy of Needs

Among the five levels of motivational needs, there are three groups being categorized, that are Basic Needs (or called deficiency needs), Psychological Needs, and Growth Needs (or called self-fulfilment needs). Under the Basic Needs, there are another two classifications, such as 1) Physiological Needs that refer to the food, water, warmth, and rest and 2) Safety Needs that refers to the security and safety. This kind of needs is located at the bottom part, indicating that the Basic Needs is the most important need to be fulfilled. According to Maslow (1943), it is believed the Basic Needs are the minimum level that is needed to be fulfilled before proceeding to the upper level of the hierarchy of needs.

Under the Psychological Needs, there are two categories that are 1) Belongingness and Love Needs that refers to the close contacts and friends and 2) Esteem Needs that refers to the fame and sense of success. The final stage is the stage of self-actualization that refers to full potential achievement of an individual. After a few decades, the hierarchy of needs was upgraded with an extension from five stages of growth to eight stages of growth. During the 1960s, Aesthetic Needs and Cognitive Needs were being added. In the next decade, Transcendence Needs then was being slotted as the final stage of hierarchy needs (Dłużewska, 2015; Maslow, 1960; Maslow, 1970).

3.1.3 The Capabilities Concept

The growth needs in the hierarchy of needs is said to have an indirect connection with the capabilities of an individual. According to Sen (1985), the concept of capabilities was established to widely propose ones' rational towards well-being. Instead of

applying the concept merely on the pure economic aspect, this concept has also been developed into a useful platform in analysis in a variety of dimensions. These dimensions analyses include economic, social as well as political analyses (Dłużewska, 2015). Here, it shows that capabilities can be broadly explained as freedom, but specifically, capabilities are the real chances for ones to choose to be or to do what they value. (Leon, 2017).

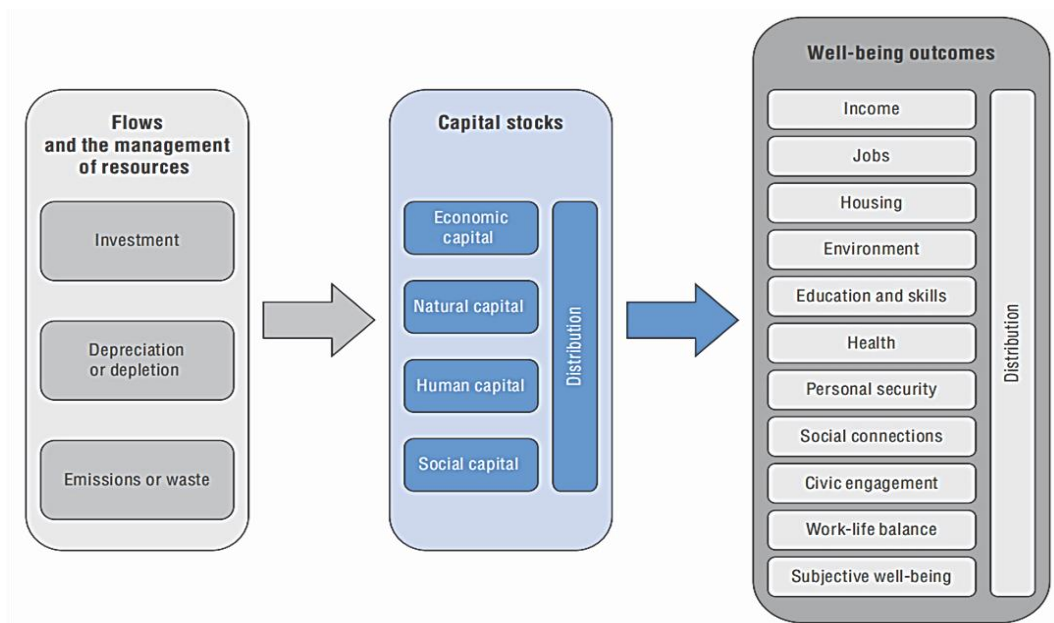
The term “capabilities” is used in the plural due to the reason that Sen was presenting it in a broader and more general sense, which means it is an all-embracing framework (Clark, 2019). To explain it specifically, Nussbaum (2000, 2011) had innovated some detailed dimensions for a list of capabilities that regards life, health and integrity, fancy, feelings, practical purpose, etc. Referring to Deneu-lin & McGregor (2009), capabilities is presented as one of the dimensions in the personal well-being that is mainly measured by three dimensions (agency, capabilities, and functioning). This shows that the capabilities approach is increasingly influential when interpreting global development in the aspects of social and economic.

3.1.4 Theoretical Concept of Sustainable Well-being

Abu Bakar et al. (2015a) has developed a theoretical concept of sustainable well-being by modelling economic well-being and social well-being. From their findings, they found that sustainable well-being is in relation to three different dimensions of well-being, which are economic well-being, social well-being, and environmental well-being. This statement was supported by Mullis (1992) who studied on whether economic well-being can affect psychological well-being as predictors. In his finding,

it is significant that economic well-being can predict psychological well-being. Besides, Abu Bakar et al. (2015b) also found that the sustainable well-being is highly reliant of the people (future generation, displaced groups, and community and neighbourhoods) as well as the environment (awareness, participation, and lifestyle). Again, this illustrates that there is a connection between each dimension of well-being which one is correlated to the other in forming sustainable well-being. Vik and Carlquist (2017) who focused on measuring subjective well-being, also stated that psychological well-being is associated closely with the settings in which people live their lives in their study. Moreover, Figure 10 showed below is the sustainable well-being framework of the OECD countries that illustrates the connection between the well-being variables from different dimensions.

Figure 10: OECD Well-being Framework



Source: OECD (2013b).

3.2 Proposed Framework of Societal Satisfaction of Life Indicator (SSLI)

As there are multiple indexes used in measuring the well-being of a country, the social indicators in these indexes are being reviewed for the construction of composite social indicators for Malaysia. The empirical framework that is adopted in the study is partly based on the theoretical conception, especially Maslow's hierarchy of needs and partly based on some crucial social indicators as well as some social emphasis. As below shown is the proposed framework of social progress for the case of Malaysia:

Table 4: Proposed Framework of Societal Satisfaction of Life Indicator

Societal Satisfaction of Life Indicator	
Domains	Items
Basic Human Needs	<ul style="list-style-type: none">• Water and Sanitation• Education• Health• Shelter and Housings• National Security and Public Safety
Transportation and Connections	<ul style="list-style-type: none">• Transport• Social Connections
Sustainable Development	<ul style="list-style-type: none">• Environment• Demographic• Economy
Political Concerns	<ul style="list-style-type: none">• Governance• Civic Engagement
Social Concerns	<ul style="list-style-type: none">• Women Status• Social Opportunity and Mobility• Family

3.3 Indicator Construction Procedure

To construct the Societal Satisfaction of Life Indicator (SSLI), several indicators listed above might have the information content towards the social progress in Malaysia. However, these indicators have to be analysed to obtain the most reflective set of component series of social progress with leading characteristic. According to the

Conference Board (2000), the available cyclical indicators need to be examined based on the characteristic of the indicator and further classified into three main groups, namely leading, coincident and lagging indicators. Table 5 shown the summary of cycle definition based on the nature of the cyclical movement.

Table 5: Difference between the Three Groups of Indicators

Leading Indicator	Coincident Indicator	Lagging Indicator
<ul style="list-style-type: none"> - An indicator of performance that may forecast the future without any guarantee of success. - A leading indicator can affect the change in the future. - It is useful to make short-term predictions of the future change. 	<ul style="list-style-type: none"> - An indicator of performance that may not predict the future, but it describes the current situation a lot. - A coincident indicator can provide information that is useful and valuable to the current economic condition. 	<ul style="list-style-type: none"> - An indicator of historical performance that measures how we performed. - A lagging indicator can only record the incidents happened. - It is helpful to confirm specific patterns or recent movements and make further forecasts from the incident happened.

As the study aimed to develop a Societal Satisfaction of Life Indicator by targeting the social progress in Malaysia, it will be suitable to opt for the leading indicators with short-term forecasting ability, instead of coincident and lagging indicators. Under the procedure of indicator construction, there are two steps of selection for constructing SSLI. The first one is selecting the reference series while the second one is choosing the components series to be included in a composite indicator. After deciding the components series, it is followed by completing the systematic compilation step of the Conference Board (2001), which is shown in the following:

Firstly, calculate **month-to-month changes**, $r_{i,t}$ for every component, $X_{i,t}$ where $i = 1, \dots, n$, using the formula below:

$$r_{i,t} = \frac{X_{i,t} - X_{i,t-1}}{X_{i,t} + X_{i,t-1}} * 200$$

If the components are presented in percent form, simple arithmetic differences will be applied which is shown as below:

$$r_{i,t} = X_{i,t} - X_{i,t-1}$$



Secondly, **multiply the month-to-month changes with standardization factor**, w_i for each component. Under the second procedure, the results will show each component's contributions for every month, $c_{i,t} = w_i * r_{i,t}$.



Thirdly, **sum the adjusted month-to-month changes** of all components for every month to obtain the total adjusted contributions,

$$S_t = \sum_{i=1}^n c_{i,t}$$



Fourthly, **compute the preliminary levels of the index** recursively using the symmetry percent changes. The calculation is shown as below:

$$I_2 = \frac{200 + S_2}{200 - S_1} * I_1$$

where I_1 is the first quarter with the initial value of 100, and I_2 is the following month.



Lastly, **rebase 2010 as the base year** on the preliminary index.

3.3.1 Reference Series Selection

To choose for the reference series, there are some conditions where the reference series must be a long and continuous time series without any data intermittence. Other than that, the reference series must strongly correlate to the boost in the economy (Zhang

& Zhuang, 2002). As the study focuses on the well-being measurement, all the well-being indicators or indexes will be on the list for the study.

Among these indicators, the Human Development Index (HDI) is the best selection of reference series for SSLI. This is because it is a composite indicator that mirrors the development progress in the society which is similar to the main objective of the study, that is to measure the social progress in Malaysia. Under the HDI, there are three dimensions, which consist of long and healthy life, knowledge, and a decent standard of living. These dimensions, however, are used to measure the achievement of a country based on human development regardless of the surroundings or environment.

Besides HDI, the World Happiness Index (WHI) is chosen as another reference series in this study because it covers the measurement of well-being in the emotional aspects which the HDI lacks in its components. The WHI consists of several variables such as Gross Domestic Product (GDP) per capita, social support, healthy life expectancy, freedom to make a life choice, generosity, perceptions of corruption, and unexplained happiness. These variables are merely used to target the happiness of society. Since the study is conducted to build a composite indicator that can examine Malaysian attainment at a minimum level of bias, the constructed SSLI will propose several potential components that can capture the measurement of overall social health.

3.3.2 Component Series Selection

To select the component series, there are some requirements needed to be fulfilled. First and foremost, it is required to select the component series that has a high leading possibility, which can be known as a good leading indicator. This can be tested using the correlation analysis by determining the co-movement of each component series proposed in Table 4. Via the analysis, both of the positive and negative results can be achieved and is normally numbered within the range of 1 and -1.

Nevertheless, the component series with positive value is preferable to be included in the development of indicators so that the whole indicator will have the leading characteristic. Omitting the component series with a negative value, the component series with the value within 0.9 to 1 are not suggested to be selected either as it shows a strong correlation between the two variables which may lead to a high probability of coincident. Besides, the component series with the value of 0 should not be included in the construction of the indicator. Usually, the component series within the range of 0.7 and 0.8 is the most preferable as it may be good leading indicator.

Moreover, since the study is planned to develop a leading indicator, the component series are required to have the information content in relation to the existence of short-run causality. To explain, if a variable is found to have a causality relationship with certain components, this is due to some reasons like the influence from either micro or macro level or both. These informative reasons are the information content that helps in describing the outlook of the economic condition of a nation. In fact, it will be beneficial to foresee the nation's future. Hence, the

component series that have the causality relationship must be included in the construction of SSLI.

Apart from that, the Conference Board (2000) listed out a few criteria for selecting the cyclical indicators. These criteria include well conformity, the consistent timing, currency, economic significance, smoothness as well as statistical adequacy of data. As the potential social indicators have been analysed and proposed through the systematic approach, these components series will then be undergoing the regression analysis and other methods in order to develop a composite SSLI for measuring the social progress in Malaysia.

3.4 Procedures for Dating Turning Points

3.4.1 Detrending Procedure

Under the detrending procedure, Christiano Fitzgerald (CF) filter method that was established by Christiano and Fitzgerald (2003) will be applied in the study. Compared to the Hodick Prescott (HP) filter method, it is preferable as HP filter method is barely used to remove the trend movements in the cyclical literature (Ravn & Uhlig, 2002). Besides, this method has a basic similarity to Baxter King (BK) filter method established by Baxter and King (1999), which are used for detrending and smoothing the problem occurs in the domain's frequency. However, this filter is consistent as it can diminish the problem of weights approximation when the sample size, T rises (Haug & Dewald, 2004). In other words, it can work on a bigger level of time series compared to BK filter method.

The estimated cyclical component is shown below:

$$c_t = b_0 y_t + b_1 y_{t+1} + \dots + b_{T-1-t} y_{T-1} + \tilde{b}_{T-t} y_T + b_1 y_{t-1} + \dots + b_{t-2} y_2 + \tilde{b}_{T-1} y_1$$

where,

$$b_j = \frac{\sin(jc) - \sin(ja)}{\pi j}, \quad j \geq 1$$

$$b_0 = \frac{c-a}{\pi}, \quad a = \frac{2\pi}{p_h}, \quad c = \frac{2\pi}{p_l}$$

$$\tilde{b}_k = -\frac{1}{2} b_0 - \sum_{j=1}^{k-1} b_j$$

Here, the p_h and p_l are the cut off cycle lengths for the quarterly data. According to Christiano and Fitzgerald (2003), the cycles that are lengthier than p_l but shorter than p_h are known as the cyclical component, c_t .

3.4.2 Turning Point Dating Procedure

Bry-Boschan (BB) algorithm (1970) is a descriptive approach that is mainly used to determine the cyclical turning point, specifically the maximum and the minimum point. Typically, this method creates an analogy between the turning points and is applied merely on the observation for a monthly basis. For the quarterly data, Bry Boschan Quarterly (BBQ) algorithm that was developed by Pagan-Harding (2002) will be employed to perform the dating task of the turning points in the cyclical trend. It is simply a quarterly version that shares the similar function as the BB approach, but with a combination of some vital rules. Therefore, both algorithms enable identification of the turning point based on the movement around the local maximum and minimum points, which are less likely to be presented in the parametric method. The followings are the procedures of an algorithm:

- I. Identify the potential turning points and date the expansion periods (peaks) and the contraction periods (troughs) in a series.
 - a. Occasionally, a graphic identification on the turning points is able to filter out the “false turning points”. Here, the “false turning points” refer to the short cyclical movements and or the movements with insufficient amplitude.
- II. Alternate the peaks and troughs determined.
- III. A set of rules for the re-combination of the turning points that are determined after prior steps, in which is to meet the predetermined criteria that regard the period and amplitudes of phases as well as complete cycles.

As mentioned, BB approach is used for the monthly observations that perform the procedures listed above. The core in the algorithm procedure is determining a local topmost or trough that takes place at time, t when $\{y_t > (<)y_{t\pm n}\}$, $n = 1, \dots, N$, where N is commonly set to 5. Under the third procedure, the fixed criteria are: (1) the minimum endure duration for a phase must be 6 months and (2) the minimum duration for a complete cycle is 15 months.

Since the range of each class of data in this study is targeted a quarter of a year, BBQ algorithm will be adopted in the study. Hence, in the first procedure of the BBQ approach, n will be set to 2, where $\{\Delta 2y_t > 0, \Delta y_{t+1} < 0, \Delta 2y_{t+2} < 0\}$. This is to ensure y_t is a local maximum relative to two quarters (6 months) on either side of y_t . At that point, the derivation change sign at t is needed at a turning point in a graph at

time, t . Thus, Δy_t will turn out to be a measure of the derivative y_t in respect of t , resulting in the use of sequence $\{\Delta y_t > 0, \Delta y_{t+1} < 0\}$ as signalling an expansion point.

Throughout the procedure of the BBQ test, the cyclical turning points can be easily detected. Therefore, when new observations are added up, the outcomes of the turning point analysis will show slightly or completely no effect on the turning point dated previously.

3.5 Directional Accuracy Test

Directional accuracy (DA) test is a measurement that is broadly used to statistically predict the accuracy of a forecasting method. Meanwhile, it is used as a comparison between the actual realized direction and the forecast direction, either upward or downward. To estimate the direction of changes in a business cycle, the forecasts are classified into trichotomous scenarios that are great predicted growths, zero deviation, and great predicted reductions. According to Wong et al. (2012), a relevant cutoff is essential in distinguishing between the small and the large changes, for instance, 50% of cutoffs adopted by Greer (2003) and 25% of cutoffs adopted by Kolb and Stekler (1996).

As shown below is the formula for calculating the directional accuracy test, measured in percentage:

$$\text{Directional Accuracy Rate (DAR)} = \frac{C_s}{N_s} \times 100$$

where C_s refers to the number of correct predictions for significant large changes and N_s refers to the total number of significant large changes in the actual business cycle variable. Assuming the threshold is 50%, forming the hypothesis for the DA test:

$$H_0 : P = 0.5$$

$$H_1 : P > 0.5$$

At a significant level, we reject H_0 when the calculated DAR is greater or lesser than 0.5, which indicates that there is either positive or negative deviation in the forecasting model. If DAR exceeds 50%, it can be concluded that the forecasting model is statistically outperforming the actual model. In contrast, if DAR is less than 50%, it can be concluded that the forecasting model is being dominated by the actual model. However, we do not reject the H_0 when the calculated DAR is equal to 0.5 at a significant level, indicating that there are no significant changes occur in forecasting model.

3.6 Interpolation Techniques

According to Kaya (2014), interpolation is a value estimation within two known values. It is a useful tool which enables to fill up the data surrounding missing data. Therefore, interpolation helps to build a function that crosses through a discrete set of known data points and thus, it assists to foresee the longer-term cycles. Moreover, it is a process that adjusts the frequency of a time series from a lower frequency to higher frequency. For instance, interpolation helps to convert the annual data to quarterly data and quarterly data to monthly data. Under the interpolation algorithm, there are several

methods and measurements to produce a time series with high frequency, including Gandolfo, G. (1980) Interpolation and Cubic Spline Interpolation.

3.6.1 Gandolfo (1981) Interpolation Technique

In 1981, the technique of interpolation proposed by Gandolfo is broadly adopted in most of the studies to address the issue of limited sample size by enhancing the data frequency. In the study, the annual data will be interpolated to the quarterly data through the quarterly formula integrated from quadratic function, which shown as followings:

$$\text{First Quarter (Q1)} : y_t^{(1)} = 0.0546875y_{t-1} + 0.234375y_t - 0.0390625y_{t+1}$$

$$\text{Second Quarter (Q2)} : y_t^{(2)} = 0.0078125y_{t-1} + 0.265625y_t - 0.0234375y_{t+1}$$

$$\text{Third Quarter (Q3)} : y_t^{(3)} = -0.0234375y_{t-1} + 0.265625y_t + 0.0078125y_{t+1}$$

$$\text{Fourth Quarter (Q4)} : y_t^{(4)} = -0.0390625y_{t-1} + 0.234375y_t + 0.0546875y_{t+1}$$

where y_t , y_{t-1} and y_{t+1} refers to the current, lag, and lead values of the annual data respectively.

3.6.2 Cubic Spline Interpolation Technique

The cubic spline interpolation is developed based on the tool of an engineer that is used to form smooth curves by passing through several points. Therefore, the spline is made from weights that are attached to a flat surface at the data points to be linked. As a strip bends flexibly across these weights and effectively and efficiently correlates each data points, it forms a smooth curve without any break in continuity. Here, the

weights will be the coefficients on the cubic polynomials that are used for data interpolation (McKinley & Levine, 1998).

To fit a piecewise function of the form:

$$S(x) = \begin{cases} s_1(x) & \text{if } x_1 \leq x < x_2 \\ s_2(x) & \text{if } x_2 \leq x < x_3 \\ \vdots & \\ s_{n-1}(x) & \text{if } x_{n-1} \leq x < x_n \end{cases}$$

where s_i refers to a polynomial function at the third-degree, defined by:

$$s_i(x) = a_i(x - x_i)^3 + b_i(x - x_i)^2 + c_i(x - x_i) + d_i$$

Here, $i = 1, 2, 3, \dots, n - 1$.

The first and second derivatives of these $n - 1$ equations are fundamental to this process, in which shown as below:

$$s'_i(x) = 3a_i(x - x_i)^2 + 2b_i(x - x_i) + c_i$$

$$s''_i(x) = 6a_i(x - x_i) + 2b_i$$

Here, $i = 1, 2, 3, \dots, n - 1$.

Besides, to obtain the cubic polynomial interpolation, there are four stipulations that needed to be conformed, such as:

1. The piecewise function $s(x)$ will interpolate all data points, meaning that the interval will match with the value of low-frequency series. Hence, a result of $s(x_i) = y_i$ and $s(x_{i+1}) = y_{i+1}$ will be obtained.
2. $s(x)$ will be continuous on the interval $[x_1, x_n]$. This means that each of the sub-function must joint at the data points and thus, obtaining the result of $s_i(x_i) = s_{i-1}(x_i)$.

3. $s'(x)$ will be continuous on the interval $[x_1, x_n]$. This means that both the derivatives and the data points must be equal. Thus, the result of $s'_i(x_i) = s'_{i-1}(x_i)$ will be obtained.
4. $s''(x)$ will be continuous on the interval $[x_1, x_n]$. Similar as the stipulations above, the result of $s''_i(x_i) = s''_{i+1}(x_i)$ will be obtained.

3.7 Data Description

In the study, the data are collected from 36 series of indicators proposed in Table 4. Next, these data will be compiled, interpolated, and undertaken several tests to construct a composite indicator of Malaysian social progress as well as to examine the constructed indicator if it has the leading power and directional accuracy in forecasting social progress in Malaysia. Finally, the analysed data will be used for the development of SSLI to identify the social progress in Malaysia. Besides, the targeted period of the study is from the year 2009 to 2018. These data are sourced from distinct online sources, such as The World Bank, Knoema, CEIC database, Department of Statistics Malaysia, etc.

3.8 Concluding Remarks

In this chapter, it is mainly discussing the methodologies for constructing the SSLI. It begins with the selection of reference as well as component series for SSLI, followed by the procedure of detrending. Under the detrending procedure, the Christiano Fitzgerald (CF) filter is used to detrend and smooth the irregular parameter. Then, the study proceeds to date the turning points using the Bry Boschan Quarterly (BBQ) algorithm developed by Pagan-Harding (2002) to determine the critical episodes of

social progress in Malaysia. Comparative analysis on leading profile will be presented to ascertain the leading ability of the constructed SSLI against the HDI and WHI. Lastly, the directional accuracy test is adopted to evaluate the performance of constructed SSLI and predict its directional accuracy.

CHAPTER 4

EMPIRICAL FINDINGS AND INTERPRETATIONS

4.0 Introduction

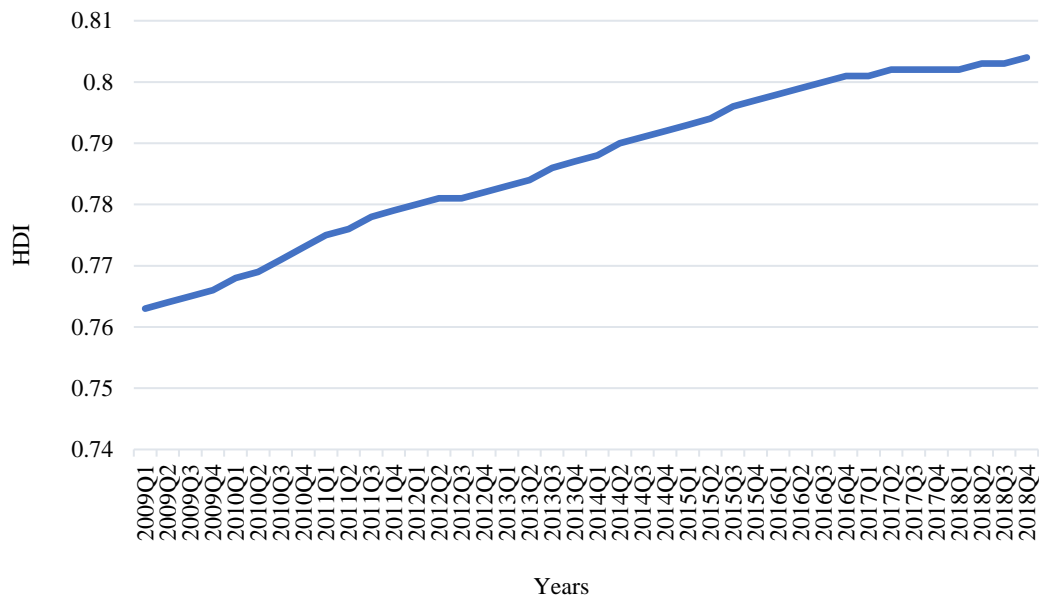
Since the study is to develop a Societal Satisfaction of Life Indicator (SSLI) to trace the social progress in Malaysia, this chapter will present the empirical findings and discussion for SSLI construction, using the quarterly data for 2009-2018. Section 4.1 will present the findings of reference series selection while section 4.2 will discuss the findings of component series selection based on correlation analysis. Next, the result of the constructed SSLI will be discussed in section 4.3 while section 4.4 will present the cyclical movements of SSLI and the reference series. In section 4.5, findings of the turning point analysis and leading profile will be enclosed. Finally, section 4.6 will discuss the outcomes of the directional accuracy test while the concluding remarks will bring this chapter to a close.

4.1 Findings of Reference Series Selection

The main objective of the study is for targeting the social progress in Malaysia with SSLI constructed. Therefore, it is important to choose a reference series that has a similar measurement as stated in the main objective of the study. Here, the Human Development Index (HDI) is suitable to be used as the reference series as it is mainly measuring the development progress in society. Therefore, in this study, a full annual series of HDI is collected for the period of 2009 to 2018. Next, cubic spline interpolation is applied for converting the annual series of HDI to its quarterly basis.

The interpolated results for HDI is then presented in Figure 11 for the duration of 2009Q1 to 2018Q4.

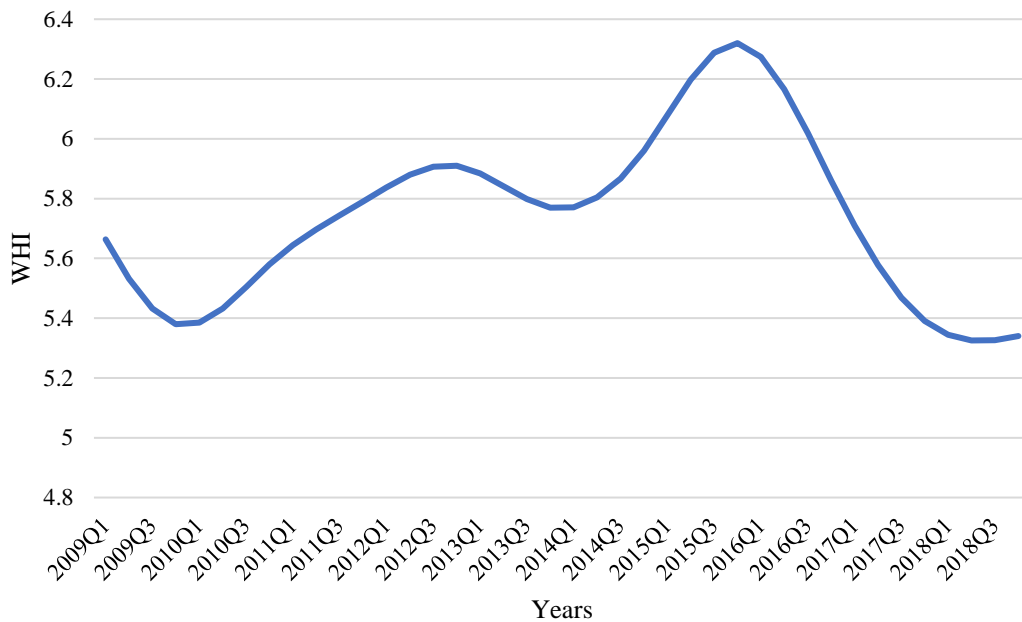
Figure 11: Human Development Index (HDI)



Based on Figure 11, it recorded a gradual increase in the quarterly series of HDI from the first quarter of 2009 to the last quarter of 2018. This steady growth is due to the rising contribution of the component index of HDI that includes life expectancy at birth, expected years of schooling, mean years of schooling, and Gross National Income (GNI) per capita. According to Human Development Reports (2018), the contribution of life expectancy was moving upward from 74.31 years to 76 years, the expected years of schooling increased from 12.79 years to 13.47 years, mean years of schooling ballooned from 9.61 years to 10.16 years, and GNI per capita is improved from \$ 19,514.92 to \$ 27,226.68.

Apart from that, World Happiness Index (WHI) is another selection of reference series for this study. In this study, a full annual series of WHI is collected for the same period as HDI which is from 2009 to 2018. Next, the annual series of WHI is interpolated to its quarterly basis, using cubic spline interpolation. Then, the interpolated results for WHI is presented in Figure 12 for the duration of 2009Q1 to 2018Q4.

Figure 12: World Happiness Index (WHI)



Looking at Figure 12, a few fluctuations were recorded in the quarterly series of WHI from the first quarter of 2009 to the last quarter of 2018. At the beginning of the studied period, the WHI score declined from 5.66 to 5.38 within the year 2009, due to the incident of financial crisis in 2009. Then, the WHI score increased steadily in the following period, from the first quarter of 2010 to the last quarter of 2012 with a WHI score of 5.91. Nevertheless, the WHI then recorded a slight decrease to 5.77 in

the first quarter of 2014 and peaked at 6.32 in the last quarter of 2015, followed by a gradual drop until the fourth quarter of 2018, probably due to the odour pollution in Langat River and Semenyih River in Malaysia as well as the outbreak of leptospirosis disease in Malaysia.

4.2 Findings of Component Series Selection

As listed in section 3.3 in the last chapter, the leading indicators are apt for short-term forecasting, compared to coincident and lagging indicators. Consequently, the component series that shows leading features will be the only option for the SSLI construction. According to the Conference Board (2000), there are some examination required for the selection of component series from a set of data that is beneficial to a business cycle at a certain level. To run under the examination, over 80 data series were piled-up from many sources that include The World Bank, Knoema, CEIC database, Department of Statistics Malaysia, etc. The collected data are then compiled and tested for correlation analysis to analyse the correlation level of both reference series and examined series.

Table 6 shows the results of correlation analysis for both the reference series and the investigated series. To conduct a leading indicator, the component series with positive value is preferably included as it can influence the whole indicator to have the leading characteristic. Therefore, only the component series with positive value is chosen for the development of SSLI while the component series with a negative value will be omitted. Besides, the component series with the correlation value of 0.5 and above are being focused in this study while the component series with the correlation

value below 0.5 will be disqualified and discarded. This is because component series that associated positively but weakly with the reference series will have lower significant influences on the development of SSLI.

Among the data series collected, majority of the component series are positively correlated with the reference series. However, there are only 15 data series from 15 domain items are selected to construct the SSLI. Here, the 15 domain items are classified under five domains, such as basic human needs (water and sanitation, education, health, shelter and housings, national security and public safety), transportation and connections (transport, social connections), sustainable development (environment, demographic, economy), political concerns (governance, civic engagement) as well as social concerns (women status, social opportunity and mobility, family). The results of correlation analysis for the 15 data series and the alternative reference series are all listed in Table 6 shown below.

Table 6: Results of Correlation Analysis on Alternative Reference Series and Selected Component Series towards HDI

Panel A: Correlation Coefficient between HDI and Alternative Reference Series			
WHI			0.2215
Panel B: Correlation Coefficient between HDI and Selected Component Series			
Domains	Domain Items	Component Series	Correlation Coefficient
<i>Basic Human Needs</i>	WS	SMDW	0.9836
	EDU	TEN	0.9219
	HEA	MLE	0.6727
	SH	VaT	0.6905
	NSPS	RoC	0.9804
<i>Transportation and Connections</i>	SC	HP	0.7990
	TRAN	ROD	0.8668
<i>Sustainable</i>	ENV	FORE	0.8134

<i>Development</i>	DEMO	CDR	0.8716
	ECO	GNP	0.9834
<i>Political Concerns</i>	GOV	CORR	0.4637
	CE	VT	0.5756
<i>Social Concerns</i>	WOS	WP	0.4852
	SOM	FL	0.9727
	FAM	DiVo	0.6843

Note: WHI represents World Happiness Index, WS represents Water and Sanitation, EDU represents Education, HEA represents Health, SH represents Shelter and Housings, NSPS represents National Security and Public Safety, SC represents Social Connections, TRAN represents Transportation, ENV represents Environment, DEMO represents Demographic, ECO represents Economy, GOV represents Governance, CE represents Civil Engagement, WOS represents Women Status, SOM represents Social Opportunity and Mobility, FAM represents family.

In Table 6, the correlation result shown in Panel A depicts that the HDI is positively but poorly correlated to the WHI. Meanwhile, the results shown in Panel B indicate that most component series recorded a strong association with the HDI with the correlation value of 0.7 to 0.9, such as people using safely managed drinking water services (SMDW), tertiary school enrolment (TEN), road crashes (RoC), handphone subscribers (HP), road density (ROD), forest area (FORE), crude death rate (CDR), gross national product (GNP), and female labour participation (FL). Meanwhile, there are only a few components that show a moderate positive correlation with the HDI, which is within the value of 0.5 to 0.7. These components are male life expectancy at birth (MLE), house value of transaction (VaT), voter turnout (VT), and divorces registered (DiVo). On the other hand, two components show a weak positive correlation with the HDI, that is the control of corruption (CORR) and women in parliament (WP). Even though both components show a correlation value below 0.5, these components are still elected in constructing the SSLI. This is because both components are among the crucial topics that are currently and increasingly being concerned in Malaysia.

Generally, corruption issues in Malaysia are at a high level. This issue must be paid serious attention to because the more corrupted the country, the more challenging it will be for them to develop their economy. Ksenia (2008) states that corruption issues are commonly higher in under-developed and developing countries like Malaysia, compared to those developed countries. Since Malaysia aims to become a developed country, thus there is crucial to take note of and minimize the issue of corruption. Moreover, it is found that corruption influences the society as well, which creates poverty. According to Nwabuzor (2005), the poor will suffer a lot from paying a regressive tax under a corrupted government. This is because they need to or even asked to pay more bribes with their limited income or in different extortion forms. The circumstances of the poor will become worse when they only have a few services and less support from the government in their areas. This uplifts the difficulty among the poor to flee away from the poverty line. Hence, CORR is required to be included in the SSLI construction as it indirectly represents the poverty status.

Since 1955, women were allowed to take part in the parliament in Malaysia. Until the recent year, the number has summed up to nine women, which five women are in the position of full ministers and four women are in the position of deputy ministers respectively (Au, 2018). Even though the number of women in parliament is still less, it is believed that women have a vital capable of developing society actively (Wan Azizah, 2002). Having women in parliament to lead and develop the politics and social is important for gender equality as well as social justice. This is because are more protective of their families and themselves against unfavourable matters like family violence, harassment, child abuse, etc. According to Piya Raj

Sukhani (2020), as women in parliament promote gender equality, it also encourages gender balance in the manpower and consequently boosts the economy. Thus, it is necessary to count the WP in the construction of the SSLI when measuring the social-based well-being in Malaysia.

4.3 Visualization of the Constructed SSLI

Following the systematic compilation step stated in the Conference Board (2001), the components that went through the analysis and elected are then aggregated into its composite form. Figure 13 below shows the computed SSLI for the period of 2009Q1 to 2018Q4. Based on Figure 13, the computed SSLI recorded a sharp increase in the beginning period, from the first quarter of 2009 until the second quarter of 2010, followed by a gradual drop with a few fluctuations. Meanwhile, Figure 14 displays the cyclical movement of the constructed SSLI after being detrended using the CF filter. According to Figure 14, it clearly shows a total of three peaks during the period of 2009Q1 to 2018Q4, that occurred in 2010Q1, 2013Q2, and 2015Q2 respectively. It also records a total of three troughs that took place in 2012Q2, 2014Q2, and 2016Q2 respectively. Thus, the cyclical movement of the SSLI shows a few ups and downs as well and these instabilities are due to a few significant events that happened during the studied duration, which will be discussed in the following section.

Figure 13: Societal Satisfaction of Life Indicator (SSLI)

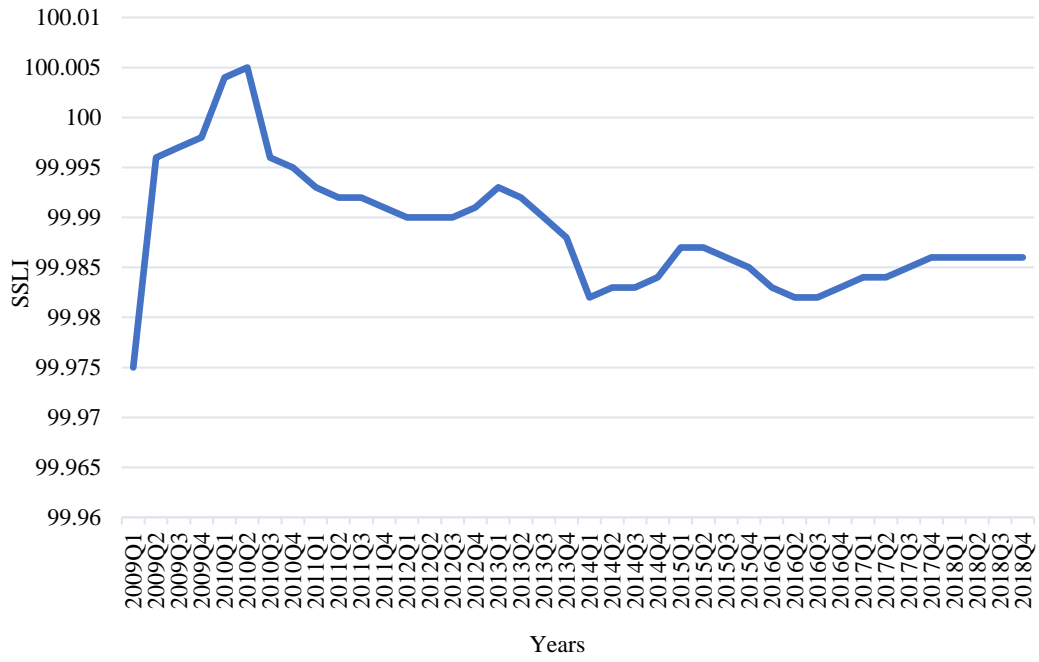
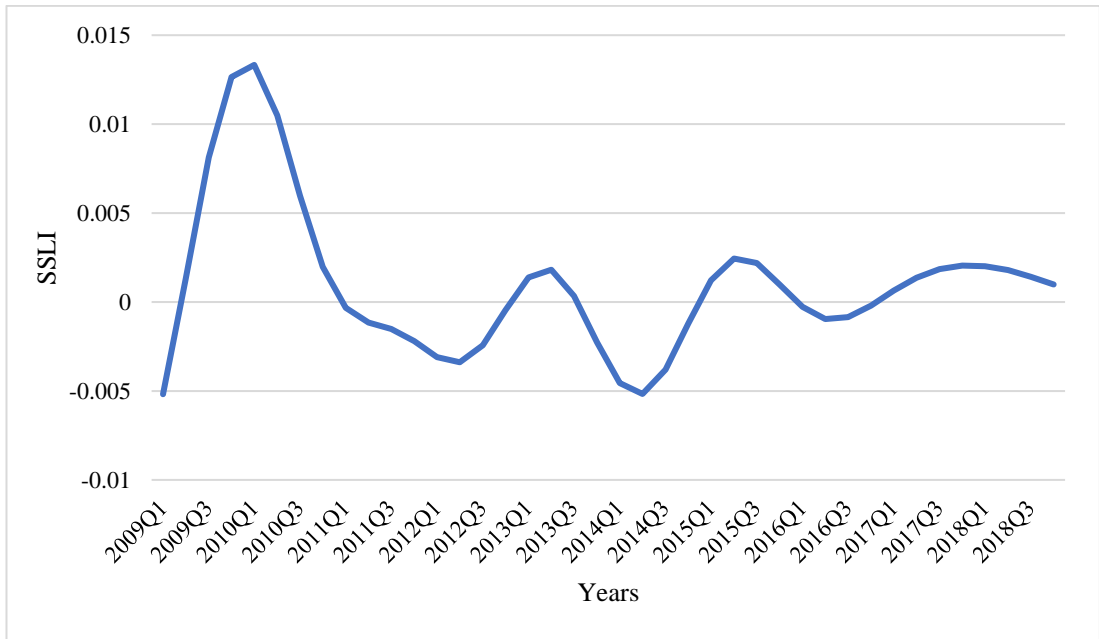


Figure 14: Cyclical Movement of Societal Satisfaction of Life Indicator (SSLI)



4.4 Cyclical Movement of the Reference Series and the Constructed SSLI

With the results obtained, the next action is to determine the cyclical movement of the constructed SSLI together with HDI. Therefore, the composite series built were detrended by using Christiano Fitzgerald (CF) filter method. In the study, CF filter method was opted because it can create a consistent movement after smothering the frequency problem of the series, which is better than using Hodick Prescott (HP) filter method. In Figure 15, it shows the cyclical movement of HDI and SSLI after the detrending procedure. Meanwhile, Figure 16 shows the cyclical movement of WHI and SSLI after the detrending procedure.

Figure 14: HDI versus SSLI

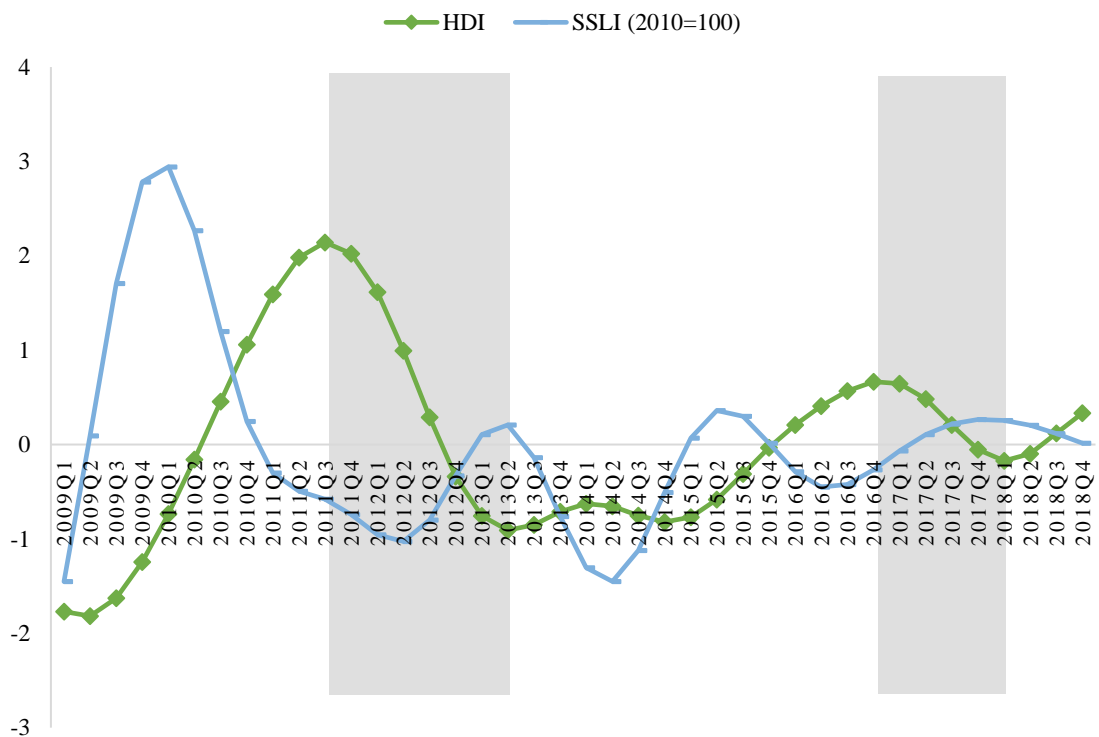
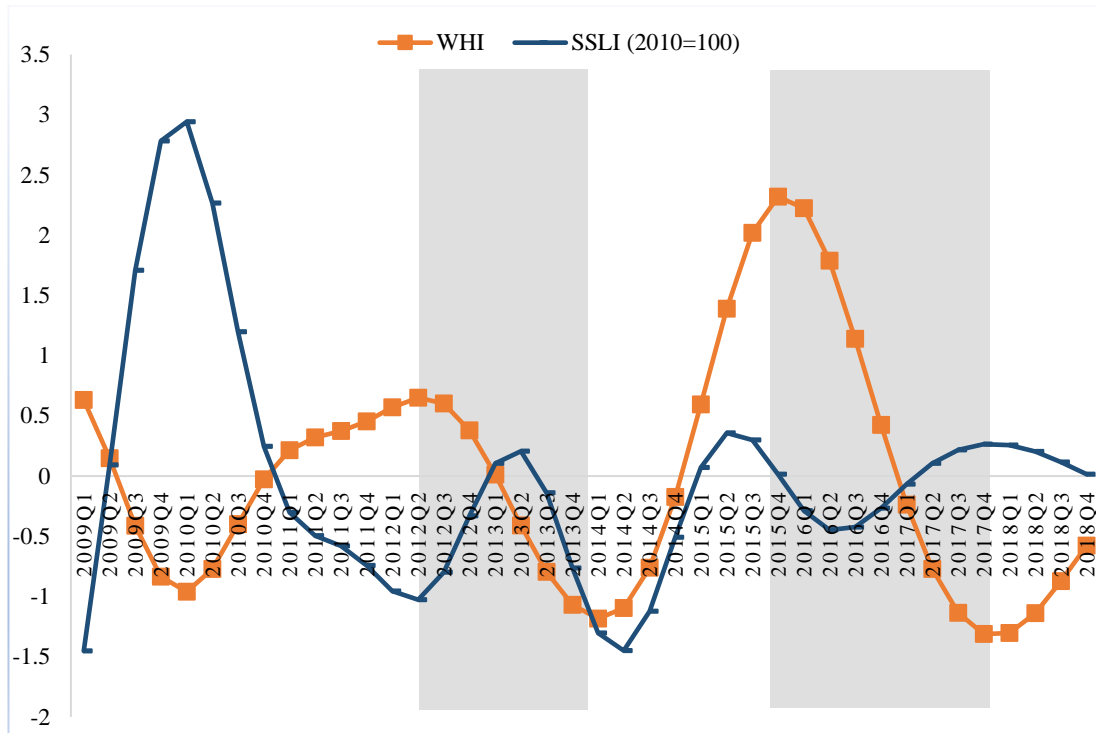


Figure 15: WHI versus SSLI



From Figure 14, two shaded regions are remarked as the turning points of both HDI and SSLI. These shaded regions indicate the happening of significant events that will affect the social progress in Malaysia. The first shaded region takes place from the middle of 2011 to the middle of 2013. During this period, there are two significant happenings that either directly or indirectly stimulate the social progress in Malaysia. Firstly, the trade partners of Malaysia which are Thailand and Vietnam were facing massive floods in their countries. As they are one of the biggest rice producers in the world, this natural disaster caused them to incur losses, especially in rice production. With the low supply of rice, this had resulted in an escalation on the global rice price (Bank Negara Malaysia, 2012) and created pressure on those countries and societies with a low budget. Although Malaysia is not considered as a country with a low budget, as a net food importer, it had to bear the higher price of the rice along with the rising

living cost. According to the OEC record, the rice import by Malaysia from Vietnam had reduced from 9.8% to 8.95% at a higher trade value of \$288 million.

Secondly, the incident of the Bersih 2.0 rally is another significant event resulting in the turning point in the first region. In 2011, the corruption issue in Malaysia had become worse, with declining rank in Corruption Perceptive Index (CPI) from 56th to 60th (Wind, 2011). To protest for free and just elections in Malaysia, demonstrators then marched along the streets of Kuala Lumpur illegally and without any permit to demonstrate from the government during Bersih 2.0 rally in the beginning third quarter of 2011. Although both Bersih and government were advised and agreed to settle among themselves peacefully, the government soon banned Bersih 2.0 again by locking down Kuala Lumpur in order to block the demonstrators from entering the city. Nevertheless, over 20 thousand demonstrators have successfully entered the city centre together with a myriad of opposition leaders to begin the rally towards Stadium Merdeka. During Bersih 2.0 rally, the government tried to stop the demonstrators via roadblocks, water cannons, and gas thrown on the crowds (Wonderful Malaysia, 2011). Here, this incident had seriously influenced the harmony in the society. Thence, it reflects instability in Malaysia's politics.

The second shaded region occurs in the ending year of 2016 to the beginning year of 2018. Within this period, Malaysia was facing environmental pollution in both Langat River and Semenyih River that located in Peninsular Malaysia, due to the industrial discharged by the factories along Sungai Lalang, construction projects, spillage of palm oil, and other factors. As reported in The Star Online (2016), a total

of 16 cases of river pollution occurred in the month of October 2016 and of the eight cases were the cases in Langat River. These river pollutions then forced the closure of water treatment plant, causing disruption of water supply in both Petaling and Sepang district as well as troubles to the population nearby (Marimuthu Nadason, 2017). As water is one of the human basic needs, it is undeniable that the pollution in Langat River and Semenyih River would affect the quality of life among the community nearby, particularly their health.

Apart from that, the other significant event that happened in the second shaded region is regarding a top disease that occurred in 2016 in Malaysia, namely leptospirosis disease. According to Frigillana (2017), leptospirosis is a historical endemic disease that can influence human beings as well as animals via water contact. This means that an individual can be infected if he or she gets contact with soil, water or food that adulterate with the infected animals' urine. If that individual is not treated adequately, this disease can induce damage in kidney, meningitis, liver failure, respiratory distress and even cause fatality. In early 2017, a total of 40 infected individuals were being quarantined, an old man was dead of leptospirosis, and three people were diagnosed with leptospirosis (Sapian et al., 2012). As the leptospirosis cases were escalating, it not only will seriously influence the economic growth in Malaysia, but also will bring a significant impact on the well-being as well as the livelihood of citizens and those who live in the rural areas (Kit, 2002), in terms of low productivity in livestock, unemployment, and low prevention and control expenses (Bashiru Garba et al., 2018).

Besides the two shaded regions by the HDI, it is found that the constructed SSLI possess additional turning points, indicating one or more significant happenings. These evident peak and trough are referring to the unnoticeable small turning points that belong to the HDI without any doubt. Therefore, the supposing dated turning points is within the year 2014. During this period, the global pricing of the crude oil recorded a dramatical drop, due to the surplus of oil production by U.S. and other Organisation of the Petroleum Exporting Countries' (OPEC) members. With the reduction in the crude oil price, it affects the prices of the commodities to decline and drives the transportation costs. Hence, the surplus of the current account of the nation was reduced. Despite that, the Malaysian economy was still supported by the demand from the local and positive development in the overall net export (Bank Negara Malaysia, 2015).

Additionally, the occurrence regarding the Malaysia Airlines flights happened in the same period. On 8th March 2014, the MH370 went missing while heading to Beijing, China. After the investigation, it is found that the flight had made a critical turn to the north-western of Peninsular Malaysia and disappeared at the Andaman Sea (Thomsen, 2018). Another incident regarding the Malaysia Airlines flights is MH17 that was shot down on 17 July 2014 when passing through the eastern Ukraine, which is a conflict area (Dutch Safety Board, 2015). These two big happenings have induced a deep sadness, especially to the family members of the victims. Referring to the eudaimonic perspective of well-being, negative emotion undeniably will influence the well-being status of an individual. Thus, the incident of the flight crash and disappearance may be the significant events that result in the turning points in 2014.

Based on Figure 14, in the first shaded region, the SSLI is obviously moving faster than the HDI. Similarly, the turning point of the SSLI is moving faster and ahead of the HDI's in the second shaded region. Meanwhile, looking at Figure 15, the SSLI is apparently faster and moving ahead of the WHI in the first and the second shaded regions. Overall, the cyclical movement of the constructed SSLI is moving forward than both the reference series. This means that the SSLI has leading power compared to the HDI and WHI, where its turning point leads a few quarters in advance compared to the turning point of the HDI and WHI. Moreover, it even can capture additional significant happenings as compared to both the reference series.

Nevertheless, the determination of the leading power of the constructed SSLI in the visual graph is less likely to be accurate. In order to date the actual turning points for the reference series and SSLI, BBQ approach that was proposed by Pagan-Harding (2002) will be used in the study and its findings will be discussed in the next section.

4.5 Results of Turning Point Analysis

As stated in the previous section, the discussion on the findings of the turning point analysis will be focused in this section. After the detrending procedure using the CF filter method, the procedure proceeds with identifying and dating the actual turning points for the HDI, WHI and SSLI, using the BBQ approach proposed by Pagan-Harding (2002). Accordingly, the outcomes of the turning point analysis done for the HDI, WHI, and the constructed SSLI are listed in Table 7 shown below.

Table 7: Turning Point Analysis and the Leading Profile of SSLI
(Growth cycle: CF Filter)

	WDI	HDI	SSLI	Amount of Lead/Lag (Quarters)	Important Events
Peak	2012Q2	2011Q3	2010Q1	+6	<ul style="list-style-type: none"> ○ Natural disasters and nuclear crisis in Japan ○ Incident of illegal Bersih 2.0 rally ○ Slump in non-energy primary commodities
Trough	2014Q1	2013Q2	2012Q2	+4	
Peak	-	-	2013Q2	-	<ul style="list-style-type: none"> ○ A slump in global crude oil price ○ Incidents of MH370 and MH17 ○ Implementation of 6% GST
Trough	-	-	2014Q2	-	
Peak	2015Q4	2016Q4	2015Q2	+6	<ul style="list-style-type: none"> ○ Outbreak of leptospirosis disease in Malaysia ○ Escalation of food prices ○ 1MDB Scandal
Trough	2017Q4	2018Q1	2016Q2	+7	
Average Lead/Lag (Quarters)				5.75	

As depicted in Table 7, both reference series (WDI and HDI) have dated a total of two peaks and two troughs within the period of the study. Nevertheless, the constructed SSLI has slightly outperform the reference series by dating an additional peak and trough for the period of 2013-2014, which reflected several crucial events that can significantly affect the social progress in Malaysia, such as the effect amidst 6% GST implementation, air crashes incidents involving two flights from Malaysia Airline (MH370 and MH17) as well as the slumped crude oil prices and hiking food prices due to weather-related production shortfall. All these incidences, as a whole, had impacted the social well-being of the nation. However, these social pressures have not been well-captured by the HDI as well as WDI. On the whole, the SSLI is not

merely capable to detect the oscillation of social well-being in a more detailed manner, but also capable to serve as a composite leading indicator of social progress as it upholds a promising leading feature towards the HDI and WDI. The average leading power is at best 5.75 quarters, a short-term leading period which is adequate for the development of pre-emptive measures in the near future.

On top of the extra chronology dated, the SSLI also dated the rest of the baseline chronology reflected by HDI and WDI. For instance, peak and trough in 2011-2013 were dated correctly with some remarkable lead times. During that period, the trade partners of Malaysia, Thailand and Vietnam were facing massive floods while Japan was experiencing nuclear crisis. On the other hand, Malaysia's political stability was shaken due to the incident of illegal Bersih 2.0 rally. Apart from this, another significant episode was recorded during the period of 2016-2018, due to various incidents that happened one after another.

4.6 Results of Directional Accuracy Test

In order to identify the accuracy of the SSLI in predicting the directional of the social progress in Malaysia, the directional accuracy analysis is done in the following step of the study. Table 8 below shows the outcomes of the directional accuracy analysis between the reference series themselves and between HDI and WHI and the constructed SSLI.

Table 8: Result of Directional Accuracy and Binomial Testing

Panel A: DAR between Reference Series (HDI and WHI)				
Lag (Quarter)	Directional Accuracy Rate (%)		P(Binomial)	
1	67.57		0.013**	
2	69.44		0.009***	
3	57.14		0.095*	
4	44.12		0.108	
5	33.33		0.023**	
6	28.13		0.007***	
Panel B: DAR between Reference Series and SSLI				
Lag (Quarter)	Directional Accuracy Rate (%)		P(Binomial)	
	HDI	WHI	HDI	WHI
1	52.63	40.54	0.122	0.068*
2	59.46	36.11	0.068*	0.034**
3	66.67	34.29	0.018**	0.024**
4	68.57	35.29	0.012**	0.032**
5	64.71	42.42	0.032**	0.095*
6	51.52	50.00	0.136	0.140

Note: Asterisks (***), (**) and (*) denotes rejection at 1%, 5% and 10% significance level respectively.

In Table 8, Panel A displays the results of DAR between the reference series, which are the HDI and WHI. This analysis is conducted in the study for the purpose of identifying whether the HDI that was built with objective components can directly reflect the WHI that mainly consists of subjective components. Based on the result, the directional accuracy rate (DAR) between the HDI and WHI are more than 50% for the first 3 lags but are lower than 50% for the later 3 lags. This indicates that the HDI has over 50% probability to make a prediction of the directional change in the WHI merely for 3 lags. The null hypothesis of the HDI is that the estimating indicator is a dependable estimating indicator. From the binomial testing results, it illustrates that the binomial value for the first three lags are smaller than the 10% significant level, depicting that there is no rejection towards the null hypothesis. Meanwhile, we reject the null hypothesis for lag 4, lag 5 and lag 6 as their binomial value are exceeding 10%

significant level. This means that the HDI is able to outperform the WHI for at most 3 lags only. Here, it can be concluded that the HDI is not directly compliant with the WHI.

From the results shown in Panel B, it is found that the SSLI illustrates a more fitting directional accuracy with the HDI compared to the WHI. For the HDI, the DAR for the entire 6 lags is exceeding 50%, which indicates that the SSLI has over 50% probability to make a prediction of the directional change in the HDI for 6 lags. Meanwhile, the DAR with the WHI for all 6 lags is below 50%, meaning the SSLI has a probability of 50% and below to foretell the directional change in the WHI for 6 lags. Looking at the results of the binomial testing for the HDI, the binomial values for the first lag and the final lag are larger than the significant of 10%, signifying a rejection of the null hypothesis. Nevertheless, we do not reject the null hypothesis for the remaining lags as their binomial value are less than 10% significant level. Here, it can be said that the SSLI significantly is a dependable estimating indicator that has a major outperforming capability against the HDI, where its DAR with HDI is greater than 50%. For the WHI, the outcomes of the binomial testing show no rejection of the null hypothesis for all lags, except for lag 6, in which the SSLI is significantly dominated by the WHI.

4.7 Concluding Remarks

In a nutshell, the main target of the study building an indicator to measure the social progress in Malaysia is accomplished, with the development of SSLI that contains 15 domain items under five domains. Each domain item consists of one single component.

Therefore, the 15 components were interpolated, tested and selected through correlation analysis, underwent the procedure of dating the turning points and finally build up the SSLI that leads averagely 5.75 quarters and even outperforms the reference series, especially the HDI in estimating the future trend of social progress in Malaysia. These components include people using safely managed drinking water services (SMDW), tertiary school enrolment (TEN), male life expectancy at birth (MLE), house value of transaction (VaT), road crashes (RoC), handphone subscribers (HP), road density (ROD), forest area (FORE), crude death rate (CDR), gross national product (GNP), the control of corruption (CORR), voter turnout (VT), women in parliament (WP), female labour participation (FL), as well as divorces registered (DiVo).

CHAPTER 5

CONCLUSION

5.0 Introduction

In this chapter, it will conclude for this study which consists a total of five sections. First and foremost, section 5.1 will summarise and discuss all the empirical outcomes acquired from every tests and analysis done in the previous chapter. Next, the policy implications and recommendations, as well as the limitations of the study will be highlighted and revealed in section 5.2 and section 5.3, respectively. Then, followed by section 5.4, presenting the perspicacity on the potential study prolongation as a direction for the future study. Finally, the last section will be the closing remarks for chapter five.

5.1 Summary of the Empirical Findings

The main target of the study was to measure the social progress among Malaysian society with the creation of an indicator. Therefore, after gathering the social-basis data, the study began with the interpolation algorithm to convert the annual basis data to quarterly data. This was because the frequency of the data series collected was lower for formulating an indicator, due to the limitation of data collection. Hence, the interpolation algorithm was used to increase the frequency of all the data series. In the study, the interpolation algorithms applied was Gandolfo (1981) interpolation for interpolating the data with high value and cubic spline interpolation for interpolating the data with percentage.

Thereafter, it was followed by trial and error compiling a myriad of components combination and then the best among these combinations was selected. In this procedure, correlation analysis was carried out to determine the association between the chosen series and Human Development Index (HDI). This was to seek the components that were having leading characteristics and significant influence when constructing the Societal Satisfaction of Life Indicator (SSLI). From the results obtained, a total of 15 components was selected to build the SSLI, including people using safely managed drinking water services (SMDW), tertiary school enrolment (TEN), road crashes (RoC), handphone subscribers (HP), road density (ROD), forest area (FORE), the crude death rate (CDR), gross national product (GNP), female labour participation (FL), male life expectancy at birth (MLE), housing transaction value (VaT), voter turnout (VT), divorces registered (DiVo), corruption control (CORR), and women in parliament (WP). Even though the majority exceeds 0.5 correlation value, there are two components lower than 0.5 correlation value, were chosen to build the SSLI as they provided a piece of crucial information while explaining the well-being status of Malaysia.

Subsequently, it was continued with the dating turning points procedure. In the study, all the data series were detrended using CF Filter method established by Christiano and Fitzgerald (2003). Under this procedure, the trend between the reference series and the composite series were then identified and determined whether if both series showed a similar trend. It was for the comparison of the cyclical movement to check for the consistency of the turning points of both series. From the outcomes, it showed that the cyclical movement of the SSLI was similar to the

reference series, especially the HDI, in which both trends peak and trough at the same amount. In the next step, the Bry-Boschan Quarterly (BBQ) approach was applied to determine the turning points for the reference series and the constructed SSLI. The results had been discussed in the last chapter, showing that all the series were identified a total of two peaks and two troughs within the studied period and the SSLI can lead the HDI averagely at 5.75 quarters. Besides, SSLI had detected one more peak and trough, which should be detected in the cyclical movement of HDI.

After the dating turning points procedure, the study finally ended with the analysis of directional accuracy and binomial testing for the SSLI with the reference series. As discussed in the preceding chapter, the binomial value for the HDI for lag 2, lag 3, lag 4, and lag 5 were lower than 10% significant level which implied we do not reject the null hypothesis. Meanwhile, the results of the binomial testing for the WHI for lag 1, lag 2, lag 3, lag 4, and lag 5 were less than the 10% significant level, indicating no rejection of the null hypothesis. Hence, it can be concluded that the SSLI built was a dependable estimating indicator for the HDI, instead of WHI, because it had over 50% of probability forecasting the direction movement in the HDI. Thus, the SSLI can be used as a measurement of Malaysian quality of life in the social dimension and was able to outperform the HDI.

5.2 Policy Implications and Recommendation

In recent year, many economists and researchers had shifted their concern to the topics of well-being status of a country. Similarly, many countries are increasingly targeting on the measurement of the living standard of their countries. This is because they

believe that there is a close positive relationship between the well-being and the economic development. One of the most popular welfare-based indicators is Human Development Index (HDI) that primarily explains the development of human capital. The concept of the HDI is that the development of society implies the economic growth of the country. Consequently, HDI is often claimed to be better than the Gross Domestic Product (GDP) in measuring how well and how far a country has grown. However, the HDI is not enough to explain the overall well-being among the society when there are some significant happenings occurred, especially the incidents that have psychologic impacts. For instance, the incident of Malaysia airline MH370 and MH17.

Blanchflower and Oswald (2005) have been using the theory of paradox to lift the question on the HDI, whether if the HDI is able to indicate the happiness economics in Australia. In their study, they found an arguable result, which a high-positive development in HDI cannot entirely reflect the happiness among the Australian society. Although Australia is ranking at the top three in the global, its subjective well-being had recorded an extremely low rank, due to the occurrence of social issues in terms of family problems, low job satisfaction, hectic lifestyle, etc. From the results, it reveals that the social progress in Australia is low. Similar to the case in China, even though the economic development in China is generally ranked 2nd in the world, there are still many social-related issues in the country, such as inequality, crimes, high divorce rate, etc. Hence, social progress cannot be explained wholly with economic progress.

In chapter 4, a correlation analysis and an analysis of directional accuracy was conducted for the HDI with the World Happiness Index (WHI). The results depict that the HDI was not directly compliable with the WHI, probably due to the characteristic of their components. In HDI, the components included are objective-based while the components in the WHI are majorly subjective-based, which makes the WHI a good social indicator that can reflect the social progress accurately compared to the HDI. In fact, by consisting the subjective-based data sets, it will enable the government to easily identify the social problems and thus, it enables the better policies implementation to improve the social progress, in order to develop the country as a whole. Therefore, it is required to make the subjective measurement as a part of economic progress.

Over years, Malaysia only employed and relied on the indicator built by the foreign country. However, the adoption of the foreign indicators may not be suitable in explaining the social progress in Malaysia. These foreign indicators like the HDI and WHI can only be adopted as a reference for the policymakers to conduct a short-term forecasting, but the policymakers still required to review the HDI performance for Malaysia on how far can the HDI reflect the Malaysian social progress. Assuming the government just relying on the foreign indicators, this will raise the issue of ignorant of some important aspects that potentially reflect the social progress. Hence, it is necessary for the government to build its social indicator to measure the actual social progress among the society.

As mentioned, the HDI biases towards the development of human capital. The constructed SSLI differs from the HDI in terms of the focus of the measurement, which the SSLI tries to explain the social progress comprehensively. Here, the SSLI can enable the policymakers to aware of which aspect is vital in targeting the social progress among the Malaysian society. Besides, as the SSLI is able to capture more significant events compared to the HDI and WHI, it will be beneficial to the Malaysian government in policy implementation. Accordingly, the policymakers can either create new policy or enhance the ready policy to improve the social progress, in order to develop the country effectively.

5.3 Limitation of the Study

Even though the study has come out SSLI for measuring the social progress in Malaysia, there are still many places to improve the constructed SSLI. Firstly, as the study aimed to measure the overall well-being status in Malaysian society, some components should be added in the SSLI creation, for instance, culture and human rights. To determine the social progress in Malaysia, the cultural component is vital in explaining Malaysian society as it ties communities together and shapes social change in a constantly evolving world (Raja, 2020). Besides, human rights should be counted in as well, as it is the basic needs of an individual and a key to improving his or her living standard. However, these two components are lacking in the study due to the limitation of data collection, which the data does not have high frequency and it even has a big gap in data availability. As a result, it will induce the SSLI that it may not be able to explain the whole social progress among Malaysian society effectively and sufficiently.

Secondly, the data series collected for the SSLI is the objective data, and this might affect the possibility of gauging the true social well-being in Malaysia. In other words, the SSLI constructed may only explain a part of the Malaysian social progress. Referring to the framework of some welfare-related indicators, the indicator can be built up with either secondary data or primary data or both. As the main objective is to measure the social progress in Malaysia, there is necessary to include some subjective data in the composite social indicator because subjective data is important in explaining how well and how far the society has developed. Subjective data like satisfaction towards life in society. By including some subjective components, it might lift the potential and adequacy in measuring the social progress of the country. Besides, this may able to make the SSLI a better estimating indicator that can outperform both the HDI and WHI.

5.4 Direction of the Future Studies

As there are a few limitations listed priorly, these have given the direction of the future studies to the researchers who are interested. First and foremost, it is highly recommended to conduct a study concerning the improvement of the constructed SSLI. For better measurement of the social progress in the society in Malaysia, it was suggested to add the components mentioned in the last section to test for their significant influence when compiling into the SSLI. Also, other societal components that have leading features can be included as well.

Other than conducting a study using the objective data, primary research is advocated to gather the subjective data that significantly explain the social progress.

This is because primary research not only can help to prevent the problem of the big gap in data availability but also ensure the study to run smoothly without any worries on the unattainability of data. By adding the subjective data into the SSLI, it is believed that the result is more likely to attain a clear-cut and comprehensive outcome. As a result, the improved SSLI that can explain the whole social progress in Malaysia will aid both the federal government and the state government in developing the nations and states via policies implemented.

5.5 Closing Remarks

In conclusion, the main objective of the study creating a social indicator that used for the social progress measurement in Malaysia is achieved. In the study, the best compilation of SSLI contains a total of 15 components under five domains, that are people using safely managed drinking water services (SMDW), tertiary school enrolment (TEN), road crashes (RoC), handphone subscribers (HP), road density (ROD), forest area (FORE), the crude death rate (CDR), gross national product (GNP), female labour participation (FL), male life expectancy at birth (MLE), housing transaction value (VaT), voter turnout (VT), divorces registered (DiVo), corruption control (CORR), and women in parliament (WP). This erected SSLI showed a favourable result, in which it had the capability to lead at an average of 5.75 quarters and outperform the HDI. It even can capture the extra significant events that have not captured by the HDI. Thus, the constructed SSLI is valuable in helping the policymakers in targeting social progress in Malaysia.

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