Malaysia's Communication Content and Infrastructure: The Broadband Demand's Forecast, Strategies and Policy Implications

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Abstract: Malaysia Communications Content and Infrastructure purview are moving forward in making digital lifestyles as a reality for all Malaysians including having transformational paradigm in achieving easier access to internet and experiences the socio benefits of an interconnected life. The main aim of this study is to provide information on the Malaysia's broadband demand forecast until year 2020, the strategies and policy implication to accommodate the needs of citizens and essentials for Malaysia in the journey to achieved Developed Nations by year 2020. The methods used in this study are Compound Annual Growth Rate (CAGR) in two time periods; from year 2002 -2011 and year 2006 - 2011 that used as the market penetration rate in order to identify the broadband demand forecast based on the national population projection until year 2020. Moreover, this study referred to the multiple collections of literature reviews and secondary data from the Government Reports and Statistics about policies and strategies on how Malaysia ensuring the broadband access for all become reality.

Keywords— **broadband, CAGR, ETP, forecast**

I. INTRODUCTION

Malaysia is now said to be at the mid-point in its journey towards Vision 2020 and is transforming to become a developed nation during the second phase of a fifteen year period. Everything in this world today has changed tremendously in terms of technological development, and most work needs to operate globally in order to survive the competition which exists in the world these days. This change has created an impact on the nature of work where a high level use of technology is a necessity to compete in the global arena.

To achieve the developed nation and be competitive nations, government of Malaysia have introduced multiple policies in strengthening the supply of broadband at Malaysia. Among the policies are Malaysian Communication and Multimedia Services 886 [10] with the purposed stimulating Malaysia to deliver advanced information, communication and broadband services from year 2006 until now, National Broadband Initiatives (NBI) and National Transformation Policy (NTP) through the enforcement of Economic Transformation Plan (ETP) on year 2010 (Najib, 2013). [2].

Therefore, this study will provide information on the broadband demand's forecast by using the Compound Annual Growth Rate (CAGR) with two (2) time period that are (i) 9 years CAGR) and (ii) 5 years CAGR of the 2002 – 2011 Malaysia Statistic on the broadband subscription from the Department of Statistic Malaysia.

Moreover, this study will provide information on comparison of the broadband demand, by using the CAGR as the market penetration from year 2012 until 2020 using the population projection made by Statistic Department of Malaysia and Population Projection using CAGR.

Furthermore, there are various major policies on Malaysia's communication content and infrastructure and the strategies taken by Malaysia government in ensuring the broadband access for all.

II. MALAYSIA'S STATISTICS ON BROADBAND SUBSCRIPTIONS AND POPULATION

Statistic on broadband subscriptions by the Department of Statistic Malaysia have shown that there is an increase number from year 2000 until 2011 [1].

TABLE 1: MALAYSIA BROADBAND SUBSCRIPTION YEAR 2002-2011

Year	Broadband Subscriptions
2002	19,300
2003	110,400
2004	252,500
2005	501,700
2006	897,200
2007	1,368,900
2008	1,740,100
2009	2,620,300
2010	4,722,200
2011	5,686,900

The Department of Statistic Malaysia shown there is an increasing number of population trend since year 2002 until 2010 [4].

TABLE II: MALAYSIA POPULATION YEAR 2002-2011

Year	Population
2002	24727100
2003	25320000
2004	25905100
2005	26476900
2006	26831500
2007	27186000
2008	27540500
2009	27895300
2010	28334100

III. MALAYSIA BROADBAND DEMAND'S FORECAST

A. The Compound Annual Growth Rate (CAGR)

The Compound Annual Growth Rate (CAGR) method is the year-over-year growth rate of an investment over a specified time period of time.

The CAGR is calculated by taking the nth root of the total percentage growth rate, where n is the number of years in the period being considered [3].
This can be written as follows:

$$CAGR = \left(\frac{Ending\ Value}{Beginning\ Value} \right)^{\left(\frac{1}{\#\ of\ years} \right)} - 1$$

B. Malaysia's Broadband Demand's Forecast by CAGR

To identify the results of broadband's demand forecast, this study used the CAGR methods and have divide it into two time periods. Firstly, the nine (9) years' time period and secondly, the five (5) years' time period.

TABLE III: THE CAGR FOR TWO (2) SETS OF PERIODS OF BROADBAND SUBSCRIPTIONS

Year	Years Growth	CAGR
2002 -2011	9 years	88.90%
2006 -2011	5 years	44.68%

To identify the population forecast, this study will used the CAGR methods referring to the 2002-2010 populations numbers.

TABLE IV: THE CAGR FOR POPULATION PROJECTION

Year	Years Growth	CAGR
2002 -2010	8 years	1.72%

The result for the demand of broadband subscription at Malaysia by year 2020 using CAGR for both two different time periods as the time based:

TABLE V: THE BROADBAND DEMAND'S FORECAST USING CAGR OF 88.90%

Year	Statistic Department Population' Projection	Broadband Demand	Population Projection using CAGR (1.72%)	Broadband Demand
2012	NA	-	29317175	2,606,296,858
2013	NA	-	29821431	2,651,125,216
2014	NA	-	30334359	2,696,724,515
2015	30,500,000	27,114,500	30856110	2,743,108,179
2016	NA	-	31386836	2,790,289,720
2017	NA	-	31926689	2,838,282,652
2018	NA	-	32475828	2,887,101,109
2019	NA	-	33034412	2,936,759,227
2020	32,400,000	28,803,600	33602604	2,987,271,496

TABLE V1: THE BROADBAND DEMAND'S FORECAST USING CAGR OF 44.68%

Year	Population' Projection	Broadband Demand	Population Projection Using CAGR (1.72%)	Broadband Demand
2012	NA	-	29,317,175	1,309,891,379
2013	NA	-	29,821,431	1,332,421,537
2014	NA	-	30,334,359	1,355,339,160
2015	30,500,000	13,627,400	30,856,110	1,378,650,995
2016	NA	-	31,386,836	1,402,363,832
2017	NA	-	31,926,689	1,426,484,465
2018	NA	-	32,475,828	1,451,019,995
2019	NA	-	33,034,412	1,475,977,528
2020	32,400,000	14,476,320	33,602,604	1,501,364,347

This increasing demand for broadband subscription is parallel together with the increasing number of Malaysia's population forecast on year 2020. According to Malaysia's Statistic Department, during year 2020, Malaysia population will be growth to 32,400,000 people. Furthermore, Malaysia forecasting that on year 2020, 7,780,7000 with 24.0% from total population are in 0-14 age group, meanwhile 22,445,900 from the total population is in 15-64 age group that is 69.2% and 2,214,600 is in 65+ age group with 6.8% from the total number of population [4].

The increase in demand is also corresponding to the Economics Transformation Plan (ETP) business opportunities provide under the Entry Point Projects (EPP) that will increase the GDP growth and fostering Malaysia's development.

1V. MALAYSIA STRATEGIES AND POLICY IMPLICATION

Since year 2006- 2010, there are many strategies under Malaysia government to making the broadband access for all become reality [7]. Among major policies of Communication content and infrastructure development are National Broadband Initiatives (NBI) and Economic Transformation Plan (ETP).

A. NATIONAL BROADBAND INITIATIVES (NBI)

The National Broadband Initiatives (NBI) launched on March 24, 2010 is to widening the usage of broadband cross over Malaysia. There are five (5) initiatives underscore as the followings:
   i. Community Internet Centres and Mini Community Broadband Centre
   ii. 1 Million Netbook
   iii. E-Kiosk
   iv. Mini Community Broadband Centre to Home
   v. High Speed Broadband

The strategies under NBI contains of two (2) aspects, which are the Supply and Demand for the broadband subscription [5].
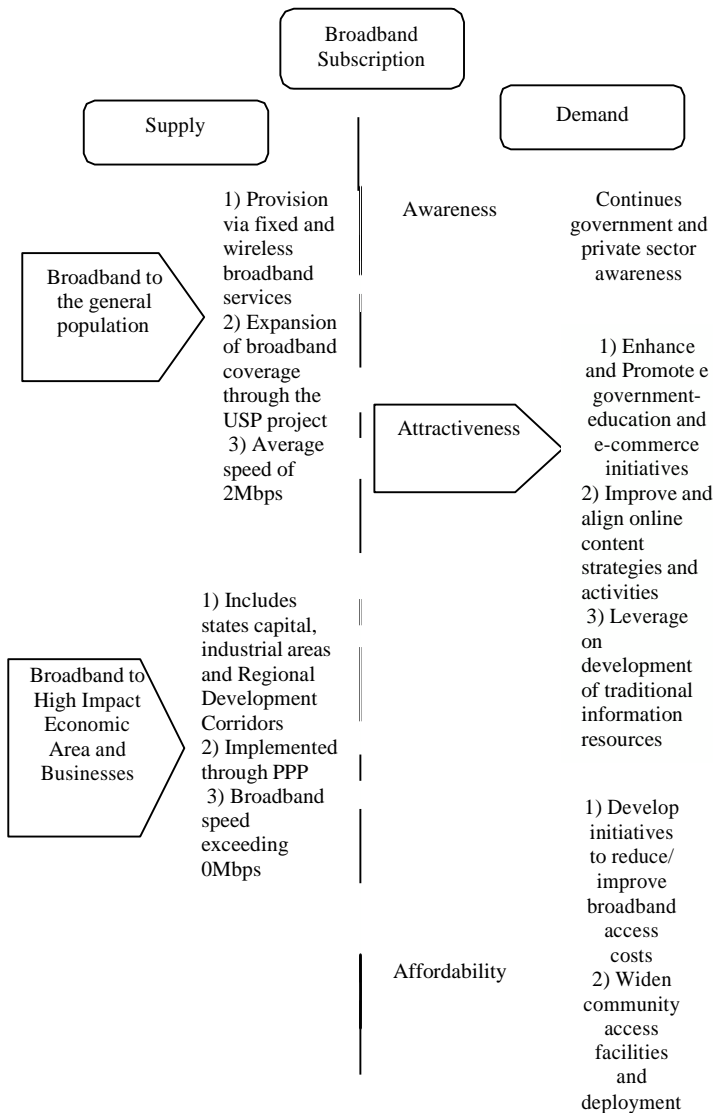
Figure1.The Strategies under NBI

B. ECONOMIC TRANSFORMATION PLAN (ETP) ON COMMUNICATION CONTENT AND INFRASTRUCTURE

The Economic Transformation Plan (ETP) launched on September 25, 2010 with the goal to elevate the country to developed nation status by year 2020, with GNI per capita of US$15,000 through attracting US$444 billion in investments which will turn to create 3.3 million new jobs. ETP have 12 National Key Economic Areas (NKEA), those representing economics sectors which contribute to the target GNI [8].

The 12 economics sectors under NKEA's are (i) Oil, Gas and Energy, (ii) Palm Oil and Rubber, (iii) Financial Services, (iv) Tourism, (v) Business Services, (vi) Electronics and Electricals, (vii) Wholesale and Retail, (viii) Education, (ix) Healthcare, (x) Communication Content and Infrastructure, (xi) Agriculture and (xii) Greater Kuala Lumpur/ Klang Valley.

For the Communication Content and Infrastructure's area, there are several strategies called as EPP or Entry Points Projects that are kick starts programme which provide high impact projects involving large infrastructure investments or more direct output to Malaysians [9]

EPP 1: Nurturing Malaysia's creative content industry
This EPP aims to enhance capacity, capability and competency in Malaysia's creative industry to produce world-class content and make the country a regional hub for digital Content[11].

EPP 2: Connecting 1Malaysia
This EPP aspires to get more Malaysian companies online, enhance telepresence services and enhance telecommunication infrastructure. These targets aim to fast track the adoption of new value-added communication services for business, household and Government use [12].

EPP 3: Establishing e-Learning for students and professional training
This EPP will establish a common knowledge platform for students and professionals to enhance teaching methods and help the general population enter a knowledge-based economy [13].

EPP 4: Launching e-Healthcare
This EPP intends to upgrade Internet connectivity for 500 hospitals and 8,000 clinics, as well as provide five million patients with direct access to the Health net platform. The platform provides a gateway for information sharing among healthcare providers and insurance companies, while offering patients better access to healthcare-related services and education [14].

EPP 5: Deepening e-Government
This EPP focuses on building an information structure for the Government that is centralized and outsourced, while ensuring

all Government facilities are connected to access necessary information.

Efforts to achieve this include initiatives taken in 2012 targeting for 50% of all intra-Government transactions (e.g. job applications and internal circulars) to be completed online. A zero face-to-face target was also set, aiming for 90% of Government-related counter services to be made online, with the remaining 10% to be completed via e-forms by 2020[15].

EPP 6: Ensuring broadband for all
This EPP is concentrated on increasing the broadband penetration rate in Malaysia, which will require components such as faster connection speeds and easier provisioning of fibre optic or copper cables [16]

EPP 7: Extending reach
Analyses have indicated that sub-urban, rural and remote areas have only achieved broadband penetration rates of 25%, 20% and 15% respectively. This EPP therefore aims to reduce the digital divide in non-urban areas by 2020 through greater industry participation and public-private collaboration [17]

EPP 8: Offering a smart network
This EPP addresses the affordability and quality of Malaysia's Internet services by creating tiered broadband price plans based on priority of service and usage caps. It also encourages service providers to collaborate and provide Smart Applications that are useful to the public [18]

EPP 9: Extending the regional network
Approximately 80-90% of Malaysia's Internet traffic goes outside the country. This requires Malaysia to access a significant amount of bandwidth via international submarine cables. Currently, Malaysia uses 200Gbps of capacity, and this must be increased rapidly to reach 7Tbps by 2020. To achieve this, this EPP aims to encourage the establishment of advanced data network centers to move Malaysia up the value chain of Internet services provided [19]

EPP 10: Track and trace
This EPP focuses on the use of Radio Frequency Identification (RFID) technology to generate economic gains through two main projects [20]

From the above NBI projects, Malaysia have focusing multiple strategies in order to create the demands among Malaysian by giving the awareness with the public private partnership programme, providing the attractiveness and providing the affordability, therefore it will create broadband access for all become reality in the future.

Malaysia Government also had invest 11.3 billion since year 2006 (Ninth Malaysia Plan) for the public private partnership investment in High Speed Broadband Project (HSBB) that have benefits 2.3 million premises in urban area with 4 megabytes per second [10].

Furthermore, under the ETP, the EPP projects will create more job opportunities, attracting foreign company to become partner with Malaysia and strengthening the Malaysia's to become creative and innovative in communication content and multimedia field.

There are many programmes and activities under all EPP that will cover all Malaysian under several champions' agencies that given mandate to implement all strategies.

V. CONCLUSIONS

Malaysia is a country that provides big incentives and large opportunities for foreign countries to invest in the Content Communication and Infrastructure fields, as Malaysia is transforming themselves as Developed Nations by year 2020.

Malaysia needs to provide the supply of broadband to accommodate the demands of Malaysian. With the analysis of broadband demand forecasts, the increment based on the market penetration towards the population growth is the best ways to show that there is a big demand that should prepared by the government of Malaysia

It is also as the symbols of the best opportunity of foreign country in making collaboration of technologies transfer s or others investmment as also the Malaysia's Communication Policies is supporting and attracting the investors.

Malaysia also will provide first class and competitive human capital with information and communication literacy and now try to fill in all the gap of information technology by providing the best strategies and implementation in making the broadband access for all become reality by year 2020.

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