

Transportation Road Networks in Sabah Rural Area and Poverty Eradication: East Coast Sabah Study

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A well-managed transportation system will definitely offer various advantages to a society and country as it will drive towards sustainable transportation. A good transportation system also will significantly establish a good social relationship by facilitating communication between urban and rural populations. In addition, by permitting people to deliver services from one place to another, it will reduce pollution which benefits the public financially and timely. This study aims to identify how a rural transportation road network is significant in poverty eradication in the rural area of East Cost Sabah. In these remote areas, a transportation system plays a significant role in a difficult area to access as inadequate road network systems impact on potential future development. Additionally, this study will also identify the complicated logistics required, typically due to the topography of the earth. This is an empirical study which employed a questionnaire research tool in a remote community on the East Coast of Sabah. The data was analysed using SPSS 23 to answer the study objectives and to analyse significant results. This study was expected to highlight the significant role of the transportation road network on poverty eradication in the remote rural area of East Coast Sabah.

Key words: *Transportation, Network, Rural area, Poverty, Eradication, Socio-economics.*

Introduction

Poverty Major Challenge

Ravallion (2008) stated that the World Bank defined the new international poverty line or standard as USD\$1.25 a day in 2008 and it was estimated in 2012, using this poverty line index that around 1.2 billion people lived in poverty (Ravallion, 2013). In October 2015, the international poverty line was updated to USD\$1.90 based on ICP purchasing power parity (PPP). Referencing the new standard, The World Bank reported in 2016 that of the 766 million extremely poor who live below the poverty line of USD\$1.9 a day, about 33% live in South Asia and 9% live in East Asia and the Pacific.

It is not easy to be poor, as life is a daily struggle. Ernest (for UNICEF in The Convention On The Right of the Child) estimated that around half the world's children (1.1 billion) live in a state of poverty and 300 million go to bed hungry each night. On average, 24,000 children under the age of five die every day, most from preventable causes, with malnutrition contributing to about one-third of these deaths. In one poor African country, Niger, it was reported by aid workers that in the summer of 2005 draught and locusts destroyed the food crops resulting in parents, in desperation, feeding their starving children with grass and leaves (BBC, 2005). Even without disaster impending, it is estimated that around a quarter of Niger's children will die before the age of five (CNN, 2005). The statistical data provided by The World Bank evidences that countries from the Africa region followed by Asia are the poorest countries in the world.

Communities in Semporna East Coast of Sabah

It is generally accepted that most of the communities residing on the island around Sabah have limited access to facilities and opportunities. The island communities not only have limited facilities and opportunities but also have limited and unequal access to education, employment and other vital services as a result of distance and location and this study attempts to investigate potential improved access to sustainable livelihoods, entrepreneurial opportunities and productive resources (Kasim, Sidah, Raman, Rini and Shyafiq, 2019). The government has initiated a program of universal access to basic social services and is progressively developing social protection systems to support those who cannot support themselves. This research is part of a grant funding a Feasibility Study on Transportation Network on the East Coast of Sabah. This study aims to identify the transportation network pattern existing between Semporna and the island; to identify transportation costs affecting the island communities and to identify the need of transportation improvement and contribution towards poverty eradication in Semporna communities. Major issues confronting these communities are related to the transportation problem coupled with a shortage in drinking water which is related to water source security and supply.

The median monthly household income for Malaysians increased to RM5, 228 in 2016 as opposed to RM4, 585 in 2014, with a growth rate of 6.6 percent per annum at nominal value (Statistics Malaysia, 2016). Sabah is targeting overall poverty to be less than 9 percent by 2015 and less than 5 percent by 2020. Poverty in the state of Sabah reduced at the rate of 4 percent in 2014 to 2.9 percent in 2016. The community's contribution to the Sabah economy constitutes 27 percent from the agriculture sector and 8.3 percent from the manufacturing sector.

Overview of Empirical evidence

Poverty and Transportation

It is important to know that the concept of poverty encompasses not money, expenditure and basic survival needs but it is also about access to clean water and sanitation, low levels of health and education, lack of voice, inadequate physical security and insufficient capacity and opportunity to better one's life (World Bank, 2018). Early definitions of poverty contradict with the overall meaning of poverty and there is a risk that the early definition simplifies the concept of poverty even though its' nature was from a different perspective. It degraded the understanding of poverty to the history and the values of the community or groups who were not considered (JICA, 2011). Another definition of absolute poverty accepted by The United Nations, during the World Summit on Social Development 1995, is as a condition characterized by severe deprivation of basic human needs including food, safe drinking water, sanitation facilities, health, shelter, education and information. This definition acknowledges that poverty depends not solely on income but also includes relevant access to social services.

The importance of the transport sector in economic and social development has long been recognized. Sectors such as agriculture, education, health and water and sanitation infrastructure are constantly emphasized for their direct role in poverty reduction. Transport tends to be viewed as contributing to poverty reduction indirectly through its contribution to economic growth World Bank (1980). A number of the empirical studies confirm the strong links between transport and economic output, growth and general welfare (David Aschauer, 1989; David Canning and Marianne Fay, 1993; Douglas Holtz-Eakin, 1992). The poorest groups tend to be less mobile and often end up in a 'poverty trap' because of their limited access to job opportunity, education and health facilities, social networks and more generally their 'right to the city' (Harvey, 2003).

Transportation and Economy

The word 'infrastructure', is generally associated with a structure such as a bus stop, road, school, clinic, police station and so on. Fulmer and Jeffrey (2009) defined infrastructure as the physical components of interrelated systems providing commodities and services essential to

enable, sustain, or enhance societal living conditions. Infrastructure can be defined as the basic physical organizational structure and facilities needed for the operation of a society or enterprise (oxforddictionaries.com, 2019) found in a rural, urban or other area. This includes the services and facilities necessary for the economy to function (Sullivan, 2003).

Therefore, infrastructure improvement must consider public and private physical improvement such as transportation, roads, sewage, water, electric, hospital, school and telecommunication (internet connection and broadband speed). The Organization for Economic Co-operation and Development (OECD, 2007) classified communications as a part of infrastructure when they listed communication as one of the elements under consideration in their infrastructure investment. People that live in urban areas are generally better off compared to people in rural areas as they have good access to facilities and infrastructure that service their basic daily basic needs. According to Ali and Ahmad, (2009) the poverty gaps in rural-urban areas of the states still remains wide which is a challenge for the Malaysian economy. Development in the urban area will open up more job opportunities that will attract people and at the same time will lead to increased income.

In general, infrastructure can be divided into two categories, either soft or hard (Torrison, 2009). Soft infrastructure refers to the infrastructure that makes up institutions that help maintain the economy. Usually it requires human capital and helps deliver certain service to the population. Soft infrastructure thus includes all institutions that are required to manage the economic, health, cultural and social standard of a country such as the education system, health care system, law enforcement, financial system, the government and the emergency services. In contrast, hard infrastructure is referred to as the physical network necessary for the functioning of a modern industrial nation and includes bridges, railway, sewage and train lines.

The provision of hard infrastructure which is under transport services, including the construction and maintenance of transport infrastructure, generates demand for labour (often unskilled labour) and provides income-earning opportunities for the poor (Rosabeth Moss Kanter, 2015). In the service aspect of the sector, it promote economic growth (Cavelle D. Creightney 1993; Christine Kessides 1993) by improving accessibility and transport investment and affects employment. Therefore, a transport project will generate jobs for the poor who are otherwise unemployed or under-employed and contribute to poverty reduction.

Transportation infrastructure linkages are important to enable the development of economy. Since infrastructure is defined as the physical framework of facilities through which goods and services are provided to the public, its links to the economy are multiple and complex and involve large expenditure inflow, affecting production and consumption directly and creating both positive and negative spill over effects. By Tacoli's (2015) definition, linkages consist of flows (of goods, people, information, finance, waste, information and social relations) across

spaces that link one space to another space and hence highways, roads, rail lines, air routes and sea routes are all linkages since they link one place with another.

Methodology

This study employed survey method to gather primary data. In this study which focused on local communities, random sampling was used. 115 heads of household were interviewed representing 20 villages located in the island around Semporna district. The data was collected by a hired enumerator who assisted the respondents to respond to the questionnaire. The data was analysed using SPSS 23 to investigate the relationship between transportation road networks and poverty eradication. The survey questionnaire instrument was categorized into five sections. The first section (Section A) comprised questions related to family background; Section B to saving and family support, Section C to availability of infrastructure, Section D accessibility to public support, Section E to available alternatives and future support. The instrument measurements used are open-ended questions and a Likert scale.

Table 1 details respondent profiles and background.

Table 1: Respondent Profiles

Profile	Frequency	Percentage
Number of family members		
10 persons and above	33	28.7
5 – 10 persons	41	35.7
2- 4 persons	26	22.6
1 person	15	13.0
Level of Education		
University/college degree or diploma	16	14.0
Secondary school	29	25.0
Primary school	33	29.0
Didn't have any education	37	32.0
Number of assets*		
10 and above	19	16.5
6 to 9	36	31.3
3 to 5	39	33.9
1 to 2	21	18.3
Type of jobs		

Owner of business	34	29.6
Government staff	28	24.3
Private company	41	35.7
Unemployed	12	10.4

*assets including house, boats, chalet/homestay and other relevant assets.

Findings and Analysis

As presented in Table 2, the findings of this study are that the majority of respondents agree that improvement and development of infrastructure significantly contributes to the improvement of their quality of life. Further, it is evident that transportation network problems do contribute to poverty and social exclusion in a variety of ways. In particular, lack of transport provision contributes to social isolation and poverty. This is not just an issue for those without a boat; those with access to a boat still find that they are forced to use their boat to obtain necessary supplies from Semporna town.

Table 2: Respondents Response on Transportation and Poverty Level

Items	Percent
1. My family quality of life improved when we can earn more income : Strongly Agree : Agree : Neutral : Disagree : Strongly Disagree	75.0% 12.5% 8.75% 3.75% -
2. We have the opportunity to find suitable job in town when we can mobile easily. : Strongly Agree : Agree : Neutral : Disagree : Strongly Disagree	83.0% 10.5% 6.5% - -
3. Transportation road network plays main role in my life and family. : Strongly Agree : Agree : Neutral : Disagree : Strongly Disagree	89.0% 7.5% - 3.5% -

4. Transportation road network contribute to my success in my business/career.	
: Strongly Agree	77.0%
: Agree	20.5%
: Neutral	2.5%
: Disagree	-
: Strongly Disagree	-
5. The development of provided infrastructure in my village has contributed to the improvement of this village	
: Strongly Agree	75.0%
: Agree	12.5%
: Neutral	8.75%
: Disagree	3.75%
: Strongly Disagree	-

Limited vehicle availability and alternate affordable transportation options afflict this cost-sensitive group, making the journey to town or city excessively long and costly, particularly for the very poor. This study has shown that 50 percent of the respondents spend more than three hours traveling from their island to town each day. The findings also show 20 percent respondents spend more than five hours to reach the destination. These people also suffer disproportionately from safety due to tides and security because their location exposes them to “kidnapping” activities (Ramliet *al.*, 2016; Lai, 2014 and 2016).

This study found that there are significant transportation impacts on economic growth at the macroeconomic level and on personal welfare of the poor at the microeconomic level. The burden of transport on household budgets often cannot be precisely determined. Income may be difficult to establish, especially where in the case of fishing activities for daily consumption as it is difficult to determine total volume in this context. Household expenditure is therefore probably a better base than merely using income to determine impact; although it is believed that household consumption in this research tended to understate transport expenditure, while other transport surveys tend to overstate them. Subject to those caveats, it is estimated that transport accounts for between 50 to 60 percent of household expenditure.

The burden of transport expenditure on the people living on the island is considered to very high and in some cases, has most impact on the poor. Similarly commercialization in the sea transport sector may lead to higher prices for services that makes them unaffordable for the poor.

services and amenities depend on transport as a complementary input for their effective delivery (Louis Berger International, 1979).

In the context of water resources, the authority concerned will need to look at technical aspects to generate a long term solution. The majority of the respondents agreed that transport subsidies should be provided to the affected islands. In general transport subsidies are commonly and widely used globally as a direct intervention to help the poor, especially in urban areas. However transport subsidies are rarely provided to the poor living on islands in the state. Thus, transport facilities provided to very poor communities living on the island should be recognized and prioritized. A further priority is the provision of underground water and solar power systems and to consider water supply access from the mainland through a pipeline to the island. Another viable alternative is rainwater harvesting as a sustainable option that supplies water with low energy and cost. However, all of these alternatives require high cost and planning in consideration of installation, maintenance and operation.

Recommendations

Accessibility to Transport Facility

This study found that improving public transport services for island villages must entail making them more affordable or more physically accessible. Such services have never been provided by the relevant authority and their provision would ease and assist the addressing of social exclusion. In addition, accessibility in terms of sea transportation could help promote socioeconomic integration in such aspects as employment, education, health, social service and retail amenities. Availability of public sea transportation will allow these communities access to job opportunities in the nearest town or urban areas. In other words the ability to obtain employment and education is highly dependent on the costs and availability of public transport.

The study findings highlight the importance of government allocation of a special budget for public transportation provision for island communities throughout the state. The budget will enhance the capacity of transport authorities to introduce new services affecting island communities in the island and prevent these deprived groups suffering further exposure to poverty or other forms of social exclusion. The analysis shows that low income families are more dependent on public amenities such as sea transportation facilities. Transportation costs in terms of fuel consumption account for a larger proportion of income and cheaper fare deals, including the payment of advance, larger, lump sums are often unavailable to them. Thus, in consideration of general transportation costs, the most crucial factor or barrier for the head of households is the effect on their daily needs. In particular, most households spend a greater share of income on transport than on other basic household needs.



Social wellbeing

With regards to the issue of poverty, the study generally found that the island communities do not have sufficient resources to meet basic human needs and, in addition, because of their lack of human capital, in many cases may not be able to take adequate advantage of the economic opportunities available in their surrounding area. Improving mobility and job accessibility are very important factors that contribute to the capability of households to escape poverty. As transportation costs continue to rise, poor households will experience increasing burden from the expenses necessary to meet basic needs and improve quality of life.

Conclusion

This study has shown that transportation infrastructure are crucial for Semporna island communities who confront limited access to transport facilities and lack of other public facility options which cumulatively produce a poverty trap. In this context, wider access to jobs, education and health facilities, social networks and more generally “rights to the city” are limited. Provision of transportation facilities should be one of the top priorities or government agenda items as it is economically and socially beneficial to communities in general in terms of reducing transport costs, improving efficiency and promoting economic growth. The poor can definitely benefit from transportation facilities provided by the relevant authority, however, real success lies in the implementation and the execution of a strategic, planned program.

In conclusion, different methodological approaches may require to more detailed study with regards to the water resources needed by island communities. This study has highlighted a need for more comprehensive, publicly available datasets to be generated and collated that can be used to explore transportation in relation to poverty. The identification of significant gaps in these datasets can then be addressed in order to improve future analysis in this regard. Finally, this study interpreted the effect of policy approaches that have been brought into play to address different aspects of the problem confronting people living on the island of Semporna, Sabah.



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