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Effectiveness Of *Perintis* Air Transportation System In Papua Island Of Indonesia

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ABSTRACT: *The superiority transportation modes in Papua Island is air transportation its serving 38 city districts or 95%, compared with other modes of transportation. Therefore Perintis air transport operated since 1974, still survives to this day as a mode of transport that is able to open the isolation area. Perintis air transport system is a government policy to accelerate the development of the service area of the isolated, remote and border areas. The level of effectiveness of the contribution of the role of transportation is a research goal, using the value of Perintis air transport contribution to GDP, employment, human development and community mobilization. The results show that mono less effective air transportation services in all areas of services, except in areas used by the ministry of road transport modes.*

Keywords: *Perintis*, Air Transport, Regional Development, Effectiveness.

I. INTRODUCTION

Papua Island location is on the eastern tip of Indonesia, 3.5 times wider area of Jawa, including the largest island in Indonesia, borders Papua New Gueinea (PNG), the length of the region bordering PNG from Skow district of Jayapura Regency in the North to the district last passage Sota Merauke regency in the south is 756.5 km. Papua Island Consists of the West Papua province and Papua Island with 11 (eleven) and 29 (twenty nine) districts / cities.

Geographical and topographical conditions and the speed of matter in the urban district transportation services, from 40 urban districts there are 15 counties can be accessed by road transport or 39, 47%, transportation rivers and lakes 12 districts or 30%, transport crossing 7 districts or 30%, sea transport 22 districts or 55% and air transport 38 districts / cities or 95%. The presence of *Perintis* air transport in Papua Island is a leading transportation since 1976 and continues to this day. Thus, the need assessment of the extent of the effectiveness of the policy

Perintis air transport financial subsidies of Papua Island in 2008 (adjusted in 2012 Exchange 1 U$ = Rp. 9750) is (5.7 million U$) and increased 22.80%, amounting to U$ 7 million in 2009. Funds used in the *Perintis* air transport services has increased from year to year, while the number of routes served from 7 airports supply area was 39 routes in 2008 increased to 42 routes in 2009 or an increase of 7.14%.

II. STUDY OF THEORY

A systems approach is a systemic and comprehensive way to solve problems involving a system, This is a particular problem-solving philosophy used to solve complex problems [1,2]. Some literature explains that transportation is a system that has some characteristics of the multimodal, multi-sector, multi-issue and multi-disciplinary. For that, through a systemic approach to transportation problems can be solved [3,4,5]. While effectively a measure of success to reach the target [6].

Perintis Air Transport is a commercial air transport activities that serve domestic routes network and for connecting remote and disadvantaged areas or areas that are not served by other modes of transportation and not commercially profitable, [7]. *Perintis* air transport policy in effect not only meet the target opening isolation area, but it is expected the development of the area behind the area. Indicators of Regional Development [8,9,10] can be done in 2 (two) aspects, namely:

1. Conducting an analysis of the areas developed by a review of (i) the linkages among different regions around it. (ii) What is the level of accessibility in the region, (iii) how the movement of traffic (goods, people, services, cash and investments (iv) How is the status of the region lagging in classification
2. Conducted a regional economic analysis includes (i) the economic growth or Gross Regional Domestic Product (GRDP), (ii) income per capita (iii) Human Development Index (HDI), (iv) Changes in land use or land-uses such as agricultural land into commercial (trade, industrial and residential, etc.).

Another indicator of an area can be judged from the success of the role of transportation in the field of Economic and Social Affairs Community. Economic Affairs were able to show the development of an area measured by the value of the Gross Domestic Product Growth (GDP) and the Absorption of Labour, Social Affairs assessed while the Human Development Index (HDI), Population Mobility and Control of the government. [11,12,13,14]

Gross Domestic Product (GDP) is a measure of the productivity of the region's most common and widely accepted as the standard measure of the scale of development in the region and the state. Therefore, universal, although considered to have various shortcomings, GDP assessed as a measure of the operational development on a national scale. GDP is the total gross production from the region, which is the total value of all goods and services produced in a country or region within a period of one year, GDP and population reflects the income per capita of a country.

According to the UNDP Human Development Index (HDI) is a performance measure of human development based on a number of basic components of quality of life, HDI is built through a dimensional approach to a long and healthy life, knowledge and a decent life. Indicators that the reference is life expectancy, level of education and Decent Living Standards.

III. RESEARCH METHODS

The method used is an assessment of 4 (four) variables economic and social benefits of transportation i.e. GDP, Labor Absorption, Human Development and Mobility community. Effective secondary data value multiplied by the weighted value of each indicator, GDP weights assigned 30%, Employment Absorption 20%, HDI 30% and 20% of population mobility, thus:

Eff = Σ (VD x VB) / 4 x 100%

= [(V GDP x 0.3) + (VEA x 0.2) + (V HDI x 0.3) + (V MS x 0.2)] / 4 x 100%, in this case:

V GDP is the value of GDP

V EA is the value of labor

V HDI is the value of the human development index

V MS is the value of mobility

If the value Eff 0-25% considered ineffective, 25-50% is less effective, 50-75% is quite effective, 75-100% is effective or specified:

NOT Effective ≤ 75 % > Effective

Locus of research has not effective divided into 4 distinct character zones, namely;

1. Zone of West Papua in terms of the relatively flat topography.
2. The North Zone Papua in terms of topography are relatively swampy and Mamberamo river and Numfor Biak Islands.
3. Zone Papua Midsection terms of topography is relatively rugged and the hills, there are mountains of Puncak Jaya.
4. The Southern Zone Papua terms of relative marshy topography, there are big rivers like Digul, Maro, Bian etc..

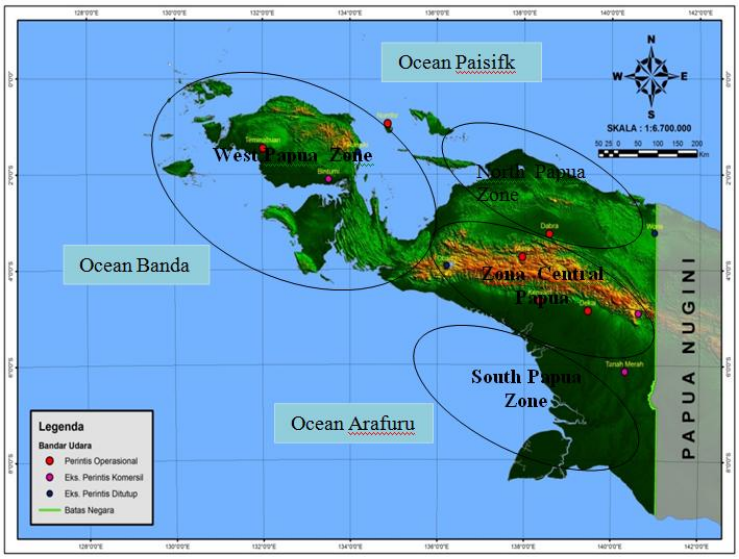

Figure 1. Locus of Research

IV. DISCUSSION

Based on the results of the assessment indicate that the average urban districts served less effective *Perintis* air transport contributes to the development of the region, except in areas established multi-modal transportation services. Another indication that could refer to the development of a region is the hierarchy of the city with service area and the potential of the area are shown in Table 1 and Figure 1.

Table 1. Rated effectiveness of *Perintis* air transport in Papua Island

No.	Airport	GDP Value x Value Weight (0.3)	TK Value x Value Weight (0.2)	HDI value x Weighted Value (0.3)	MOB x Value Weighted Value (0.2)	Amount	Total Value Percentage (%)
1.	Teminabuan	0,3	0,2	1,5	0,2	2,2	44
2.	Bintuni	0,3	0,2	1,5	0,2	2,6	52
3.	Ransiki	0,6	1	1,5	1	4,1	82
4.	Dabra	0,3	0,2	0,9	0,2	1,6	32
5.	Numfor	1,5	0,2	1,5	0,2	3,4	68
6.	Senggi	0,3	0,2	1,5	1	3	60
7.	Mulia	0,3	0,2	1,5	0,2	2,2	44
8.	Oksibil	0,9	0,2	0,3	0,4	1,8	36
9.	Sugapa	0,3	0,2	0,3	1	1,0	20
10.	Dekai	0,3	0,2	1,5)	0,2	2,2	44
11.	Kenyam	0,3	0,2	0,3	0,2	1,0	20
12.	Tanah Merah	0,3	0,2	0,3	0,2	1,0	20
Average : 522/12							43,50

Note: Assessment using a scale of 1-5

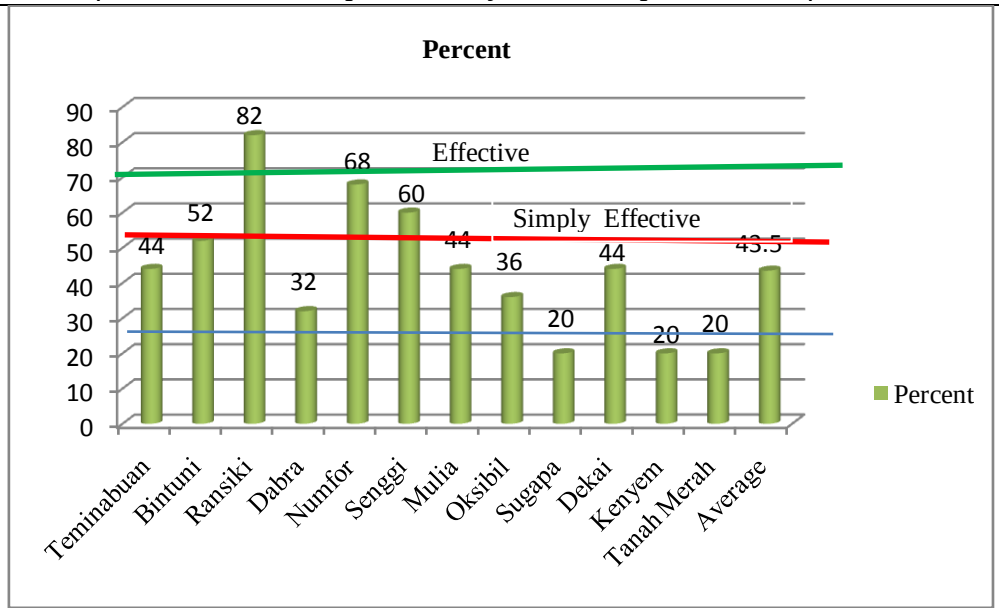

Figure 2. Percentage effectiveness by District

Based on the zone area indicates that the area of the western part of the airport, who finished highest level of effectiveness is Ransiki airport with a value 82%, the next airport Bintuni with values 52% and airports Teminabuan with a value 44%, the average level of effectiveness of air transport areas of the West is 59.33%. Furthermore, the northern zone occupying the highest effectiveness Numfor airport with a value of 68%, the next airport Senggi with a value of 60%, and airports Dabra with a value of 32%, so that the average level of effectiveness of the north is 53.55%. For the Central Mountains zone occupying the highest effectiveness airport Mulia with a value of 44%, the next airport Oksibil with a value of 36%, and airports Dabra with a value of 20%, so that the average level of effectiveness of the north is 33.33%.

To the south of the occupied zone is the highest effectiveness Dekai airport with a value 44%, the next airport and Tanah Merah guests' each with a value of 20%, so that the average level of effectiveness of the southern zone is 28%. For details, can be seen in Figure 2.

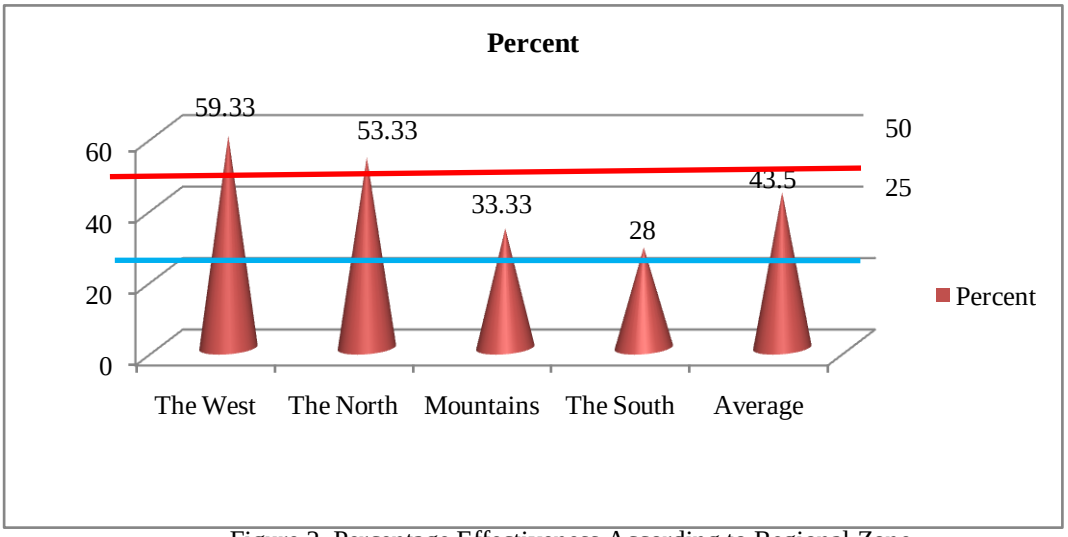

Figure 2. Percentage Effectiveness According to Regional Zone

This indicates that the zone has limited accessibility to lag behind in the development of the region, seen in the central mountain zone which generally can only be reached by using air transportation, nor the southern zone, although it can be accessed via multiple modes of transportation road and river transport but because of the condition of the network damaged roads and river transport services with the level of capacity and low frequencies that have not been able to contribute to the development of significant areas.

Development of the service routes the airline is always based on the number of requests from and to the region in addition to technical considerations such as the capacity of the runway, air traffic services, communications and air navigation facilities and the availability of Depot Refueling Aircraft (DRA).

Bintuni airport is not too difficult to build the DRA because there are streams that can be used as a medium of transportation or aviation fuel in the harbor Bintuni while Berau Bay airport Nop Goliath can utilize the Brassa river and build a fuel depot of plane in Sautor, then from Sautor road network built to Dekai.

Several strategic routes open where available refueling aircraft are Timika - Dekai and Timika - Oksibil consideration that Mozes Kilangin Timika airport is let out airports with direct service from Makassar and Denpasar airport that serves as a stop over or transit. Advantages direct route is the efficiency of time and cost for air transport service users previously had to remember the route through the air Sentani airport of Jayapura and Merauke, so users of air transport services and Oksibil Dekai goal must stay overnight before continuing its journey to the next day due to lack of connecting flight.

The airport Bintuni outlook is promising due to the presence of gas mining companies, the problem is the limited development area especially at the end of the runway there is a river that does not allow for an extension, in addition to the regional airports are congested residential and office high enough so that when the social impact development of existing airports, and therefore increase the capacity of the airport Bintuni require relocation.

Based on this analysis showed that enhanced airport service from route to route commercial *Perintis* is effective by commercial airline operators and even some of the routes happens sometimes waiting list for prospective passengers particular route Sorong - Bintuni, Jayapura - Oksibil, Jayapura - Dekai, Timika - Dekai, but its contribution in accelerating the development of the relatively small area that is caused because of the contribution of air transport in the GDP in 2008 ADHK the transport sector was 25.72%, lower than 37.67% of road transport and sea transport 39.88% .

Consequently, policies that can be done to speed up the development of the island of Papua, a *Perintis* air transport needs are served multi-modal transportation services especially road transport services.

Based on these findings show that to accelerate regional development policy in Papua Island needed accelerated development of the road network that follow the Presidential Regulation Number 21 Year 2011 About the Acceleration of Development in Papua and West Papua, Presidential Decree No. 32 Year 2011 About the Master Plan for the Acceleration and Expansion of Development economy Indonesia (MP3EI) corridors 6 and Public Works Ministerial Decree No. 507 of 2010 on the Development of the strategic road Papua and West Papua, as well as accelerating the development and improvement of the road network across Papua.

Availability of the road network linking the region with other regions will spur the movement patterns of production of goods and services, people can market their agricultural products were finally able to raise their standard of living. This condition will spur the growth of GDP, Labour transport sector, HDI and increased mobility.

To determine the effectiveness of the strong relationship between the variables (fixed variable) in the development of the region with a GDP variable, Labor Absorption, HDI and Population Mobility (variable not fixed) correlation testing.

By testing the correlation between the effective rates of GDP growth by region shows a positive value 0.4398 means there is a strong correlation between GDP contribution of air transport sub-sector. Likewise, employment, amounting to 0.697, the HDI of 0.9902 and 0.9773 for Community Mobility. as in Figure 3.

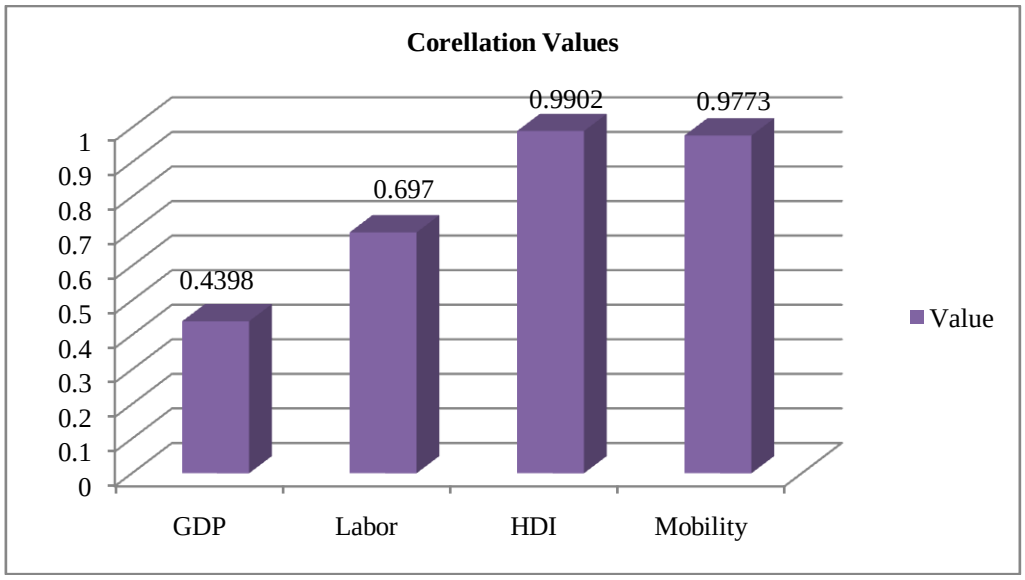

Figure 3. Correlation value of regional development indicators.

Figure 3. Correlation value of regional development indicators. Based on these results it was found that to improve the effectiveness of regional development of an area needs improvement strategy Human Development Index include increased income, level of education and health, then the mobility of society through the preparation of road transport infrastructure, rivers and lakes, and sea crossings so that accessibility to the region can providing an alternative to transport service users.

Population mobility in second place, meaning that the higher mobility of the population of a region both within and across regions proves the high activity in the region and ultimately result in production value and great service.

Third is the provision of opportunity seekers, this can be done in an area where there are investors who invest, or there is a continuous development activities resulting multi flier effect for people who live in the area and GDP associated with economic conditions in the regions specified period based on the development of the business sector 9.

Contribution of regional development indicators linked to the value of the correlation indicates that the indicator that gives the largest contributor to regional development is the Human Development Index (HDI) with a correlation value 0.9902, then the mobility of people with values 0.9773, 0.697 Employment and GDP by 0.4398 and *Perintis* airports who managed to get the effective value is the value Ransiki effectiveness of 82%.

V. CONCLUSIONS AND RECOMMENDATIONS

Care air transport system of *Perintis* in Papua Island for 36 years shows that the average contribution has not been effective, the development of the region, this is because not contributed adequately to the GDP, the level of employment, limited, human development index and low mobility except when parallelized with multiple modes of transportation services especially in road transport. Recommended to accelerate the development and improvement of the road network across Papua including the primary arterial road that connects the road network Sorong - Manokwari - Nabire - Wamena - Jayapura - Oksibil - Merauke, collector road network connecting Timika - Potowaiburu - Waghete, Wamena - Dekai - Oksibil and Wamena - Kenyem.

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