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Income Generating Study on The South Sumatera LRT Operational

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Abstract:- In South Sumatra Palembang, Light Rail Transit (LRT) which is one type of mass transportation has been built. LRT is a rail-based mass transportation facility with electric drive and can be used to carry passengers on a larger scale, but in the implementation of LRT operations require very large operational funds. The generated income from monthly sales ticket was unequal to the costs incurred for LRT operations. In this study, researchers used three options to obtain other income besides ticket sales, which are the income from ad space rent (stations, poles, railroad walls and LRT trains), trade stall rent, and ATM stall rent. The questionnaire survey was conducted on 400 sample companies in Palembang with the aim of getting the company's perception about the willingness to pay (WTP) for renting the advertising space and the ATM stall so that income generation can be predicted from the three options offered to the South Sumatra LRT operations. The analysis conducted in this study was a quantitative analysis with descriptive statistics. From the analysis it was found that the total income that would be received by the manager if all available locations had been occupied or rented were Rp. 10,080,715,996 once a year with the income proportion from advertising rent at 96.25%, income from trade stalls rent 2.08% and income from ATM stalls rent is 1.67%. It is expected that the existing income can help in funding operational in South Sumatra LRT.

Keywords:- *Income Generating, WTP, Advertisement, Trade Stall, ATM Stall.*

I. INTRODUCTION

Transportation is an inseparable part of human life. Transportation will make it easier for humans to do various activities such as social, economic and educational activities, because transportation is a derivative needs to meet the primary needs. Along with the times, many problems are caused by the population increasing such as the increasing need for transportation trips used by road users in large urban areas such as in Indonesia, one of which is Palembang. Palembang is the capital of South Sumatra. To meet the transportation needs in Palembang, a light railroad has now been built, known as the Light Rail Transit (LRT). LRT is one of the rail-based mass transportation facilities with electric drive and can be used to carry passengers on a larger scale.

At first the South Sumatra LRT was operated to support athlete and official mobility in the Asian Games 2018, but after the Asean Games ended the number of passengers using the LRT was not optimal. As a result of not maximizing the number of passengers, the income received by the manager is unequal to the operational costs of the LRT itself. Various attempts have been made by managers and the government such as the station area development program (TOD), integration with feeder transport, requiring government employees to use LRT and giving special rates to students. However, in its implementation this have not a significant impact on the increasing income received by the LRT manager.

There are several options that can be done to increase South Sumatra LRT incomes, which are tariffs raising, entrance ticket discounts, property taxes, sales taxes, fuel taxes, vehicle fees, utility fees, employee fees, road fees, vehicle-km taxes, parking taxes, parking fees, parking prices raising, construction costs, land sales tax, station rent, station clean air and advertising [1]. However, based on the evaluation criteria, which are the ease of being accepted by the public, the bureaucracy ease and in terms of application ease, three options are obtained, that are station rent for trading activities, ATM stall rent and advertising space rent [1] [2]. The focus in this study is three income options, the income from advertising space rent, the trade stall rent and ATM stall rent. The purpose of this study is to predict the increasing income (income generating) from advertising space rent, the trade stall rent and ATM stall rent.

II. LITERATURE REVIEW

A. *Income Generating*

Income Generating means getting or increasing revenue that can be done by identifying potential businesses, adding value and getting technical assistance from certain parties [3]. Income generating in transportation is income from operational and non-operational transit [4].

There are 18 (eighteen) options for increasing income according to [1] rates raising, discounted admission fees, property taxes, sales taxes, fuel taxes, vehicle fees, utility fees, employee fees, road fees, vehicle-km taxes, parking taxes, parking fees, raising parking prices, construction costs, land sales tax, station rent, station clean air and advertising. While the most options accepted by the public are the costs of developing transportation, station rent and advertising. Whereas [2] gives the option of adding non-operational income by developing a business-oriented station area (TOD). Likewise to increase income on campus by leasing infrastructure to traders and entrepreneurs [3]. Utilization of transportation facilities and infrastructure is a place for advertising to increase transportation companies income [5][6].

B. *Advertising*

Advertising is all forms of non-personal presentation, ideas promotion, goods or services promotion conducted by paid sponsors [7]. Advertising is non-personal communication paid through various media by business companies, non-profit organizations, or individuals, which in some way are identified in certain messages. Advertising is effective when the advertisement reaches the objectives to be achieved by advertisers [8]. Basically the ultimate goal of advertising is to stimulate or encourage sales.

Advertisement or billboards based on the used media, can be divided into two, which are audio and visual signage. Audio billboards are billboards that are manifested through sound both directly and indirectly while visual billboards are billboards that are manifested in the form of images. Examples of visual signage are posters, banners, placards, etiquette, leaflets, brochures, logos, name boards, and billboards. While the example of audio-visual signage is videotron.

C. *Ability to Pay (ATP) and Wilingness to Pay (WTP)*

Ability to pay is the ability of a person or company to pay for the services it has received based on income that is considered ideal. According to [9] the approach used in the ATP analysis is based on the allocation of costs for transportation and the income it receives, in other words ATP is the ability of the community to pay for the travel costs it does. Ability to pay is the ability of a person to pay for the services he has received based on income that is considered ideal. The approach used in the ATP analysis is based on the amount of company income per month, the allocation of costs for investment both for the advertising space rent, trade stall rent and ATM stall rent and the intensity or frequency per month. Factors that influence ATP are the amount of company income per month, the allocation of costs for investment from income per month, the percentage of costs for investment from the allocation of costs for investment, the intensity of investment and the number of assets owned [10]. The equation used is as follows:

$$ATP = (It \times Pp \times Pt)/Ft \quad (1)$$

With:
ATP : Ability to Pay
It : The income average once a year
Pp : The Persentage Average of cost allocation investment once a year
Pt : The Persentage Average of cost allocation investment
Ft : Frequency

Willingness to Pay (WTP) is the user's willingness to issue services or rewards for facilities that have been received. Willingness to pay is the highest price a person (consumer) is willing to pay to get a benefit in the form of goods or services, as well as making a benchmark of how much potential customers appreciate the goods or services [11]. The approach used in the analysis of WTP is based on user perceptions of the rates that will be made for advertising, trade stall rent and ATM stall rent. The factors which influence WTP are user perceptions of the level of service quality, user utilities of public transport used, facilities provided by operators and user income [9].

To get advertising prices based on respondents' willingness to pay, it can be calculated with the following equations:

To get the WTP price for the ads type, the following equation is used:

$$\text{WTPadstype} = \frac{\sum \text{Rates agreed x Number of Respondents}}{\text{Number of Respondents for Each Ad Type}} \quad (2)$$

To get the price of WTP, the trade stall rent use the following equation:

$$\text{WTPtradestall} = \frac{\sum \text{Rates agreed x Number of Respondents}}{\text{Number of Respondents for Each Station}} \quad (3)$$

Meanwhile, to get the WTP price for the ATM stall rent, the following equation is used:

$$\text{WTPATMstall} = \frac{\sum \text{Rates agreed x Number of Respondents}}{\text{Number of Respondents for Each Station}} \quad (4)$$

The use of the WTP equation is based on the three proposed funding options, which are the advertising rent, the trade stall rent and ATM stall rent.

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III. METHODOLOGY

To answer the problem and the purpose of the study; the steps are as follows:

- Determine and formulate the problems which exist in the field, the income problem that is unequal to the South Sumatra LRT operational funding expense.
- Determine the goal, which is to predict an increase in income (Income Generating) for South Sumatra LRT managers in one year.
- Determine data collection methods that consist of primary data in the form of advertising price data, the trade stall rent prices and the ATM stall rent prices with interview surveys and questionnaire surveys of 400 companies and banks in Palembang, while secondary data is obtained from various related agencies the usefulness of the data is to determine the number of companies that are respondents, determine the location and extent of the lease, the number of passengers at the station and the LHR of the road traversed by the South Sumatra LRT route.
- Questionnaire arrangements are carried out to look for company perceptions of interests, location, type of advertisements, prices to be paid for Willingness to Pay (WTP), area or number of units and duration of rental.
- Data processing and analysis methods for obtaining predictions of increased income (income generating) from the advertising space rent, the trade stall rent and ATM stall rent conducted with Ms. Excel, tabulation and quantitative descriptive analysis. The stages of data processing are as follows:

- Determine the station category and the road category based on the number of passengers and the LHR of the Road.
- Calculate the income from advertisement rent

To calculate the income from advertisement rent, take the following steps:

- ✓ Determine which type of advertisement is the most desirable
- ✓ Determine the rental price (WTP) based on location.
- ✓ Determine the area of available rental space
- ✓ Calculate the advertisement rent income

- Calculate income from the trade stall rent

To calculate the trade stall rent income, the following steps are taken:

- ✓ Determine the rental price (WTP) based on the station category
- ✓ Determine the area of the stall rent
- ✓ Calculate the trade stall rent income

- Calculate the ATM stall rent income

To calculate the ATM stall rent income, the following steps are taken:

- ✓ Determine the location of rental based on interests
- ✓ Determine the rental price (WTP) based on the station category
- ✓ Calculate the ATM stall rent income

IV. ANALYSIS AND DISCUSSION

A. *Income Generating*

Income prediction analysis of the 3 (three) proposed income options, which are the advertising space rent income(stations, poles, railroad walls and trains), the trade stall and the ATM stall rent incomes. The stages to get an increase in income (income generating) are as follows:

- *Determination of Station Criteria Based on Number of Passengers and Road Criteria Based on Road LHR.*

Criteria	Station Name	The Passengers Number
Crowded > 34.011	SMB II airport	46.683
	Asrama Haji	34.668
	Bumi Sriwijaya	35.562
	Ampera	44.807
	DJKA	51.808
Normal 10.930 - 34.010	Punti Kayu	14.783
	Demang	13.521
	Cinde	14.931
	Polresta	16.212
	Jakabaring	16.403
Quiet < 10.929	RSUD	7.879
	Garuda Dempo	8.569
	Dishub	5.646

Table 1:- Station Criteria Based On the Number of Passengers
Source : [12]

Determination of station criteria and road criteria are calculated based on data on the number of passengers at the station and the road LHR that has been obtained [12], it can be classified into station categories based on criteria, which are stations with crowded criteria, stationary with normal criteria and stations with quiet criteria. These criteria can be seen in TABLE 1.

Road criteria based on road LHR can be grouped into three, which are roads with high, medium and low LHR, can be seen in TABLE 2 the following:

Roads Criteria (LHR)	Roads Name	LHR
Low < 2953	Jl. Letjend Harun Sohar	2.754
	Jl. H. Bastari	2.243
Medium 2.953 - 6.166	Jl. Bandara	3.000
	Jl. H. Burlian	3.856
	Jl. Angkatan 45	6.096
	Jl. Kapten Arivai	3.468
High >6.166	Jl. Demang Lebar Daun	7.625
	Jl. Sudirman	8.670

Table 2:- Road Criteria Based On Average Daily Traffic (LHR)
Source : [12]

➢ *The Advertising Space Rent Income*

There are 4 (four) locations of advertisements that will be used as rental space for advertisement, they are at the station, on the pole, on the outside wall of the railroad which is at the intersection and on the LRT train.

- Income from the rent of ad place on the Station

✓ Determine the type of ad desired

Based on the survey results found that 75% of respondents choose the type of Poster advertisement.

✓ Determine WTP prices based on ad type and station criteria

Based on the survey, the price that the company wants to pay is based on the location of the station and the type of advertisement chosen. Therefore, to get the price based on the type of advertisement according to station criteria, tabulation of the most desirable ad type (poster) with the station location is then calculated using the WTP equation (2). Based on the calculation, the rental price for the advertisement on the station is based on location, and station criteria can be seen in TABLE 3 the following:

Station Criteria	Price (Rp)/m^2/month
Crowded	520.969
Normal	375.000
Quiet	355.556

Table 3:- WTP Price Based On Station Criteria

✓ Determine the area of advertising rental place available on the station

Based on the data obtained [12], observations, and measurements in the field, obtained the area of advertising rent on the station. There are two typical stations, namely a typical general station with a total of 12 (twelve) stations and a typical airport station totaling 1 (one) station. The location of advertisements at a typical station can be seen in Figure 1. below:

Fig 1:- The advertisement location is on the Station, Source: [12]

Total area data available at two typical stations can be seen in Table 4 As follows:

Station	The location of advertisements	Wide (m^2)	The Total Area (m^2)
Typical	Pole (pier)	28	207
	Elevator	48	
	Escalator	21	
	Platform Wall	110	
Airport	Platform Wall	70	106
	Platforms Top Beam	36	

Table 4:- Area Of Advertisement Available On The Station

Based on table 4 the total area available at a typical station is 207 m2 located on a pole on the station, on the elevator, on the escalator, and on the platform wall which is on the second floor of the station. The total of typical stations is 12 stations along the LRT route. While the airport station with only one station and is located within the SMB II Airport area has a total area of available adverts is 106 m2 located on the second floor of the station. On the first floor of the SMB II Airport station cannot be used as an ad rental place, trade kiosks, or ATM kiosks because it is used as a management office.

Based on a survey conducted on respondents, then got the assumption is obtained that the area of the ads that will be used to advertise in one year is based on the percentage of respondents' interest in advertising on the station. The

percentage of respondents' interests is used as a basis for the potential use of advertisements to be installed or rented by companies. Then based on the calculation, the percentage of respondents' interest and the assumption of the area of the advertisements to be used can be seen in TABLE 5 as follows:

The location of advertisements	Percentage of interest (%)	Wide Place Available (m^2)	Wide (m^2)
SMB II airport	30,60%	106	32,43
Asrama Haji	2,80%	207	5,79
Punti Kayu	4,20%	207	8,69
RSUD	0,70%	207	1,44
Garuda Dempo	0,70%	207	1,44
Demang	2,80%	207	5,79
Bumi Sriwijaya	14,60%	207	30,22
Dishub	2,80%	207	5,79
Cinde	6,30%	207	13,04
Ampera	20,80%	207	43,05
Polresta	2,80%	207	5,79
Jakabaring	0,70%	207	1,44
DJKA	10,40%	207	21,52
Total			176,50

Table 5:- Assuming the Area of the Advertisement Place Used On the Station

✓ Calculate income from Rental of Advertisements on the Station

Based on calculations that have been done, the price (WTP) is obtained based on the location of the station and the assumption of the area used in one year. Then the prediction of income can be calculated from the advertisement located on the station, which can be seen in TABLE 6 The following:

Station	Price (Rp) /m^2 /month	Wide Place Available (m^2)	Duration (month)	Income (Rp)/year
Bandara SMB II	520.969	32,43	12	202.777.806
Asrama Haji	520.969	5,79	12	36.234.436
Punti Kayu	375.000	8,69	12	39.123.000
RSUD	355.556	1,44	12	6.182.408
Garuda Dempo	355.556	1,44	12	6.182.408
Demang	375.000	5,79	12	26.082.000
Bumi Sriwijaya	520.969	30,22	12	188.936.701
Dishub	355.556	5,79	12	24.729.631
Cinde	375.000	13,04	12	58.684.500
Ampera	520.969	43,05	12	269.170.095
Polresta	375.000	5,79	12	26.082.000
Jakabaring	375.000	1,44	12	6.520.500
DJKA	520.969	21,52	12	134.585.048
Total Income				**1.025.290.532**

Table 6:- Prediction of Rental Revenue Advertisement in LRT Stations

Based on TABLE 6 Then, it can be identified the total income from the rent of ad place on the station with the type of poster adverts based on the available ad place and the duration of ad rent for one year is Rp. 1,025,290,532.

- The revenue of advertisement rent place on the pole

✓ Determine the desirable ads type

Based on the processing of data found that the type of ads most desired to be installed on the pole is the type of poster with has 41.7% percentage of respondents, then the calculation of income only on the type of ads poster.

✓ Determine the price of the rent (WTF) based on the location

To get the prices based on the location and the type of advertisements, respondents can be using tabulation performance and calculated by the WTP equation. According to the calculation, the rental price of the

advertisement respondent wishes to pay by obtained the location of the pole advertisement based on the type of poster advertisement, it can be seen in the following Table 7

The road Criteria (LHR)	The Price (Rp)/m2/month
Low	446.250
Medium	450.000
High	452.941

Table 7:- The Price of WTP Based On the Road

✓ Determine the area of advertising space that is available on the LRT pole

Based on the observations and measurements in the field, there are three pillar categories were obtained, namely the pole on the roadside, the middle of the road, and the middle of the road under the station. The pole on the roadside has the potential to rent ads only on both sides because on the outside and the opposite side, the current cannot be seen by road users. The pole in the middle of the road has the same dimensions as the pole on the side of the road but has the potential for rental places on all four sides because the driver can see advertisements on all four sides of the pole. The poles below the station have larger pole dimensions and the potential for advertising on all four sides because all four sides of the mast can be seen by road users. The location of the pole for the advertisement below the station can be seen in Figure 2. as follows:

Fig 2:- Pole advertisement

Based on the measurements on the field, obtained the total area of advertising that available at the LRT pole, consisting of the location of the pole which is on the roadside, the location of the pole located in the middle of the road and the location of the pole located in the middle of the road under the station. The total area of advertising in the LRT pole can be seen in TABLE 8 the following data are :

The pole location	Roadside	The road under the station	The middle of the road	The broad amount
Jl. Bandara	36	182	1.310	1.546
Jl. Letjend Harun Sohar	93,6	182	1.253	1.575
Jl. H. Burlian	64,8	546	1.930	2.573
Jl. Demang Lebar Daun	50,4	182	302	560
Jl. Angkatan 45	72	182	763	1.053
Jl. Kapten Arivai	28,8	182	216	441
Jl. Sudirman	36	364	806	1.224
Jl. H. Bastari	266,4	546	1.742	2.688
The broad amount				11.660

Table 8:- The Wide Place of Advertisement Available In LRT Pole

Based on a survey conducted to the company, it was found that the percentage of the company's interest to advertise on the pole. The assumption of the area of the ad that will be used to advertise in one year based on the percentage of respondents' interest in advertising on the pole. The assumption of the area where the ads are used can be seen in TABLE 9 the following data are :

The pole location	The broad available (m^2)	The percentage of interest (%)	Extents used (m^2)
Jl. Bandara	1.528	9,5%	145,16
Jl. Letjend Harun Sohar	1.529	3,6%	55,03
Jl. H. Burlian	2.541	2,4%	60,98
Jl. Demang Lebar Daun	534	3,6%	19,24
Jl. Angkatan 45	1.017	28,6%	290,86
Jl. Kapten Arivai	427	2,4%	10,24
Jl. Sudirman	1.206	44,0%	530,64
Jl. H. Bastari	2.554	6,0%	153,26
The broad amount			1.265

Table 9:- The Assumed Area of Advertisement Used In LRT Pillars

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According to table IX, it was found the assumption of the area of the ad that will be used to advertise is 1.265 m2 with the huge potential of the pole ad are on the sudirman street that has 44% from the available of the extents. The great potential of the interesting is on the sudirman street because it has a high LHR category, market, and shopping area, until invites the companies to advertise there.

✓ Determine the total income from the advertisement rent in pole

To get the total income from advertising rent on the pole respondent can using the calculation based on the steps above.

Fig 3:- Advertisement Location in the outside crossing wall of rail

The pole location	Price (Rp) /m2 /month	The broad available (m2)	Duration (month)	Income (Rp) /year
Jl. Bandara	450.000	145,16	12	783.864.000
Jl. Letjend Harun Sohar	446.250	55,03	12	294.683.508
Jl. H. Burlian	450.000	60,98	12	329.287.680
Jl. Demang Lebar Daun	452.941	19,24	12	104.566.322
Jl. Angkatan 45	450.000	290,86	12	1.570.654.800
Jl. Kapten Arivai	450.000	10,24	12	55.313.280
Jl. Sudirman	452.941	530,64	12	2.884.183.347
Jl. H. Bastari	446.250	153,26	12	820.728.720
Total Income				6.843.281.656

Table 10:- The Prediction of the Advertisement Revnue in LRT Pole

According to the calculation on the step above obtained the rental price of the advertisement based on the type, location, the assumption of the space area of the advertisement was used. Then, the revenue from the advertisement rental can be calculated for one year. The total revenue from the rent for an advertisement for one year can be seen in TABLE 10.

Based on Table 10 was found that the income prediction from the rental of advertising space on the pole with the poster type of advertisement related to them are of advertising available in one year is Rp. 6,843,281,656 with the greatest income potential is on the pole located on Jalan Sudirman.

- Income from leasing advertisement on the outer walls of rails at the intersection

✓ Determine the desired advertisement type

Based on data processing, found that the type of advertisement is most desired to be installed is poster type with the percentage of respondents 43.9%. The calculation of income is focused only on poster ad types.

✓ Determine the price of WTP based on the type of ad and location of the intersection

To get prices based on the type of advertisement, tabulation of the ad price desired by the poster type and calculated using the WTP equation (2). Calculation results can be seen in the Table 11 as follows:

Intersection area	The type of ad	The price (Rp) /m2 /month
Simpang Alang-Alang Lebar	Poster	500.000
Simpang Bandara	Poster	375.000
Simpang Polda	Poster	500.000
Simpang 45	Poster	885.714
Simpang Arivai	Poster	438.889
Simpang Charitas	Poster	525.000
Simpang Jakabaring	Poster	500.000

Tabel 11:- The Price of WTP Based On the Intersection Area

✓ Determine the available of the advertisement space

Determination of the area of advertisement space available on the outer wall of the rail at the intersection based on the observation and the measurement in the field. For the advertisement location on the railroad track at the intersection can be seen in Figure 3. as follows:

According to the observation, LRT route passed several intersections located in Palembang city, however, there are only 7 (seven) intersection that has traffic light. The location of intersection that has traffic light was chosen because it makes drivers possible to see the outside wall of rail and has waiting time to see an advertisement. The result of measurement in the field was that length and height of advertisement space was obtained that is available

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in the outside wall of RLT rail located in the intersection. The area of advertisement wall can be seen in table 12 as follows:

Name of intersection	Area (m2)
Alang-Alang Lebar intersection	192,5
Airport intersection	137,5
Polda intersection	130
45 intersection	325
Arivai intersection	210
Charitas intersection	112,5
Jakabaring intersection	100
Total	1.208

Table 12:- The Width of Available Advertisement

According to the survey, the percentage of company interested in each intersection was found. The assumption of advertisement space area will be used for ads in a year is based on the respondent's interest in advertising on the outer wall of the railroad at the intersection. Assumption of the area that ads will be used can be seen form the table 13 as follows:

Intersection Location	Available area (m^2)	Percentage of Attentiveness (%)	Used Area (m^2)
Alang-Alang Lebar Intersection	192,50	20%	38
Airpot Intersection	137,50	11%	15
Polda Intersection	130,00	5%	6
45 Intersection	325,00	23%	74
Arivai Intersection	210,00	23%	48
Charitas Intersection	112,50	17%	19
Jakabaring Intersection	100,00	3%	3
Total Area			202

Table 13:- Assumption of Area of Advertisement Space Used

According to table 13, it is obtained that the assumption area of advertisement space that is used in the wall outside rail located in the intersection is 202 m2 with the highest attentiveness in two intersection. The intersection that caught highest number of attentiveness is 45 intersection and Arivai intersection with percentage of 23% each.

✓ Calculating the total of revenue

According to the measurement that has been done in above stage, it can be calculated that total income from rental the advertisement space located on the outer wall of the railroad at the intersection. The calculation of the total income from rents of poster-type advertisement on the outer walls of the railroad located at the intersection with available area for one year can be seen in table 14 below:

Intersection Location	Advertise-ment Type	Price (Rp) /m^2 /month	width (m^2)	Period (Month)	Income (Rp)
Alang-Alang Lebar Intersection	Poster	500.000	38	12	227.535.000
Airport Intersection	Poster	375.000	15	12	65.587.500
Polda Intersection	Poster	500.000	6	12	35.100.000
45 Intersection	Poster	885.714	74	12	784.122.857
Arivai Intersection	Poster		438.889	48	12	251.062.000
Charitas Intersection	Poster		525.000	19	12	118.361.250
Jakabaring Intersection	Poster		500.000	3	12	18.000.000
Total income of advertisement outside rail						1.499.768.607

Table 14:- Income Prediction of Advertisement Space Rental Outside LRT Rail Located In Intersection

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The income from ads space rental with the type of poster ad according to area width of available ads space within a year is Rp. 1.499.768.607 with the potential of highest income in intersection 45.

- Income from advertisement space in LRT rail

✓ Determining the type of advertisement

According to the survey result and data analysis, it is obtained that the most desired type of advertisement to be shown in rail is poster with the percentage of respondent is 62,5% install in train ceiling, train floor, and outside body of LRT train.

✓ Determining WTP price according to the type of advertisement

According to the survey, the price of poster that respondent's willing to pay was obtained. To get the price according to the type of advertisement, poster advertisement price tabulation was done and measure with WTP (2) equation. The result of measurement can be seen in Table 15 as follows:

Advertisement location	Type of advertisement	Price (Rp) /m^2 /month
Train ceiling	Poster	530.000
Train Floor	Poster	500.000
Outside body of the train	Poster	416.667

Table 15:- WTP Price According To the Location of Train Advertisement

According to Table 15, there are 3(three) types of price based on the location of advertisement in LRT train which are train ceiling Rp. 530.000, train floor Rp. 500.000, and outside body of the train Rp. 416.667.

✓ Determining the area of advertising space available

Determination of the area of advertising space available on the train based on observations and measurements in the field. Based on the three proposed advertisement locations, namely on the train ceiling with the advertisement hanging on ceiling, in train floor with the advertisement glued to the floor and in outside body of train. The advertisement location of train can be seen in figure 4 as follows:

Fig 4:- Ads location on the train

Based on observations and measurements in the field, we get the area of advertising on the LRT train. The area of the advertisement is based on 3 (three) ad locations, namely on the train ceiling, on the train floor and on the outside wall of the train. The area of advertising available on the LRT train can be seen on Table 16 the following :

Location of ads	dimension (m)	location	Amount of train	Area (m^2)
Ceiling	(1x0,25)	18	5	22,5
Floor	(1,2x46,8)	1	5	280,8
Outside body of train	(2x46,8)	2	5	936
Total				1.239

Table 16:- The Width of Available Ads Space on Train

Based on survey results, a percentage of advertising interest is obtained based on the location chosen.

Ads location	Available area (m^2)	Attentiveness Percentage (%)	Used Area (m^2)
Ceiling	17,82	79%	14,11
Floor	35,1	13%	4,39
Outside body of the train	77,68	8%	6,45
Total Area			24,95

Table 17:- Area Assumption of Used Ads

The assumption of the area of the ads that will be used to advertise on the train in one year is based on the percentage of respondents' interest in advertising on the train. The assumption of the ads area that will be used can be seen in table 17.

According to Table 17, The area width of used ads space according to the location of LRT train ads is 24,95 m^2 with the percentage of ceiling ads 57%, in train floor 18% and outside body of train is 26%.

✓ Calculating the total of income from LRT train ads rent

To get the total income from advertisement rent on the train, a calculation is done by predicting revenue for one year of rental. The total income from rent a place to advertise on the LRT train for one year can be seen in the following table 18:

Ads location	Ads type	Price (Rp) /m^2 /Month	Width (m^2)	Period (Month)	Income (Rp) /year
Train ceiling	Poster	530.000	17,82	12	113.335.200
Train floor	Poster	500.000	35,1	12	210.600.000
Outside body of the Train	Poster	416.667	77,688	12	388.440.000
Total income					712.375.200

Table 18:- Income Prediction of Train Ads Space

According to Table 18, the total income prediction from train ads space with the type of ads of poster according to the area of available ads space in a year is Rp. 712.375.200.

- Total income of ads rental

Total income from ads rental was obtained through addition of income ads located in station, in the pole, wall outside rail located in intersection and in LRT train. The result of measurement can be seen in the table 19 as follows:

Ads location	Income (Rp) /Year
Station	1.025.290.532
Pole	6.843.281.656
Outside wall rail	1.499.768.607
Train	712.375.200
Total	**10.080.715.996**

Table 19:- Income Total of Advertisement Rental

According to Table 19, the total income that will be received by LRT management if all ads space rental is fully filled in a year is Rp. 10.080.715.996.

➢ *Income from trade kiosk rent*

To calculate income from rental of trade kiosks based on a survey conducted to companies in the city of Palembang, the calculation steps are as follows:

✓ Determining the rental price of kiosk (WTP)

To get the rental price of a trade kiosk based on the location of the station, a cross tabulation is done between the station location and the price to be paid and calculated using the equation WTP (3), based on the calculation results, the rental price of the kiosk is obtained as in TABLE 20. as follows:

Station Criteria	Price (Rp)/m^2/month
Crowded	460.000
Medium	437.000
desolate	418.000

Table 20:- WTP Price of Trade Kiosk According To Station Criteria

According to Table 20, the price of kiosk leases per squared meter in a month according to the criteria of station. If the station is crowded, the price is Rp. 460.000, station with the medium crowd is Rp. 437.000 and desolate station is Rp. 418.000 in one month rental.

✓ Determine the area of kiosk rent available

According to the data obtained [12] and the result of observation in the field, it was obtained the available location for kiosk rental can be seen in figure 5 as follows:

Fig 5:- Location of Kiosk Rental

According to field measurement, it was obtained that the area of kiosk rental available in two typical station. The area of kiosk rental can be seen in the table 21, as follows:

Station Type	Dimension (m)	Kiosk Location	Width (m^2) / station	Amount of Station	Total width (m^2)
Typical Station	(2x2)	4	53,5	12	642
	(5x2,5)	3			
Airport Station	(3x2,4)	2	14,4	1	14,4
Total					656,4

Table 21:- The Total Area of Kiosk Rental Available

Based on a survey of companies in the city of Palembang, a percentage of interests in renting a kiosk is based on the location of the desired station. The percentage of interest in renting a kiosk is used as an assumption of the area of the kiosk that will be used at the station in one year. Assumption of the area of the trade kiosk to be used can be seen in table 22. As follows:

Station	Available Width (m^2)	Attentiveness Percentage (%)	Used Percentage (m^2)
Airport SMB II	14,4	31%	4,45
Asrama Haji	53,5	6%	3,24
Bumi Sriwijaya	53,5	1%	0,65
Demang	53,5	19%	10,38
Cinde	53,5	2%	1,30
Polresta	53,5	2%	1,30
Jakabaring	53,5	22%	11,67
RSUD	53,5	1%	0,32
Garuda Dempo	53,5	1%	0,32
Dishub	53,5	15%	7,78

Table 22:- Assumption of Used Kiosk Area

✓ Measure the income from kiosk rental

According to the measurement that has been done, the income from Sumsel kiosk rental can be seen from table 23 as follows:

Station	Price (Rp)/m^2/Month	Available area (m^2)	Period of Rent (month)	Income (Rp) /year
Bandara SMB II	460.000	4,45	12	24.569.018
Asrama Haji	460.000	3,24	12	17.898.182
Bumi Sriwijaya	460.000	0,65	12	3.579.636
Demang	437.000	10,38	12	54.410.473
Cinde	437.000	1,30	12	6.801.309
Polresta	437.000	1,30	12	6.801.309
Jakabaring	437.000	11,67	12	61.211.782
RSUD	418.000	0,32	12	1.626.400
Garuda Dempo	418.000	0,32	12	1.626.400
Dishub	418.000	7,78	12	39.033.600
Total Income				217.558.109

Table 23:- Income Prediction of Kiosk Rental

Based on Table 23, it was found that the total income that would be received by the LRT manager if all the rental kiosks that were assumed to be used were fully filled were Rp. 217.558.109 in one year.

➢ *The income of ATM stall rental*

Below is the steps to measure the income from atm stall rent according to respondents' answer:

✓ Determine price of rent that want to be paid according to the location of station.

To obtained rent price according to the location of station, therefore, cross tabulation was done between station location and the paid price then price that can be measure using WTP(4) equation, so the price of ATM rent stall according station criteria was obtained. Rent price in one year according to willingness to pay (WTP) can be seen in table 24 as follows:

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Station criteria according to the amount of passengers	Price (Rp) /unit /year
Few passengers	20.636.364
Medium	23.333.333
Many passengers	23.750.000

Table 24:- WTP Price ATM Stall According To Stations' Criteria

✓ Determining the amount of unit that can be install in station

According to the data that obtained [12], observation and measurement in the field, the available width area obtained for ATM stall rental can be seen in figure 6 below:

Fig 6:- Location of ATM stall rental

According to the result of measurement with the total of width that obtained with the size of a unit ATM is 1 meter, therefore, it can be measure the amount of ATM slot that can be install can be seen in table 25, as follows:

Station Type	Length (m)	Width (m)	Point	Slot total/ station	Station Total	Slot total of ATM
Typical Station	4	5	1	5	12	60
Airport Station	4	3	1	4	1	4
Total						64

Table 25:- Slot Total of ATM Available

According to Table 25, that total slot of ATM that can be installed in LRT station is 64 unit of ATM that spread across station typical of 60 slots and 4 slots in airport SMB II station.

According to the result of survey, company that choose to install the ads is just in the station that has many passengers. Meanwhile, in station that categorize for having few passengers, there is no company who is interested to install the ATM. Therefore, the assumption of the ATM stall amount that will be use in a year according to the percentage of respondent's attentiveness to rent ATM stall. Assumption of ATM stall amount that will be installed can be seen in table 26 as follows:

Station Name	Available Slot	Percentage of Attentiveness (%)	Unit of ATM
SMB II Airport	4	31,90%	2
Asrama Haji	5	4,3%	1
Bumi Sriwijaya	5	17,0%	1
Ampera	5	23,4%	2
DJKA	5	17,0%	1

Table 26:- Assumption of Install ATM Stall

According to the table 26, slot assumption that will be used for ATM installment in LRT station is as much as 7 unit of ATM.

✓ Measuring the income of ATM stall rent

Based on the calculation, it can be calculated the predicted revenue from ATM stall rental at the South Sumatra LRT station if the assumption of the number of installed ATMs is 7 (seven) units, then revenue from ATM kiosk rental in one year can be seen in the following table 27:

Station Name	Price (Rp) /unit	Unit	Period (year)	Income (Rp) / Year
SMB II Airport	23.750.000	2	1	47.500.000
Asrama Haji	23.750.000	1	1	23.750.000
Bumi Sriwijaya	23.750.000	1	1	23.750.000
Ampera	23.750.000	2	1	47.500.000
DJKA	23.750.000	1	1	23.750.000
Total				166.250.000

Table 27:- Income of ATM Stall Rent

Based on Table 27, the prediction of income from ATM stall rental for one year is Rp. 166,250,000 assuming only the station has a many passengers were installed with ATM.

➢ *Income Generating Prediction*

Based on the calculations that have been done, it can be calculated the predicted increase in revenue for South Sumatra LRT operations that comes from rent revenue from ad sites (at stations, poles, railroad walls at intersections and on LRT trains), rental revenue from trade kiosks and rental revenue from ATM stall. Calculation results can be seen in table 28 As follows:

Type of Rental	Income (Rp) /year
Advertisement Space Rentak	10.080.715.996
Kiosk Rental	217.558.109
ATM stall rental	166.250.000
Income total	10.464.524.105

Table 28:- Total Income

According to Table 28, income generating prediction obtained from rent of ads space, kiosk rent, and ATM stall rent as much as 10.464.524.105 in a year.

V. CONCLUSION

According to analysis that has been done, generating conclusion as follows:

- Predicted income from ads space rental on the facilities and infrastructure of South Sumatra LRT is Rp. 10.080.715.996 in one year.
- Predicted income from the rental kiosk at South Sumatra LRT Station is Rp. 217.558.109 in one year.
- Predicted income from the ATM kiosk rental at the South Sumatra LRT station is as much as Rp. 175,000,000 in one year
- Predictions of income enhancement (income generating) that can be obtained is as much as Rp. 10,473,274,105 in the period of one year.

With the enhancement of income (income generating), it is expected to enhance the revenue and funding for LRT South Sumatera operations.

REFERENCES

[1]. T. Litman, “Local Funding Options for Public Transportation,” Journal of Public Transportation, Vol. 17, No. 1, 2014, pp. 43-74.
[2]. Y. Suprobo, and Ikaputra, “Development of Station Buildings to Increase Non-Operation Revenues of PT. Kereta Api Indonesia (Persero) (Case Study at Bogor Station),” Journal of Land Transportation Research, Volume 17, Number 2, September 2015: pp. 119-136.
[3]. O. Abdulrazak Olawale, “Infrastructural Utilisation And Income Generation At The Federal Science And Technical College Yaba Lagos,” Thesis. Department Of Educational Administration, School Of Postgraduate Studies, University Of Lagos, Akoka, Yaba, Nigeria. 2015.
[4]. R. Beverly Silverberg, “Transit Advertising Revenue: Traditional and New Sources and Structures,” Synthesis of Transit Practice, National Academy Press, 1998.
[5]. B. Jeff, “Advertising on Triangle Transit: A Revenue Forecast & Policy Analysis,” Sanford School of Public Policy, Duke University, April 17, 2013.
[6]. K. Jayashree, “An Empirical Study on The Scope of Transit Advertising,” BIMS International Journal of Social Science Research, ISSN 2455-4839, 2015.
[7]. P. Kotler, and K. L. Keller, “Marketing Management, "(Issue 13, Vol. 1 & 2), Erlangga Publisher, Jakarta, 2014.
[8]. S. Basu, ”Marketing Management, Consumer Behavior Analysis," Eleventh Edition, Liberty Publisher. Yogyakarta, 2014.
[9]. O. Z. Tamin, “Study on Evaluation of Public Transportation Rates and Analysis of Ability to Pay (ATP) and Willingness To Pay (WTP) in DKI Jakarta, "Transportation Journal. Inter-University Transportation Study Forum (FSTPT). Vol 1, No. 2, page. 121-135, ISSN: 1411-2442. Bandung, 1999.
[10]. P. Bambang, “Lecture Material for Public Transport Systems and Goods” Semarang 2002.
[11]. D. Amelia Nungki Kusuma, “DIY Willingness To Pay (WTP) of Tourism Objects of the Botanical Gardens and Happy Loka Zoo," Thesis, Muhammdiyah University, Yogyakarta. Yogyakarta, 2016.
[12]. Balai Pengelola Kereta Api Ringan Sumsel, Research Data, 2018.