

# Measuring the Feasibility of Urban Transport Business Operations in the Disruption Era: A Case Study in Sukabumi City

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## ABSTRACT

Disruption era was pinned in the era of industrial revolution 4.0 because there were indeed many industries that had not yet implemented digitalization, losing competition with similar industries that had implemented digitalization. This happens because industries that have implemented digitalisation services have distinctive competence in the form of ease of reaching consumers and being reached by consumers, as well as ease and efficiency in transactions. In Indonesia, especially in the City of Sukabumi, one of the industries suspected of being disrupted at this time is the urban transportation industry, which incidentally is a populist-based industry.

This study aims to get an overview of the expenses and turnover of urban transport drivers in the city of Sukabumi today. From this data, the break-even points are then analyzed. Urban transport drivers are made into the population in this study because they are part of an urban transport business whose profit is highly dependent on turnover. Vehicle owners are excluded from the population because their income does not depend on turnover because they apply the rental system to drivers who operate their vehicles. The results of this study are expected to be input for the Government of the City of Sukabumi in setting regulations for the urban transport industry.

To achieve the research objectives, a survey was conducted by interviewing urban transport drivers. Samples were 248 from a total population of 656 with an error tolerance of 5%. Data is taken at one time (the same year), so this research data is cross section data. The variable in question is the observed variable and produces primary data with a ratio measurement scale. The primary data obtained were analyzed with a combination of descriptive statistical analysis and simple linear algebra.

**Keywords:** *Break Even Point Analysis, the impact of the industrial revolution 4.0*

## 1. INTRODUCTION

Human life is now in the era of technological revolution that fundamentally changes the way of life, both as individuals and in dealing with one another. Specifically in the economic field, the current technological revolution known as the 4.0 industrial revolution has changed the way business transactions become all-digital. Digitalization of business transactions certainly has a positive impact by providing benefits for the perpetrators, both in terms of cost efficiency and of course in terms of time. In terms of bringing together buyers and sellers, industrial digitalization makes it easy for buyers to find sellers and vice versa.

On the other hand, digitization of the industry has the potential to cause disruption to industries or companies that still apply conventional business transaction methods. Thus the digitalization business era besides known as the industrial revolution 4.0 era is also known as the era of disruption. There are several things which according to the author are the cause of the disruption. First, information dissemination,

especially in terms of marketing, is far behind or losing faster than companies that have implemented digitalization. Second, the ease of transactions that are as easy as touching a finger (such as in selecting products, making payments) makes producers and consumers more easily and quickly make deals, this has the potential to reduce the customer loyalty of companies that still apply conventional methods. And other reasons which of course are logical or reasonable.

One of the industries that were disrupted in the 4.0 industry era was the transportation services industry. The DKI Jakarta Land Transportation Organization (Organda) said that the conventional transportation business was getting worse in the second semester of 2017, one of which was due to being unable to compete with transportation based on online service applications [1]. Likewise in areas such as one of them in the City of Sukabumi, West Java Province, transportation services based on online applications (digital) which have been operating since 2017, are expected to disrupt conventional transportation services. The fact is that the number of fleets (drivers) based on online application services

in the 3rd quarter of 2017 in Sukabumi has exceeded the number of city transportation and conventional taxibike [2]. Considering the inevitability of the digitalization era, it is necessary to investigate the feasibility of the sustainability of the conventional transportation business in terms of operations. Furthermore, the results of the research can be given recommendations to the local government to issue

**2. LITERATURE REVIEW**

**2.1 Concepts of Profit, Loss, and Break Even**

Profit is the difference between total income and total expenditure (total costs). According to Horngren [3], profit is the excess of total income after being reduced by total expenses. If the total income of a company exceeds the total expenditure, then the company is said to make a profit. Conversely, if the total revenue of a company is still below the total expenditure, then the company is said to experience a loss. Meanwhile, if the total revenue of a company is equal to the total expenditure, then the company is said to break even.

**2.2 Breakeven Analysis**

Break Even Point (BEP) analysis is widely used in business feasibility studies, whether before a business operates, or after the business is running. According to Herjanto [4], break even analysis is an analysis that aims to find a point in the cost-income curve that shows total costs equal to total income. This point is called the break even point (BEP). In line with it, Gasperzs [5] suggested that Break Even Point Analysis is one of the economic analyzes that is useful in analyzing the relationship of total variable costs (TVC) and total fixed costs (TFC) to production output or other measures in business and industrial activities.

By knowing the break-even point, a decision maker can find out at what level of sales volume the company reached the break-even point, which is a condition where there is no loss even if it is not profitable. So that company leaders can know that if sales exceed that point, the company starts to make a profit. In addition, BEP analysis can also be used for various purposes, for example choosing new products that are more economical to replace old products, deciding whether it needs fixed cost efficiency, and to determine production capacity.

In line with what was previously explained, Handoko [6] argues that break-even analysis is used to determine how many products must be produced, or what the minimum product selling price is if the number of products is constant, so that the company at least does not suffer losses. Thus the break-even analysis can be used for the operational feasibility study of a company both during the planning and evaluation after the company operates, so that the break-even analysis is expected to avoid bankruptcy. As for Riyanto [7] states that the conditions in which revenue is exactly the same as the total cost, so the company does not get profits or do not suffer losses, called Break Even Point. Thus the writer can describe the equation to analyze the break-even point as follows:

policies that can save the sustainability of the urban transport business. Such policies include raising selling prices or tariffs to passengers (for information, for urban transportation in Indonesia, selling prices to passengers are determined by the local government), lowering operational costs such as income tax or other creative policies.

$$TR = TC$$

$$P \times Q = FC + VC$$

$$P \times Q = FC + C_u \times Q$$

$$(P \times Q) - (C_u \times Q) = FC$$

$$(P - C_u) \times Q = FC$$

$$Q_{BEP} = \frac{FC}{P - C_u} \text{ atau } P_{BEP} = \frac{FC}{Q} + C_u$$

Where:

TR = Total Revenue = Gross income

TC = Total Cost = Total operational expenses

FC = Fixed Cost = Expenditures / Fixed Costs

VC = Variable Cost = Expenditures / Costs that can vary

Cu = Cost per Unit = Cost per Product Unit

P = Price per Unit = Product Sales Price per Unit

Q = Quantity = Production Capacity / Volume

**2.3 Urban Transport Operational Review**

An important issue which is always discussed in the issue of urban transport is regarding routes and fares. Tamin [8] states that the application of public transport rates can be in the form of flat fares or rates based on distance (distance base fares). For the City of Sukabumi itself, the application of urban transport rates uses a flat fare system or uniform rates. In addition, the determination of urban transport rates in the City of Sukabumi is an agreement between the Department of Transportation of the City of Sukabumi and the Indonesian Consumers Foundation or abbreviated YLKI [9].

In the writer's opinion, urban transportation business, especially for drivers who operate it, is a micro business category. As stipulated in Law Number 20 Year 2008 concerning Micro, Small and Medium Enterprises: micro businesses are businesses that have assets or net assets of up to Rp 50 million, excluding land or buildings where the business is located [10]. While based on its development, the urban transportation business is categorized as a livelihood business activity, which is a micro business which is for the sole purpose of making a living. This type of micro business is widely known as the informal sector [11].

**2.4 Prior Research**

In this study, the authors also refer to previous studies that are similar or have relevance to this study, including:

**Table 1. Previous Research**

No.	Prior Researchers	Title	Research result
1.	G. Anil Kumar, et al. [12]	Decreasing cost of public sector first-line ART services in India from 2007-2008 to 2015-2016	The break-even point for the number of patients alive and on ART was 2,735
2.	Fatmawati M. Lumintang [13]	Analysis of Income of Rice Farmers in Teep Village, Langowan Timur District	If the selling price is Rp 164,750 per sack, the farmers will not profit but will not lose

**3. RESEARCH METHODS**

**3.1 Research Type and Design**

This research is basically an applied research. According to Jujun S. Suriasumantri in Sugiyono [14] applied research is research that aims to solve the problems of practical life. The suitability of the object in this study, namely the operational conditions of the urban transport driver business in the digitalization era, is a consideration for the use of a case study approach.

In addition, this research also uses a descriptive approach. According to Williams, the descriptive research approach is a basic research method in which the researcher examines the situation, as exists in the current situation [17]. The descriptive approach includes a description of the income phenomenon and the discovery of operational feasibility conditions for urban transport drivers in the era of disruption. The purpose of this descriptive study is to evaluate the selling price or tariff for using urban transport per passenger in Sukabumi

**3.2 Data**

Secondary data for this study were collected from notes and information submitted by officers at the Transportation Department of the Sukabumi City Government. Secondary data collected in the form of the number of routes and the number of city transportation per route. The usefulness of the data is to determine population size, proportions per route, and take proportional samples per route using stratified random sampling method.

The primary data to be collected in this study is related to the variables identified to be investigated in the study. The variables in this study are the observed variables, which are daily revenue, current fare or selling price per passenger,

Furthermore, Bickman [15] stated that applied researchers are contributing to major public policy debates and decisions. The approach used in this research is a case study. Creswell [16] understands case studies as research that investigates a program, event, activity, process or group of individuals.

fixed expenses per day, and variable costs per day. These variables are asked directly verbally to the urban transport driver by the surveyor. Data collection from respondents is designed so that the findings can be generalized to the population [18].

The concept variables in question were gross income (revenue) per day, price (tariff), number of passengers per day, variable costs per day and fixed costs per day. The number of passengers is calculated by dividing gross revenue by price (tariff). Variable costs are measured by 5 construct variables in units of Rupiah per day, namely gasoline purchases, official levies, informal levies, food allowances and other operational expenses. The fixed cost in this study is the obligation to pay the vehicle owner in units of Rupiah per day.

**3.3 Sampling Design**

From secondary data observations at the Department of Transportation of the Sukabumi City Government, urban transportation data in Sukabumi City are still active as of December 31, 2018, which is only about 656 units spread over 20 routes [19]. Thus the sample size can be calculated using the Slovin formula [20] as follows:

$$n = \frac{N}{1 + e^2 N} = \frac{656}{1 + (0,05)^2 \times 656} = \frac{656}{2,64} = 248$$

From the total 248 sample sizes thereafter distributed proportionally to 20 routes as in the following table:

**Table 2. Sample Distribution**

<b>Route</b>	<b>Population Size</b>	<b>Proportion</b>	<b>Sample Size</b>
<b>02</b>	0	0%	0
<b>03A</b>	0	0%	0
<b>03B</b>	21	3,2%	8
<b>04</b>	50	7,6%	19
<b>05</b>	10	1,5%	4
<b>06</b>	0	0%	0
<b>08</b>	195	29,7%	74
<b>09</b>	13	2%	5
<b>10</b>	80	12,2%	30
<b>11</b>	4	0,6%	1
<b>14</b>	65	9,9%	25
<b>15</b>	58	8,8%	22
<b>20</b>	18	2,7%	7
<b>21</b>	0	0%	0
<b>21A</b>	23	3,5%	9
<b>25</b>	57	8,7%	21
<b>26</b>	9	1,4%	3
<b>27</b>	30	4,6%	11
<b>28</b>	23	3,5%	9
<b>29</b>	0	0%	0
<b>Total</b>	<b>656</b>	<b>100%</b>	<b>248</b>

Then the sample is drawn using the stratified random sampling method.

**4. RESULTS AND DISCUSSION**

From the secondary data in the second column in table 2 it can be seen that the remaining 15 out of the 20 routes in Sukabumi City have city transportation vehicles that are still actively operating. Thus in this era of digitizing business there are five routes that are totally disrupted. The disruption of the city transportation business on the five routes is probably because the number of city transportation on the route was lower. With urban transport rarely traversed, passengers are now more comfortable using public transportation based on online services. The decline in demand that is considered to be below the breakeven level has caused business operators in the five urban transport businesses to go bankrupt.

From the primary data obtained from the results of interviews with 248 city transportation drivers spread over 15 routes as in table 2, the results of research, analysis and discussion are presented as follows.

**4.1 Description of Respondents**

The question to the city transportation driver regarding the ownership of the city transportation car that he operates and the deposit or lease system if it is not his own, produces data with a nominal measurement scale. Category 1 is given to the answer to the vehicle that belongs to yourself, category 2 is given to the answer to the vehicle that is not your own. Obtained the following results:

**Table 3. Vehicle Ownership**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	25	10.1	10.1	10.1
2	223	89.9	89.9	100.0
Total	248	100.0	100.0	

From table 3 above, it is known that 89.9% or 223 of 248 city transportation drivers used as respondents operate vehicles belonging to others. The remaining 10.1% or more precisely 25 of 248 respondents are vehicle owners who operate their own city transportation cars. Thus, the data from 25 respondents were discarded or not included in the subsequent data processing because it was not in accordance with the objectives of the study.

Next the vehicle rental system is asked of respondents who are purely drivers (not the owner of the vehicle that is stealing) to equalize the perception that the unit of analysis is rupiah per day. For respondents who answered the amount of rent for half a day was given a score of 2, while for one day was given a score of 1. The score produced data with an interval measurement scale because the number 2 here has a value greater than twice the number 1. The scoring results also become multipliers for cost and revenue.

**Table 4. Rental System**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	69	30.9	30.9	30.9
2	154	69.1	69.1	100.0
Total	223	100.0	100.0	

From table 4 above it is known that the majority of 69.1% urban transport drivers operate their vehicles half a day, they take turns with other drivers or operate with a shift system.

imposed per passenger, fixed costs per day, operational or variable costs per day to produce quantitative data with a ratio measurement scale. The observed data of the survey results variable was captured in the IBM SPSS output table as follows.

**4.2 Costs, Revenue, and Demand**

Respondent's answer data from several observed variables that were asked were about revenue per day, price (tariff)

**Table 5. Observed Variable Statistics**

Statistics					
	Fixed Cost	Variable Costs	Total Revenue	Price	Demand
N Valid	223	223	223	223	223
Missing	0	0	0	0	0
Mean	128112.11	208035.87	284878.92	4000.00	71.41
Median	120000.00	203000.00	270000.00	4000.00	68.00
Mode	100000	204000 <sup>a</sup>	250000 <sup>a</sup>	4000	63
Minimum	80000	92000	190000	4000	48
Maximum	200000	363000	520000	4000	130

a. Multiple modes exist. The smallest value is shown

From table 5 it can be seen that in one day the cost of renting the cheapest vehicle is 80,000 rupiah, while the largest rental fee is 200,000 rupiah. If averaged, the cost of renting a car per day is in the range of 128,000 rupiah, with a middle (median) value of 120,000 rupiah, and most are charged 100,000 rental fees. The lowest total variable cost is 92,000 rupiahs, the highest is 363,000 rupiahs, an average of 208,000 rupiahs, the most variable costs are 204,000 rupiahs. The highest total revenue is 520,000, the total revenue is 190,000, with the total revenue of 250,000, when the average total revenue of urban transport drivers in Sukabumi is 284,900 rupiahs.

Furthermore, from table 5 it is also known that city transportation rates in Sukabumi Flat are 4,000 rupiah (far-away) for all routes. For the least number of passengers is an average of 48 people per day, but there are also those who get an average of 130 passengers per day. The average number of urban transport passengers in Sukabumi per day is 71 people, with most urban transport drivers getting 63 passengers in one day.

### 4.3 Breakeven Analysis

To avoid bias due to too far-off data, the data for BEP (Break Even Point) analysis is taken from the mode or the most data available in table 5. In addition, it is also because they want to know the fate of most urban transport business operators. From this data can be analyzed:

Known:

Total variable cost (TVC) = 204,000

Total fixed costs (TFC) = 100,000

Demand (Q) = 63 people

Asked: PBEP =? (minimum tariff that can help break even)

Answer:

The BEP condition is reached if:

$$\text{Total Revenue (TR)} = \text{Total Cost (TC)}$$

$$P \times Q = TFC + TVC$$

$$P = \frac{(TFC + TVC)}{Q}$$

$$P = \frac{(100.000 + 204.000)}{63} = \frac{304.000}{63} = 4.825$$

So the fare per passenger so as not to lose is Rp 4,825.

The results of this study have differences with the results of research Kumar et al. where in his research a break-even point in demand (quantity) was produced, while from this study obtained break-even information in the selling price (rupiah) in line with its purpose which is to become a recommendation for the government of Sukabumi City in determining current urban transport rates. Whereas if it is benchmarked with the results of Lumintang's research, this study has similarities in which from the Lumintang research obtained break-even information in the selling price (rupiah). From this study it is known that the daily operational costs of urban transport drivers in the City of Sukabumi amount to 304,000 rupiah. Turnover per day 63 passengers. The data is taken from the amount of data that appears (mode). From these data it can be analyzed that the breakeven point of the urban transport operational business is at a rate of 4.825 rupiah per passenger. Therefore it is recommended to the

Government of the City of Sukabumi to implement a price discriminatory policy which is to increase the urban transportation tariff to Rp 5,000 on the lonely route of passengers, which in fact is the majority of urban transportation businesses in the City of Sukabumi.

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