An analysis of the financial return on investment of rural road

by

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ABSTRACT

This research is an analysis of the financial return on investment of rural road 3004 from Nakhon Phatom Police Station to Suansunandha Rajabhat University Nakhon Phatom Learning Center. This objective is an analysis of the financial return on investment if expanding route of bus. There are 200 sets of questionnaires for general information and requirements. The process of this research is to define population and sample, set sample size, define sampling plan, make a questionnaire, take the created questionnaire with the specialists, find index of congruence and try-out, explore the general information of people, study bus schedules of buses, calculate the cost of a project, calculate the project's return and analysis of financial return. The research showed that people are interested in bus service 7 percent and calculated NPV = -60,735,780.14. This means that the project is unlikely to invest or lose. There are 3 suggestions. (1) Based on the interview, the executives showed that analysis of the financial return should be calculated throughout the route of the bus. (2) May be for students or the people, live in the area, buy monthly card to guarantee minimum income to the bus. (3) Data of questionnaires showed they may not match the actual target group, resulting in discrepancies, so questionnaires should be collected from only students or people, live in the area, who are likely to be the actual target group.

Keywords: analysis of the financial, financial, bus.

INTRODUCTION

Suan Sunandha Rajabhat University, Nakhon Pathom Learning Center, is one of four educational centers that have implemented teaching and learning according to the university's educational expansion policy and have started teaching since August 1, 2015. College of Logistics and Supply Chain is one of many faculties have taught at Nakhon Pathom Learning Center. However, since the Nakhon Pathom Learning Center conducts teaching in the initial stage. Traveling into the center of education is a problem that affects students directly. Students will be traveling by van, taxi and private car. There are currently no bus services available on this route. For this reason, the researcher recognizes the importance of the problem, the analysis of the financial return on investment of rural road 3004 from Nakhon Phatom Police Station to Suansunandha Rajabhat University Nakhon Phatom Learning Center. The purpose of this research is to analyze the financial return of an expansive route from Nakhon Phatom Police Station to Suansunandha Rajabhat University Nakhon Phatom Learning Center. As shown in Figure1.
LITERATURE REVIEW
1. Sample Selection
   1.1 Probability Sampling is selecting units from all units in the population by sampling technique. According to the sample size set. Each sample unit in the population can calculate the probabilities or probabilities that will be represented in the sample. It can be divided into two types as follows.
   - Equal probability sampling
   - Unequal probability sampling
   1.2 Non-probability sampling is the population may not know the true or not. It is not possible to use sample selection using probability and must use sample selection without probability. This is the sample unit selection and there is an equal opportunity. It can be divided into several types as follows.
   - Accidental sampling
   - Quota sampling
   - Purposive sampling
2. Net present value: NVP
   Net present value is the present value. In other words, it is the value that can be derived using an asset and is to evaluate “Can investment make a profit?” by moving each net cash that return to current value.

RESEARCH METHODOLOGY
1. Define population and sample. This research, the population is the people who live in the extension path. The sample is the person who lives in the extension path and near the road.
2. Set sample size. From the Yamane sample size table, 95% confidence level, discrepancy not exceeding 10%, the researcher used 200 samples because of limited budget.
3. Define sampling plan. The researcher used accidental sampling because it is convenient and save cost.
4. Make a questionnaire to store general information of people in that area such as gender, age, education and travel interests.
5. Take the created questionnaire with the specialists. In order for the specialists review content validity and make further suggestions, then to improve the questionnaire.
6. Find index of congruence and try-out. This research has been reviewed.
7. Explore the general information of people living in this area by using the questionnaire.
8. Study bus schedules of buses from the secondary data of the Bangkok Mass Transit Authority (BMTA) to determine the number of buses to pass and bus timetables.
9. Calculate the cost of a project. Investment costs include the cost of building a carriage, based on secondary data from the Bangkok Mass Transit Authority (BMTA). Operating expenses include utilities, such as electricity from lighting installations, car ports, and fuel bills. Maintenance costs and other expenses include the cost of repairs bus and accessories.
10. Calculate the project's return by using project revenue from bus fare.
11. Analysis of financial return is based on Net Present Value: NPV.

RESULTS
The results of the research are divided into 2 parts.
Part 1: Personal characteristics of the respondents.
Part 2: Analysis of financial return.

**Part 1: Personal characteristics of the respondents. Analysis will use frequency and percentage.**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>72</td>
<td>36.0</td>
</tr>
<tr>
<td>Female</td>
<td>128</td>
<td>64.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table1 shows that the sample in this research. There were a total of 200 persons, 128 of them were female, or 64.0% and 72 males, or 36.0%.
Table 2: Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under the age of 15</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>15-18</td>
<td>22</td>
<td>11.0</td>
</tr>
<tr>
<td>19-22</td>
<td>64</td>
<td>32.0</td>
</tr>
<tr>
<td>Aged over 23</td>
<td>110</td>
<td>55.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 2 shows that most of the samples in this research were 23 years of age or older, there were 110 people or 55.0%. A minor between 19-22 years, there were 64 people, or 32.0 percent. The age of 15-18 years, there were 22 people, or 11.0%. Under the age of 15, there were 4 people, or 2.0 percent.

Table 3: Education

<table>
<thead>
<tr>
<th>Education</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower than junior high School</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Junior High School</td>
<td>22</td>
<td>11.0</td>
</tr>
<tr>
<td>High School</td>
<td>56</td>
<td>28.0</td>
</tr>
<tr>
<td>Bachelor</td>
<td>112</td>
<td>56.0</td>
</tr>
<tr>
<td>Higher than bachelor</td>
<td>6</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 3 shows that most of the samples in this research had 112 undergraduate level, or 56.0%. High School had 56 people, or 28.0%. Junior High School had 22 people, or 11.0%. Higher than the bachelor's degree, 6 people were 3.0% and 4 people lower than junior high school students, or 2.0%

Table 4: Travel

<table>
<thead>
<tr>
<th>Travel</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traveling with other people</td>
<td>22</td>
<td>11.0</td>
</tr>
<tr>
<td>Bike</td>
<td>6</td>
<td>3.0</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>38</td>
<td>19.0</td>
</tr>
<tr>
<td>Car</td>
<td>58</td>
<td>29.0</td>
</tr>
<tr>
<td>Motorcycle Taxi</td>
<td>36</td>
<td>18.0</td>
</tr>
<tr>
<td>Taxi</td>
<td>30</td>
<td>15.0</td>
</tr>
<tr>
<td>Minibus</td>
<td>10</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 4 shows that most of the samples in this study were traveling by car using 58 vehicles (29.0%), followed by 38 motorcycles (19.0%), 36 motorcycles taxi (18%), 30 taxi (15.0%), 22 traveling with other people (11.0%), 10 minibuses (5.0%), and 6 bikes (3.0%)

Table 5: Interesting use of the bus

<table>
<thead>
<tr>
<th>Interesting use of the bus.</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interested</td>
<td>70</td>
<td>35.0</td>
</tr>
<tr>
<td>Ignore</td>
<td>130</td>
<td>65.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 5 shows that people are interested in 35 percent. According to the interview, the specialist found that although people are interested in 35 percent, but when the time is really available, there will be people who use the service up to 20 percent of those interested. Mean that there will be about 7% (35 * 20)
Part 2: Analysis of financial return. Analysis will use NPV.

1. Predict the demand for the bus.
   1.1 From the data collection, it was found that the bus that passes this closest route is the 515 bus, which has an average of 4 buses per hour. As shown in Figure 2.
   1.2 In Figure 2, in the case that there are 4 buses per hour (blue line), there will be people who use the service up to 7 percent.
   1.3 From the data collection, it was found that at the red star is bottleneck point. There is a need to use this road (7am to 6pm).
   The passing vans through this road were 13 cars per hour * 10 people = 130 people.
The passing cars through this road were 1,080 cars per hour * 2 people = 2,160 people.
The passing motorcycles through this road were 420 cars per hour * 2 people = 840 people.
Summarize all the requirements using the road route. The average hourly rate was 3,130.
The estimated demand for buses is 0.07 * 3,130 = 220 persons per hour.

![Figure 2 515 Bus Route](image)

2. Cost calculation
   According to data from the Department of Land Transport, 2016, it was found that the average cost of bus service was 64.16 baht per kilometer.
   Total distance is 26.6 kilometers.
   Cost is 64.16 * 26.6 = 1,706.66 baht per trip.
   Total cost is 1,706.66 * 4 = 6826.62 baht per hour.
3. Calculate the return.
   The minimum bus ticket is 12 baht per trip.
   The total income is 12 baht * 220 persons per hour = 2,640 baht per hour.

   The total revenue is 2,640 baht per hour = 2,640*12*365 = 11,563,200 baht per year.
   Total cost is 6,826.62 baht per hour = 6,826.62*12*365 = 29,900,595.6 baht per year.
   The interest is charged at 8 percent of the loan rate.
   The age of the project is set to 4 years due to maintenance of a large bus or change of bus.
   No money invested in the start.
   So calculating NPV = -60,735,780.14 baht

CONCLUSION
   This research is the analysis of the financial return on investment of rural road 3004 from Nakhon Phatom Police Station to Suansunandha Rajabhat University Nakhon Phatom Learning Center. The purpose of this research is to analyze the financial return of an expansive route from Nakhon Phatom Police Station to Suansunandha Rajabhat University Nakhon Phatom Learning Center. From the predictions and calculations, it was found that in the route Nakhon Ratchasima 3004 rural highway extension from the police station to Suannandha Rajabhat University. Nakhon Phathom Learning Center. The total income is 2,640 Baht per hour and the total cost is 6826.62 baht per hour. NPV = -60,735,780.14 baht so this project is not worth the financial return due to loss.
   According to executives interviews to find the cause of the loss found.
   1. Analysis of the financial return should be calculated throughout the route of the bus
   2. May be for students or the people, live in the area, buy monthly card to guarantee minimum income to the bus.
   3. Data of questionnaires showed they may not match the actual target group, resulting in discrepancies, so questionnaires should be collected from only students or people, live in the area, who are likely to be the actual target group.

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