REPORT OF RESEARCH RESULTS

(a) Title : A Study of Footbridge Utilization Behavior in Nakhon Ratchasima

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(c) Summary

Footbridges are a type of pedestrian facility which guarantees complete safety for road crossing. With a concept of "grade separation", vehicular traffic is separated from pedestrians. However, unlike normal traffic interchanges where a car would go up a flyover or other types of grade-separate interchange and cross a conflicting traffic stream effortlessly, pedestrians tend to evaluate effort of walking to the footbridge

and climbing up high stairs against convenience of jaywalking on the street surface while risking accident and fines.

Pedestrian behaviors always play an important role in road safety. They evaluate the traffic conditions and street environment and decision to react on situations based upon personal benefits. The 2010 record shows 1,737 pedestrian accidents in Thailand, most of which were resulted from their decisions and behaviors. A study of footbridge crossing behavior aims to determine factors affecting decision whether to use the footbridge. Traffic speeds and flows, number of traffic lanes, the height and location of footbridges and other influential factors will be taken into account. Although the study area will be limited to Nakhon Ratchasima Municipal Area and its vicinity, the result is expected to be transferable to most medium-sized cities in Thailand. The results will be used to design facilities and set measures to respond to the needs of pedestrians from all sexes and age groups.

This research are suppose to studies about pedestrian crossing walk usage behavior for people in Nakonrachasrima province and also request for factors that people decide to use type of crossing. By Logistic Regression Analysis method, the

data come from interview the pedestrian and analysis by SPSS program.

(d) Aim of Research :

1. To study the factors influencing the decision to use or not to use footbridges.
2. To develop footbridge utilization behavior model.
3. To determine general locations and other characteristics of footbridges that would be attractive to pedestrians.

(e) Method of Research & Progression :

The data used in the analysis for this study. The Primary Data is data collected from a survey of the Field observation and interview in six study locations. It have sample size are workday 3,083 persons and weekend 3,168 persons.

Table 1: Topography of the Footbridge

Location	Traffic Volume	city	Physical					
			No of lanes	Roof	Island	Bus stop	Distance from the junction	transparent bridge
Nakhon Ratchasima Rajabhat University	Low	urban	6	Yes	Yes	Yes	No	Yes
Pak Thong Chai	Low	urban	8	Yes	Yes	Yes	No	No

Marie Vithaya School /Saint Mary's College	High	urban	4	Yes	Yes	Yes	No	Yes
Suranari Witthaya School	High	urban	6	Yes	Yes	Yes	10 Meter	Yes
Bunluawittayanusorn School	Low	Sub urban	6	Yes	No	No	No	Yes
JOHO	High	Sub urban	6	No	Yes	Yes	80 Meter	Yes

A Data Collection uses a Revealed Preference Questionnaire Survey to interview face to face for pedestrian this study a sample size 435 person for suburban and 705 person for Urban and topic to interview for a Socioeconomic characteristics such as sex and age. This study analysis base on Logistic Regression .

$$prob(event) = \frac{e^{V_{in}}}{1 + e^{V_{in}}}$$

Where $V_{tn} = \beta_0 + \beta_1 X_{tn1} + \beta_2 X_{tn2} \ldots + \beta_n X_{tnk}$

β_0 and β_1 are parameters estimated from observed data

X_s is independent variables

e is the base of the natural logarithm, approximately 2.718

(f) Results of Research :

Logistic Regression Analysis Model

- Urban

  V_{in} = 3.243-0.688(dis_bus)+ 0.300(N_ friend) R^2=0.763

- Suburban

V_{in} = 0.654-0.423(dis_bus)+ 0.209(N_ friend)+ 1.787(law)+ 1.483(accident) R^2=0.760

Where:

dis_bus = Distance from bus stop to footbridge

N_ friend = Number of friend to group pedestrians

Law = Know law about pedestrian

Recommended Measures to Encourage Footbridge Use:

- Public relation on pedestrian traffic laws would help improve ratio of footbridge users by 4.32% Ideal locations for footbridges are near bus stops.

Variable	Urban	Suburban
Distance (bus stop to footbridge)		
1 Meter	6.5 % (+)	7.22 % (+)
2 Meter	5.09 % (+)	4.41 % (+)
Group pedestrians		
2 people	0.20 % (+)	0.10 % (+)

3 people	0.50 % (+)	0.31 % (+)

Findings

1. Footbridges near schools are more utilized.
2. The existence of the island reduces percentage of footbridge use.
3. In the urban & suburban area, group pedestrians tend to use footbridge.

(g) Future Areas to Take Note of, and Going Forward :

I. Effective design of footbridge should consider user behavior and preferences.

II. Locations should be carefully determined to maximize the benefit of the footbridge.

III. Pedestrian safety awareness should be fostered to children and students.

(h) Means of Official Announcement of Research Results :

We will submit our research to gather comments in reputable transportation Journal. Now we already submitted the research abstract for approval and are waiting to submit the full

paper in SWU Engineering Journal. We expect the publication in the Journal of SWU Engineering Journal (2013) Vol 8.