Inception Report

ATRANS
ASIAN TRANSPORTATION RESEARCH SOCIETY

Road Traffic Accidents caused by the increased number of delivery service riders during the Pandemic: An Empirical Study in Bangkok Metropolitan and Vicinity

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List of Abbreviations and Acronyms

AGE	Age
ERTA	Experience of road traffic accident
FA	Fatigue
LOT	Lack of training
LPC	Lack of protective clothing
MPU	Mobile phone using while riding
PMV	Poorly maintained vehicle
RRB	Risky riding behaviors
TP	Time pressure
UB	Unbalanced or awkward loads
WE	Work experience
WL	Workload

CHAPTER I INTRODUCTION

1.1 Rationale

The Covid-19 pandemic has forced and changed people' behaviors to order foods and other related products online. Hence, rider profession has become an important actor for the Thai economy since there is a lot of demand for the platform, especially fresh food products must be delivered immediately. Food delivery business for the whole year 2021 is expected to be worth 5.58 billion baht, or about 10 billion baht increase accounting for 24.4% compared to the year 2019. The total order volume is expected to reach 120 million in 2021, equal to three times the number of orders in 2019, there were approximately 35-45 million orders (Kasikorn Research Center, 2021). The Kasikorn Research Center (2022) estimates that the market value of food ordering in 2022 (recalculation base, including restaurants, bakeries, and beverages) will be approximately 7.9 billion baht or expand by 4.5%, slowing from a high accelerating base in 2021. However, the Umicron pandemic may result in the food delivery market to accommodation to expand more than expected.

Interestingly, motorcycle sales in 2021 are expected to return positively, after three years of negative sales volume, many motorcycle campers admitted that the market was becoming saturated because of the number of motorcycle registrations with the Department of Land Transport, around 21 million vehicles nationwide. In 2021, the motorcycle market has recovered, with the first eight months of this year, motorcycles have sold 1,092,326 vehicles or grew by 7.90%, expanding significantly better than cars. This can be implied that rider profession is a major factor boosting the sale volume of motorcycle.

Rider or motorcyclist to transport goods as needed or called as a messenger who send documents but currently preferable to deliver food. This career is rising rapidly in line with economic growth. Some make it temporary, and most of them stretch into mainstream occupations. According to Chulalongkorn University, it says this is one of the most economically expanded professions. In the COVID-19 era and most riders, 80% are mainstream occupations, with the remaining 20% seen as an auxiliary occupation (TNNOnline, 2021). The age range of the majority of rider is between 18-29 years old, followed by 30-44 aged group, and the last group is late workers, including the elderly, which are the smallest. The rider's highest education levels are mostly high school and undergraduate levels.

Statistics indicate that more than 45% riders work more than 60 hours a week because there are conditions for each platform to require more work in exchange for insurance or bonuses, for example, which is higher than the labor statutory period of 48 hours per week. This inevitably results in road traffic accidents. One-third of riders have had accidents during work, more than 40% of them are serious injuries, some of them fatal, which is a very risky occupation, and when they are hospitalized, they will result in no income or lower income (TNNOnline, 2021).

Of course, rider remains an important engine for the economy duringCOVID-19, including the future. While workers remain vulnerable and not as protected as they should be, it is no surprise that scholars have called on the state to help outliness on the protection of these workers. Otherwise, if the economy improves, there may be a few people who turn their backs on rider's career, a popular career in 2021. However, study on road safety among riders is quite rare.

A survey conducted by the Transport Workers Union in Australia indicated that riders has no or least training. They had a great pressure during the bad weather conditions, as well as long periods of work (Zhou, 2018). European Agency for Safety and Health at Work (2010) also mentioned about risks among riders such as time pressure, unbalanced or awkward loads, poorly maintained vehicle, equipment not appropriate, lack of training, lack of protective clothing (high visibility and vest), and lack of training. Ayun et al. (2017) found that the majority of riders (food delivery) having motorcycle crash were male accounting for 99.20% and 82.60% of them had less than six months of work experience. Ayun et al. (2019) also conducted a study entitled "effects of age and violations on occupational accidents among motorcyclists performing food delivery." They analyzed 1,317 injured couriers regarding rider-related factors and crash-related factors according to rider's age or violations. The findings indicate that all types of injury decreased with age, but the death or disability' accidents increased with age.

Zheng et al. (2019) conducted a study entitled "crash involvement and risky riding behaviors among delivery riders in China: The role of working conditions." They collected the data from 824 delivery riders. The findings revealed that workload, time pressure, fatigues, and risky riding behaviors are associated with crash. In addition, the study by Vijayasankari et al. (2020) showed that the most important cause of accident among food delivery worker was mobile phone use while driving. Bernama (2021) added that most causes of accidents occurring to riders in Malaysia are fatigue and rushing to reach destination on time. According to the previous studies, 11 causes of traffic accident among food delivery riders are selected. Hence, the conceptual framework is proposed as follow.

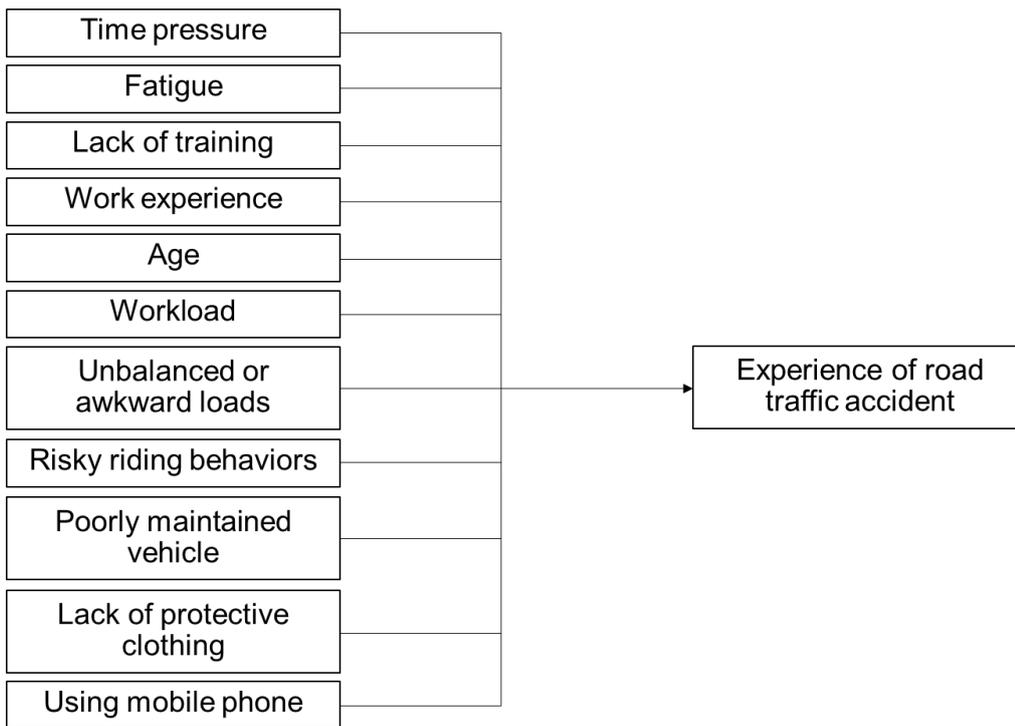|	
Time pressure	
Fatigue	
Lack of training	
Work experience	
Age	
Workload	
Unbalanced or awkward loads	→ Experience of road traffic accident
Risky riding behaviors	
Poorly maintained vehicle	
Lack of protective clothing	
Using mobile phone	

Figure 1 Proposed conceptual framework

1.2 Research Questions

1. What are the situation and prevalence of road traffic accident among riders (food delivery) in Bangkok?

2. What are the causes of road traffic accidents among riders (food delivery) in Bangkok?

3. What are countermeasures against accident?

4. What are suggestions and recommendations to policy makers?

5. Are the main findings of the study consistent with previous studies?

1.3 Objectives

1. To examine the situation and prevalence of road traffic accident among riders (food delivery) in Bangkok.

2. To examine causes of road traffic accidents among riders (food delivery) in Bangkok.

3. To examine countermeasures against accidents.

4. To provide suggestions and recommendations to policy makers.

5. To compare the main findings with other previous works (PRISMA Analysis).

1.4 Research Benefits

1. The findings of this research will catch attention from public to place importance on road traffic accidents among riders.

2. The findings of the study can be used as an evident in policy making process to deal with road traffic accidents among riders.

3. Researchers and scholars can apply the findings in their research in the future.

CHAPTER 2 METHODOLOGY

2.1 Research Design

This research is a mixed method research including quantitative research and qualitative research.

2.2 Quantitative Research

2.2.1 Population

The population of this study is food delivery riders in Bangkok and vicinity.

2.2.2 Sample

The sample of this study were 384 participants who are food delivery riders in Bangkok and vicinity derived from the following formula (Cochran, 1977).

$$n \quad = \quad \frac{Z^2}{4e^2}$$

Where n = sample size

Z = Z value at reliability level or significance level. The reliability level 95% or significance level 0.05; Z = 1.96

e = The desired level of precision (.05)

Hence, n = $\frac{(1.96)^2}{4(.05)^2}$

= $\frac{3.8416}{0.01}$

= 384.16

= 384

2.2.3 Research Tool

Questionnaire was employed as a research tool. It consists of 13 parts as followings.

1. Demographic information
2. Time pressure
3. Fatigue
4. Lack of training
5. Work experience
6. Age
7. Workload
8. Unbalanced or awkward loads

9. Risky riding behaviors
10. Poorly maintained vehicle
11. Lack of protective clothing
12. Using mobile phone
13. Experience of road traffic accident

2.2.4 Validity

Each item will be assessed by transportation experts giving the item rating of 1 for clearly measuring, -1 for clearly not measuring, and 0 for unclear measuring. Finally, the index of item – objective congruence (IOC) will be calculated using the formula developed by Rovinelli and Hambleton (as cited in Kotchapong, 2008) for each item of the questionnaire. Prasitrattasin (2007) suggested that the IOC index higher than .50 is determined as valid. Hence, any item with IOC index lower than .50 will be deleted or the statements will be revised in accordance with the recommendations of the experts.

2.2.5 Reliability

The reliability of each measurement, measure of internal consistency, will be examined employing Cronbach's alpha coefficient (Cronbach, 1951). George and Marry (as cited in Gliem & Gliem, 2003) suggested that the Cronbach's alpha coefficient >.90 – Exccellent, >.80 – Good, >.70 – Acceptable, >.60 – Questionable, >.50 - Poor, and <.50 – Unacceptable.

2.2.6 Data Collection

During July-September 2022

2.2.7 Data Analysis

The primary data will be collected using questionnaires as a research tool. Well-trained research assistants are assigned to collect data. Then, descriptive statistics such as frequency, percentage, mean, median, and standard deviation was applied in data analysis. In addition, ordinary multiple regression analysis using statistical software was employed to examine relationship between independent and dependent variables.

2.3 Qualitative Research

2.3.1 Key Informants

There were 20 key informants who are food delivery riders and had experienced of road traffic accidents. Snowball sampling was used to select the key informants. Criteria for selecting key informants are defined as follows:

1. Being a food delivery rider in Bangkok and vicinity.

2. Experienced in road traffic accidents in the past 2 years.

3. Willing to cooperate or participate in this study.

2.3.1 Research Tool

In-depth interview using semi-structured interview.

2.3.2 Data Collection

During July-September 2022.

2.3.3 Data Analysis

Narrative analysis will be employed in this study. This method is used to analyze content from various sources, such as interviews of respondents, observations from the field, or surveys. It focuses on using the stories and experiences shared by people to answer the research questions.

CHAPTER 3 RESEARCH PLAN
3.1 Project Schedule

This project is a 1-year project. The timeframe of this research is scheduled as illustrated in Table 1.

Table 1 Timeframe

Activities	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Review of literature	■											
Inception report submission	■											
Questionnaire Validation		■										
Progress report			■									
Data collection				■	■							
Data analysis						■						
Interim report presentation & submission							■					
Roundtable discussion & workshop								■				
Final report presentation & comments									■			
Final report preparation & submission										■	■	■

3.1 Project Expenditure

The total budget of the project is 414,000 and the expenditure of this project is illustrated in Table 2.

Table 2 Project expenditure

No.	Description	Cost/Unit	Unit	Amount (Baht)
1	Project leader	3,000	12	36,000
2	Research assistants	6,000	12	72,000
3	Expenses for project meeting (3 project members x 12)	1,000	36	36,000
4	Survey Data collection	400	100	40,000
5	In-depth interview	2,000	20	40,000
6	Transportation & Petrol	3,000	30	90,000
7	Office and computer supply	5,000	1	5,000
8	Document & Copy	5,000	1	5,000
9	Secretariat's participation portion	10,000	1	10,000
10	Advisor	10,000	2	20,000
11	Data coding & analysis	40,000	1	40,000
12	Publishing proportion of the report book	20,000	1	20,000
Total				414,000

3.3 Project oversight

The project oversight component of this research has been designed to track and provide guidance, comments, and recommendations at key stages of the project from different perspectives.

1. Project advisors – four advisors are assigned to provide independent assessment and review of major outputs. Then, they responsible for giving comments and recommendations on technical excellence and relevance.

2. Consultative forum – to ensure the relevance and completeness of the findings, this forum or roundtable discussion will be held in order to gain comments and recommendations from various perspectives.

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