FACTORS THAT INCREASE USAGE RATE OF TRANSPORTATION MANAGEMENT SYSTEM (ISUZU MIMAMORI) IN TRUCK BUSINESS

BY

MISS NITIDA SAENGDAOCHAI

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE PROGRAM IN MARKETING
(INTERNATIONAL PROGRAM)
FACULTY OF COMMERCE AND ACCOUNTANCY
THAMMASAT UNIVERSITY
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ENTITLED

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was approved as partial fulfillment of the requirements for
the degree of Master of Science Program in Marketing (International Program)

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Independent Study Title	FACTORS THAT INCREASE USAGE RATE OF TRANSPORTATION MANAGEMENT SYSTEM (ISUZU MIMAMORI) IN TRUCK BUSINESS
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Academic Years	2015

ABSTRACT

This independent study, "Factors that increase usage rate of transportation management system (ISUZU MIMAMORI) in truck business", aims at investigating the reasons to not using Mimamori system, consumer needs and decision making factors in using transportation management system to increase usage rate of Mimamori system. The result of this finding will be beneficial to those who are interesting in transportation management system.

The study is developed based on findings from both primary and secondary data in terms of exploratory and descriptive research, in-depth interview and questionnaire.

The result of this study shows that the most important factors for using transportation management system are quality of system (accuracy of information), after sales service and durability of device. The entrepreneurs did not use GPS system for

tracking vehicle only but also eco-fuel, safety and security. However, there are more functions that the entrepreneurs need more from GPS system to help them manage transportation more efficiency. The reasons for not using Mimamori system are high investment in device, high monthly service fee and the entrepreneurs already have transportation management system. The author also compares attitude and perception toward Mimamori system between GPS user versus GPS non-user and Mimamori user versus Mimamori non-user, since some respondents use both GPS system and Mimamori system, to find triggers and barriers for increasing usage rate of Mimamori system. The more details of study and recommendation are provided in this study.

This study has been chosen to be part of a contemporary topic in applied marketing as it pertains to technology subject area of marketing knowledge that important to Thailand today.

Keywords: transportation management system, factor, GPS, truck, isuzu, mimamori

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Miss Nitida Saengdaochai

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CHAPTER 1

INTRODUCTION

1.1 PROBLEM STATEMENT AND RESEARCH PURPOSE

Road Transportation, a main business sector that drives economy of Thailand, is 80% of transportation in Thailand. Moreover, 52% of Thailand's logistics cost is transportation cost which is the biggest cost. (Thailand's Logistics Report 2014, 2015) Therefore, if business owners have a good transportation management system, they can reduce cost, at the same time, increase efficiency and quality in their business. These will enhance road transportation business in Thailand to be more competitive.

Telematics, the technology of sending, receiving and storing information relating to remote objects such as vehicles via telecommunication devices, is used in transportation business for fleet tracking and management. Initially, most of transportation business installed GPS system in truck for tracking vehicle only. Then ISUZU, the big player in truck market, introduced telematics system called "Mimamori" in 2010 which is more advanced and more valuable than GPS system. Mimamori system can provide data which help business owners see the area that they can reduce cost and run their fleets more effectively such as analyzing driving behavior, making report which help reduce paper work, and giving recommendation to develop driving behavior with economical and safety skills. Moreover, it can return profits to business owners from improvement of driving behavior which GPS system cannot do these functions. Mimamori system can install with ISUZU truck only.

In 2015, however, the usage rate of Mimamori system is just 10% of ISUZU truck users, while 90% of ISUZU truck users are still using GPS system. ISUZU would like to increase usage rate of Mimamori to be 100% to replace GPS system. (Tri Petch Isuzu Sales, 2015) Therefore, this proposal aims at investigating the reasons to not using Mimamori system, consumer needs and decision making factors in using transportation

management system to increase usage rate of Mimamori system in contemporary topic in applied marketing and pertains to technology subject area of marketing knowledge.

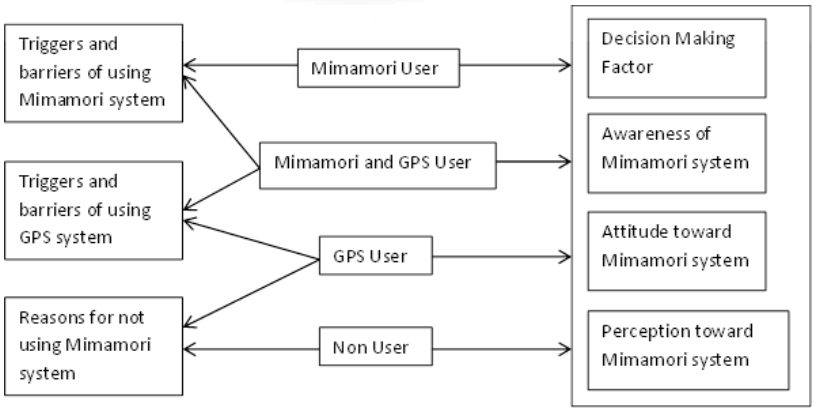
1.2 RESEARCH OBJECTIVES

1. To figure out the reasons to not using Mimamori system
    - Consumer's characteristic
    - Consumer behavior and insight of using transportation management system
    - Purchasing criteria of using transportation system
    - Reasons to not using Mimamori system

2. To convert customers from GPS system to Mimamori system
    - Identify triggers and barriers of using GPS system
    - Identify triggers and barriers of using Mimamori system
    - Consumer attitude toward Mimamori system
    - Consumer perception toward Mimamori system

1.3 CONCEPTUAL FRAMEWORK

Objective: To find underlying reasons of using transportation management system in different segments in order to understand each target segment.



1.4 OUTLINE OF REPORT ORGANIZATION

Chapter 1 is an introduction section, containing problem statement and research purpose, research objectives, conceptual framework and report outline.

Chapter 2 is the literature review section which provides broad picture of why this topic has an importance to Thailand today.

Chapter 3 is research methodology that draws the structure of this study including theoretical framework, research methodology and sampling procedure.

Chapter 4 is the data analysis and results part that describes findings of desk research and in-depth interview.

Chapter 5 is the conclusion and recommendation that will infer key findings from chapter 4 and suggestion of marketing implications for managers including limitations of the study and further recommendation.

CHAPTER 2
LITERATURE REVIEW

- Logistics corner, “5 Strategies to reduce Transportation Costs” (2009) Web

This article analyzes 5 ways to reduce transportation costs which are Strategic use alternative energy, Strategies to change the format of a new transport (Multimodal transportation), Strategic distribution center, Strategy shipping all flights to and (Backhauling management) and Strategic use of information technology (Transportation management system-(TMS)). TMS is a tool in planning of transportation to make it fast and cost-efficient as possible. Elements of the TMS system are Transportation Management and Transportation Optimization.

- Bus & Truck newspaper, “GPS tracking market penetration to get market share” (2015) Web

This article stated that GPS Technology has growth rapidly especially GPS tracking system that can manage transportation to cope with the opening of the ASEAN Economic Community that coming up next. Many GPS companies have to improve their product and system to cover the needs of most users. In term of consumers, in addition to considering the cost of tracking devices and systems, they should consider quality of devices and systems, accuracy and reliable of map data and after sales service.

- National News Bureau & Public Relations, “Department of Land Transport to require public transport and service vehicles to install GPS systems” (2016) Web

There are new regulation of Department of Land Transport (DLT) that require newly registered public trailers and trucks with over 10 wheels to install the GPS navigation system to track driving behavior and prevent accidents because most bus and truck accidents were the result of driver’s behavior, such as exceeding speed limits or working overtime.

- Rungwiroon Komalittipong, “Ranking GPS system in Thailand” (2014) Web

This article indicates that how many players in GPS market and how much market share they have. There are 32 players in the market and the number one is D.T.C. Enterprise Co., Ltd.

- Thapana Phongtanapaibul and Chaiyos Chairungruang, Southeast Bangkok College. “FACTORS DECIDING ON CHOOSING GPS TRACKING SOLUTION SYSTEM FOR FREIGHT TRANSPORTATION AT D.T.C. ENTERPRISE COMPANY LIMITED” (2014) Web

In this study, the author analyzes factors that affect decision making on choosing GPS tracking solution system for freight transportation of D.T.C. Enterprise Company. The finding revealed that different on registered capital, size of company and operating duration were different on opinions.

- Motortrivia news, “The test drive Mimamori Genius Truck wade logistics response AEC” (2013) Web

This journal showed that ISUZU arranged Mimamori Genius truck test drive to demonstrate the potential of the ultimate solution for transportation, got an entrepreneur in business logistics to cope with the liberalization of the ASEAN Economic Community. This system helps improve better driving behavior and more safety, reduce fuel cost and reduce maintenance fee. Therefore, help to reduce business cost and create a truly profitable.

- Truck today, “Way to success of using Mimamori System” (2015) Magazine

This article stated that there are lots of customers that successful from using Mimamori system. They can reduce cost and increase efficiency in their business from improving driving behavior and using Mimamori reports in transportation management. There are 5 factors that make customers successful. 1) Knowing actual fuel consumption rate 2) Restructuring revenue drivers with incentive awards 3) Real knowledge that lead to further development 4) Communication with the same information across the organization 5) Seeing overview operation, reducing time wasted and adding more profit.

- Isuzu Eco Drive Seminar, “Comparison between Mimamori system and GPS system” (2015) Document

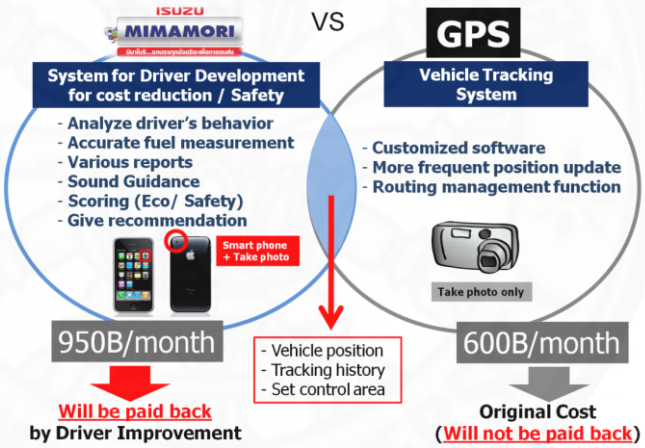


Figure 2.1: Comparison between Mimamori and GPS system

This picture shows the difference between Mimamori system and GPS system. GPS system is like a camera that can only take a picture. On the other hand, Mimamori system is like a smart phone that has many applications such as analyze driver’s behavior, accurate fuel measurement, various reports etc. Also, take a picture. Although both of them can track vehicle, see vehicle history and set control area, Mimamori system can be paid back from driver improvement while GPS system cannot be paid back.

- IBIS World, “Fleet Telematics Systems in the US : Market Research Report” (2015) Web

This report indicate that Fleet Telematics Systems industry has performed exceptionally well over the past five years as the proliferation of industry products increased. Over the next five years, the industry is expected to continue its rapid growth. Greater use of mobile devices with internet connections, increasing regulations and new markets are projected to increase demand.

- Darrell S. Bowman and Tammy E. Trimble, “Market Guide to Fleets Telematics Services” (2012) Web

This study provide a detailed market guide to the current telematics services and review of the available telematics systems by using four criteria; Total solutions, Aftermarket solutions, Complex solutions and Geographically relevant solutions in the identification of 153 telematics solution providers.

CHAPTER 3
RESEARCH METHODOLOGY

FRAMEWORK

This study has applied Customer Buying Process Theory, which describe the customer's journey before they buy a product, to analyze the topic as stated. (Kotler P., & Keller K., 2012)

Figure 3.1: Customer Buying Process Model

The researcher focus on stage1, stage2 and stage4 which are problem/need recognition, information search and purchase decision. As a consequence, the researcher could analyze customer needs, source of information and purchasing criterias that effect to choosing transportation management system. Also, the researcher applied marketing mix theory which are Product, Price, Place and Promotion to study this topic. Therefore, the researcher could specify awareness of Mimamori system, service fee that customer willing to pay, channel which customer know Mimamori system and customer perception toward Mimamori system. The data will be used for suggestion for increasing usage rate of Mimamori system.

RESEARCH METHODOLOGY

Exploratory and descriptive research will be used to gather relevant data which responses to the objectives of study. The data collection will be divided into 2 parts as following;

3.1 EXPLORATORY RESEARCH

3.1.1 Secondary data

The relevant information regarding competitors, market size and industry trends was obtained from various website, newspaper, academic research and literature review.

3.1.2 Primary data

Data was collect base on in-depth interview to gain consumer insights including their perception, attitude, buying decision criteria, triggers and barriers of using transportation management system.

3.2 DESCRIPTIVE RESEARCH

Descriptive research was conducted by using questionnaire to reassure data obtained from the in-depth interview. To classify type of customers by acquiring precise information on consumer profile. Moreover, the questionnaire can help to measure the level of needs, attitudes, and perception to generate the right marketing mixes which the total respondents were 130 persons. Data was collected via offline with face-to-face interaction or self-answer and was analyzed using the Statistical Package for the Social Sciences (SPSS) to analyze frequencies, means, percentages, cross-tabulation and T-test analysis to answer the research objective of this study.

3.3 SAMPLING PROCEDURE

3.3.1 Sample Selection and respondent qualification

Target respondents are transportation business owners or managers who take care of logistics or transportation of company in Bangkok and metropolitan because Bangkok region is the highest sales in Thailand and it is convenience to collect data. The in-depth interview was conducted with 4 persons; 2 persons who use GPS system and 2 person who use Mimamori system.

The respondents was divided into 2 groups which are Mimamori users (user) and GPS users (non-user) to compare attitude, perception, decision making factors, triggers and barriers toward transportation management system. For non-users, they got product knowledge about Mimamori system before doing questionnaire. Therefore, they can see the benefit of Mimamori system. The surveys were distributed offline with face-to-face interaction or self-answer with convenience sampling. The total respondents are 130 persons.

CHAPTER 4
DATA ANALYSIS AND RESULTS

4.1 MARKET ANALYSIS

The Global Positioning System (GPS) is a satellite-based navigation system which provides location and time information for vehicle tracking, tracking history and set control area. There are 32 players in GPS market in Thailand which DTC is the leader in market. Furthermore, Department of Land Transport (DLT) requires newly registered public trailers and trucks with over 10 wheels to install the GPS navigation system to track driving behavior and prevent accidents. This is a great opportunity to increase usage rate of Mimamori System. However, many truck makers also install their own system with including GPS function. For example, Volvo has Dina fleet system, Hino has IQ-San system and UD has Smart Logistics system.

4.2 EXPLORATORY RESEARCH AND KEY FINDINGS

4.2.1 In-depth interview with GPS users.

Findings from GPS users are that Mimamori system is very expensive when compare to GPS system in terms of both device and service fee. Even they know that Mimamori system is more advanced and more valuable than GPS system, they do not want to invest since they already have GPS system. It is too high switching cost. Moreover, Mimamori system has to depend on driver for recording data. They, therefore, worry about resistance of drivers due to complicated system.

4.2.2 In-depth interview with Mimamori users.

Findings from Mimamori users are that Mimamori system makes them know real fuel consumption rate and can improve driving behavior. Therefore, they can reduce fuel cost. One of interviewee said before using Mimamori system, it is hard to set fuel consumption rate and evaluate KPI of drivers. He used his guts feeling and had the idea

that if he wants to improve logistics, he has to improve human resource. As a consequence, he looks for transportation management system to help him and Mimamori system is the answer.

4.3 QUANTITATIVE ANALYSIS AND KEY FINDINGS

Data analysis was done by collecting data from questionnaire surveys and analyzing data by using the Statistical Package for the Social Sciences (SPSS). According to the result, an offline questionnaire surveys were received from 130 respondents (n=130) who are transportation business owners or managers. The key findings and the data interpretation were analyzed as following.

From frequency analysis and descriptive statistics, the respondents are Owner (25%), Manager (41%) and Purchasing (34%). Their truck in-hand is Isuzu (98.5%), Hino (53.8%), Fuso (15.4%), UD (13.8%), Volvo (10.8%) and Scania (10%). They have operating duration for 17.5 years in average. 59.2% of respondents are Mimamori Users, who use Mimamori system to manage their transportation. 62.3 % of Mimamori Users also use GPS system. On the other hand, 40.8% of respondents are non-users which 71.7% of them use GPS system and 28.3% did not have any system in their business.

Table 4.3.1 Important of information source about Transportation Management System (n=130)

Number (Percent) of Respondents						
Information Source	**Strongly not Important**	**Somewhat not Important**	**Somewhat Important**	**Strongly Important**	**Mean**	**Std. Deviation**
Shop, Dealer		5 (3.8)	68 (52.3)	57 (43.8)	3.40	.56514
Seminar, Trade Show	3 (2.3)	13 (10)	72 (55.4)	42 (32.3)	3.18	.69845
Friends	5 (3.8)	30 (23.1)	63 (48.5)	32 (24.6)	2.94	.79489
Review from internet	6 (4.6)	28 (21.5)	71 (54.6)	25 (19.2)	2.88	.76386
Website	7 (5.4)	31 (23.8)	72 (55.4)	20 (15.4)	2.81	.75838
Social Media	9 (6.9)	34 (26.2)	67 (51.5)	20 (15.4)	2.75	.79788
Newspaper, Magazine	7 (5.4)	34 (26.2)	76 (58.5)	13 (10)	2.73	.71299

The most important source to search information about Transportation Management System is shop or dealer, seminar or trade show and friends respectively.

Table 4.3.2 Decision making factors in using Transportation Management System (n=130)

Number (Percent) of Respondents						
Factor	**Strongly not Important**	**Somewhat not Important**	**Somewhat Important**	**Strongly Important**	**Mean**	**SD**
Quality of system (accuracy of information)		2 (1.5)	27 (20.8)	101 (77.7)	3.76	.46262
After Sales Service		2 (1.5)	29 (22.3)	99 (76.2)	3.75	.47105
Durability of the device		2 (1.5)	40 (30.8)	88 (67.7)	3.66	.50661
Extensive of service center		4 (3.1)	40 (30.8)	86 (66.2)	3.63	.54472
Easy to use		2 (1.5)	52 (40)	76 (58.5)	3.57	.52737
Price of the device		4 (3.1)	49 (37.7)	77 (59.2)	3.56	.55690
Service fee		4 (3.1)	55 (42.3)	71 (54.6)	3.52	.56010
Sales representative advising		5 (3.8)	56 (43.1)	69 (53.1)	3.49	.57393
Brand reputation		7 (5.4)	52 (40)	71 (54.6)	3.49	.60034

The most important factors in using Transportation Management System are quality of system (accuracy of information), after sales service, durability of the device, extensive of device center, easy to use, price of the device, service fee, sales representative advising and brand reputation respectively.

Figure 4.3.1 GPS system brand that respondents use. (n=86)

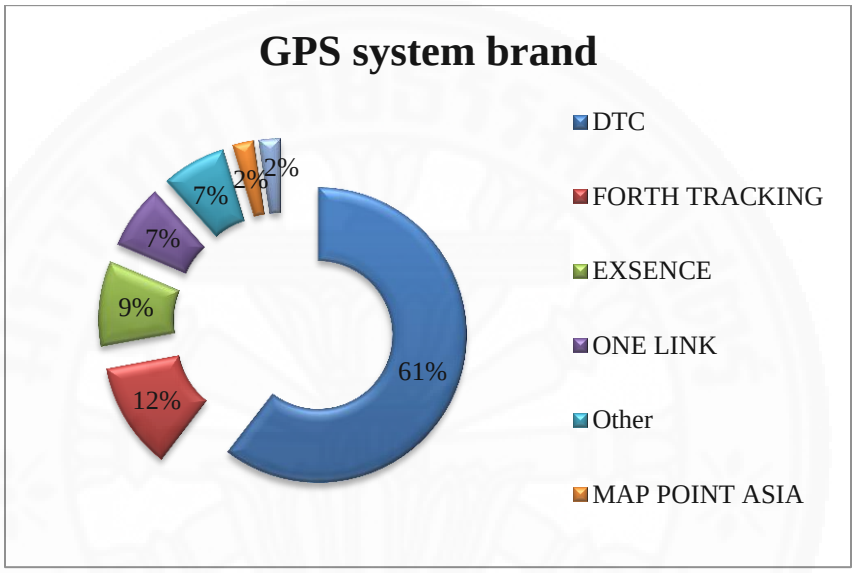
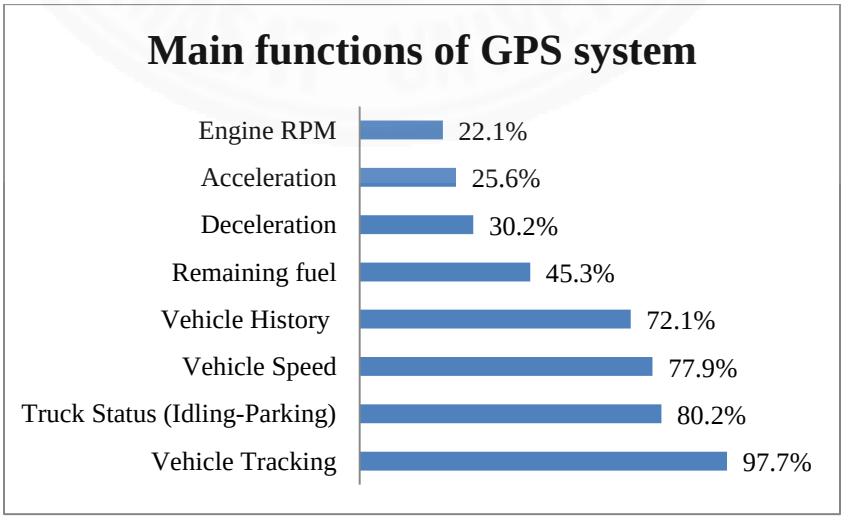


Figure 4.3.2 Main functions of GPS system that use for transportation management. (n=86)



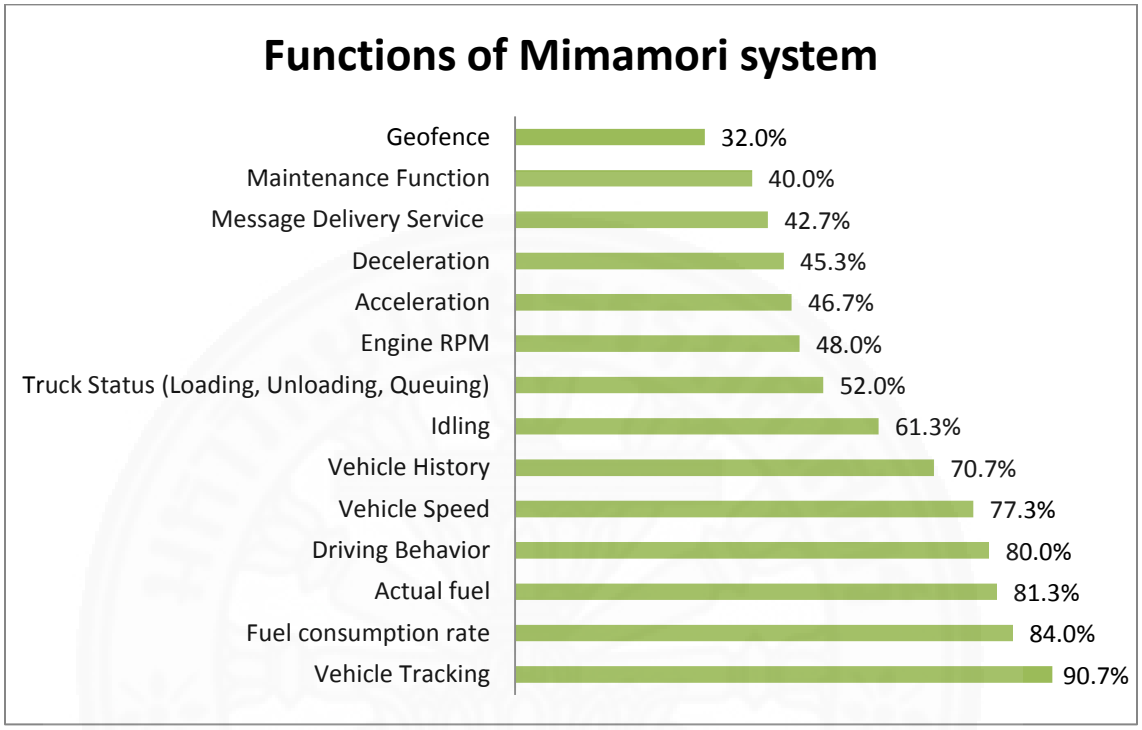
66.2 % of respondents use GPS system which DTC is the highest share (61%) following by Forth Tracking (12%), Exsence (9%) and One link (7%) respectively. In addition, the main functions of GPS system that respondents use for managing transportation are Vehicle Tracking (97.7%), Truck Status (Idling-Parking) (80.2%), Vehicle Speed (77.9%) and Vehicle History (72.1%). These results show that the entrepreneurs are not only concern about tracking but also idling which is the main problem of parking and sleep which lead to fuel consumption, safety, and driving out of route. The monthly service fee of GPS system is 470 baht per month in average.

However, there are more functions which the entrepreneurs need more from GPS system to help them manage their transportation more efficiency. The most important functions are Driving Behavior analysis (46.8%) and Fuel Consumption rate (40%) following by Oil measurement from direct Injection (60%) which is somewhat important. Also, Executive Summary (63.9%), Driving Recommendation (50%) and Distance Measurement (45%) are less important.

Table 4.3.3 Top three functions that respondents need more from GPS system (1 = most important, 3 = less important)

Function	1		2		3	
	No.	%	No.	%	No.	%
Distance Measurement	11	27.5%	11	27.5%	18	45.0%
Oil measurement from direct Injection	7	35.0%	12	60.0%	1	5.0%
Fuel Consumption rate	28	40.0%	25	35.7%	17	24.3%
Driving Behavior analysis	29	46.8%	21	33.9%	12	19.4%
Driving Recommendation	1	3.3%	14	46.7%	15	50.0%
Executive Summary	10	27.8%	3	8.3%	23	63.9%

Figure 4.3.3 Functions of Mimamori system that use for transportation management. (n=77)



Mimamori users are 59.2 % of respondents. Functions that they use most for managing transportation are Vehicle Tracking (90.7%) following by Fuel consumption rate (84%), Actual fuel (81.3%) and Driving Behavior (80%) which GPS system did not have these functions except Vehicle Tracking. These results show that the entrepreneurs give important to fuel consumption rate which leads to reduce transportation cost more than tracking vehicle only.

The monthly service fee of Mimamori system is 950 Baht per month which 54.6% of respondents think it is reasonable while 45.4% think it is too expensive. However, the most important reasons for not using Mimamori system are High Investment in device (14.6%), following by Already have transportation management system (10%) and High Service fee (9.2%) respectively

There were some respondents who use both Mimamori system and GPS system. As a consequence, the researcher analyzed data by using cross-tabulation and t-test analysis to compare the different between two groups; GPS User versus GPS Non-user and Mimamori User versus Mimamori Non-user.

Table 4.3.4 Source of Mimamori system's awareness

Source of awareness	Total Respondent	GPS User	GPS Non-user	Mima User	Mima Non-user
	n =103	n =68	n =35	n =77	n =26
Shop, Dealer	65.4%	68.6%	59.1%	85.7%	35.8%
Seminar, Trade Show	3.1%	4.7%	.0%	3.9%	1.9%
Friends	6.2%	2.3%	13.6%	6.5%	5.7%
Media	2.3%	2.3%	2.3%	1.3%	3.8%
Internet	1.5%	.0%	4.5%	1.3%	1.9%

79.2% of respondents know Mimamori system and most of them know from shop or dealer (65.4%) following by friends (6.2%). In contrast, GPS user knows Mimamori system from seminar or trade show (4.7%) secondary from shop or dealer.

Table 4.3.5 Reasonable of Mimamori service fee

Mimamori service fee	Total Respondent	GPS User	GPS Non-user	Mima User	Mima Non-user
	n =130	n =86	n =44	n =77	n =53
Resonable	54.6%	47.7%	68.2%	63.6%	41.5%
Non reasonable	45.4%	52.3%	31.8%	36.4%	58.5%
Appropriate price	**540**	**540**	**545**	**565**	**520**
GPS Service fee	470	470	0	450	500

54.6% of respondents agree that Mimamori service fee is reasonable while 52.3% of GPS users and 58.5% of Mimamori non-users think Mimamori service fee is not

reasonable. They suggest that Mimamori service fee should be around 520-565 Baht per month. However, they give value to Mimamori system more than GPS system.

Table 4.3.6 Attitude toward Mimamori system (n=130)

Number (Percent) of Respondents						
Statement	**Strongly Disagree**	**Somewhat Disagree**	**Somewhat Agree**	**Strongly Agree**	**Mean**	**SD**
Mimamori helps improve driving behavior skills of your drivers to be better.		8 (6.2)	46 (35.4)	76 (58.5)	3.52	.61273
You have a policy to use Mimamori reports to manage your transportation.		2 (1.5)	61 (46.9)	67 (51.5)	3.50	.53193
Mimamori makes you know real fuel consumption rate.		3 (2.3)	59 (45.4)	68 (52.3)	3.50	.54631
You have a policy to give incentive to your drivers for economical driving.		3 (2.3)	60 (46.2)	67 (51.5)	3.49	.54625
Mimamori can help increase efficiency of your transportation e.g. reduce accident.		3 (2.3)	65 (50.0)	62 (47.7)	3.45	.54434
Mimamori can help reduce your transportation cost.		3 (2.3)	66 (50.8)	61 (46.9)	3.45	.54362
Mimamori makes your drivers get better fuel consumption rate.	1 (0.8)	6 (4.6)	59 (45.4)	64 (49.2)	3.43	.62181
You have a policy to use Mimamori score as a benchmark to evaluate your drivers.		4 (3.1)	73 (56.2)	53 (40.8)	3.38	.54652

The respondents strongly agree that Mimamori system make them know real fuel consumption rate and help improve better driving behavior skills of their drivers which lead to reducing fuel cost. Moreover, they have a policy to give incentive to drivers for economical driving and agree that Mimamori report can help manage their transportation.

Table 4.3.7 Summary of comparison the attitude toward Mimamori system between GPS user and GPS Non-user (95% CI, p-value ≤ 0.05)

Statement	Mean (SD) of GPS User n =86	Mean (SD) of GPS Non-user n =44	t	p-value
Mimamori makes you know real fuel consumption rate.	3.45 (0.55)	3.59 (0.54)	-1.362	0.176
Mimamori helps improve driving behavior skills of your drivers to be better.	3.49 (0.65)	3.59 (0.54)	-0.902	0.369
Mimamori makes your drivers get better fuel consumption rate.	3.41 (0.60)	3.48 (0.66)	-0.608	0.544
You have a policy to give incentive to your drivers for economical driving.	3.48 (0.57)	3.52 (0.51)	-0.453	0.651
You have a policy to use Mimamori score as a benchmark to evaluate your drivers.	3.40 (0.54)	3.34 (0.57)	0.536	0.593
You have a policy to use Mimamori reports to manage your transportation.	3.42 (0.54)	3.65 (0.48)	-2.488	0.014
Mimamori can help reduce your transportation cost.	3.43 (0.54)	3.48 (0.55)	-0.465	0.642
Mimamori can help increase efficiency of your transportation e.g. reduce accident.	3.37 (0.55)	3.61 (0.49)	-2.440	0.016

There was a significant difference in attitude toward Mimamori system between GPS user and GPS non-user at 95% confidence level. These results show that GPS non-users strongly agree that Mimamori system can help increase efficiency in their transportation and they will use Mimamori reports for transportation management.

Table 4.3.8 Summary of comparison the attitude toward Mimamori system between Mimamori user and Mimamori Non-user (95% CI, p-value ≤ 0.05)

Statement	Mean (SD) of Mima User n =77	Mean (SD) of Mima Non-user n =53	t	p-value
Mimamori makes you know real fuel consumption rate.	3.60 (0.52)	3.36 (0.56)	2.500	0.014
Mimamori helps improve driving behavior skills of your drivers to be better.	3.57 (0.57)	3.45 (0.67)	1.085	0.280
Mimamori makes your drivers get better fuel consumption rate.	3.40 (0.67)	3.47 (0.54)	-0.621	0.536
You have a policy to give incentive to your drivers for economical driving.	3.53 (0.55)	3.43 (0.54)	1.010	0.314
You have a policy to use Mimamori score as a benchmark to evaluate your drivers.	3.43 (0.55)	3.30 (0.54)	1.302	0.195
You have a policy to use Mimamori reports to manage your transportation.	3.60 (0.52)	3.36 (0.52)	2.571	0.011
Mimamori can help reduce your transportation cost.	3.52 (0.58)	3.34 (0.48)	1.872	0.064
Mimamori can help increase efficiency of your transportation e.g. reduce accident.	3.52 (0.55)	3.36 (0.52)	1.668	0.098

There was a significant difference in attitude toward Mimamori system between Mimamori user and Mimamori non-user at 95% confidence level. These results show that Mimamori users strongly agree that Mimamori system make them know real fuel consumption rate and Mimamori reports can help manage transportation.

Table 4.3.9 Perception toward Mimamori system (n=130)

Number (Percent) of Respondents						
Factor	**Least**	**Somewhat Least**	**Somewhat Most**	**Most**	**Mean**	**SD**
Fuel consumption rate		1 (0.8)	58 (44.6)	71 (54.6)	3.54	.51570
Driving behavior analysis		2 (1.5)	60 (46.2)	68 (52.3)	3.51	.53187
Quality of system (accuracy of information)		4 (3.1)	74 (56.9)	52 (40)	3.37	.54472
Eco and Safety instruction in real time	1 (0.8)	8 (6.2)	68 (52.3)	53 (40.8)	3.33	.62739
After Sales Service		14 (10.8)	65 (50)	51 (39.2)	3.28	.64980
Have various reports	1 (0.8)	6 (4.6)	84 (64.6)	39 (30)	3.24	.56793
Sales representative advising		15 (11.5)	81 (62.3)	34 (26.2)	3.15	.59860
Extensive of service center		23 (17.7)	69 (53.1)	38 (29.2)	3.12	.67783
Durability of the device		11 (8.5)	93 (71.5)	26 (20)	3.12	.52288
Easy to use	1 (0.8)	13 (10)	89 (68.5)	27 (20.8)	3.09	.57663
Brand reputation	1 (0.8)	32 (24.6)	83 (63.8)	14 (10.8)	2.85	.60311
Service fee is reasonable	7 (5.4)	33 (25.4)	69 (53.1)	21 (16.2)	2.80	.77159
Price of the device is reasonable	3 (2.3)	45 (34.6)	62 (47.7)	20 (15.4)	2.76	.73457

The strengths of Mimamori system in customer's mind are fuel consumption rate and driving behavior analysis. Even though ISUZU brand has a good reputation in Thailand, Mimamori system is not famous enough. Also, pricing of Mimamori device and service fee are not reasonable.

Table 4.3.10 Summary of comparison perception toward Mimamori system between GPS user and GPS Non-user (95% CI, p-value ≤ 0.05)

Factor	Mean (SD) of GPS User	Mean (SD) of GPS Non-user	t	p-value
	n =86	n =44		
Brand reputation	2.79 (0.60)	2.95 (0.61)	-1.472	0.143
Sales representative advising	3.09 (0.59)	3.25 (0.61)	-1.420	0.158
Quality of system (accuracy of information)	3.27 (0.52)	3.57 (0.55)	-3.075	0.003
Easy to use	3.02 (0.53)	3.23 (0.64)	-1.929	0.056
Durability of the device	3.10 (0.53)	3.14 (0.51)	-0.326	0.745
Fuel consumption rate	3.55 (0.50)	3.52 (0.55)	0.248	0.805
Driving behavior analysis	3.52 (0.53)	3.48 (0.55)	0.465	0.643
Eco and Safety instruction in real time	3.31 (0.66)	3.36 (0.57)	-0.426	0.671
Have various reports	3.23 (0.61)	3.25 (0.49)	-0.165	0.869
Price of the device is reasonable	2.64 (0.75)	3 (0.65)	-2.712	0.008
Service fee is reasonable	2.66 (0.76)	3.07 (0.73)	-2.916	0.004
Extensive of service center	3.01 (0.64)	3.32 (0.71)	-2.489	0.014
After Sales Service	3.19 (0.64)	3.48 (0.63)	-2.465	0.015

There was a significant difference in perception toward Mimamori system between GPS user and GPS non-user at 95% confidence level. These results show that GPS non-users think Mimamori system is outstanding in reasonable price, extensive of service center, especially, after sales service and quality of system.

Table 4.3.11 Summary of comparison perception toward Mimamori system between Mimamori user and Mimamori Non-user (95% CI, p-value ≤ 0.05)

Factor	Mean (SD) of Mima User	Mean (SD) of Mima Non-user	t	p-value
	n =77	n =53		
Brand reputation	2.95 (0.56)	2.70 (0.64)	2.363	0.020
Sales representative advising	3.22 (0.55)	3.04 (0.65)	1.726	0.087
Quality of system (accuracy of information)	3.43 (0.52)	3.28 (0.57)	1.504	0.135
Easy to use	3.12 (0.63)	3.06 (0.50)	0.584	0.560
Durability of the device	3.17 (0.59)	3.04 (0.39)	1.410	0.161
Fuel consumption rate	3.60 (0.52)	3.45 (0.50)	1.580	0.117
Driving behavior analysis	3.56 (0.55)	3.43 (0.50)	1.315	0.191
Eco and Safety instruction in real time	3.35 (0.68)	3.30 (0.54)	0.434	0.665
Have various reports	3.22 (0.64)	3.26 (0.45)	-0.427	0.670
Price of the device is reasonable	2.83 (0.70)	2.66 (0.78)	1.306	0.194
Service fee is reasonable	2.96 (0.68)	2.57 (0.84)	2.953	0.004
Extensive of service center	3.22 (0.68)	2.96 (0.65)	2.167	0.032
After Sales Service	3.40 (0.63)	3.11 (0.64)	2.548	0.012

There was a significant difference in perception toward Mimamori system between Mimamori user and Mimamori non-user at 95% confidence level. These results show that Mimamori users think Mimamori system is outstanding in brand reputation, reasonable price of service fee, extensive of service center and after sales service.

Table 4.3.12 Top three factors to convert customers from GPS system to Mimamori system (1 = most important, 3 = less important)

Factor	1		2		3	
	No.	%	No.	%	No.	%
Brand reputation	5	26.3%	8	42.1%	6	31.6%
Sales representative advising	9	37.5%	4	16.7%	11	45.8%
Durability of the device	0	0.0%	5	38.5%	8	61.5%
Quality of system	32	45.1%	20	28.2%	19	26.8%
Easy to use	8	13.8%	23	39.7%	27	46.6%
Service fee	7	22.6%	11	35.5%	13	41.9%
After Sales Service	7	17.9%	13	33.3%	19	48.7%
Driving Behavior Analysis	58	61.1%	24	25.3%	13	13.7%
Driving Recommendation	4	10.0%	22	55.0%	14	35.0%

The most important factors to convert GPS user to Mimamori user are Driving Behavior analysis (61.1%) and Quality of system (45.1%) following by Driving Recommendation (55%) and Brand reputation (42.1%) which is somewhat important.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATION

The most important factors for using transportation management system are accuracy of information, after sales service and durability of device. Also, the most important of information sources about transportation management system are shop or dealer, seminar or trade show and friends.

Customers did not use GPS system for tracking vehicle only but also eco-fuel, safety and security. The most functions of GPS system that customers use for managing transportation are vehicle tracking, truck status (idling – parking), vehicle speed and vehicle history. The monthly service fee of GPS system is 470 baht per month in average. However, customers need more functions from GPS system to help manage transportation more efficiency which are driving behavior analysis and fuel consumption rate, which Mimamori system has these functions.

However, the reasons that customer are not using Mimamori system are high investment in device, already have transportation management system and high service fee. Since Mimamori system can install in Isuzu truck only, therefore, customers who have trucks in many brands cannot use the same system for managing transportation. If customers already have transportation management system such as GPS system or their own system, it is too high switching cost to change system to Mimamori. Furthermore, the appropriate Mimamori service fee should not exceed 600 baht per month. The strengths of Mimamori system are fuel consumption rate and driving behavior analysis. On the contrary, the weaknesses of Mimamori system are brand reputation, reasonable price of device and service fee.

To convert customers from GPS system to Mimamori system, the most important factors are driving behavior analysis, quality of system, driving recommendation and brand reputation.

The recommendation strategy to increase usage rate of Mimamori system for GPS user

Characteristic: 79% of this group know Mimamori system and believe that Mimamori system makes them know real fuel consumption rate and helps improve better driving behavior skills. Moreover, they have a policy to give incentive to drivers for economical driving.

Reason for not using Mimamori system: Since Mimamori system has high investment in device and they already have GPS system which provides basic functions such as vehicle tracking that they can use for managing transportation. Therefore, the company should do a promotion campaign for this group such as special discount.

Service fee: They think Mimamori service fee is too expensive and the appropriate price should be 540 baht per month.

Strategy: Communicate benefit of Mimamori system in terms of fuel consumption rate and driving behavior analysis which GPS system did not have these functions. Moreover, they can use Mimamori score from Mimamori report as a benchmark to evaluate and give incentive to their drivers.

The recommendation strategy to increase usage rate of Mimamori system for GPS Non-user

Characteristic: 79.5% of this group know Mimamori system and strongly agree that Mimamori can help increase efficiency of their transportation and they have a policy to

use Mimamori reports to manage your transportation. Moreover, they believe that Mimamomri system has a good quality and after sales service.

Reason for not using Mimamori system: Since Mimamori system has high investment in device and they have a few truck in-hand. Therefore, it is not worth to invest.

Service fee: Most of people in this group think Mimamori service fee is reasonable.

Strategy: Communicate benefit of Mimamori system in terms of accuracy of information, fuel consumption rate, driving behavior analysis and especially after sales service and quality of system.

The recommendation strategy to increase usage rate of Mimamori system for Mimamori Non-user

Characteristic: 50% of this group does not know Mimamori system. However, they believe that Mimamori helps improve better driving behavior skills and makes drivers get better fuel consumption rate.

Reason for not using Mimamori system: Mimamori system has high investment and they already have transportation management system. Moreover, the monthly service fee is too high.

Service fee: They think Mimamori service fee is too expensive and the appropriate price should be 520 baht per month.

Strategy: Create awareness to this group and communicate benefit of Mimamori system in terms of fuel consumption rate and driving behavior analysis which are the unique selling point of Mimamori system.

LIMITATIONS OF THE STUDY

Data errors

The length of the questionnaire leaded to an existence of response bias such as acquiescence bias, extremity bias, and social desirability bias especially offline. Furthermore, missing data occurred because respondents sometimes gave up and/or got distracted during the survey.

Sampling selection error

Some companies, especially big companies business owners are quite busy and hard to access. Moreover, for Mimamori users, most owners let operators to do the system so they did not know about Mimamori functions in detail.

FURTHER RECOMMENDATION

According to new regulation of Department of Land Transport (DLT), trailers and trucks with over 10 wheels have to install the GPS navigation system to track driving behavior and prevent accidents. This new rule leads to intense competition. Shops or dealers are the most influent of information searching. Also, after sales service and quality of device are the factors of using transportation management system. This study already state in pricing and selling points for each segment. However, there are other marketing mixes that should be considered to be more competitive such as attractive promotion.

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APPENDICES

APPENDIX A

Questionnaire

FACTORS THAT INCREASE USAGE RATE OF TRANSPORTATION MANAGEMENT SYSTEM (ISUZU MIMAMORI) IN TRUCK BUSINESS

General Information

Company name_____ Your Position_____

Type of cargo _____ Operating duration _____ Year

Truck in-hand at the present

☐ ISUZU ____ unit ☐ HINO _____unit ☐ FUSO _____unit ☐ UD _____ unit

☐ VOLVO ___unit ☐ SCANIA ____unit ☐ FAW _____ unit ☐ SHACMAN _ unit

☐ CAMC ____ unit ☐ SINO _____ unit ☐ HOWO _____ unit ☐ OTHERS ____unit

A Transportation Management System (TMS) is a software application designed to manage and optimize inbound and/or outbound transportation operations.

Questions

1. When you are interested in using Transportation Management System, how much important are these source you use to get information to evaluate the product? Rating will rank from 1 to 4, one represent for "Not important" and four for "Very important"

	Strongly not important **1**	← **2**	→ **3**	Strongly important **4**
1.1 Shop, Dealer				
1.2 Friends				
1.3 Seminar, Trade Show				
1.4 Newspaper, Magazine				
1.5 Website				
1.6 Review from internet				
1.7 Social Media				
1.8 Others				

2. How much important are these factors you use to make decision in using Transportation Management System? Rating will rank from 1 to 4, one represent for "Not important" and four for "Very important"

	Strongly not important **1**	← **2**	→ **3**	Strongly important **4**
2.1 Brand reputation				
2.2 Sales representative advising				
2.3 Quality of system (accuracy of information)				
2.4 Easy to use				
2.5 Durability of the device				
2.6 Price of the device				
2.7 Service fee				
2.8 Extensive of service center				
2.9 After Sales Service				

3. Do use you GPS system at present?

☐ Yes ☐ No (Continue with no. 8)

4. Which GPS system do you use?

☐ DTC ☐ GLOBE TECH ☐ MOBILE INNOVATION

☐ MAP POINT ASIA ☐ FORTH TRACKING ☐ EXSENCE

☐ ONE LINK ☐ Others _____

5. What are main functions of GPS system that you use for managing your business? (Multiple Answer)

☐ Vehicle tracking ☐ Vehicle History ☐ Truck Status(Idling-Parking)

☐ Remaining fuel ☐ Vehicle Speed ☐ Engine RPM

☐ Acceleration ☐ Deceleration ☐ Others_____

6. What functions would you need more from GPS system to help you to manage your transportation more efficiency? (Please prioritize the top three 1 = Most important, 3 = Less important)

☐ Distance Measurement ☐ Oil measurement from direct Injection

☐ Fuel Consumption rate ☐ Driving Behavior analysis

☐ Driving Recommendation ☐ Executive Summary

☐ Others_____

7. How much monthly service fee of your GPS system?

_____ Baht/Month

8. Do you know Mimamori system?

☐ Yes ☐ No (Continue with no. 10)

9. Which source did you know Mimamori system?

_____

10. How much do you agree with the following statement? Rating will rank from 1 to 4, one represent for "Strongly disagree" and four for "Strongly agree"

	Strongly disagree 1	**2**	**3**	**Strongly agree 4**
10.1 Mimamori makes you know real fuel consumption rate.				
10.2 Mimamori helps improve driving behavior skills of your drivers to be better.				
10.3 Mimamori makes your drivers get better fuel consumption rate.				
10.4 You have a policy to give incentive to your drivers for economical driving.				
10.5 You have a policy to use Mimamori score as a benchmark to evaluate your drivers.				
10.6 You have a policy to use Mimamori reports to manage your transportation.				
10.7 Mimamori can help reduce your transportation cost.				
10.8 Mimamori can help increase efficiency of your transportation e.g. reduce accident.				

11. Do you use Mimamori system at present?

☐ Yes

11.1 Which functions of Mimamori system that you use for managing your business? (Multiple Answer)

☐ Vehicle tracking ☐ Vehicle History ☐ Actual fuel

☐ Idling ☐ Fuel consumption rate ☐ Vehicle Speed

☐ Deceleration ☐ Acceleration ☐ Engine RPM

☐ Driving Behavior ☐ Geofence ☐ Maintenance Function

☐ Message Delivery Service ☐ Truck Status (Loading, Unloading, Queuing)

☐ Others_____

11.2 Please prioritize the <u>top three functions</u> that you think are the most important in managing your business? (1 = Most important, 3 = Less important)

☐ Vehicle tracking ☐ Vehicle History ☐ Actual fuel

☐ Idling ☐ Fuel consumption rate ☐ Vehicle Speed

☐ Deceleration ☐ Acceleration ☐ Engine RPM

☐ Driving Behavior ☐ Geofence ☐ Maintenance Function

☐ Message Delivery Service ☐ Truck Status (Loading, Unloading, Queuing)

☐ Others_____

☐ No

11.3 What is <u>the most important reason</u> for not using Mimamori system?

☐ High Investment (Device(
☐ High Service fee
☐ Difficulties in use
☐ Drivers did not cooperate
☐ GPS system require from employer only
☐ Already have transportation management system
☐ Others_____

12. Do you think Mimamori service fee is reasonable or not? (950 Baht per month)

☐ Yes ☐ No (Please provide the services that you think is appropriate _____Baht per month)

13. In your opinion, how much strength of Mimamori system in these following factors? Rating will rank from 1 to 4, one represent for "Least" and four for "Most"

	Least 1	**2**	**3**	**Most 4**
13.1 Brand reputation				
13.2 Sales representative advising				
13.3 Quality of system (accuracy of information)				
13.4 Easy to use				
13.5 Durability of the device				
13.6 Fuel consumption rate				
13.7 Driving behavior analysis				
13.8 Eco and Safety instruction in real time				

	Least 1	← 2	3 →	Most 4
13.9 Have various reports				
13.10 Price of the device is reasonable				
13.11 Service fee is reasonable				
13.12 Extensive of service center				
13.13 After Sales Service				

14. What are the most top three factors that make you use Mimamori system instead of GPS system? (1 = Most important, 3 = Less important)

☐ Brand reputation ☐ Sales representative advising ☐ Durability of the device

☐ Quality of system ☐ Driving Behavior Analysis ☐ After Sales Service

☐ Easy to use ☐ Service fee ☐ Driving Recommendation

☐ Others_____

- End of the questionnaire. Thank you for your time -

BIOGRAPHY

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