
EMPOWERING PUBLIC FREIGHT DRIVERS THROUGH IMPROVING VEHICLE EMERGENCY RESPONSE CAPABILITIES

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ABSTRACT

KEYWORDS

Public Freight, Vehicle
Damage, Drivers,
Emergency Action

The evaluation was carried out to determine the skills of emergency response handling by public freight drivers to vehicle damage so that it can be used to improve the ability of public freight drivers to anticipate emergency response. Location of survey survey is in Jakarta and surrounding areas. The sampling technique used in this study is non probability sampling and Purposive Sampling. The study results showed that more than 50% of public freight drivers do all tasks of delivering goods such as driving, cleaning vehicles, maintaining vehicles, supervising the process of loading/unloading and maintaining cargo. The most common types of vehicle damage experienced by public freight drivers are broken tires, transmission system disturbances and brake system disturbances. Public freight drivers tend to repair damage from broken tires, transmission system disturbances, brake system disturbances themselves, whereas to repair damaged axles and engine damage, drivers tend to contact the nearest repair shop and/or contact the company. The evaluation results show the need to improve the driver's ability in emergency response related to vehicle conditions such as inspection of vehicle equipment, vehicle loading procedures, tire burst, transmission system disturbances, brake system disturbances.

INTRODUCTION

The data from the Indonesian National Police Traffic Management Center (Korlantas Polri), as published by the Ministry of Transportation, indicates that the number of traffic accidents in Indonesia reached 103,645 cases in 2021, which is higher than the 100,028 cases reported in 2020. The total number of fatalities in 2021 was 25,266, with 10,553 serious injuries and 117,913 minor injuries, resulting in material losses amounting to Rp246 billion. In terms of the types of vehicles involved, motorcycle accidents accounted for the highest percentage at 73%, followed by freight transport at 12% (dataindonesia.id, 2022).

Ninety percent of the findings by the National Transportation Safety Committee (KNKT) regarding the causes of truck accidents, from a human aspect, point to drivers lacking technological knowledge, such as not understanding the functioning of brakes, full hydraulic brake systems, hydraulic air brakes, and full air brakes. KNKT identified a competence deficiency in drivers not covered by the driver's license issuance or training mechanisms (detik.com, 2022).

Goods transportation with Public Motorized Vehicles consists of general goods transportation and special goods transportation. General goods transportation involves non-hazardous items that do not require special facilities. Motorized vehicles used for goods transportation are required to use cargo (Undang Undang Nomor 22 Tahun 2009 Tentang Lalu Lintas Dan Angkutan Jalan, n.d.).

Every public transportation company must prepare an emergency response document in the form of standard operating procedures to address any emergency situations. This includes

the development and implementation of emergency response management, identification of potential emergencies in operational activities, and crisis management system and emergency response (Peraturan Menteri Perhubungan Nomor PM 85 Tahun 2018 Tentang Sistem Manajemen Keselamatan Perusahaan Angkutan Umum, n.d.):

- a) Development and implementation of emergency response management;
- b) identification of all potential emergencies that may arise in the course of operations; and
- c) crisis management system and emergency response

The requirements for motorized vehicles used for goods transportation include meeting technical and roadworthy standards proven by test certificates, having a Cargo Manifest, clearly displaying the company name on the left, right, and rear sides of the vehicle, attaching a Reflective Safety Device to the rear and sides of the motorized vehicle, providing a complete first aid kit, and meeting the Minimum Service Standards for Goods Transportation (Peraturan Menteri Perhubungan Nomor PM 60 Tahun 2019 Tentang Penyelenggaraan Angkutan Barang Dengan Kendaraan Bermotor Di Jalan, n.d.).

The Minimum Service Standards related to driver competence according to this regulation are that drivers must have knowledge of service routes, emergency response, and service size following training at least once every 5 years. Law No. 22 of 2009 concerning Traffic and Road Transportation, Article 203, paragraph (1), mandates that "the Government is responsible for ensuring Traffic Safety and Road Transportation," and Article 208, paragraph (1) of Chapter XI, Section Four mandates that traffic and road transportation supervisors are responsible for building and realizing a culture of traffic and road safety. In efforts to prevent traffic accidents, various preventive, educational, and curative measures need to be taken.

The evaluation of common goods transportation driver emergency response aims to determine the ability to handle emergency situations regarding vehicle damage, providing a basis for improving the emergency response capabilities of common goods transportation drivers. The evaluation of the emergency response conditions of common goods transportation drivers is carried out using purposive sampling techniques, which evaluate based on samples chosen for specific considerations, such as population characteristics or known features focused on specific goals (Arikunto & Suharsimi, 2011; Notoatmodjo, 2018).

RESEARCH METHOD

For analysis purposes, primary data was collected through interview surveys with common goods transportation drivers aimed at exploring their experiences in handling emergency and hazardous conditions on the road. The interviews were conducted using a survey form containing questions related to:

- Respondent identity and experience as a common goods transportation driver.
- Assignments, rights, and obligations as a driver.
- Experiences with hazardous incidents.
- Experiences and knowledge of emergency response to vehicle breakdowns on the road.
- Experiences and knowledge of emergency response to accidents on the road.

The sampling technique used in this research is non-probability sampling with purposive sampling. The sample criteria for this research are common goods transportation drivers. Roscoe (1975), cited by (Uma Sekaran, 2017), provides a general reference for determining the sample size, suggesting that a sample size of more than 30 and less than 500 is appropriate for most research. The survey location is the DKI Jakarta province.

Analysis of the primary survey results involves both quantitative and qualitative analyses to understand the extent of the drivers' presence and perception regarding emergency response handling in common goods transportation. This information can be used to evaluate the

emergency response actions of common goods transportation drivers during the course of the study.

RESULTS AND DISCUSSION

Driver Background

The lowest age of respondents was 20 years and the highest age was 64 years. The age of most respondents in the age range of 26-50 years. The highest education respondents were junior high school (37.6%) and high school (35%). The lowest education was primary school (25.6%). There were respondents who had D4 and S1 education, amounting to 1.7%. The distribution of respondents' age groups and education is presented in Table 1 and Figure 1.

Table 1. Age Group of Respondents

Age Group	Sum	Percentage
< 21	2	1,7%
21-25	10	8,5%
26-30	20	17,1%
31-35	16	13,7%
36-40	22	18,8%
40-45	19	16,2%
46-50	15	12,8%
51-55	8	6,8%
56-60	4	3,4%
61-65	1	0,9%
> 65	0	0,0%
Total	117	

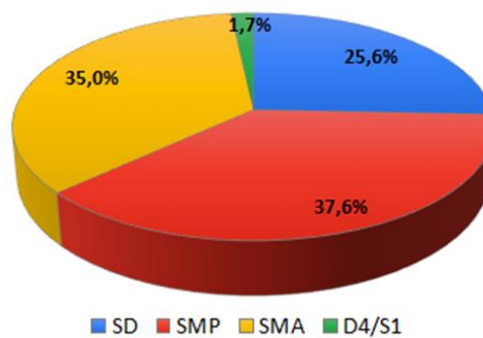


Figure 1. Respondent Education

Driver's License Owned

Most respondents have a General Driver's License according to the vehicle being driven. There are 17.1% of respondents who do not have a General Driver's License. The distribution of SIM ownership types owned by respondents is presented in Table 2.

Table 2. Driver's License Ownership

SIM Owned	Sum	Percentage
A	4	3,4%
A Umum	2	1,7%

B1	16	13,7%
B1 Umum	37	31,75
B2	0	0,0%
B2 Umum	58	49,6%

Driving Experience

Most respondents have had experience driving freight transportation for more than 2 years, even 53.8% of respondents have had driving experience for more than 10 years. The length of driving experience of the respondents is presented in Table 3.

Table 3. Freight Transport Driving Experience

Experience	Sum	Percentage
< 2 Year	4,0	3,4%
2 - 4 Year	13,0	11,1%
5 - 7 Year	20,0	17,1%
8 - 10 Year	17,0	14,5%
> 10 Year	63,0	53,8%

Presence of Vehicle Crew

The presence of vehicle crews who assist respondents on trips is relatively low, only 38.5% of respondents are always assisted by vehicle crews. The presence of the vehicle crew is presented in Figure 2.

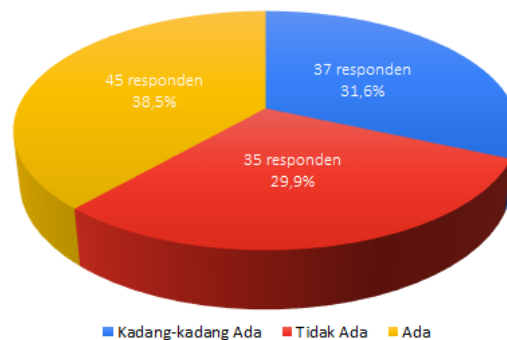


Figure 2. The Presence of Helpful Vehicle Crews

Type of vehicle used

The type of vehicle most used by respondents over the past three years was the Colt Diesel Double (CDD) at 40.2%. Some respondents use more than 1 (one) type of vehicle. The types of vehicles used by respondents today are presented in Table 4.

Table 4. Type of Vehicle Used

Vehicle Type	Sum	Percentage
Colt Diesel Double (CDD)	49	41,9%
Colt Diesel Double (CDD),	1	0,9%
Colt Diesel Engkel (CDE)	13	11,1%
Fuso	16	13,7%
Pick up	3	2,6%
Trailer	8	6,8%
Tronton	20	17,1%
Wing box	7	6,0%

Driver Payment System

The payment systems received by respondents were the salary system and road money, at 33.3% and 28.2% respectively. The types of payment systems accepted by respondents are presented in Table 5.

Table 5. Driver Payment System

Payment Systems	Sum	Percentage
Salary System	39	33,3%
Road money	33	28,2%
Commission	18	15,4%
Road Money and Commissions	2	1,7%
Borongan	14	12,0%
Percentage	2	1,7%
Deposit	9	7,7%

Driver Obligations

Most respondents get the obligation to perform all the tasks above, which is 52.1%. (Table 4). Only 11.1% performed one major driving task.

Table 6. Driver Obligations

Obligation	Sum	%
Just drive	13	11,1
Driving, cleaning vehicles	5	4,3
Drive, clean the vehicle, maintain the vehicle, supervise the process of loading / unloading.	5	4,3
Driving, cleaning vehicles, maintaining vehicles, supervising the process of unloading/loading goods, maintaining cargo	61	52,1
Drive, clean the vehicle, maintain the vehicle, maintain the load	4	3,4
Drive, clean vehicles, supervise the process of unloading/unloading, maintaining cargo	13	11,1
Driving, maintaining vehicles,	4	3,4
Driving, maintaining vehicles, supervising the process of loading and unloading,	4	3,4
Drive, maintain vehicles, maintain loads	3	2,6
Driving, supervising the process of unloading/unloading goods, maintaining cargo.	1	0,9
Driving, keeping the load	4	3,4

Types of Vehicle Damage Experienced

In Table 7, it can be seen that all respondents (95.73%) have experienced tire rupture. The types of vehicle damage most often experienced by the next respondent were clutch system disorders (53.85%) and brake / brake system disorders (45.3%).

Table 7. Vehicle damage that has been experienced

Types of Damage	Sum	Percentage
Flat tire/burst tire	112	95.73%
Clutch system disturbance	63	53.85%
Brake system disturbance	53	45.30%
Engine damage	21	17.95%
Broken Axle	16	13.68%
Others	4	3.42%

Flat Tire/Burst Tire Damage

A total of 72.32% of respondents tend to repair a flat or burst tire themselves, while 16.32% attempt self-repair, and if difficulties arise, they are taken to a workshop. Only a small percentage of respondents (6.25%) seek the nearest workshop when experiencing a flat tire. The maximum repair time needed is 3 hours. The main difficulties faced by respondents in self-repairing a flat tire are the absence of vehicle crew assistance (30.36%), incomplete equipment (27.68%), and an unsafe vehicle location (25.89%). The time required for repairs and difficulties faced when self-repairing flat tire damage are presented in Table 8.

Table 8. Time to Overcome Tyre Rupture

Time Requirement	Percentage
<1 hour	56.25%
1 - 3 hour	42.86%
4 - 6 hour	0.89%

Brake System Disturbance

Most respondents (83.03%) tend to repair brake system disturbances (brake failure) themselves. Only 15.09% of respondents seek the nearest workshop, and 1.89% wait for assistance from the company. The time required for respondents to self-repair the most common brake system disturbances is 1-3 hours (47.17%), while respondents who require less than 1 hour are 44.4%. Difficulties faced in self-repairing brake system disturbances include the absence of assistance (49.06%), incomplete equipment (45.28%), an unsafe vehicle location (39.62%), and unprepared spare parts (24.53%). The time required to address brake system disturbance and the difficulties faced in self-repair are presented in Table 9.

Table 9. Time to Overcome Brake System Interference

Time Requirement	Percentage
<1 hour	43.40%
1 - 3 hour	47.17%
4 - 6 hour	5.66%
> 6 hour	3.77%

Clutch System Disturbance

Only 50.79% of respondents tend to repair clutch system disturbances themselves. About 28.57% attempt self-repair, and if difficulties arise, they are taken to a workshop, and 4.76% attempt self-repair while waiting for assistance from the company. The time required for respondents to self-repair the most common clutch system disturbances is 1-3 hours (50.79%), while respondents who require less than 1 hour are 41.27%. Difficulties faced in self-repairing clutch system disturbances include unprepared spare parts (46.03%), the absence of assistance (34.92%), incomplete equipment (31.75%), and an unsafe vehicle location (28.57%). The time required to address clutch system disturbance and the difficulties faced in self-repair are presented in Table 10.

Table 10. Time to Resolve Clutch System Interference

Time Requirement	Percentage
<1 hour	41.27%
1 - 3 hour	50,79%
4 - 6 hour	4.76%
> 6 hour	3.17%

Engine Damage and Broken Axle

Very few respondents attempt self-repair if they experience engine damage and a broken axle, each accounting for % and 18.75% of drivers who have experienced such damage. Respondents tend to wait for assistance from the company and seek the nearest workshop. Difficulties faced in self-repairing engine damage include unprepared spare parts (57.14%), incomplete equipment (23.81%), an unsafe vehicle location (9.52%), and the absence of assistance (9.52%). Meanwhile, difficulties faced in self-repairing a broken axle include incomplete equipment (75%), unprepared spare parts (46.03%), an unsafe vehicle location (25.89%), and the absence of assistance (37.5%)..

Involvement of the Transportation Company

A total of 70.09% of respondents state that the company covers the cost of repairs/purchase of equipment when the vehicle experiences damage. According to respondents, the company's role in handling vehicle damage includes providing spare parts (45.3%), equipping tools, and sending assistance (36.75% each). Some companies only provide guidelines/rules (14.53%), while others pass the responsibility for damage to the driver or their own responsibility (14.53%). The involvement of the company in handling vehicle damage is presented in Figure 3.

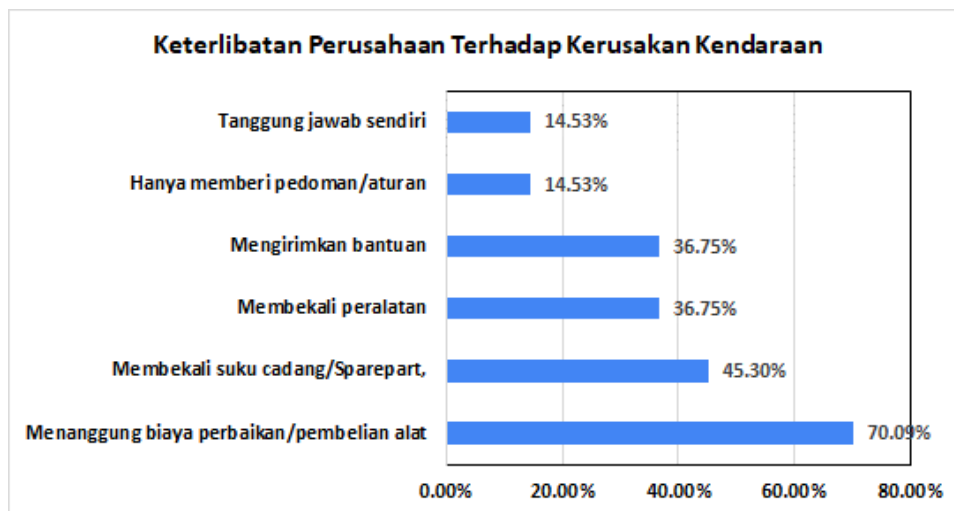


Figure 3. Company's Involvement in Vehicle Damage

Need for Improvement in the Skills of Common Goods Transportation Drivers

Key findings from the evaluation of common goods transportation drivers are as follows:

1. The driver's salary system is set by the company for 33.3%, while 66.7% use a driver-managed system such as commission, lump sum, travel allowance, and others.
2. About 52.1% of drivers perform all tasks (driving, cleaning the vehicle, maintaining the vehicle, supervising the loading/unloading process, and cargo care).
3. The most frequently experienced types of vehicle damage are flat tires, clutch system disturbances, and brake system disturbances.
4. Drivers tend to self-repair flat tires, clutch system disturbances, and brake system disturbances. However, for repairing a broken axle and engine damage, drivers tend to contact the nearest workshop or the company.
5. The company's role in handling vehicle damage is providing spare parts (45.3%), equipping tools, and sending assistance (36.75% each). Some companies only provide guidelines/rules (14.53%), while others pass the responsibility for damage to the driver or their own responsibility (14.53%).

The above findings indicate the need for the involvement of common goods transportation companies and the necessity for drivers to receive sufficient training in emergency response related to vehicle damage.

Based on the key findings from the survey above, the recommended content for emergency response training for common goods transportation drivers is as follows. The need for improving the skills of common goods transportation drivers based on the analysis of the survey results is:

1. Vehicle Equipment Inspection.
2. Loading Procedure.
3. Flat Tire Repair.
4. Clutch System Disturbance.
5. Brake System Disturbance.

Effective methods for implementing skills improvement are:

1. Participatory action methods in the form of lectures and discussions. The implementation of this method is effective, with a time allocation of 40% for material delivery or lectures and 60% for discussion and Q&A (Liany et al., 2017).
2. Lecture, Q&A, and direct practice methods. The delivery of this method has a high effectiveness ranging from 75%-97.5% (Ni Putu Linda Santiari & I Gede Surya Rahayuda, 2018).

Based on the above results, the proposed method for providing training is the lecture, Q&A, and direct practice method, involving both drivers and representatives from common goods transportation companies. Further steps include the development of training materials and the time required for training based on the five proposed topics above.

CONCLUSION

Respondents of public freight drivers surveyed have more than 2 years of experience and low vehicle crew availability, tend to have to manage emergency response due to vehicle damage themselves and have the obligation to perform all tasks including driving, cleaning vehicles, maintaining vehicles, supervising the process of loading / unloading goods and maintaining cargo).

The types of vehicle damage that drivers most often experience and are repaired by the driver himself are tire ruptures, clutch system disorders, brake system disorders. This condition is the basis for the need for debriefing materials to improve the ability of public freight transport drivers.

It is a real and urgent need to carry out briefings to company representatives responsible for the condition of vehicles and drivers of public freight transport with the material:

1. Vehicle Equipment Inspection
2. Vehicle Loading Procedures
3. Broken Ban
4. Clutch System Interference
5. Brake System Interference.

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