

GLOBAL POSITIONING SYSTEM (GPS): THE UTILIZATION OF GPS IN COMMERCIAL VEHICLE LISENSING BOARD (LPKP)

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ABSTRACT

This research will be a feasibility study of the utilization of Global Positioning System (GPS) in Lembaga Pelesenan Kenderaan Perdagangan (LPKP). GPS is a widely use technology in various sectors such as military, civilian and others, however in this research the focus would be on the transportation vehicles that are being registered with LPKP. The GPS will not only be used for tracking and controlling but it will be used to locate the location of the vehicle but capable of recording the handling errors of the drivers. The objective of this research is to find out any issues that will arise from the future utilization of the technology, focusing on the transportation's operators. Thus, it could be used as a feedback for the LPKP to take into consideration of the issues.

INTRODUCTION

The Global Positioning System (GPS), which originated in the United States in the late 1970s, is widely recognized as the world's most accurate method of navigation. As mentioned by (Brandon, 2003), the GPS is also well known for precision time signals that synchronize global information network systems utilizing fiber optics, satellites, radio, coaxial cable, and copper wire. Being an embedded technology, the GPS is not generally visible in personal computers, automobiles, surveying equipment, weather tracking systems, military munitions, electronic receivers, and other products incorporating the technology. Most individuals, for example, are unaware that data received from domestic and international financial institutions are dependent on the accurate synchronization of data streams provided by the GPS. These products include computer hardware and peripherals, telecommunications equipment, computer software, semiconductor manufacturing equipment, analytical instruments, and semiconductors and other electronic components. GPS equipment is not included in the International Technology Agreement (ITA) when incorporated into information technology products that are in the

agreement, it will be duty free. Thus, demand for GPS is likely to benefit from increased demand for cellular phones, satellite network equipment, and other ITA products incorporating GPS technology.

The GPS technology is using the Map-Matching (MM) technique, where according to (Yu *et.al.*, 2006), MM is a technique that attempts to locate an estimated vehicle position on a road network. To improve the performance of land vehicle navigation systems, map-matching, a technique that restrains vehicle position on the road, has been introduced. A large number of vehicle positioning systems are currently available in the market and most of them are GPS based systems. Mention by (The Aerospace Corporation, 2003) the GPS system can tell the location anywhere on or above Earth to within about 20 to 30 feet. Even greater accuracy, usually within less than three feet, can be obtained with "differential corrections" calculated by a special GPS receiver at a known fixed location. However, these GPS based systems are difficult to use in urban areas due to satellite signal blockage and multipath effects caused by surrounding buildings. For example, GPS positioning coverage can be less than 20% in urban areas in Hong Kong, and the positioning error can reach a maximum of more than 100 meters.

Information research organization.

LPKP is a government body under the administration of the Ministry of Entrepreneur and Cooperative Development (MECD). The core task of LPKP is to produce and governance goods transportation licenses as well as public transportation licenses. In Malaysia, the distribution of the portfolio is divided accordingly into geographical areas which are Peninsular LPKP, Sabah LPKP and Sarawak LPKP. In this research the focus area of implementation is in Peninsular LPKP which then being controlled by headquarter that is located in Putrajaya.

In order to understand more about LPKP, it would be better to clarify out that LPKP licenses and Jabatan Pengangkutan Jalan (JPJ) licenses are different. JPJ licenses are licenses that authorize the vehicles to be on the road whereas LPKP licenses are licenses that authorize goods that will be carried out using the vehicles, where it can be goods or people (especially for services). Both LPKP and JPJ are working together to make sure the goods and services transportation will operate in a good condition abide by some rules following the act of JPJ and LPKP.

Currently LPKP is only responsible on the buses, trucks or taxies that are registered with LPKP, therefore, the responsible for the vehicle plus public that used them has become the responsibilities of LPKP as well. The

chairman of LPKP, Datuk Haji Markiman bin Kobiran has come out with a thought of using GPS for tracking and controlling vehicle which will reduce accidents and errors of the vehicle, and also road handling among drivers. It is hoped that these matters will ensure public safety (Singh, 2005)) while using the public transportation. Besides that, as described by (Ahmad *et.al.*, 1998) where the advanced of information technologies have brought the government to new number of information system in Malaysia, which include in the transportation sectors. Since the rapid economic growth in Malaysia, the number of new vehicles on the road, new roads, and highways is expected to increase (Umar, 1994), thus with the use of GPS for tracking and controlling will help to reduce the number of casualties among public transportations.

Managing the licenses in Malaysia solely would be very complicated. Therefore LPKP have organized the regional by distributing the state regionally. Currently there are three headquarters for LPKP which is Peninsular LPKP, Sabah LPKP and Sarawak LPKP. With the purpose of managing licenses in Peninsular Malaysia, four regional offices have been operating which are Northern Regional LPKP, Middle Regional LPKP, Eastern Regional LPKP and Western Regional LPKP. Retrieving data from the LPKP, it is reported that by 2007 the licenses that being produced by LPKP in Malaysia are 500,368 licenses. Referring to the data, there are some country such as Brunei, Indonesia, Singapore and Thailand that happened to be having the licenses. This situation happens because the vehicles that are registered are operating in those countries due to providing services or undergoing projects. The details of the distribution of the licenses are:

Table 1

The LPKP Licenses versus The State/Country

State	Buses	Trucks	Taxies	Unidentified	Grand Total
Johor	11,569	39,098	9,484	0	60,151
Kedah	4,407	19,760	4,236	0	28,403
Kelantan	2,112	8,924	3,261	0	14,297
Melaka	2,355	5,730	1,479	0	9,564
Negeri Sembilan	2,932	15,740	1,577	0	20,249
Pahang	2,359	14,694	2,937	0	19,990
Perak	5,129	24,501	4,024	0	33,654
Perlis	380	1,692	591	0	2,663

(continued)

State	Buses	Trucks	Taxies	Unidentified	Grand Total
Pulau Pinang	5,404	21,934	3,775	0	31,114
Sabah	6,799	24,316	7,027	2	38,144
Sarawak	2,867	23,543	2,785	0	29,195
Selangor	8,736	75,736	11,877	0	96,349
Terengganu	1,431	11,148	1,554	0	14,133
Wilayah Persekutuan Kuala Lumpur	9,765	43,677	37,909	0	91,351
Wilayah Persekutuan Labuan	308	745	125	0	1,178
Wilayah Persekutuan Putrajaya	82	15	105	0	202
Brunei	0	0	0	0	0
Indonesia	16	34	0	0	50
Singapore	439	711	935	0	2,085
Thailand	95	76	0	0	171
Unidentified	1,201	4,584	1,640	0	7,425
Grand Total	68,367	336,658	95,321	2	500,368

SIKAP System by LPKP, 12 Mac 2007

PROBLEM STATEMENT

GPS technology has been widely used in other developed countries, but not in Malaysia. Consequently the Chairman of LPKP has come out with a thought of implementing GPS in all of the vehicles that are registered with LPKP. Nevertheless there is no focus research that has been done to study on the utilization of GPS in LPKP.

Before enforcing or enhancing a rule, LPKP Act 1987, to the public, it is coherent to revise the feasibility study of the utilization of GPS in LPKP so that LPKP will make a wise decision, taking into consideration all factors including the transportation operators' problem and issues.

PROJECT OBJECTIVE

The objective of this research is to do a feasibility study on how the GPS especially the tracking and controlling vehicle utilization will affect the transportation's operators in providing services to public and abide by the rules and regulation structured by LPKP.

LITERATURE REVIEW

Transport systems are among the various factors affecting the quality of life and safety in a city (Singh, 2005). Thus cities play a vital role in promoting economic growth and prosperity. The development of cities largely depends upon the physical, social and institutional infrastructure. Therefore (Singh, 2005) the importance of transportation is paramount. According to (Singh, 2005) the transport demand in most Indian cities has increased substantially, due to increases in population as a result of both natural increase and migration from rural areas and smaller towns. The phenomenon goes the same as being referred to Table 1 as well as by the Northern Regional Director, Puan Nur Azlin binti Mohamad Awal. Availability of motorized transport activities has further added to transport demand.

Consistent with (The Aerospace Corporation, 2003) GPS is the only system today able to show the exact position on Earth at any time, any where, and in any weather. GPS satellites orbit 11,000 nautical miles above Earth. They are monitored continuously at ground stations located around the world. The satellites transmit signals that can be detected by anyone with a GPS receiver. The first GPS satellite was launched in 1978. The first 10 satellites launched were developmental satellites, called Block I. From 1989 to 1997, 28 production satellites, called Block II, were launched and the last 19 satellites in the series were updated versions, called Block IIA. The launch of the 24th GPS satellite in 1994 completed the primary system. The third-generation satellite, Block IIR, was first launched in 1997. These satellites are being used to replace aging satellites in the GPS constellation. The next generation, Block IIF then was scheduled for its first launch in late 2005.

GPS is a satellite-based navigation system that reports the location, speed and direction of a vehicle anywhere on the globe. Unlike cellular communications, that often experience dead spots, GPS receivers and satellites are always capable of maintaining strong locks, even in regions with dense foliage or urban settings with tall buildings (Motorpoint, 2007). Nowadays the usage of GPS is being preferred due to several factors as mentioned by the writer in an article published in (Motorpoint, 2007). The factors are:

Can Help Control labor costs

GPS tracking helps companies get a lock on labor costs, as well as extreme overtime costs. Employees typically keep their own vehicle history records and write their hours on a timecard each week voluntarily. With

a GPS system, those timecards are replaced by precise printed reports downloaded directly from a computer, with a history list of each vehicle from the time it started its route, to the time it finished. Employees will also know how many stops it made and the length of each stop. Thus all employees' time can be verified and analyzed.

Increases Fleet Efficiency

With GPS tracking data user can determine an individual or group's average length of a service stop, or analyze a service stop versus non-service stop or the actual length of a service call or installation. Corrective measures based on this information gets job productivity up and wasted time and inefficiency down.

Can Help Lower Fuel Bills

GPS tracking information attacks high fuel bills in three areas: Controlling Speeding, Idling and Unauthorized Use. The tracking data is captured for all three items allowing fleet managers to take steps to address these and measure the results of their actions.

Can Help Lower Insurance Bills

As a result, fuel consumption and costs can drop dramatically. Speeding increases user maintenance, fleet insurance premiums, fuel expense, gas mileage and users' liability should an accident occur. With GPS tracking there is no need to rely on the public to report unsafe drivers. The operator will know how their vehicles are being operated and by whom.

Can Control Moonlighting of Employees

GPS tracking units monitor who, what, where and when the vehicles are or have been. This puts controls on unauthorized usage and moonlighting. It will also help the prevention of robbery.

Ensures Vehicle and Cargo Security

Every year companies lose billions a year because of robbery. Much of this happens during transit, before it is even delivered. Tracking systems can play a major role in preventing both vehicle and cargo thefts as well as aiding in recovery. Through systems monitoring, the movement can be monitored thoroughly.

Can resolve billing disputes

Arrival and departure times are recorded. Determine exactly when the vehicle arrived and departed from a customer address.

The detailed, accurate information available from GPS has made it popular within aviation, sea navigation, various outdoor activities and sports, and automotive vehicles. There are numerous benefits of GPS tracking for managing transportation fleets and the cost has become affordable in recent years.

The GPS system was developed to meet military needs (The Aerospace Corporation, 2003), but new ways to use its capabilities in everyday life are continually being found. Mapping, construction, and surveying companies use GPS extensively. In the example, during construction of the tunnel under the English Channel, British and French crews started digging from opposite ends: one from Dover, England, and one from Calais, France. They relied on GPS receivers outside the tunnel to check their positions along the way and to make sure they met exactly in the middle. Otherwise, the tunnel might have been crooked. Besides that GPS also allows mine operators to navigate mining equipment safely, even when visibility is obscured.

Cite by (The Aerospace Corporation, 2003) vehicle tracking is one of the fastest-growing GPS applications today. GPS-equipped fleet vehicles, public transportation systems, delivery trucks, and courier services use receivers to monitor their locations at all times. Automobile manufacturers are offering moving map displays guided by GPS receivers as an option on new vehicles. The displays can be removed and taken into a home to plan a trip. In example several Florida rental car companies have GPS-equipped vehicles that give directions to drivers on display screens and through synthesized voice instructions. With this advance once would never again getting lost on vacation, no matter where you are. The future of GPS is as unlimited as being imagined. New applications will continue to be created as technology evolves. GPS satellites, like stars in the sky, will be guiding us well into the 21st century

While these techniques are still very much in use, (Yan, 2005) mentioned that developments in telecommunications technology over the last decade or so have brought more services providing easier use, faster speed and wider coverage. GPS is mainly used for navigation and surveying purposes, many aspects of the system rely on telecommunications technology. All three segments that make up the system, the space

segment (a constellation of satellites), the control segment (ground base stations) and the user segment (the signal receiver) are essentially common building blocks of a telecommunications system.

According to (Cao-Hsu, 2002), he discussed that the installation of GPS systems poses serious problems, limiting its efficiency when tracking stolen vehicles. The GPS antenna cannot be hidden under metal; otherwise the signals will be blocked. This antenna must also be visible to the 4 satellites to which it is tuned; otherwise no positioning is possible. On a typical vehicle, this leaves only antenna locations under the dashboard or under the rear window. In the case of SUVs, even the rear window cannot be used as it is too vertical a surface, leaving only the under dash for its placement. As a result, professional thieves can quickly and easily locate and disable the antenna, rendering the GPS device useless. Many GPS vendors permit almost anyone to install their devices, including most new car dealers. It has been demonstrated in the past that many thefts-related activities were initiated internally. It is therefore critical to select a vendor that carefully controls and monitors the quality of installations performed by its dealers, and also certifies its installers.

On the other hand the conventional GPS or the GPS that use MM technique face difficult when are requested to be used in urban areas due to satellite signal blockage and multipath effects caused by surrounding buildings. Since the Malaysia geographical area is surrounded with high buildings, caves, high mountains, forest and other obstacles to interrupt transfers signals to the satellite, the implementation of the GPS itself will not be effective in complete. Multipath signals generated by reflections from nearby surfaces or fences can also interfere with the GPS data. Some methods have been introduced to improve these problems (Cao-Hsu, 2002). Dead Reckoning (DR) is a way to keep track vehicles during periods of blocked transmission. DR combines directional and distance information from a heading sensor in the car and from the car's odometer, and calculates the current position of the vehicle by computing the course steered and speed over the ground from a last known position. DR is used to improve accuracy when GPS transmission is available, in addition to being a backup when transmission is blocked. However, its accuracy tends to drop if the car travels for an extended period without receiving GPS signals

METHODOLOGY

The research method involved administration of a questionnaire related to understanding and preparedness towards the utilization of GPS in

LPKP. Survey and interview have been carried out and interpretive analysis be used to analyze those surveys.

Qualitative research is being conducted due to the relevancy of the objective of the research. Qualitative research are concerned primarily with the process, rather than outcomes or products. The qualitative research also is the primary instrument for data collection and analysis. Data are mediated through this human instrument, rather than through machines. It is also involved fieldwork. The researcher physically goes to the people, setting, site, or institution to observe or record behavior in its natural setting.

Surveys and interviews being carried out among the samples that have been chosen. The samples are operators for the buses and trucks. The buses and truck operators that are selected been choose from different licenses classes, such as trucks- *Pembawa A* and *Pembawa C*, for buses- *Bas Ekspres*, *Bas Sekolah*, *Bas Berhenti-henti*, *Bas Catar* and *Bas Pekerja*. The taxi operators aren't chosen as the sample due to the rationale of having GPS in the vehicles are not applicable because of the practicality of having one.

Survey Design

The questionnaires are prepared both in the English and Malay version. The questionnaire then be divided into four sections (referred to as Section A, B, C and D). Section A is for demographic information of the respondents which would be of age, race, gender and education background of the owner, type of licenses owned, types of business and annual income.

Section B be classified into three parts (referred to part I, II and III). Part I is on GPSs' awareness, which purposely to check their understanding. Part II explored the extent of GPSs' implementation. Basically, to know what GPS all about: what is, what are the potential impacts of their vehicles, why and when it is to be implemented. This implies that they know more about the elements of GPS that affect their business than they do about GPS in general and actual implementation in vehicles registered with LPKP. Part III determined the respondents' preparedness towards GPS.

Section C studied into the factors or issues that arise due to the implementation on utilization of GPS in vehicles, especially public transportations. Finally, Section D has been useful to the LPKP for the input in considering the implementation of GPS compliance by respondents.

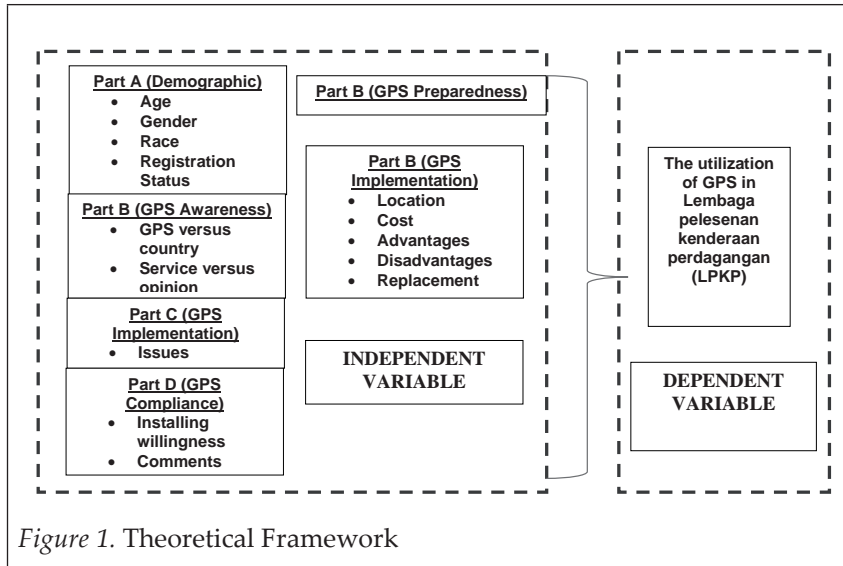


Figure 1. Theoretical Framework

Sampling

The target sampling that had been carried out focusing at Northern Regional LPKP which covers Perlis, Kedah, Pulau Pinang and half of Perak (from North Sungai Siput to the Northern Perak.). 150 questionnaires be distributed from the Northern Regional LPKP's counters, 200 questionnaires be posted to the transportation operators and random interview through phones and one-to-one be carried out. The major sources are from the questionnaire that are posted, where the method are using the self-enveloped with stamp be sent to the transportation operators.

FINDINGS

The students of the utilization of GPS in LPKP are very essential to be carried out because it is expected that the outcomes would assist the government especially LPKP in regulating all transportation operators to implement GPS. The outcomes would be useful in terms of considering whether GPS would be suitable to be implemented so that LPKP can take actions towards the utilization.

Section A- Demographic

Table 2 shows, 45 percent of the transportation operators are aged between 51 to 60 years old. While operators between 31 to 40 years old

are about 30 percent, followed by 20 percentages between 41 to 50 years old. Besides that only 5 percent of the transportation operators ages below than 30 years old.

Table 2

Section A – Demographic (Age)

Criteria	Amount	Percentages, %
Below 30 years	1	5%
31 – 40 years	6	30%
41 – 50 years	4	20%
51 – 60 years	9	45%
Over 60 years	0	0%

The majority of the transportation operators are male with 89 percent, while female with only 11 percent. Most transportation operators in the targeted samples are Malay with 47 percent. The transportation operators than followed by 37 percent Chinese and 16 percent Indian.

Table 3

Section A – Demographic (Gender and Race)

Criteria (gender/race)	Amount	Percentages, %
Male	17	89%
Female	2	11%
Malay	9	47%
Chinese	7	37%
Indian	3	16%

Based on Table 4, most of the transportation operators have the private limited registration status with 67 percent are sole proprietorship with 27 percent and only 1 percent partnership. The types of services that offered by them are trucks with 75 percent and buses by 25 percent.

Table 4

Section A – Demographic (Registration Status and Types of Services)

Criteria (gender/race)	Amount	Percentages, %
Male	17	89%
Female	2	11%

(continued)

Criteria (gender/race)	Amount	Percentages, %
Malay	9	47%
Chinese	7	37%
Indian	3	16%

Section B (Part I) - GPS's Awareness

In terms of knowledge in knowing what GPS is, based on Table 5, 80 percent knows what GPS stands for, while 20 percent only know GPS is some devices that use the Internet and satellite technology. Moreover 24 percent of transportation operators named Singapore as the country that has implemented GPS. While 19 percent named Unites States as countries that have been implemented GPS. Another 10 percent equally named United Kingdom and Malaysia. The remaining 5 percent for each other named country such as China, Britain, Denmark, Australia, Thailand, German, Taiwan and Japan as countries that have been implemented GPS.

Table 5

Section B (Part I) - GPS versus Country

Criteria	Amount	Percentages, %
Global Positioning System	4	80%
Use Internet and Satellite	1	20%
Singapore	5	24%
United State	4	19%
United Kingdom	2	10%
Malaysia	2	10%
China	1	5%
Britain	1	5%
Denmark	1	5%
Australia	1	5%
Thailand	1	5%
German	1	5%
Taiwan	1	5%
Japan	1	5%

The result in Table 6 stated that 100 percent transportation operators choose to provide services that are beneficial, comfortable and safe to the public. Asking for the opinion on the GPS, 37 percent agreed that GPS is useful and safe. Another 19 percent also agreed that GPS can track and

monitor the vehicles. While 19 percent are willing to use. However 13 percent voice out that GPS are costly, vice versa that 6 percent said that GPS are cheaper. Lastly 6 percent firmly stated not willing to use GPS.

Table 6

Section B (Part I) - Service versus Opinion

Criteria	Amount	Percentages, %
Beneficial, Comfortable and Safe	12	100%
Useful and safe	6	37%
Willing to use	3	19%
Track and monitor vehicles	3	19%
Costly	2	13%
Cheaper	1	6%
Not willing to use	1	6%

Table 7 also shows that 81 percent of the transportation operators agreed that GPS can control and locate vehicle movements while helps the daily operations. The remaining 6 percent gradually agreed that GPS can reduce operational cost, save time and helps in security perspective.

Table 7

Section B (Part I) - GPS helps in daily operations

Criteria	Amount	Percentages, %
Control and locate vehicle movement	13	81%
Reduce operational cost	1	6%
Security perspective	1	6%
Save time	1	6%

Section B (Part II) - GPS's Implementation

In Table 8 the implementation of GPS was asked. The main question would be the location, and 60 percent agreed to install the GPS in the Prime Mover, and 20 percent agreed to install in Trailer (Articulated Trucks). Another 10 percent would like to install but not willing to revealed the location as to remain as the company confidentially. Lastly another 10 percent clearly has no idea and not sure the location to install the GPS.

Table 8

Section B (Part II) - GPS's Location

Criteria	Amount	Percentages, %
Prime Mover	6	60%
Trailer (Articulated Trucks)	2	20%
Company confidentiality	1	10%
Not sure	1	10%

Asking for the price of installation, Table 9, 56 percent estimated that the price is between RM 1,000.00 to RM 3,000.00 per unit. While 22 percent estimated between RM 250.00 to RM 500.00 per unit. The remaining 22 percent are not sure of the price.

Table 9

Section B (Part II) - GPS's Cost

Criteria	Amount	Percentages, %
RM 1,000 – RM 3,000 /unit	5	56%
RM 250 – RM 500 /unit	2	22%
Not sure	2	22%

65 percent of the transportation operators notify that GPS are good at controlling and locating vehicles. While 24 percent confident of the security perspective. The remaining 12 percent convinced of the efficiency utility.

Table 10

Section B (Part II) - GPS's Advantages

Criteria	Amount	Percentages, %
Control and locate vehicle	11	65%
Security perceptive	4	24%
Efficiency utilization	2	12%

In Table 11, the disadvantages of GPS also been highlighted that 67 percent would say that GPS are costly. 17 percent influences on the possibility of information leakage. Another 17 percent says that the costs of the maintenance are high.

Table 11

Section B (Part II) - GPS's Disadvantages

Criteria	Amount	Percentages, %
Costly	8	67%
Information leakage	2	17%
High maintenance	2	17%

According to Table 12, 64 percent of the transportation operators are ready to implement GPS depending on government policy. While 9 percent of each element of time to implementing GPS, vehicles that ages less than 10 years, depending on the company, after GPS being informed and educated in the public and by the year 2010.

Table 12:

Section B (Part II) - GPS's Implementation

Criteria	Amount	Percentages, %
Government policy	9	64%
Vehicle less than 10 years	1	9%
Company policy	1	9%
After informing to the public	1	9%
At year 2010	1	9%

In terms of replacing GPS, Table 13 stated that other alternatives of the technology are by using hand phones 50 percent, the old current way with 33 percent and with the help of control room systems with 17 percent.

Table 13

Section B (Part II) - GPS's Replace

Criteria	Amount	Percentages, %
Hand phone	3	50%
The current way	2	33%
Control room systems	1	17%

Table 14 explores the preparedness towards GPS where 38 percent want to implement GPS on the certain vehicle only. Another 38 percent would

not be ready to implement GPS. Only 23 percent is certainly ready to install GPS in their vehicles.

Table 14

Section B (Part III) - GPS's Preparedness

Criteria	Amount	Percentages, %
Only the needs	5	38%
No	5	38%
Yes	3	23%

The choices of installing the GPS are either rent or buy the devices, 60 percent would only rent the devices due to the maintenance, warranty and price constraints. Remaining 40 percent would buy the GPS because of the financial stability.

Table 15

Section B (Part III) - Implementation Status

Criteria	Amount	Percentages, %
Rent	6	60%
Buy	4	40%

In Table 16, 57 percent feel like with the implementation, GPS will provide good information. Another 29 percent agree on the traffic control and security. Remaining 14 percent believes that GPS can reduce the operational cost.

Table 16

Section B (Part III) - Needs of Implementation

Criteria	Amount	Percentages, %
Provide good information	4	57%
Traffic control & security	2	29%
Reduce operational cost	1	14%

Section C- Issues That Will Arise

As stated in Table 17, 100 percent of the transportation operators cannot afford to install GPS unless the cost to be shared with the customers. Table

17 issues that have been identified are 43 percent mainly on the cost, may cost of installation and cost that the transportation operators have to bear with. Besides that 19 percent issues are the effectiveness of the devices and specific transportation operators that have been approved by LPKP, in terms of specifications and standards of the device. 10 percent would discuss on the acceptance by the customer, such as possibility of sharing the cost. The remaining 5 percent predicts that the issues that will arise are the coverage of the GPS as well as the political interference that will take place.

Table 17

Section C- Issues That Will Arise

Criteria	Amount	Percentages, %
Costly shared with the customer	6	100%
Cost	9	43%
Effectiveness of the device	4	19%
Specific service provider	4	19%
Acceptance by the customer	2	10%
Coverage area of the GPS	1	5%
Political interference	1	5%

Section D- GPS Compliance

In Table 18, two main factors that were discussing which are the willingness to implement GPS and also comments upon the installation. The factors of the willingness, 67 percent would say that GPS is good for practicality as well as the functionality. The remaining 33 percent also positive on the GPS used for public transportation such as buses and taxies only.

Table 18

Section D- Installing Willingness

Criteria	Amount	Percentages, %
Good for public transport only (bus and taxi)	2	33%
GPS is good in practicality and functionality	4	67%

SIGNIFICANCE OF THE STUDY

The findings of this study will be useful and benefited the LPKP in enforcing the transportation's operators to utilize the GPS in their vehicles such as buses. The needs of the study will ensure the appropriateness of

its implementation. The GPS study will equip LPKP with the findings that more or less effect the decision making for the GPS utilization by taking into consideration of the operators as well as users. The research will also improve the performance of LPKP in enforcing the correct and practical rules that will give a win-win situation between the government and the operators.

The proposed GPS study will help LPKP to have a clear picture of the future implementation of the rules. Since LPKP is a government body under MECD, this research will be needed before being carried out for the approval from higher management as well as requesting for permission consent.

IMPLICATION

Adopting GPS in LPKP will benefit in various ways such as GPS tracking technology. In GPS tracking technology the user will be able to locate their vehicle if user end up lost on the road. Additionally, users will be able to use the GPS tracking system to map out a course for the travels. According to (Colin, P., 2012) there are obvious safety features of a GPS tracking system, for example, if the user is the unfortunate victim of car theft, a GPS tracking system can assist law enforcement in finding the missing motor vehicle with some degree of ease. The location of the user's car can be pinpointed and tracked through a GPS tracking system. (Raise, A., 2007) has mentioned that there are few issues that user are faced if user neglect to use GPS. The existing of Panic Button in GPS System can help the user as well as the service provider alert in any emergency situation. A GPS System streamlines supply chains and truck movements as well as keep track of the vehicle speed. The system can track goods at any point of time and accurately predict when goods will reach their destination. Besides that GPS System also are used to detect structural problems in buildings and roads and to predict disasters like earthquakes and so on.

CONCLUSION

GPS seems to be one of the useful tools to use and solve problems that will be faced by the transportation operators. The study will aid LPKP before imposing the GPS utilization to be part of rules and regulation in the LPKP Act 1987. As widely known GPS implementation in many developed countries such as the United States is very popular compared to Malaysia. It seems like Malaysia should also introduce GPS into the systems especially in transportation. With GPS the government can

monitor, track, control and reduce accidents, errors of vehicles and road handling among drivers. Besides that the government also has to take into consideration and be fair to the wellbeing and the rights of the public as well as the service providers.

SCOPE AND LIMITATION

The scope area of GPS is only focusing on the tracking and controlling the vehicle. This scope only will cover the overall performance of the drivers while handling the vehicles. With this research LPKP will be able to make a decision that considers both sides of users and operators. The study also will be using the Northern Regional LPKP to be the sampling in undergoing the research. Thus the sample will then reflect the performance of Peninsular LPKP without taking into consideration of Sabah LPKP as well as Sarawak LPKP.

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