

PalArch's Journal of Archaeology of Egypt / Egyptology

TRANSPORT DEMAND MANAGEMENT (TDM) FOR BUS INDUSTRY AT CROSS BORDER MALAYSIA AND THAILAND

*Mustakim Melan¹, Pichit Prapinit², Radasa Netsangsee³, M. Halizahari⁴, Mohamad Ghozali
Hassan⁵, Md. Abdul Kafi⁶*

¹*University Utara Malaysia, School of Technology Management and Logistics
06000 UUM Sintok, Kedah*

^{2,3}*Loei Rajabhat University, 234 Loei Cheing Kan, 42000 Loei, Thailand*

⁴*National Defense University of Malaysia (Universiti Pertahanan Nasional Malaysia)
57000 Kuala Lumpur*

^{5,6}*Disaster Management Institute (DMI), School of Technology Management and Logistics,
College of Business, Universiti Utara Malaysia, Sintok, Kedah, 06010, Malaysia*

Corresponding Author¹mustakim@uum.edu.my

Mustakim Melan, Pichit Prapinit, Radasa Netsangsee, M. Halizahari, Mohamad Ghozali Hassan, Md. Abdul Kafi. Transport Demand Management (TDM) For Bus Industry At Cross Border Malaysia And Thailand--Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(9). ISSN 1567-214x

Keywords: Bus Services, Operational Activities, Transport Demand Management (TDM), Cross Border, Scheduling And Planning

ABSTRACT:

This research investigates on passengers' movement and services of bus operators at crossing border between Malaysia and Thailand. It also discusses with regards of bus operational activities, passengers' behaviors and fleets' deployments. The low volume of passengers led to reduction the numbers of bus movements and causes to unproductive at cross border operations. The bus industry experienced with high capital investments, overheads, low-profit-margin and sometimes running at loss in their daily operations. Through these problems, this study suggests with an appropriate mechanism of using the Transport Demand Management (TDM) models in facing the current and future situation. This is an exploratory and qualitative study where the interviews were conducted among 40 respondents including the bus owners, passengers, government, regulatory bodies, public and stakeholders at both countries. The result indicates on the effectiveness of TDM with Seven(7) pillars as suggested are referring to proper scheduling, effective communication, drivers' attitude,

customers' cares, information technology, skill training and having frequent meetings. The new suggested model in TDM is recommended to be used in future planning in bus industry for cross border activities.

INTRODUCTION

Transport demand Management (TDM) deals with people's decision making for optimal use of locally accessible transportation resources (Yang et al., 2018). The TDM is structured with proper scheduling, planning, customers' commitment and behavior. Classified as a calculated service sector industry, the bus industry is one of the key parts in deciding the proficiency and viability of their stake holders. The whole operational of the bus industry shall focuses for two group benefiting in the whole activities for instance bus operators and passengers. The bus industry is very important indicator in defining the productivity and effectiveness of their TDM planning and movement. These routes among the popular for crossing border activities between Malaysia and Thailand rather than Padang Besar Perlis, Malaysia. The coaches were met with the passengers' requirement and able to accommodate from 24 to 30 passengers in one coach. Two types of coaches carrying passengers during crossing border activities so called express and tour buses, where with smaller modified vans which able to accommodate maximum to 12 passengers also part of the coaches used. Only small coaches allow from Thailand counterpart to transport passenger from Thailand to Malaysia. The small coachers are actually owned by Thailand counterpart with the same purpose as tour buses. The years recorded in the period 2014 - 2019 the number of bus operators would also reduce from 17 only 10 operators. The coaches are normally designed for comfortable sitting arrangement, equipment, facilities and meeting the customers' satisfactions.

Bus is a vehicle designed as a patronage services on a fixed route according to schedule predetermined routes. The bus services are regular intervals even though low occupancy passengers with the fixed fares (Guarda et al., 2016). The function of the bus is to move the passengers and goods from bus station to another. Bus industry and cross border movements are synonym in transport businesses in every country with roles of carrying passengers for vacations or personal matters. The study focuses on the bus industry crossing border routes between Malaysia and Thailand using ICQE of Bukit Kayu Hitam and Sadou Thailand. It was recorded about 600,000-1,200,000 tourists vice versa crossing using coach every year through the checkpoints. Reduction to the half numbers of tourists from Malaysia to Thailand every year was also recorded due to present currency. The direct routes for crossing activities are normally scheduled from Johor Bahru, Kuala Lumpur, Penang Malaysia to Hadyai Thailand using Kedah North-South Expressway to Bukit Kayu before entering Thailand border. TDM focus on people's travel behavior by getting people out of single-occupancy vehicles with a set of measures as in Table 1.

Table 1. TDM Measures

Type	Measure
Economic Measure	Public Transport Subsidy Fuel Tax

	Parking Charges Road User Charges Tradable Permit
Land Use	Land use and transportation strategies Park and Ride Facilities
Information for Travelers	Travel Information before a trip is undertaken Car Sharing
Substitution of Communication for Travel	Teleworking e-Shopping
Administrative Measures	Parking Controls Pedestrian Zones Alternative Working Patterns

Source: TDM frameworks 2019

LITERATURE REVIEW

Bus industry between the two countries was established due to demand for movement and tourist attractions. According to Lord & Tangtrongjita (2015) Bukit Kayu Hitam (State of Kedah, Malaysia)-border of the Thai province of Had Yai, Songkhla were established for cross border activities for commercial development for attractive tourism industry with structured of road transport management. Bus operators from Thailand are normally used minivan with capacity of 12 passengers while crossing to border of Malaysia and express buses with capacity of 24 passengers were used for the movement from Malaysia to Thailand. There was a local agreement that permitted with several Malaysian operators to operate international bus services between Kuala Lumpur, Malaysia and Hat Yai, Thailand. The Immigration, Customs, Quarantine and Security (ICQS) departments at both countries able to facilitate, expedite the clearance for passengers includes the green lines and physical examination for passengers and luggage. According the report (ESCAP, 2015) there is a relationship between cross border models with the movement of tourist for both countries. However, due to the economic down turn in 2014 to 2019 has further slow-down in tourism industry (Shahzad et al., 2017) and in directly given impact to the bus operators. On the other hand, buses from Thailand were observed cross over Malaysian border increasingly. The problem as recorded at present scenario referred to TDM was due to the reduction passengers among the bus operators crossing at the border of Malaysia and Thailand using the checkpoint of Bukit Kayu Hitam Kedah Malaysia and Sadao Thailand. This was regarded of economic slowdown in Malaysia and better currency in Thailand (Borhan&Arsad, 2018).

The economic slowdown in 2017 -2018 has impacted on the cross border trade and movement of people. Stronger Thai Baht and volatile foreign exchange has effected the cross border trade to dropped 1.94% in year 2019 (Arunmas, 2019). This influences on the reduction of the demand for bus industry between two countries. Assumed the scenario, it is necessary to investigate towards bus industry, customers' commitment and behavior of existing practices in perceiving the TDM movement planning (Erke& Hagen, 2006). The bus operators should monitor on the overall functions through physical fleet management in daily movement that able to oversee, coordinate and

facilitate on various transport and related activities (Maze, 1987; Rohani et al., 2013). Fleet management underpins and supports transport related activities through the planning that are used as well as to optimize the deployment (Erke& Hagen, 2006). Studies by (Belmonte et al., 2005; Maze, 1987; Ruiz et al., 2017) have viewed into the approaches engaged to improve the TDM fleets. Customer commitment and behavior are the factors that contribute in achieving for high fleet movements. TDM performance can be improved by improving relationship between operators and passengers (Erke& Hagen, 2006). TDM increases transport efficiency by providing various incentives for individuals to change their travel time, route, mode, destination, frequency, and cost (Rohani et al., 2013). TDM focuses on access to services and activities, rather than vehicle traffic.

Meyer (1999) refers to Transportation Demand Management, discusses on the better way in the bus operation. Hence, it is crucial for bus industry to have the sound of planning to their TDM for optimizing and comprehensive movement. The bus Operators in TDM optimization had been practiced as much which is focusing in depth on the real problems (White, 2009). Considering two factors hovering at present circumstances are the economics down turn and reduction of the number of tourist affecting the TDM. Hence, with such limited studies being undertaken, this investigation became a turning point in transforming the shortcomings. Given the scenario, it is justified that an exploration of current practices in which the customer commitment and behavior are the contributing to TDM performance in bus industry for at cross border lines.

Most of the bus services in Malaysia are fully managed by private companies (Rohani et al., 2013). In meeting the customer demand, bus industry has to bear the increased of present overhead costs such as administrative, fuel, maintenance and workforces. In order to sustain in bus industry, the Malay Bus Operators in Peninsular Malaysia has appealed to the government to increase by 30% passengers fare from 2008 but was rejected by the government (Perimbanayagam, 2019). In other hand, fleets with a low turn around in TDM were caused by human factors in managing the operations which will impact on the performance and the organization' outputs. In sustain viability, the bus industry should be more focus on coaches' management in order to increase fleets efficiently due to reduction number of passengers. Through the improvement in fleet performance, the operators will be focusing better on optimizing the numbers of buses according to the needs of the passengers and reducing the losses. This will also justify on the costs per vehicle with the total number of passengers in the coach at one particular time. Reduction on fleet may improve and maximize on passengers as well as efficiency. Table 2, shows on The Transport Demand Management (TDM) checklist used through this research study.

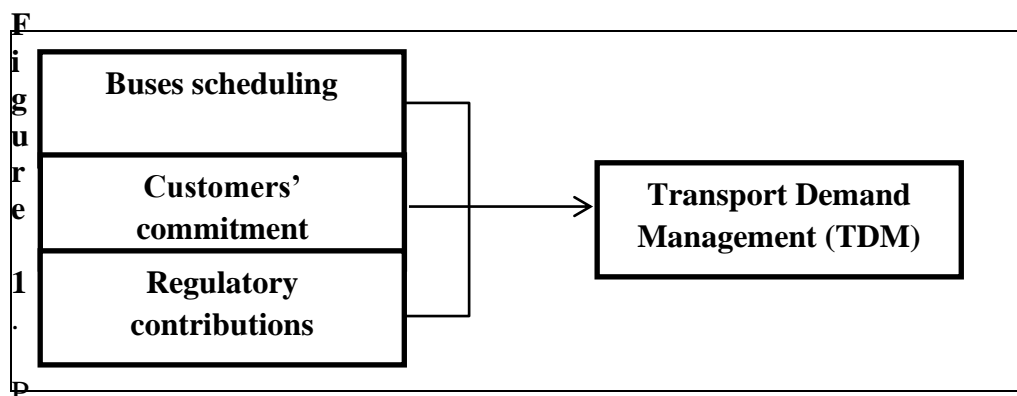
Table 2.Transport Demand Management (TDM) checklists

Bus operators	Customers commitment	Regulatory contributions
Bus scheduling and monitoring	Booking in-advance	Ministry of Tourism , Ministry of Transport and Enforcement bodies
Planning and coordinating	On time show	Industry players
Drivers assignment	Personal documentation and expenses	State/local Council and Planning Department
Maintenance and inspection scheduling	Baggage coordination	Researchers, IT Developers, Tourism, ICQS and stakeholders
Staff Coordination and duty roster	On line knowledge	Transport and Cross Border Policies

Source: Research study 2019

Theoretical Framework and Hypotheses

The literature review allows the formulation of conceptual framework with hypotheses, and shows the relationship between the independent variables (IV) and dependent variable (DV). The proposed framework has developed in Three (3) as the main indicators (IV) towards the Transport Demand Management (DV). Figure 1 refers to the Theoretical Framework as proposed in the study.



Proposed Research Framework

The following are proposed hypotheses:

H1: There is a significant relationship between buses scheduling towards TDM.

H2: There is a significant relationship between customers' commitment towards TDM.

H3: There is a significant relationship between regulatory contributions towards TDM.

METHODOLOGY

The qualitative approaches are chosen as the research design for this study. Moreover, the researcher had been in the direction of numerous participant proficiencies in understanding the phenomena. Therefore, the researchers depend much on the views as expressed by the participants to study the scenario (Creswell, 2013). Data was gathered as much as possible where the questions turned wider and further open-ended questioning had been applied for the participants to share their opinions. Accordingly, the greatest opinions based on participants' experiences that involved in historical norms. As such, this study implemented the Qualitative Research Approach in order to discover the details of TDM movement planning and its processes. On the other hand, the qualitative approach is suitable for this study as it expresses greater depth in understanding issues. It refers on the meanings, definitions, concepts, metaphors and descriptions of several elements (Berg, 2001). This approach allows exploration of a phenomenon by using the wide foundations (Baxter & Jack, 2008). Therefore, this research approach had helped the researcher in considerate a specific situation, besides serving to grow and improve theory by observing in-depth the events and situations of the study (Baxter & Jack, 2008).

Research Objectives

This study investigates on the effectiveness of TDM in bus industry relating to customer commitment and regulatory requirements. The effectiveness of TDM is based on the commitment of bus operators, customers and also regulatory bodies. This study is comprehensive investigation which involves a structured questionnaire and on face to face interview. The objectives of this study are:

- a. To investigate functions of buses scheduling towards TDM.
- b. To identify the commitment of customers towards TDM.
- c. To examine the contributions of regulatory bodies towards TDM

This is an exploratory study and the interview method of qualitative research is used by researchers to collect the data from selected bus operators, passengers, regulatory bodies and public in Malaysia and Thailand. These bus operators mainly served at crossing border activities using ICQS of Bukit KayuHitam Malaysia and Danok Thailand. The survey located at Bukit KayuHitam, AlorSetar, Penang in Malaysia while Songkla and Had Yai in Thailand. In line of the confidentiality and requested from the respondents, the details of the respondents are unable to reveal instead being identified as Company 1 to Company 10, Passengers 1-10 and Regulatory bodies 1-10, Stakeholders 1-10 in this research. The respondents are assuming a role of manager and above manager and officer in the company, passengers, public and regulatory bodies respectively. Total numbers of interviewees in this study

were fixed at 40 respondents and divided equally among the group with the basis of 50/50 between two countries. Table 3, refers on the details of respondents for the study.

Table 3.Demographic Respondents

Demographic	Category	Frequency	Percentage (%)
Gender	Male	28	70
	Female	12	30
Age	18-20 years	2	5
	21-23 years	12	30
	23-25 years	15	37.5
	25 years and above	11	27.5
Religion	Muslim	32	80
	Non-Muslim	8	20
Race	Malay /Thailand	35	87.5
	Chinese /Thailand	3	7.5
	Indian /others	2	5
Marital status	Single	18	45
	Married	22	55
Job status	Bus operators	10	25
	Customers /public	10	25
	Regulatory bodies	20	50
Salary	Below RM1000		
	RM1000(B7410)-	2	5
	RM2000 (B14,800)	22	55
	RM2000(B14,800)and above	16	40

Note* N=40

FINDINGS AND DISCUSSION

Taking an appropriate TDM movement planning secured with better customers' commitment and behavior are vital to determine the resourcefulness of buses utilization that are being used to generate profits by the bus operators. Having the good on scheduling and planning, the bus operators are able to ascertain the growth of the company and implement enhancement according to the business requirement. The effectiveness in the current practices of bus scheduling and monitoring at crossing border activities between Malaysia and Thailand towards TDM are the most appropriate mechanism and enhance competitiveness. This segment deliberated the consequences from the interviews in order to deliver response for the research question as mentioned. The current approach toward TDM movement management is driven by the constraints arising from the requirements and practices that have governed the TDM delivery process. The overall of the findings and recommendations, the

bus Operator should be fully committed in providing good services to the customers and employee in order to have continuous demand.

Last minute in purchasing tickets from counter or via online will interrupt the TDM planning and affect the buses' turn around. Some customers are committed particularly in advance bookings and have several choices for bus operators. These will help on bus scheduling and maximize the utilization and movement for the company. As a strategic business-wide objective, transition towards an effective TDM planning management approach will enable operator for better managing and control their fleets, provide greater predictability regarding journey planning and implement best management practices towards the passengers' commitment and behaviors. Detail findings on effectiveness of TDM movement in relation to the customers' commitment and behavior are summarized in Table 4.

Table 4. The findings of investigation on the function for the current bus scheduling towards TDM at Cross border in Malaysia and Thailand (H1)

Issues Addressed	Respondents	Findings
How effective in the current practices of Bus scheduling, monitoring and at crossing border activities between Malaysia and Thailand towards TDM?	Bus Operators 1 - 10	<ul style="list-style-type: none"> • The effectiveness of TDM movement management is based on the current customers' demand. • Last minute in purchasing ticket from counter or via online will interrupt the TDM planning and affect the couch turn around. • Some customers are committed particularly in advance bookings • Customers demand are based on several choice of bus operators
	Passengers 1-10	<ul style="list-style-type: none"> • Preferred late booking due to several choices of bus operators • Similar booking on the previous bus operators • More faster and less stoppage from bus industry • Facilitate the documentation at cross border crossing • Assist with tour guide and suggest accommodation at final destination

	Public and Regulatory bodies 1-10	<ul style="list-style-type: none"> • The green lanes should be provided for the bus passengers for effective movement times • Minimize and smoothen the time for inspection at ICQS to encourage smooth crossing • Prioritize buses crossing from Malaysia • Special information for the tourists to and from Malaysia and Thailand.
	Stakeholders 1-10	<ul style="list-style-type: none"> • The TDM planning is important for bus industry ensuring better operations • The bus operators need to monitor closely with customers' commitment. • The operator should influence the customers and comply with TDM.
The customers' commitment will contribute better in TDM planning?	Bus Companies 1 - 10	<ul style="list-style-type: none"> • Better planning, Communication and commitment efficiently relating to the schedules planning in TDM. • Seeking customers' on serious effort in ensuring the baggage readiness upon bus arrival. • Promotional based on IT, webs, fliers, tourism industry and other activities will encourage customers' commitment.
	Passengers 1-10	<ul style="list-style-type: none"> • Customers' feedbacks are encouraged for the better and will contribute for an effective TDM and bus turn around. • Quality of coaches, drivers and condition, sitting arrangement suits with passengers' requirement. • Ticket price and justify the value of money
	Public and	<ul style="list-style-type: none"> • TDM movement planning

	Regulatory bodies 1-10	is much conditional on the customer's commitment especially the information flow by the bus operators and regulatory bodies <ul style="list-style-type: none"> • Right planning to the right information available in the webs form bus operators and regulatory bodies
	Stakeholders 1-10	<ul style="list-style-type: none"> • In TDM movement planning, the coachers' turnaround is closely related to the customers' commitment and demand. • Smooth or delays in any bus scheduled is correlated to both customers and operators.
Regulatory contributions Towards bus industry may benefits passengers and stakeholders	Bus Companies 1 - 10 Passengers 1-10 Public and Regulatory bodies 1-10 Stakeholders 1-10	<ul style="list-style-type: none"> • All respondents mentioned that IT, webs, individual marketing, promotional activities, smooth movement at the checkpoints, green lane, government involvement in promotion, condition of the coachers, tourism industry involvement, proper scheduling and stakeholders commitment

a) *Significant relationship between customers towards TDM*

The factors that inspiration customer's commitment and behavior in the direction of effectiveness on TDM could be defensible through their following statement. Customers' preferences and price discounts are almost suggested in the answers. By having discounted rate will caused reduction in profit and sometimes loss. On the other hand the bus operators should consider for giving discounted rate for loyal customers using the services for the longer period of time or travelling in group. Consideration on marketing activities and encouraged the customers to purchase on line and enjoy on the discounted rates of the tickets. The customer service and marketing department should improve on the level marketing and the level of service as well as relationship with customer at all times. The findings on the factors those influencing on the customers' commitment and behavior for the effective of TDM movement are summarized in Table 5.

Table 5. Findings on the commitment between customers towards TDM (H2)

Issues Addressed	Respondents	Findings
To investigate the customer commitment towards the TDM	Bus Operators 1-10	<ul style="list-style-type: none"> • Customers have the rational of having smooth TDM and based on the purchasing power and economic stability. • Operators should plan the coaches based on customers demand. • An effective communication by operators should be practiced for customers' commitment. • Having regular promotion could also contribute in customers' commitment.
	Passengers 1-10	<ul style="list-style-type: none"> • Customers preferences and price discount • More marketing activities done by the bus operators and online ticketing • Better on the level of service and relationship with customer.
	Public and Regulatory bodies 1-10	<ul style="list-style-type: none"> • Close with customers and recognize constraint faced related to TDM planning • Immediate actions by bus operator and customers for any shortcoming and shortage of coaches • The operator able to update the facilities of the coaches
	Stakeholders 1-10	<ul style="list-style-type: none"> • Regular meeting and solve the existing problems • Attend and reacted on the feedback or suggestion from

		customers
b. To identify improvement in TDM towards the customer behavior.	Bus Operators 1-10	<ul style="list-style-type: none"> • Specific tasks for the operators need to do on effective TDM planning • Explain on the customers' towards TDM constraints. • Accurate time and punctuality as scheduled
	Passengers 1-10	<ul style="list-style-type: none"> • Passengers' behaviors were unpredictable and it will create problem to smoothen TDM planning • Passengers delayed (show) will also affect the movements.
To examine the factors influencing the TDM towards bus operators.	Public and Regulatory bodies 1-10	<ul style="list-style-type: none"> • Frequent reminding to the customers on the delays and changing movement times • Speedy clearance at the both CIQS. • Engage with travel and tours agents for the movements.
	Stakeholders 1-10	<ul style="list-style-type: none"> • Coordinate the movements between the mode of transport and tours agent • Movements are based on the demand • Green lane at CIQS for buses

b) Significant relationships between regulatory contributions towards TDM

The study concludes on the understanding between the regulatory bodies and bus operators which will contribute to TDM effectively. In short, regulatory commitment can be regarded as trade-off between benefits and sacrifices. In other words, to start and develop business relationships with the bus operators and focus in a first step on providing better service as regulators. The regulators are to maximize relation with customers. The customers' perceived relationship has a strong impact on their intention to stay in the focal relationship, to be a loyal and a tolerant partner between government and industry as well as investing resources and energy in a long-term cooperation. Therefore, defining an effective TDM movement planning strategy, the regulatory bodies must recognize that relationship as perceived by bus operators and demonstrate the customers' commitment and relationship. The

understanding on an effective TDM is the effort in monitoring on the TDM planning. On the other hand, immediate guideline for the bus operators on new policy and instructions which were established by the government should be provided and disseminate to all stakeholders. Monitoring the movements at CIQ areas at cross border check point will expedite the crossing the buses with effective manner. Thus, the regulator should influence the bus operators for reviewing their current standard operation procedures in TDM. Findings for the significant relationships between regulatory contributions towards TDM are summarized in Table 6.

Table 6. Findings on the significant contributions between regulatory bodies towards TDM (H3)

Issues Addressed	Respondents	Findings
Improvement the regulatory contribution towards TDM movement	Bus Operators 1-10	<ul style="list-style-type: none"> • Effective communication with regulatory bodies is crucial for ensuring better in TDM. • Make regulatory bodies care with the bus operators • Divers attitude, behavior and skill driving winning the perception of regulatory bodies
	Passengers 1-10	<ul style="list-style-type: none"> • Preparation on valid documentation for cross border. • Pay respect to uniform bodies • Pay attention on the cross border clearance and procedure
	Public and Regulatory bodies 1-10	<ul style="list-style-type: none"> • Immediate advise the bus Operators on new policy and instructions • Expedite the inspection at the CIQ with special lane • Influence the bus operators for reviewing their current standard operation procedures in TDM movement planning
	Stakeholders 1-10	<ul style="list-style-type: none"> • Sending staff for effective communication skill training and foreign language • Frequent meeting with tourism industry to know the latest information at border crossing

CONCLUSION

Transportation demand management (TDM) in the knowledge of public is the understanding on how people make their transportation decisions and choices. It also helps them to use the infrastructure for transit, ridesharing, walking, biking, and teleworks related to transportation. It is to ensure cost-effective in guiding of transportation and infrastructure and encouraged for the systems

and better balance in daily life. As referred to bus industry, it relates to the planning and scheduling or bus requirements as requested by the customers for specific movements. This concepts is related to win-win situation where both between the bus operators and customers' requirements. In the initial study the purpose of TDM was established with the Six (6) following determinations;

- a. Economic Measure - purchasing power, public transport subsidy, reduction on fuel taxes, insurance, parking charges, road user charges and tradable permit.
- b. Land Use - Land use, infrastructure, transportation strategies, parks and ride facilities.
- c. Information for Travelers - Travel information, promotional activities, information sharing, tourism industry commitment, coordination between mode of transport, fares structure and other business arrangement activities.
- d. Substitution of communication for travelers - Teleworking, e-Shopping, leisure, accommodation, food, beverages and etc.
- e. Administrative - Parking controls, safety, security, pedestrian zones, regulatory commitment, standing operating procedure (SOP)
- f. Transport operators – enough machineries, capacity, manpower, costs, scheduling, coordination, safety, security, information, marketing and business strategy

Through the above suggestions, TDM has suggested with related functions of government, public and transport operators. This research has examined and established the hypotheses of the study with the suggested questions as follows;

No	Hypotheses	References	Results
1	H1: There is a significant relationship between buses scheduling towards TDM	Table 4	Supported
2	H2: There is a significant relationship between customers' commitment towards TDM.	Table 5	Supported
3	H3: There is a significant relationship between regulatory contributions towards TDM	Table 6	Supported

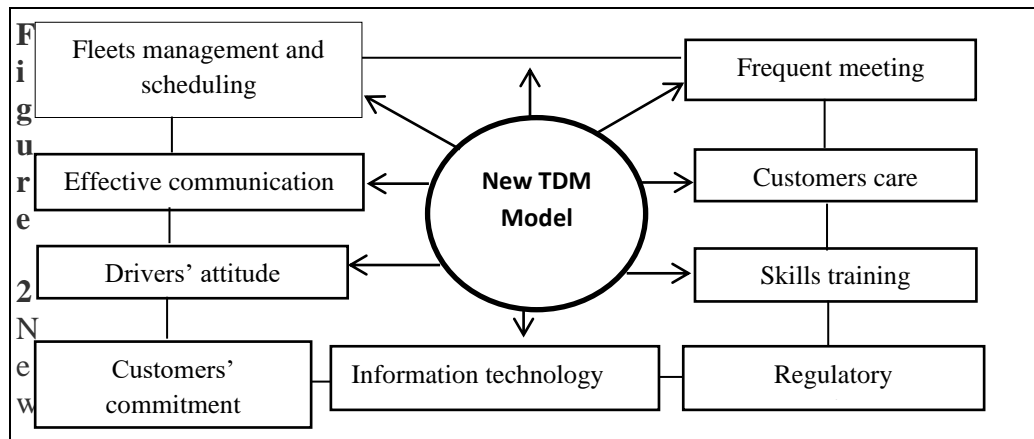
The results of the relationship between independents and dependent variable were established and supported which bus scheduling, customers' commitments, and regulatory contribution having a strong relationship with TDM. The association of social aspects in business relationships such as commitment, satisfaction, long-term orientation, dependence and trust are important in bus industry. The relationships between customers, passengers, stakeholders and service providers offer outstanding services are benefited to bus operators. Nevertheless, bus industry and customers should playing an

important role in ensuring the related activities in the TDM and support the economic growth for both countries. Various suggestions by the stakeholder at the final survey in managing for better TDM were established with seven important mechanisms as follows:

- a. Manage the fleets and schedule as required
- b. Effective communication for ensuring good commitment to various customers.
- c. Good drivers' attitude and behavior also contribute to improve the commitment by customer's communication
- d. Make customers feel that bus operators are really care to them
- e. Information technology seems to be good for enhancing the services.
- f. Sending staff for effective communication skill training is essential
- g. Frequent meeting with customers, tourism industry to review the current services and constraint could also benefits for both parties.

Contribution to body of knowledge

As a contribution, this research has established a new model which was based on the result of the overall write up and explanations. The combination of the new model was taken from the literature, survey, and opinion for the respondents. The new model as suggested is the control pillars for the TDM to ensure for the best practice in future undertaking at cross border transport activities. Figure 2, refers to a new model in TDM as suggested from the research (Nine Pillars).



model in TDM as suggested from the research (Nine Pillars) **Source:** Research study 2020

Finally, implementation on TDM planning was suggested for several initiatives in future improvement. The bus operators should be able to manage on their fleets and optimizing resources and proper planning for the coaches based on customers demand. An effective communication by operators is also one of the techniques in getting full customers' commitment. Having regular promotion, price discount, marketing activities, service level, keep in touch and improve on the shortcomings are highly recommended. At the same time the regulatory bodies which involved with cross border transport should be

well equipped with the latest information especially on the knowledge, procedures, bilateral arrangement processes, trade practices, work manners, regulatory coordination and customers based minded. On the other hand they should update on the facilities, having regular meeting, strong relationship with other stakeholders and look in the potential to look deeply into the existing problems, unpredictable matters, dealing with long term business relationship between bus operators and regulatory bodies.

REFERENCE

- Arunmas, P. (2019). Cross-Border Trade Registers Wobble Amid Global Meltdown. *Bangkok Post*, Business Column.
- Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report Volume*, 13(4), 544–559.
- Belmonte, M. V., Pérez-de-la-Cruz, J. L., Triguero, F., & Fernández, A. (2005). Agent coordination for bus fleet management. *Proceedings of the ACM Symposium on Applied Computing*, 1, 462–466.
- Berg, B. L. (2001). *Qualitative Research Methods For The Social Sciences* (Fourth). Pearson Education.
- Borhan, N., & Arsad, Z. (2018). The Effects of Economic Factors on Tourism Demand for Malaysia: A Case of Asian and European Countries. *International Academic Journal of Social Sciences*, 05(02), 32–45.
- Creswell, J. W. (2013). *Research Design: Quantitative, Qualitative and Mixed Method Approaches* (Fourth Edi). Sage Publication.
- Erke, A., & Hagen, T. (2006). Effects of competition in public urban transport on organizational commitment and behaviour. *European Transport Conference (ETC)*.
- ESCAP, T. D. (2015). Efficient Cross-Border Transport Models. *In United Nations- ESCAP*.
- Guarda, P., Galilea, P., Paget-Seekins, L., & Ortúzar, J. de D. (2016). What is behind fare evasion in urban bus systems? An econometric approach. *Transportation Research Part A: Policy and Practice*, 84, 55–71.
- Lord, M. J., & Tangtrongjita, P. (2015). *Special Border Economic Zone (SBEZ) in the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT)*.
- Maze, T. (1987). *Bus Fleet Management Principles and Techniques* (Issue November).
- Meyer, M. D. (1999). Demand management as an element of transportation policy: Using carrots and sticks to influence travel behavior. *Transportation Research Part A: Policy and Practice*, 33(7–8), 575–599.
- Perimbanayagam, K. (2019). Express bus operators want 30pc fare hike this Raya. *New Straits Times*, Nation.
- Rohani, M. M., Wijeyesekera, D. C., & Karim, A. T. A. (2013). Bus operation, quality service and the role of bus provider and driver. *Procedia Engineering*, 53, 167–178.
- Ruiz, M., Segui-Pons, J. M., & Mateu-LLadó, J. (2017). Improving Bus Service Levels and social equity through bus frequency modelling. *Journal of Transport Geography*, 58, 220–233.

- Shahzad, S. J. H., Shahbaz, M., Ferrer, R., & Kumar, R. R. (2017). Tourism-led growth hypothesis in the top ten tourist destinations: New evidence using the quantile-on-quantile approach. *Tourism Management*, 60, 223–232.
- White, P. (2009). Public Transport: Its Planning, Management and Operation. *In Routledge* (7th Editio).Taylors and Francis Group.
- Yang, W., Veeneman, W., & Jong, M. De. (2018). Transport demand management policy integration in Chinese cities: A proposed analysis of its effects. *Energies*, 11(5), 1–22.