

THE STUDY OF THE IMPACT AND SOLUTIONS OF VERIFIED GROSS MASS (VGM)
MEASURES ON THAI IMPORT-EXPORT BUSINESS
IN FREIGHT FORWARDER'S PERSPECTIVE

การศึกษาผลกระทบและแนวทางแก้ไขจากมาตรการรับรองน้ำหนักมวลรวมตู้สินค้าต่อ
ธุรกิจนำเข้าส่งออกไทยในมุมมองของผู้รับจัดการขนส่งสินค้าระหว่างประเทศ

Pannakorn Tonglim

พณณกร ทองหลิม

Faculty of Logistics, Burapha University

คณะโลจิสติกส์ มหาวิทยาลัยบูรพา

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Abstract

Due to the announcement of Verified Gross Mass (VGM) measures on July 1, 2016, the entrepreneurs in the import-export industry of Thailand have been highly alert, especially the entrepreneurs providing services in the freight forwarder business who are the mediators between the exporters and shipping liners. The purpose of this study is to study perception, adjustment model, benefits and impacts from such measures in the freight forwarder's perspective. The findings from the in-depth interviews with five experts who are serving as executive officers in the freight forwarding business reveal the VGM measures lead to the redundant working process. Most of the problems are rooted from the communication and the stakeholders' access of the shared information. The study recommends the possible solution that the use of information technology system can be used to promote the effectiveness in the information exchange among the stakeholders in the maritime transportation supply chain as well as to facilitate the implementation of the VGM measures.

Keywords: Verified Gross Mass (VGM) measures, Import-export Business, Freight Forwarder

บทคัดย่อ

เนื่องจากการประกาศใช้มาตรการรับรองน้ำหนักมวลรวมตู้สินค้าอย่างเป็นทางการ เมื่อวันที่ 1 กรกฎาคม 2559 ส่งผลให้เกิดการตื่นตัวของผู้ประกอบการในอุตสาหกรรมนำเข้าส่งออกไทยอย่างมาก โดยเฉพาะผู้ประกอบการที่เป็นผู้ให้บริการบริหารจัดการขนส่งสินค้าระหว่างประเทศ ผู้ซึ่งมีบทบาทเป็นคนกลางระหว่างผู้ส่งออกและสายการบินเรือ ทำหน้าที่ในการดำเนินงานด้านการส่งออกสินค้าแทนผู้ส่งออก ในงานวิจัยฉบับนี้จึงต้องการศึกษาการรับรู้ รูปแบบการปรับตัว ผลประโยชน์และผลกระทบจากมาตรการรับรองน้ำหนักมวลรวมตู้สินค้าในมุมมองของผู้บริหารจัดการขนส่งสินค้าระหว่างประเทศ เพื่อให้ตระหนักรู้ว่าการบังคับใช้มาตรการดังกล่าวได้ผลมากน้อยเพียงใด และผู้บริหารจัดการขนส่งสินค้าระหว่างประเทศต้องดำเนินการอย่างไรต่อไปในการพัฒนาและยกระดับมาตรฐานการดำเนินงานให้สอดคล้องกับเป้าประสงค์ของมาตรการ อย่างไรก็ตามจากการสัมภาษณ์เชิงลึกพบข้อเท็จจริง 2 ประการว่า ในบริบทของการดำเนินงานนั้น มาตรการรับรองน้ำหนักมวลรวมตู้สินค้าอาจสร้างความยุ่งยากให้กับผู้ประกอบการพอสมควร แต่ในภาพรวมนั้นผู้ประกอบการกลับมองสถานการณ์ที่กำลังเผชิญอยู่นี้ว่าเป็นความท้าทายและพร้อมที่จะปรับตัวเพื่อให้กระบวนการทำงานที่เพิ่มขึ้นมานั้นเกิดประสิทธิภาพและพัฒนาสู่ความเป็นมาตรฐานในระดับสากล

คำสำคัญ: มาตรการรับรองน้ำหนักมวลรวมตู้สินค้า ธุรกิจนำเข้าส่งออก ผู้บริหารจัดการขนส่งสินค้าระหว่างประเทศ

Introduction

Import-export business is considered a vital domain for international business because this business carries and transports goods and products from manufacturers at the port of departure to the buyers at the port of destination (Ministry of Commerce, 2019). Concerning significant value of this business, the governments tend to regulate effective measures to ensure fruitful benefits arising from this business. Part of the motives behind the effective measure is directly

from the issue of balance of trade. In other words, the sum of import-export values designates country's balance of trade (Wongsawas, 2016). Thus, the issue of balance of trade becomes in focus of the country since Thai GDP is often influenced by the import-export value, which is the major income of the country (Thanaphonepan, 2007).

The effective transportation of the containers by the ship involves three stakeholders: exporters, freight forwarders, and transporters (See Figure 1).



Figure 1 Relationship among the stakeholders

This framework is obtained based on the fact that most of exporters do not directly transport their goods and products from their bay to the countries of destination. This role is given to a third party in this paper by a common

title as freight forwarders. They bid booking lading issues, manage oversea distribution, perform custom control, and other activities on behave of exporters (Lertjariyaphone, 2007). According to the figure, four steps are included

in the transportation activity. 1) the exporters send their goods to the freight forwarders for booking. 2) The freight forwarders send booking to the liners. 3) The liners confirm booking with the freight forwarders. 4) The freight forwarders confirm booking with the exporters.

The duties of the freight forwarders also involve the transportation of the goods from the exporter to the port custom, the transfer of the containers on board, and the tracking of the containers to the destinations (Lertjariyaphone, 2007). The implementation of the verified gross mass (VGM) measures on the first of July, 2016 by the International Maritime Organization (IMO) have required the verification of the container gross mass before boarding. The freight forwarders become the centre of the maritime transportation because they represent the exporter and be the middle man between the exporters and the liners. They are also the link that promotes the congruence between the exporters and the liners to ensure the right practice as regulated by the VGM measures. As the freight forwarders are the ones who are directly affected by the implementation of the VGM measures, this study aims to explore the impact of the implementation of the VGM measures on the freight forwarders, as perceived by the practitioners in the freight forwarding business.

Research Objective

This study aims to explore the impact of the implementation of the VGM measures on the freight forwarders, as perceived by the practitioners in the freight forwarding business.

Literature Review

According to the review of related literature and previous studies on the VGM, it was found that the lives of the seamen were at risk as they encountered the maritime accidents, partly caused by the inaccuracy of between the actual gross mass of the containers and the account in the document. To solve the problem, the conferences among the related authorities such as International Maritime Organization (IMO), the International Convention for Safe Container (CSC), the International Maritime Dangerous Goods (IMDG), and the International Labour Organization (ILO) had regulated the Verified Gross Mass (VGM) measures which enforced the freight forwarders to verify their cargoes before sending them on board. If the inaccuracy between the actual VGM and the informed document is found, the liners can reject the containers on board (International Maritime Organization: IMO, 2014).

As the measures were enforced on the first of July, 2016, the comparative study aiming at the application of the VGM measures in Hongkong by comparing between the guideline of practices regulated by the IMO and the ones by the Hong Kong Department of Maritime indicated that the guideline of practice regulated by the Hong Kong Department of Maritime was not as detailed as the one by IMO, for example, lead time for VGM submitting, fee for the VGM measurement, etc. The measures, thus, increase the redundant working process for the liners in rechecking the shipping documents before boarding the containers (Sik, 2016).

A while after the implementation of the VGM measures, many studies were also conducted to investigate the effect of the

measures on the working process of maritime transportation. One of the studies was conducted at the Indonesian Port Tg. Priok. Both negative and positive impacts were found. For the positive side, the accurate VGM helped improve the safety at land and sea. However, the implementation of the measures posted some negative effect as the freight forwarders had to pay around 50-75 rupia as a fee for the VGM charge before transporting the containers into the port area. Although the fee was not much, it became part of the operating costs. Besides, the redundant working process was mentioned as the freight forwarders needed to measure the empty containers and remeasure the loaded containers (Rahmatika et al., 2017).

Luis, Huyng & Thi My Hanh (2017) compared the effect of the implementation of the VGM measures in Spain and Sweden. The result of this study revealed that there were two ways to measure the VGM. First, the measurement of the whole containers or the measurement of the container together with the truck and minus the weight of the truck to get the VGM. Second, the measurement of the goods with the empty container and lashing equipment. Both ways were the estimation of the VGM that was not permitted in the countries of origins. The only permitted measurement was to use the standardized scale located at the exporters' sites, the company, or the port' services.

Since the implementation of the measures, it was the facility that became the obstacle to the success of the measures. Many countries have implemented the use of the Port Community System (PCS) in the port management as a mean of data and information exchange which could reduce the mistakes and redundant working

process. The previous study also found that the use of the PCS in Hong Kong port could improve the working process in the maritime transportation supply chain (Luis, Huyng & Thi My Hanh, 2017).

Methodology

Data Collection

In-depth interview was employed to collect the information from five freight forwarder companies who were managers, at the time of data collection and encountered the situations before and after the implementation of the VGM measures. They were selected using purposive samplings. The selection criteria include the ones who voluntarily gave the information in the issues addressed in the research instrument.

Research Instrument

The research instrument employed in this study was a set of semi-structured interview. The questions under the semi-structured interview were formulated from the review of literature relating to the freight forwarders' perception towards VGM. The interview items intended to investigate the facts, way of practices, guidelines by the freight forwarders.

Data Analysis

The obtained information was analysed using analytic induction. The theme emerged from the obtained information was interpreted based on the observed phenomenon. Thus, the findings from this study are considered working hypotheses that requires further investigation since it requires the other aspects from other stakeholder to recheck the accuracy of the information.

Results

Five themes have been emerged from the content analysis. They are as follows:

Perception and preparation for VGM measures

It was found that freight forwarders had acknowledged the implementation of VGM measures before it was officially implemented. They knew that these measures were for ensuring safety of seamen who were directly influenced by the inaccurate verification of VGM. Once the stowage plan on board was not well-planned or even off-balanced due to the VGM inaccuracy, lives and ships could face serious problem such as ship balance or capsizing when they encountered winds or storms. Regarding the preparation for VGM measures, they, as representatives of the exporters, were initially informed about the proper guidelines of practices. They then informed the exports about the official implementation of VGM measures. They even informed the exporters to report the actual weights of the containers for them to calculate the accurate mass of the containers or the containers would be rejected by the liners.

Current situations of freight forwarders after the implementation of VGM measures

Regarding the period of time for the freight forwarders to prepare for the implementation of VGM measures, they had spent 6 months to 1 year. Despite being informed about the expected working protocols between exporters and freight forwarders, they still confronted working difficulties when the measures came into action. They claimed that they experienced confusion and misunderstanding of the proper guidelines of practice. For example, there was no forms for the documents of VGM and they

also had no idea which authority with authorized signature should be the one who sign the documents. These problems became constraints and hot potato between the exporters and freight forwarders.

Fortunately, the exporters and freight forwarders could improve their attitudes toward VGM measures and gained more working experiences after the official implementation. They followed the regulation issued by the Marine Department to specify the ones who would take responsibility on the documents. The regulation endorsed the ones who are responsible for documenting packing lists for documenting VGM. Thus, the argument between these two parties reached its end.

After the official implementation of the VGM measures had been enforced for 3-4 years, the freight forwarders were still in search for the effective working protocols between exporters and liners, in which freight forwarders acted as middlemen. It was found that there was still some incongruence. According to one of the informants, he claimed that “...for the booking, especially for full-loading container, the freight forwarders received information from the exporters to calculate the number of containers on each shipment. The booking kicked off when the goods might still be at the factory or even on the production line. So, the estimation of VGM was very challenged as they could in the way to estimate the VGM. They calculated the total weight of containers from the weight of goods, as printed on the package. However, the liners also needed booking confirmed so the inaccuracy of the actual weights often occurred. To ease this difficulty, the liners’ regulations were so flexible that the difference between the booking

and confirmed booking should not exceed 100 kg. for a container”.

Impacts of the implementation of VGM measures on the effectiveness of freight forwarders

Most of the freight forwarders agreed that the freight forwarding companies became the first responders of these measures. Cost was affected as mistakes likely occurred. Thought some liner allowed the freight forwarders to revise the confirmed booking after they submitted VGM, the extra cost due to the revision failed on their shoulders nonetheless. In addition, the implicit cost could influence the effectiveness of freight forwarder business. One of the informants reported that “...the working protocols right now is a kind of over-processing. For example, the containers that the VGM are not consistent with the booking documents are likely to be the full-loaded containers. Also, each empty container already accounted for its weight. You may check from the documents. So, we knew the weight of the containers from the liners and the goods weight from the packing list. We could estimate the VGM. It was actually our old-fashioned protocol. I myself suspected the effectiveness that they claimed we could have as a result of the implementation of VGM measures”.

As the current working protocol that freight forwarders are required to complete the VGM measures before they confirmed booking, the freight forwarders thought it was over processing and deficient. Now, they are looking for the way to save time and decrease extra cost caused by the additional working protocols. Furthermore, the liners helped improve the effectiveness of the of freight

forwarders as one of the informants claimed that “...After the official implementation of the VGM measures, we needed to add one more working protocol. We needed to contact the truck services that carried the empty containers from the container yards to the exporters’ factories for the weight of the empty containers. The reason why we needed to do it was because the containers of different liners contained different weight, but they were mostly not significantly different. One of the liners even provided us the weight of the empty containers in their booking system to facilitate freight forwarders. We just only keyed the total weights of goods from packing list into the system and we could automatically calculate the VGM and verify the VGM at once”. Thus, it can be observed that the use of online system can ease the difficulties and improve working process.

Guidelines issued for measuring VGM before and after the implementation of VGM measures

Be known among the freight forwarders, the VGM measures do influence their business. So, they tried their best to effectively implement these measures onto their working process. They claimed that “Deep down, no one wants our colleagues to get into any fatal incident”. When asked about the measuring methods, it was found that the freight forwarders employed the old practice that measured the empty container, goods, and lashes altogether. One of the informants said “Lash potentially affects the VGM since there is no actual and accurate weight of lashing equipment. However, we normally estimated the weight of lashing equipment to reduce working protocol because

it did not affect the VGM that much”. They also suggested the effective implementation of VGM measures that “we should have some sector or authority to measure the VGM or weight toll at the entrance of the port”. This idea is no new, but it is hard to become true.

In addition, the observed change is not a method used to calculate VGM, but the documenting process. Mainly, the documenting process was important since it endorsed warrant of damages caused by the incongruence between VGM and confirmed booking. Considering the penalty measures, the freight forwarders perceived the small impact of the legal penalty. One of them added that the strict implementation of the VGM measures by the liners will be more influential than the legal penalty. For example, if the liners rejected the containers due to the incongruence between VGM and confirmed booking, the freight forwarders and exporters would be highly and seriously impacted because the exporters would be fined or even pay for damages and the freight forwarders would be required to redo every process such as booking, custom control, and documentation. It is not only about the increasing cost, but it is also about the organizational images.

Benefits and impact of VGM measures as perceived by freight forwarders

For the working process, some freight forwarders perceived VGM as a burden while many freight forwarders considered these measures as a boon. One of the informants reflected “I can observe more systematic working protocol in our import-export industry after the official implementation of the VGM measures. We also acknowledge that our job could affect others”. Another added “Actually, these are good measures. If we successfully implement them, our business capacity will be elevated because we develop our working protocol to meet the international standard just like the other country members that implement these measure it is possible that they now go far beyond the standard practice already”. Hence, it can be observed that the freight forwarders perceived the VGM measures as a challenge for Thai import-export industry. Still, they have positive attitudes toward the measures and they are ready to develop, change, and improve their working protocol to meet the standard for they believe it will raise the standard working procedure of the nation.

Table 1 Problems and recommendations for the implementation of the VGM measures, as accounted by the freight forwarders

No.	Problem	Recommendations
1.	Perception and preparation before the enforcement of the measures	
	1.1 There was an argument between the freight forwarders and the exporter about the holder who would be responsible for verifying and certifying the VGM.	1.1 The freight forwarders should study and understand the measures carefully.

Table 1 Problems and recommendations for the implementation of the VGM measures, as accounted by the freight forwarders (Cont.)

No.	Problem	Recommendations
	1.2 The confusion on the VGM procedure caused them to question the process and procedure of VGM, and the documentation.	1.2 Before or during the time that the freight forwarders informed and/or reserved the liners, they needed to verify the VGM.
2	The adaption of the freight forwarders after the implementation of the measures	
	2.1 At the first phase of the implementation, the freight forwarders and the exporters who took responsibility for verifying VGM had been worried about the penalty for the case of misconduct or the inaccurate VGM.	2.1 The freight forwarders inquired the liners about the practical procedures and found that each liner had different protocols. Therefore, they needed to inform their own staffs and the stake-holders about the different protocols of each liner.
	2.2 After the implementation of the measures (1 year-present), the incongruence among the protocols employed by the liners and freight forwarders could be found, even though the measures were regulated for a period of time.	2.2 The liners became the key players in regulating the protocols for VGM. They designed the website that the freight forwarders could verify the VGM when they reserved the capacity on board. The freight forwarders could also use their electronic signatures to verify the VGM. In addition, some liner allowed the website users to know the weight of the empty container by putting the containers' serial numbers. Then, the website would calculate the VGM of that shipment for the website users.
3	Guidelines for VGM and penalty	
	3.1 According to the freight forwarders, the protocols for measuring the VGM before and after the implementation of the measures were not different. However, the working process became more complicated.	3.1 The liners and the freight forwarders could collaborate their VGM protocol being using the information technology system that allowed them to update the VGM and track the containers. The access of the information would facilitate both parties as well as prepare them for the upcoming measures.

Table 1 Problems and recommendations for the implementation of the VGM measures, as accounted by the freight forwarders (Cont.)

No.	Problem	Recommendations
	3.2 The legal penalty was perceived by the freight forwarders that it was not serious. However, they perceived that the commercial penalty was more worrying penalty.	3.2 Since the VGM measures allowed the liners to reject the shipment that failed to inform the accurate VGM, the freight forwarders who encountered the rejection of the containers must reprocess the entire documentation and VGM process, which meant their time and resources would be affected. Therefore, the enforcement of the measures would be the key factor to the successful implementation of VGM measures.
4	Impact of the VGM measures	
	4.1 The working process of the freight forwarders was redundant and ineffective.	4.1 The improvement of this issue must be done based on the cooperation between the liners and the freight forwarders. The same working process employed by the liners and the freight forwarders must be regulated. They should work on the same platform to avoid the redundancy and ineffectiveness.
	4.2 The ineffective working process affected the operating costs.	4.2 This was caused by the problem mentioned in 4.1. The missing collaboration between the liners and freight forwarders could affect the operating costs. If they could create the same platform or work on the same working process, the reduced operating costs could be obtained.
5	The benefits of the measures on the freight forwarding business	
	The working processes employed by those in the freight forwarding business were similar, but they were not on the same standard. Therefore, the implementation of VGM measures could be the starting point of	As mentioned in 4.1 and 4.2, the effectiveness working platform could be used to elevate the working standards. In addition, the strong business alliance could be established among the freight forwarding business.

Table 1: Problems and recommendations for the implementation of the VGM measures, as accounted by the freight forwarders (Cont.)

No.	Problem	Recommendations
	the better working process or the international working process.	and the liners in order to create the balance of the marine transportation supply chain.

Discussions

According to the findings, the freight forwarders mentioned both the impact and recommendations on the implementation of the VGM. Thus, it could be discussed in two folds: the impact and recommendations on the operational process, and the impact and recommendations on the policy.

The impact and recommendations on the operational process.

For the impact and recommendations on the operational process, it was found that the VGM measures regarded the operational process performed by the freight forwarders as follows: 1) the effectiveness of the working process of the freight forwarders was decreased after the implementation of VGM measures; and 2) the lack of the congruence between the working processes performed by the freight forwarders and the liners could result in the lack of the sustainable operations.

The effectiveness of the working process of the freight forwarders was decreased after the implementation of VGM measures.

After the implementation of the VGM measures in Thailand, it was found that the freight forwarding business was influenced the implementation. They perceived that the former working process was complicated because they needed to recheck and verify the information of the goods they transferred from the exporters

to the liners. As the representatives of the exporters, the freight forwarders needed to add more working process in verifying the VGM. However, the working process and database for the information exchange between the freight forwarders and the liners had not yet been developed to catch up with the update. The freight forwarders then became the one who took responsibility for verifying the data accuracy in every step. Since the implementation of VGM measures came with the penalty, it raised a question “Did the VGM process really improve the safety of life at sea as it claimed?” or it became the burden for the freight forwarders for the redundant working process and waste of the operating cost and time.

The freight forwarders were well aware of that the VGM measures were for the safety of the human and marine lives. They mentioned about the possibility of the decreasing working process and the complication caused by the measures. Also, the coming ages of the information technology and innovation could improve the working process by using the data or information management. For example, the use of PCS (Port Community System) could be implemented for the freight forwarders to access the information on the marine transportation supply chain as well as promote the effectiveness of the small freight forwarding business.

The lack of the congruence between the working processes performed by the freight forwarders.

For the international freight forwarding business and the liners, they improved their working process using the Internet such as making the reservation through the online system, tracking the container using the liners' websites, or verifying the VGM using the liners' online systems. However, several freight forwarders could not catch up with this technology since they could not connect their intra-system to the inter-system.

The information sharing or the information exchanges could be used to create the business alliance to proceed the effectiveness in this industry. If the freight forwarders could connect their database to the liners' database, that freight forwarders could enjoy the benefits for the effective working process and the VGM measures in the same time because their business could earn credit and became the business alliance with the liners. Consequently, they could transport their shipments worldwide regardless of the routes and quantity.

This recommendation could be confirmed by the result of the study "The Facility role of IT systems for legal compliance: the case of port community system and container Verified Gross Mass (VGM)" conducted by Fedi et al. (2019) that interviewed the experts in the port management about the application of the information technology system on the port infrastructure in order to response to the law. The study could be concluded into three main points as follows: 1) The implementation of VGM affected the supply chain of the maritime industry because the practitioners needed to overcome the complicated working process of

the port itself. 2) The application of the digital system in the port infrastructure could enhance the enormous information exchange. For example, the use of Port Community System or PCS could ease the complication of the data transferring process. Finally, 3) the study confirmed the practicality of the use of PCS that the implementation of the measures could harmonize the cooperation, the communication, and the infrastructure which would be the key factors the success of the effective implementation of the VGM measures.

Impact and recommendations on the policy

Three issues had been addressed as the factors affecting the deviation of the VGM. They are as follows:

The factors on the additional weight

Since most of the VGM measurement in Thailand relied on the second method prescribed by the Marine Department that they measured the packages and other equipment and the empty containers, the policy should be as follows:

Different weight of empty containers (same size and dimension) of each liner: Freight forwarders, when confirm booking, should estimate the weight of empty containers despite their perception that the weight of empty containers is different and will not directly affect the VGM.

Weight of lashing equipment: It is the weight of the lashing equipment used to fix the position of the goods within the containers for safety purposes during relocation or transportation. There is no estimation of the weight of lashing equipment. The freight forwarders should estimate the weight of the lashing equipment, which

might be deviated according to types and materials. Similar to the weight of empty containers, lashing equipment play almost non-significant roles in VGM.

Flexibility of estimated mass: The difference between estimated weight described in the booking and the VGM cannot exceed 100 kg. The freight forwarders claimed that the liners initially allow deviation of the weight from the booking documents no more than 10% of total weight. Some liner allowed the difference between the actual VGM and the documentation no less than 100 kilograms.

As aforementioned, the researcher argued that the calculation process of the VGM could deviate the congruence between the actual VGM and the documentation. Although the weight of empty containers combining with lashing equipment earns little effect on the VGM, the negligence of the VGM policy may significantly affect the VGM. Considering the fact that each container could add 100 kg. or 10% of its total mass, this inaccurate deviation could be multiplied by the number of the containers on board, which might be thousand (s). It might affect the balance of the ships.

The recommendations for the measurement of the weight or the VGM calculation, as specified by the Marine Department or the International Convention for Safety of Life at Sea (SOLAS), might be only the written form if those recommendations have been not implemented. The key success of the recommendations is the regulation that requires the use of standardized scale for indicating the VGM of every container before the container is transferred on board. Even though none of the standardized scale could be found in Thailand

at this moment, the freight forwarder could have sought the measuring service offered by the government sectors such as the department of Highways' static scale truck weight system.

The establishment of the standardized scale to measure the VGM

It was mentioned in 1) that the freight forwarders estimated the VGM by calculating the weight of goods, empty container, and lashing altogether. However, this method was inaccurate since the freight forwarders might not be able to avoid the deviation or miscalculation of the VGM. According to the study "The Impact of VGM (Verified Gross Mass) Implementation as SOLAS New Regulation – Case Study at port of TG" by Rahmatika et al. (2017), it was found that they suggested the establishment of the VGM measurement area in front of the Port TG.PRIOK so the freight forwarders could measure their containers using the standardized scale. They also recommended the free service to convince the freight forwarders to use this service. It was clear that the measurement of the whole container could be done. However, the Thai exporters or freight forwarders had no standardized scale that was capable of measuring the whole containers. If they could measure the whole containers before transferring them to the liners, they could obtain the 100% accurate VGM and verify the VGM at ease.

The awareness towards the operating costs and the image of the organization

Even though the freight forwarders thought that they were not legally influenced by the measures, they needed to be aware of the operating costs and the image of the

organization. The implementation of the VGM became their burden for they needed to add more working process which could decrease their working effectiveness as well as increased their operating costs. The inaccurate VGM could be resulted in the penalty since the measures allowed the liners to reject the containers that had inaccurate information on their VGM. If so, the freight forwarders must reprocess the measurement and the documentation. So, their operating costs would be increased and their image of organization would be tainted.

It was concluded that the VGM measures could be the double-edged sword for the freight forwarders. On one side of the coin, the freight forwarders encountered the working process problems. Without the adaptation, they would definitely be affected. On another side, they could use this challenge to elevate their working standards and competency to meet the international standards, which meant that their business could be sustainable in the long run.

Conclusions

The implementation of the VGM measures had negatively and positively influenced the freight forwarding business because they were the group of business that represented the

exporters. Therefore, the researcher conducted the study to explore the impact and the adaptation of the freight forwarding business as a response to the said measures. Using qualitative method, the researcher conducted the in-depth interview on the exclusive staffs from the freight forwarding corporations and then analysed the data using the inductive analysis. The finding revealed that the freight forwarders had adjusted their working process after the implementation of the VGM measures by adding the step of VGM calculation and documentation. However, they encountered the calculation constraints due to the additional weight of the goods, containers, and lashing. The mentioned additional weight made the VGM verified in the liners' documentation deviated. Thus, the researcher recommended the use of the information technology system to develop the shared database between the freight forwarding business and the liners. It could improve the practical working process on VGM calculation and documentation as well as promote the effectiveness of the working process for the marine transportation supply chain.

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References

- Fedi, L., Lavissiere, A., Russell, D. & Swanson, D. (2019). The facilitating role of IT systems for legal compliance: the case of port community systems and container Verified Gross Mass (VGM). *Supply Chain Forum: An International Journal*, 20(1), 29-42.

- International Maritime Organization (IMO). (2014). *Guidelines regarding the Verified Gross of a Container Carrying Cargo*. IMO, MSC.1/Circ. 1475. Retrieved June 9, 2019, from http://www.worldshipping.org/industry-issues/safety/MSC_1Circ_1475_Guidelines_Regarding_The_Verified_Gross_Mass_Of_A_Container_Carrying_Cargo_-Secretariat-.pdf
- Lertjariyaphone, S. (2007). *How to complete the import-export business*. Bangkok: Chulapublishing, Chulalongkorn University. [in Thai]
- Luis, A. A., Huyng, R. C. & Thi My Hanh, L. (2017). Port Community System in Central America and its Global Trade Impact. *International Journal of u- and e- Service, Science and Technology*, 10(9), 61-70.
- Marine Department. (2019). *Guidelines for the implementation of the requirements of the International Convention on Safety of life in the sea according to the measures to check the gross weight of the cargo containers*. Retrieved June 16, 2019, from <https://www.md.go.th/app/mdadmin/images/upload/news/4331-001.pdf> [in Thai]
- Ministry of Commerce. (2019). *International Trade*. Retrieved July 15, 2019, from <https://www.moc.go.th/index.php/moc-about/2015-10-19-03-39-24/2015-10-19-04-25-36/item/42-6.html> [in Thai]
- Munuera, L. B. (2017). *Maritime freight transportation and the impact of regulation changes: A coparison between Spain and Sweden*. School of Architecture and Built Environment. Degree Project in Transportation Science Stockholm, The University of Adelaide.
- Olav, F. K. & Björn, H. (2011). IMO legislation and its implementation: Accident risk, vessel deficiencies and national administrative practices. *Marine Policy*, 35(2), 201-207.
- Rahmatika, R. A. P., David, P. S. & Aswanti, S. (2017). The impact of VGM (Verified Gross Mass) implementation as SOLAS's new regulation case study at port of Tg. Priok. *Advances in Engineering Research (AER)*, volume 147. Conference on Global Research on Sustainable Transport (GROST 2017). 22-23 November 2017. Jakarta, Indonesia: Curran Associates, Inc.
- Sik, K. T. (2016). The application of the verified gross mass rules in Hong Kong. *Maritime Business Review*, 1(3), 225-230.
- Thai National Shippers' Council. (2016). *Container Weight Verification Rules by International Maritime Organization (IMO)*. Bangkok: Maruay Garden Hotel. [in Thai]
- Thanaphonepan, R. (2007). *Thai economic society in the decade 2007: Development strategies in global trends*. Bangkok: Kobfire publishing project. [in Thai]
- The Custom Broker and Transportation Association. (2016). *Transmitting data to the transport to support the total weight of the container*. Retrieved June 16, 2016, from https://web.facebook.com/www.ctat.or.th/posts/1216892455022919?_rdc=1&_rdr [in Thai]
- Wongsawas, S. (2016). Factors Affecting Money Supply in Thailand. *Journal of Humanities and Social Sciences Thonburi University*, 10(21), 70-78. [in Thai]

Wongsawas, S. (2016). The Effects of Money Supply on Economic Growth of Thailand. *Journal of Humanities and Social Sciences Thonburi University*, 10(22), 79-98. [in Thai]



Name and Surname: Pannakorn Tonglim

Highest Education: Master of Science (M.Sc.): Transport and Logistics Management

University or Agency: Burapha University

Field of Expertise: International Business Management