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THE INFLUENCE OF CUSTOMS AND LOGISTICS SERVICE EFFICIENCY ON CARGO DELIVERY TIME

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Abstract

The formation of a logistics chain with the use of a freight customs complex for customs and logistics service provision requires detailed research and investigation into technical, technological and organizational constraints that may affect overall cargo delivery time. Actors in the transport market, while interacting with customs authorities, have to take into account customs legislation requirements and road transport complex operational characteristics, since non-compliance with them will cause a number of delays due to the need for corrective actions and will also entail a number of penalties. In order to increase the accuracy of delivery time planning, it is considered the procedure for customs and logistics service provision involved in cargo export and import as well as for stowing cargo in a customs warehouse or a temporary storage warehouse. It is also addressed the issue of comprehensive service provision to entities engaged in foreign economic activities using a freight customs complex. The most widespread violations requiring additional correction time are identified. It is considered the technological constraints connected with the handling capacity of the research object. The influence of the organization and planning of a freight customs complex's operation on its efficiency is determined. It is proposed to consider the lack of available resources provided by customs infrastructure facilities and the excessive idle time of vehicles as a factor in delivery time planning. The paper findings can be implemented in the operation of freight customs complexes in cooperation with private sector enterprises and state organizations when performing foreign trade operations.

Keywords: customs and logistics service; customs regime; delivery time; freight customs complex; infrastructure facilities

1. Introduction

Nowadays, building external economic relations is greatly facilitated by a high level of logistics service of cargo flows moved under different customs regimes and the qualitative execution of customs formalities, their duration and the level of infrastructure support. Public authorities strongly encourage coherent cooperation between private and public sector organizations providing customs and logistics services, but the lack of funding creates a

number of obstacles to stepping up the implementation of these processes. An important aspect requiring a thorough examination is the violation of customs rules that may be committed by foreign trade entities. After all, in cargo movement under any customs regime, there is a likelihood of non-compliance with customs legislation. It happens intentionally or due to insufficient skills of those involved in delivery arrangement. Most of these violations require special consideration in the operation of freight customs complexes where a

significant proportion of cargo flows is processed. In order to plan the operation of technical, technological and organizational facilities of the freight customs complex, as well as to form indicators of its handling capacity, it is necessary to consider possible contradictions in cooperation with actors in the transport market which will lead to an increase in service time.

2. Analysis of recent research and publications

The activities of all actors in the transport market are aimed at optimizing delivery costs or time. The latter involves a planning process, working out in detail all possible variations in terms of extra costs or time expenditure. The vast majority of costs are determined and fixed before transportation takes place and are of a fixed nature. The size of duty is also set at the legislative level. Expenses on customs and transportation fees, fines for traffic violations, etc. in most cases are predictable, only tariff changes can be difficult to forecast.

The issue of determining the cost of cargo delivery in international transportation is most thoroughly covered in the works [1-4], the issues of project analysis in logistics enterprises and vehicle fleet operators' activities are addressed in the papers by T.A. Vorkut [5-6].

A considerable part of research was also centered around the study of freight customs complexes' operation [7-9], cargo flow management [10-11], and the handling capacity of customs and logistics infrastructure facilities [12-14]. However, each study is characterized by a rather narrow research perspective. Meanwhile, overall delivery time is influenced by many factors related to transport market entities and public institutions' activities. There has to be a special focus on customs authorities' activities and their cooperation with actors in the transport market. If customs rules are violated or there are queues due to customs officials' productivity issues, it has a significant impact on increasing delivery time. Service at freight customs complexes is no exception.

3. Articulation of the research objectives

The technology of fulfilling customs formalities at freight customs complexes has several limitations: the number of parking places for vehicles in the customs control zone; at each freight customs complex there is a limited number of customs officials working according to working hours or individual shifts according to the operating schedule of infrastructure facilities; customs warehouses and

temporary storage warehouses have limitations on area, therefore, they can possibly refuse to stow cargo if there is no vacancy in a warehouse; up to five vehicles can be accommodated in the in-depth customs inspection area at a time. However, the main aspect to be taken into consideration by transport market entities in their decision-making on using corresponding services is the handling capacity of a freight customs complex, as there are restrictions on the number of vehicles that can be on its territory at the same time. It leads to the need to wait in line for obtaining a vehicle permit to enter the territory of the customs infrastructure facility. At the same time, each time factor has a direct impact on increasing delivery time, as well as on the efficiency of the freight customs complex as a whole. Therefore, the main purpose of the paper is to study the processes underlying customs and logistics servicing of cargo owners during cargo export and import, complex servicing, stowing cargo in a customs warehouse and a temporary storage warehouse, as well as to determine possible actions that will be taken if there are some operating limitations in a freight customs complex's operation or the violations of customs rules are detected.

4. Statement of basic materials

In organizing the delivery of goods using international transport, the most difficult and time-consuming process is the transportation deadline planning, taking into account the fulfillment of customs formalities on the territory of freight customs complexes.

The activity of freight customs complexes is mainly privately operated and regulated by the Customs Code of Ukraine combining customs activity provided by the state fiscal authorities, and logistics activity carried out by structural divisions of the freight customs complex

A significant part of foreign trade cargo is served by freight customs complexes. These may include the following operations: import and export customs' clearance, storage of goods in a customs warehouse or temporary storage areas, the provision of transport services, increment consolidation or the provision of auxiliary services.

Market conditions set strict business rules and require prompt delivery of goods at minimum expense and risk. The activity of freight customs complexes involves complex servicing of entities engaged in foreign economic activities. However, in terms of their infrastructure provision, there are a number of restrictions leading to the excessive idle

time when goods and vehicles await for service. The latter can affect cargo safety conditions. Since freight customs complexes are significantly different from each other, for their identification there is a need to classify them which allows taking into account the specifics of their operation and the

probability of a service request rejection in the fulfillment of customs and logistics functions. Based on the analysis of the recent publications [15-17], in Fig. 1 it is proposed the following freight customs complex classification.

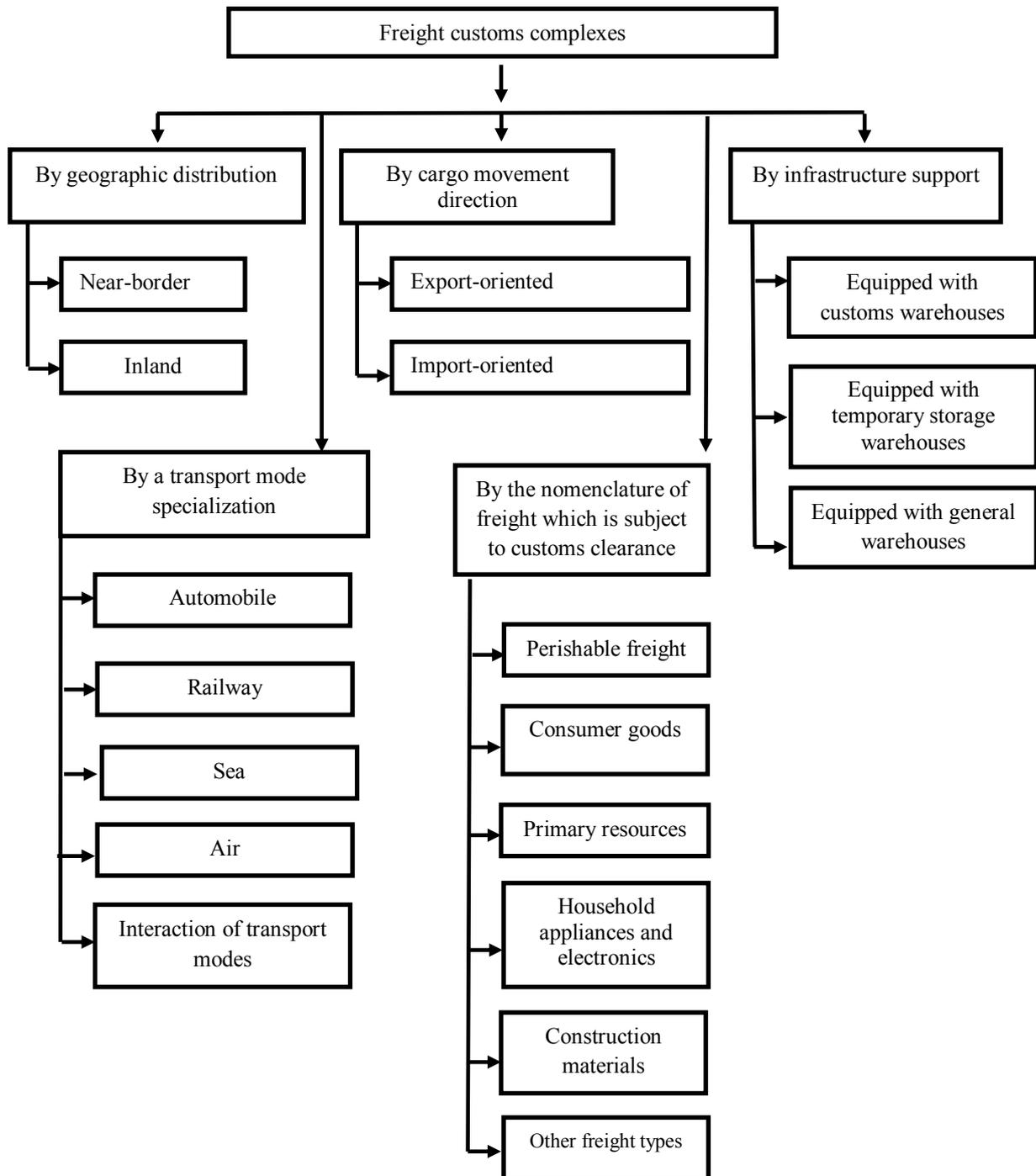


Fig. 1. Classification of freight customs complexes

Source: compiled by the authors based on [15-17]

Most delays in the cargo delivery organization are provoked by customs authorities' actions. The legislation prescribes temporary norms for the fulfillment of customs formalities, but compliance with them is rather an urgent problem for foreign economic activity participants. Because of the insufficient substantiation of standards, customs officials can face a number of obstacles to customs documentation execution, as in the development of standards it is necessary to take into account a number of factors, e.g. the specifics of a particular customs infrastructure facility; freight nomenclature requiring customs clearance; mode of transport; customs regime under which goods are transported.

Conversely, a lack of time for customs procedures can lead to a reduction in customs authorities' efficiency. The number of issued declarations does not always fully reflect customs officials' workload and their activity effectiveness due to the fact that a single customs permit can include either one or an unlimited number of goods.

The main task of customs authorities is to ensure the country's economic security, which in turn depends on fiscal fees levied by customs authorities on entities engaged in foreign economic activities. The average income per unit of time is the most important out of possible criteria for the evaluation of customs authorities' activities. The comparative efficiency of customs authority divisions' operation is determined by the criterion calculated as the ratio of average income to the unit of time obtained by a particular customs authority division for the number of employed workers.

The use of such a criterion for assessing the performance of all customs authority divisions is connected with a number of factors. Firstly, as noted previously, customs authorities' activities are concentrated not only on levying customs duties but also on the facilitation of foreign trade and the protection of the country's economic interests. In addition, customs authorities have so-called support departments (human resources department, finance and economy department, security service, etc.). Their activities do not directly contribute to the sum payable to the budget. However, such departments have an impact on customs authorities' performance including the generation of budget revenues, but this is only an indirect effect which is different for each division. Therefore, the degree of its influence is difficult to assess.

In general, the establishment of criteria for assessing customs authorities' performance on the territory of a certain freight customs complex will

make it possible to take into account the loading level and infrastructure support when choosing a place for attendance to customs formalities or logistics service provision. It will also contribute to more accurate delivery time planning.

In planning delivery time, it should be taken into account the stages of cargo movement procedures under various customs regimes.

The procedure for importing goods using a freight customs complex includes the following steps: conclusion of a service agreement; payment for services provided by a freight customs complex; arrival of a vehicle; obtaining a vehicle entry permit; weight control of the vehicle upon arrival at the territory of the freight customs complex; proof of delivery; providing customs documents and making an application for going through state control types in accordance with the commodity code to a single point of contact; automatic distribution of the customs declaration to the responsible person for customs clearance; document conformity verification by related regulatory bodies; placing the vehicle in the customs control zone; removal of customs security devices from the vehicle; customs inspection of the vehicle in the customs control zone; payment of customs duties, customs authority's stamps on documents; completion of customs clearance, issuance of executed documents; exit from the customs control zone.

The algorithm for the completion of import formalities is shown in Fig. 2.

The procedure for exporting goods using a freight customs complex consists of the following steps: conclusion of a service agreement; payment for services provided by a freight customs complex; providing customs documents and making an application for going through state control types in accordance with the commodity code to a single point of contact; automatic distribution of the customs declaration to the responsible person for customs clearance; document conformity verification by related regulatory bodies; vehicle's arrival; obtaining a vehicle entry permit; weight control of the vehicle upon arrival at the territory of the freight customs complex; placing the vehicle in the customs control zone; customs inspection of the vehicle in the customs control zone; affixing customs security devices to the vehicle; customs authority's stamps on documents; completion of customs clearance, issuance of executed documents; exit from the customs control zone.

The algorithm for carrying out export operations is shown in Fig. 3.

Comprehensive customs and logistics service at a freight customs complex during the export of goods is carried out in the following sequence: filing the application from a cargo owner for comprehensive service; conclusion of a service agreement; payment for services provided by a freight customs complex; cargo delivery from the manufacturer to the general warehouse of the freight customs complex; packing, labelling, increment consolidation for shipment; selection of an optimal vehicle from the manufacturer's own fleet (or a search for a carrier); preparation of shipment documents; preparation of customs documents; vehicle loading; weight control of the vehicle after loading; providing customs documents and making an application for going through state control types in accordance with the commodity code to a single point of contact; automatic distribution of the customs declaration to the responsible person for customs clearance; document conformity verification by related regulatory bodies; placing the vehicle in the customs control zone; customs inspection of the vehicle in the customs control zone; affixing customs security devices to the vehicle; customs authority's stamps on documents; completion of customs clearance, issuance of executed documents; exit from the customs control zone.

The algorithm for carrying out such operations is shown in Fig. 4.

Stowing cargo in a customs warehouse on the territory of a freight customs complex requires the following stages: conclusion of a service agreement; payment for services provided by a freight customs complex; arrival of a vehicle at the freight customs complex; obtaining a vehicle entry permit; weight control of the vehicle upon arrival at the territory of the freight customs complex; proof of delivery; preparation of customs documents to place cargo under the "warehouse" customs regime; providing customs documents and making an application for going through state control types in accordance with the commodity code to a single point of contact; automatic distribution of the customs declaration to the responsible person for customs clearance; document conformity verification by related regulatory bodies; placing the vehicle in the customs control zone; customs inspection of the vehicle in the customs control zone; removal of customs

security devices from the vehicle; placement of cargo in a customs warehouse; customs authority's stamps on documents; completion of customs clearance, issuance of executed documents; exit from the freight customs complex.

The algorithm for stowing cargo in a customs warehouse is shown in Fig. 5.

The placement of cargo in a temporary storage warehouse is carried out according to the following procedure: conclusion of a service agreement; payment for services provided by a freight customs complex; arrival of a vehicle; obtaining a vehicle entry permit; weight control of the vehicle upon arrival at the territory of the freight customs complex; proof of delivery; preparation of documents from the importer with a request to place the goods in a temporary storage warehouse; obtaining a permit from the customs authority to place cargo in the temporary storage warehouse; placing cargo in the warehouse; customs authority's stamps on documents; exit from the freight customs complex.

The algorithm for placing cargo in a temporary storage warehouse is shown in Fig. 6.

5. Research results

The research findings show that in order to maximize the effective functioning of freight customs complexes, it is necessary to ensure cooperation with transport market entities and cargo owners characterized by a high degree of reliability and whose activity is free from the violations of customs rules and technological requirements for the operation of vehicles. They also have to be aware of the current legislation requirements on the transportation process organization.

6. Conclusions

At present, the effective planning of freight customs complexes' activity can be achieved only by optimizing technological processes and applying modern logistics solutions for handling cargo flows. The paper considers the customs and logistics servicing of cargo owners under different customs regimes. It is determined restrictions and actions that are advisory in transportation process organization and delivery time planning in customs and logistics service provision using freight customs complexes.

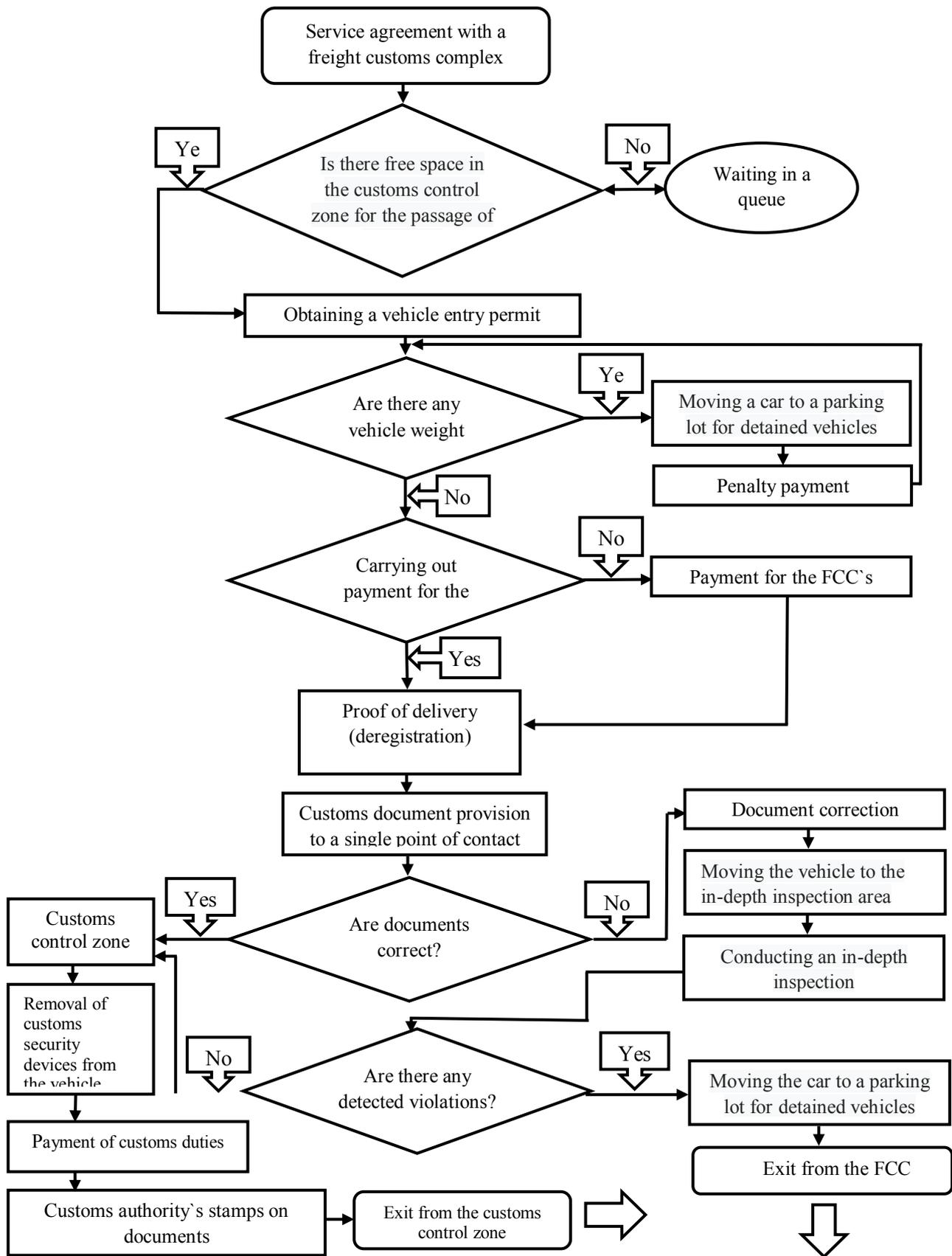


Fig. 2. Algorithm for carrying out import operations

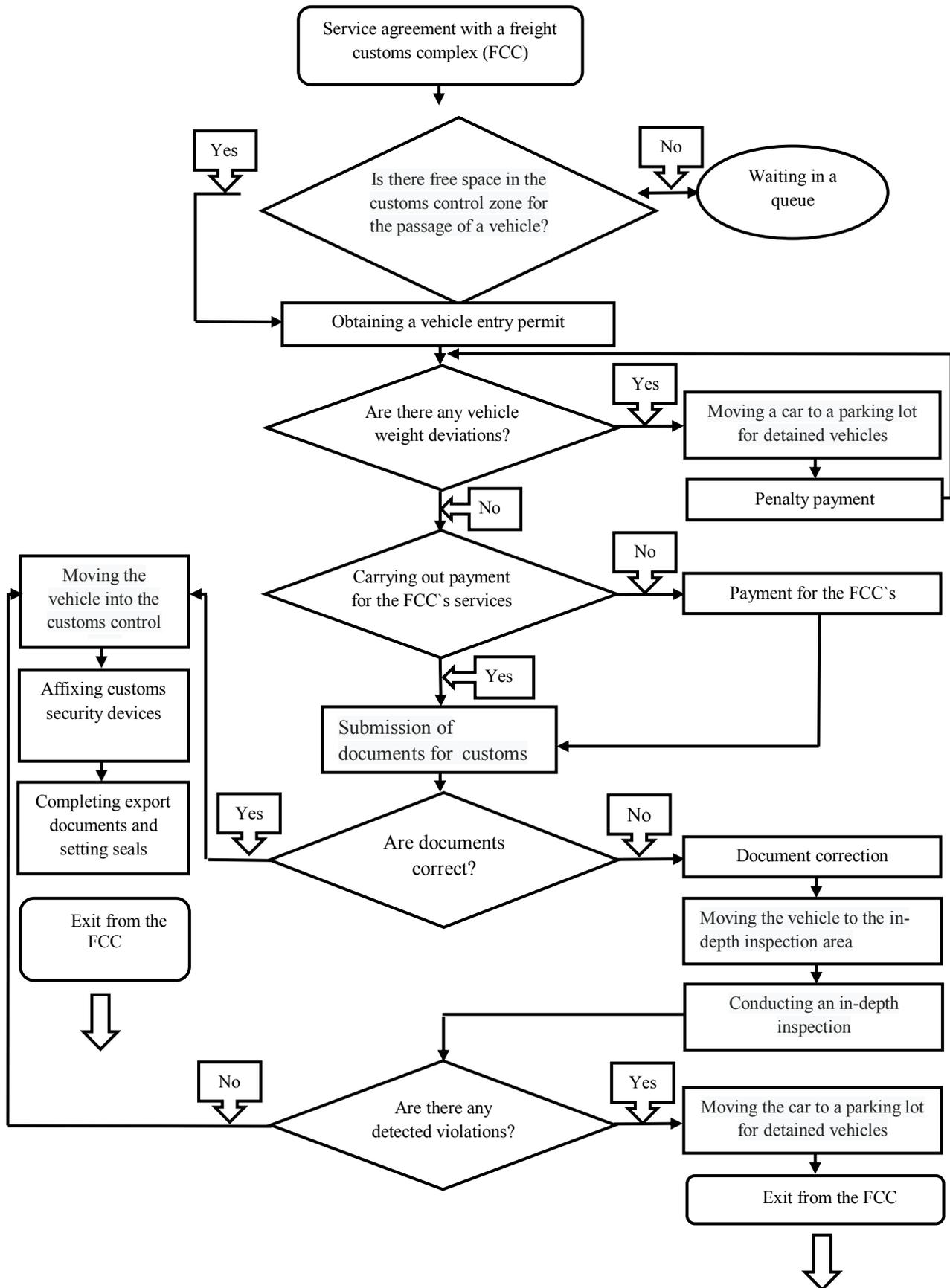


Fig. 3. Algorithm for carrying out export operations

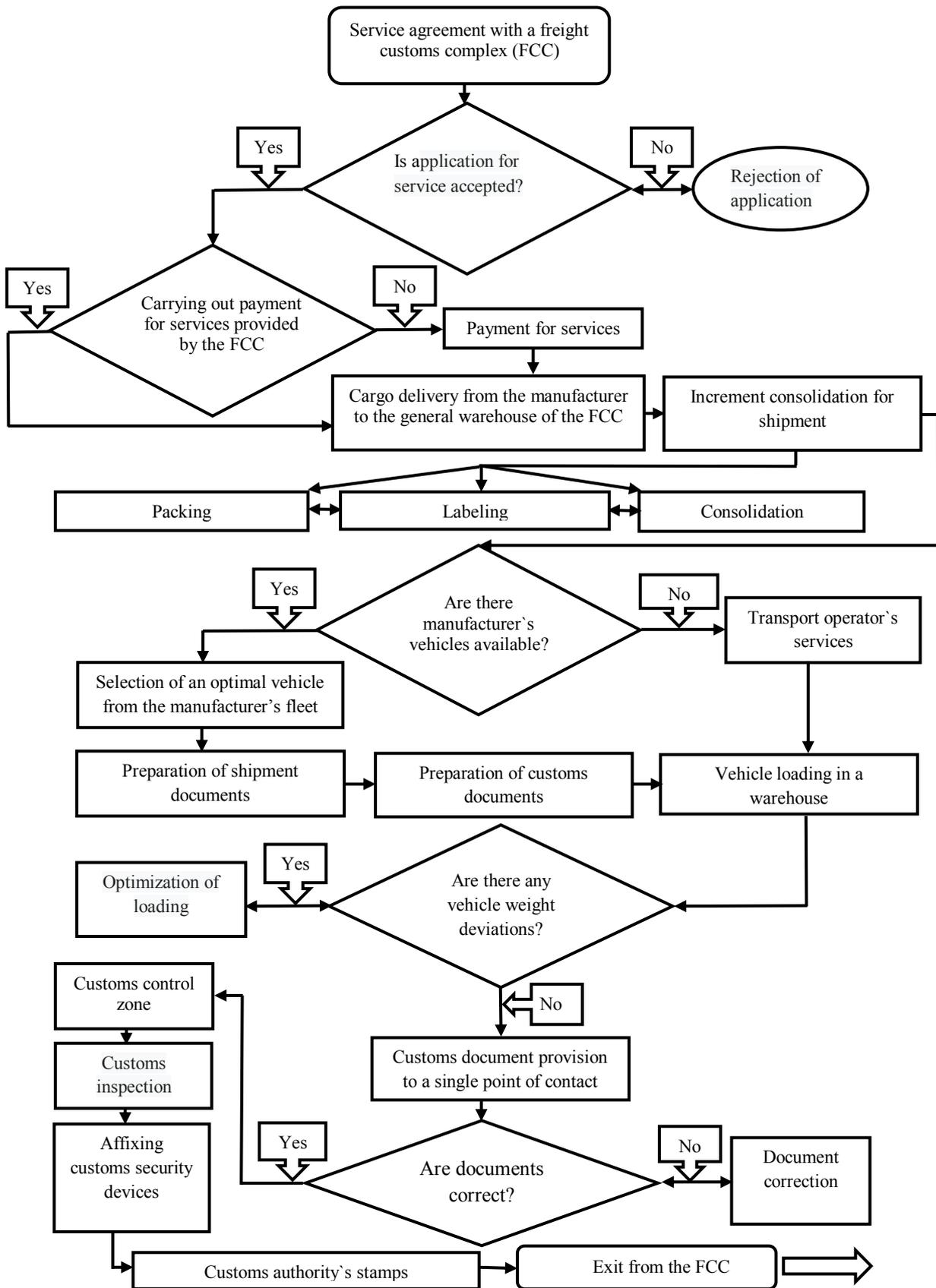


Fig. 4. Algorithm for comprehensive customs and logistics servicing at a freight customs complex

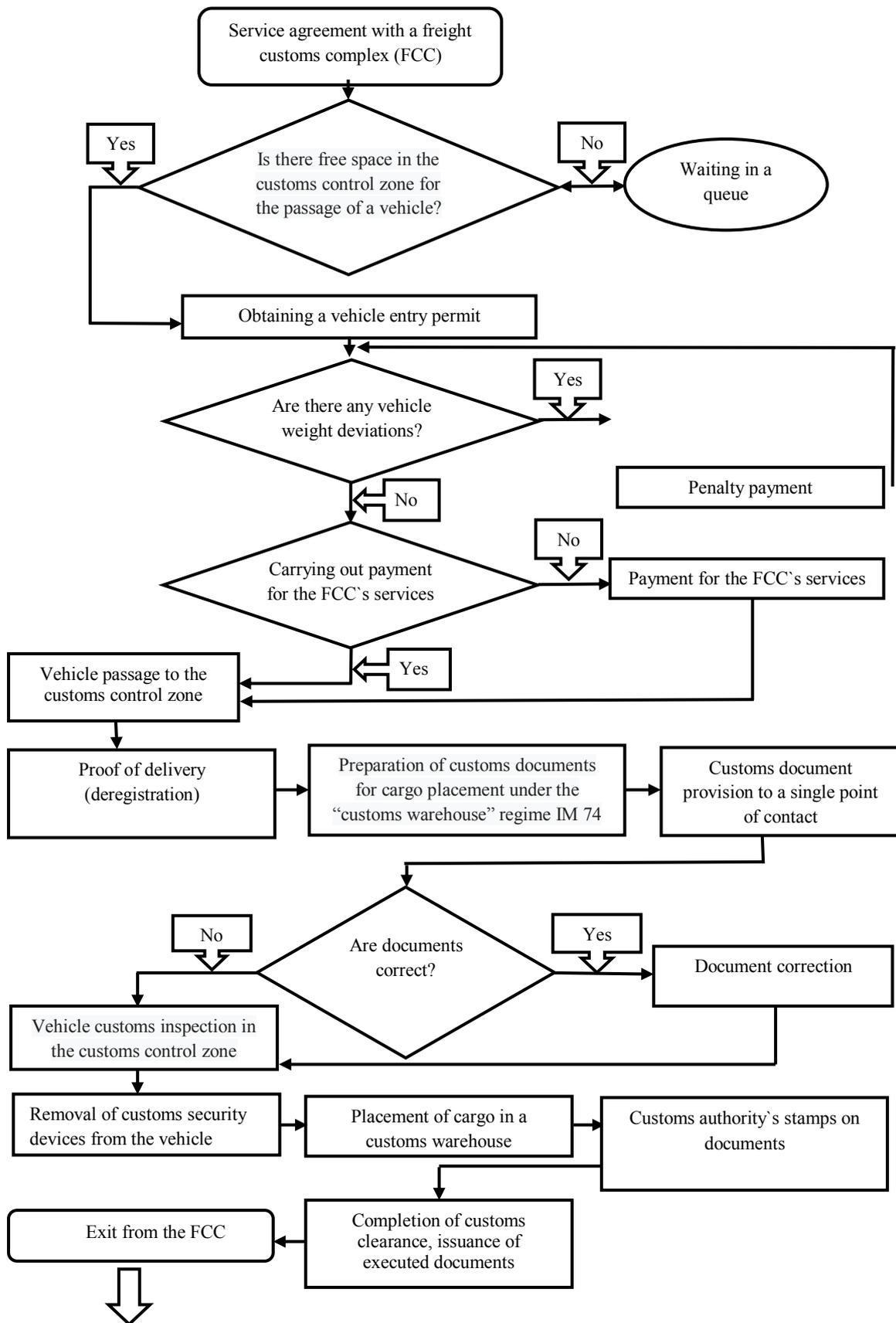


Fig. 5. Algorithm for stowing cargo in a customs warehouse

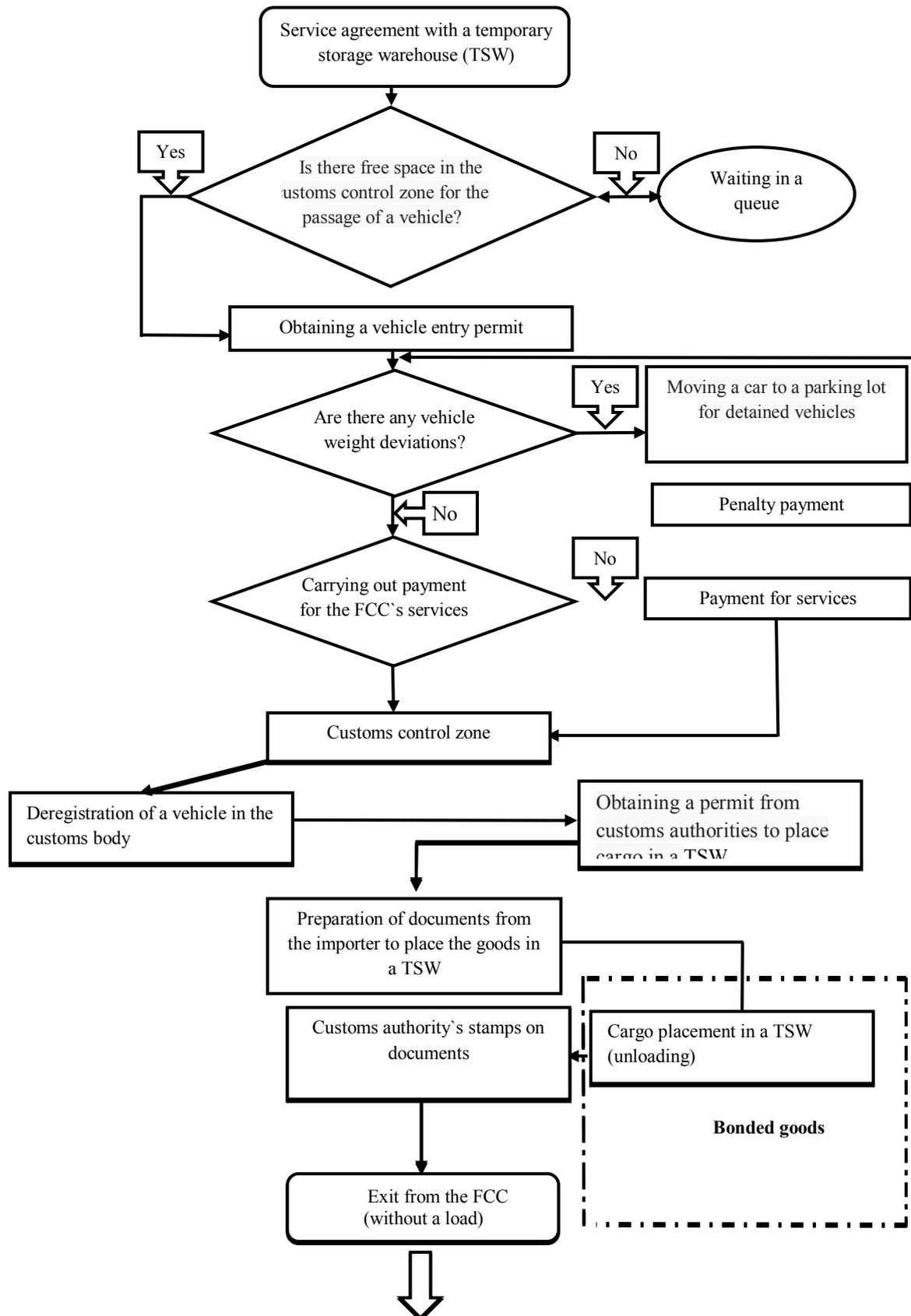


Fig. 6. Algorithm for placing cargo in a temporary storage warehouse

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Вплив ефективності надання митно-логістичних послуг на тривалість доставки вантажів

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Формування логістичного ланцюга із залученням вантажного митного комплексу до надання митно-логістичних послуг потребує вивчення та дослідження повного переліку обмежень технічного, технологічного та організаційного характеру, що можуть впливати на загальну тривалість доставки вантажу. Суб'єкти транспортного ринку при взаємодії з митними органами повинні враховувати вимоги митного законодавства та експлуатаційні характеристики дорожньо-транспортного комплексу, оскільки їх недотримання спричинить ряд затримок на усунення порушень, а також потягне за собою ряд штрафних санкцій. З метою зростання точності планування тривалості доставки розглянуто процедуру виконання митно-логістичного обслуговування при експорті та імпорті вантажів, розміщення вантажів на митний склад та склад тимчасового зберігання, комплексне обслуговування суб'єктів зовнішньоторговельної діяльності на вантажному митному комплексі. Виявлено найбільш розповсюджені порушення, які потребуватимуть додаткового часу на їх виправлення, розглянуто обмеження технологічного характеру, що пов'язані з пропускною спроможністю об'єкту дослідження, встановлено вплив організації та планування діяльності вантажного митного комплексу на його ефективність. Запропоновано врахування фактору обмеженості ресурсів об'єкту митної інфраструктури та непродуктивних простоїв транспортних засобів при плануванні тривалості доставки вантажів. Результати статті можуть бути впроваджені в діяльності вантажних митних комплексів у співпраці з підприємствами приватного сектору та державними організаціями при виконанні зовнішньоторговельних операцій

Ключові слова: вантажний митний комплекс, митно-логістична послуга, митний режим, об'єкт інфраструктури, тривалість доставки.

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Влияние эффективности предоставления таможенно-логистических услуг на продолжительность доставки грузов

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Формирование логистической цепи с привлечением грузового таможенного комплекса к предоставлению таможенно-логистических услуг требует изучения и исследования полного перечня

ограничений технического, технологического и организационного характера, которые могут влиять на общую продолжительность доставки груза. Субъекты транспортного рынка при взаимодействии с таможенными органами должны учитывать требования таможенного законодательства и эксплуатационные характеристики дорожно-транспортного комплекса, поскольку их несоблюдение повлечет ряд задержек на устранение нарушений, а также ряд штрафных санкций. С целью увеличения точности планирования продолжительности доставки рассмотрено процедуру выполнения таможенно-логистического обслуживания при экспорте и импорте грузов, размещение грузов на таможенный склад и склад временного хранения, комплексное обслуживание субъектов внешнеэкономической деятельности на грузовом таможенном комплексе. Выявлены наиболее распространенные нарушения, требующие дополнительного времени на их исправление, рассмотрены ограничения технологического характера, связанные с пропускной способностью объекта исследования, установлено влияние организации и планирования деятельности грузового таможенного комплекса на его эффективность. Предложено принимать во внимание факторы ограниченности ресурсов объекта таможенной инфраструктуры и непроизводительных простоев транспортных средств при планировании продолжительности доставки грузов. Результаты статьи могут быть внедрены в деятельность грузовых таможенных комплексов, сотрудничество с предприятиями частного сектора и государственными организациями при выполнении внешнеэкономических операций.

Ключевые слова: грузовой таможенный комплекс, таможенно-логистическая услуга, таможенный режим, объект инфраструктуры, продолжительность доставки.

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