

APPLICATION OF IT SYSTEMS IN THE OPTIMIZATION OF FORWARDING SERVICES IN THE TRANSPORT OF CONTAINERIZED CARGOES

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Abstract

Transport of goods belongs to the most important sectors of the global economy. The optimization of the organization and implementation of the transport process is significantly influenced by professional forwarding services. In shipping, the main factors affecting the reliability in customer service is the price and time of transport service. Therefore, nowadays the implementation of forwarding services is very important in order to obtain optimal conditions for the client: price and time, efficient communication between entities, providing current information on shipment status, ease of completing documents, and increased control over each element of the chain transport. Nowadays, in forwarding companies, comprehensively serving customers, to ensure efficient and optimal conditions of service, it may be important to use appropriate tools of computer-aided forwarding.

The aim of the article is to propose an algorithm for a forwarding service consisting of six functional blocks, where not only blocks associated with standard forwarding operations play an important role, but also those that allow to quickly obtain statistical data on profitability, the number of clients served and the quality of services.

The programs available on the market are universal and do not cover all of the company's forwarding activities. Analysis of all stages of forwarding activity on the example of a selected company led to the creation of its own algorithm. It should lead to the creation of a forwarding service program.

Keywords: Forwarding services, transport, IT systems

1. INTRODUCTION

Modern information systems are increasingly becoming part of the freight forwarder's daily work. They are not only of great help, but in some cases, they are necessary for the reliable operation of the business entity. A properly selected forwarding software enables companies to obtain financial benefits and improve the quality of customer service, alongside which the company's competitiveness on the forwarding services market increases [1].

Forwarders are expected to be able to make quick decisions, adapt to changing client needs, as well as provide services in a comprehensive way. Therefore, businesses that fail to adapt to emerging market trends may encounter difficulties in keeping afloat [2].

The IT software should cover different aspects, depending on the type of services offered by the forwarding company. In the activity focused exclusively on road transport of containerized cargoes, the most important elements of software support include:

- browsing the company's client database,
- shipment tracking,
- monitoring the current order status,
- vehicle records,
- settling fuel consumption costs,
- registering orders and printing them,

- calculation of transport costs and selection of the optimal route,
- issuing documents necessary during transport, e.g. the CMR,
- transfer of data to the accounting system [3].

There are also dedicated support platforms available on the market, such as transport exchanges offering the possibility of matching the needs of various transport services and containing the base of cargo available for transport. Using such tools, the transport company can avoid transports with an empty semi-trailer, while the trading company can find the best transport offer for its load. Terminal systems have also gone digital, so that forwarding companies now have the possibility of individually notifying containers to either enter or depart from the port, as well as of creating orders for container manipulation, revision, disassembly and of updating container data, including seal numbers, product name or customs status [4]. In the case of forwarding companies offering services involving land and sea transport of containers, the software should be extended to include the following:

- issuing bills of lading and electronic shipping documents,
- preparing the ISF + 2 documentation,
- the possibility of AMS, ACI submission.

Sea transport is associated with high operating costs, which is why it is so important to quickly provide documents necessary to move on to the next stage of the process. Recently, the traditional bill of lading has been increasingly replaced by its electronic equivalent, the Sea Waybill or Express Bill of Lading, which allows the recipient to receive it without sending original bills of lading to the shipowner's office. This solution significantly facilitates the release of goods and customs clearance, which at the same time minimizes the risk of additional costs related to the container's stoppage at the port.

2. AN OVERVIEW OF SELECTED FREIGHT FORWARDING SOFTWARE

Following the current trends and the needs of the forwarding market, increasingly more computer programs are being developed that are responsible for improving and facilitating the work of the forwarder. Each business entity should become familiar with the services offered and the price list in order to be able to choose the software that best meets their requirements. For the purpose of this study, three selected software programs for handling land and sea forwarding of containers were presented, along with an overview of their main features.

The first software is PasCom Forwarding II, a program targeted to forwarding companies focused on sea, air and intermodal transport of goods. The software supports customer service practically at every stage of the order fulfillment process, and it can draft documents such as:

- offers,
- forwarding orders,
- revenue and cost forecasts,
- invoices,
- container notification letters,
- CMR waybills,
- delivery and acceptance protocols,
- orders to take the container,
- orders to place the container,
- phytosanitary declarations: Sanepid (Sanitary and Epidemiological Inspection), WIOR (Regional Inspectorate of Plant Health and Seed Inspection) [5].

The PasCom Forwarding II software can also notify containers and send notifications about their current status, plus it contains the database of business partners, goods transported and currency exchange rates. The

documents are drafted on the basis of current information entered into the program and are compiled into the so-called forwarding briefcases. The big advantage of the software is the ability to use data sets in other programs, which facilitates the process of drawing up reports.

The next software is SPEDTRANS, whose extended version comes with the tools necessary to handle orders in road, sea and intermodal transport of containers. Spedtrans enables issuing all kinds of waybills (including bills of lading), invoices, receipts, notes, pay invitations, and more. In addition, the system collects and generates information on the current status of settlements with the client, keeps a register of goods and contractors with the option of verifying them in the debtors' register. Spedtrans can also create a register of employees together with HR and payroll data, information on business trips, bonuses, work schedules, etc. The program also benefits from cooperation with transport exchanges and messengers, as well as the possibility to export data to many financial and accounting programs [6].

Last but not least, there is the TMS interLan SPEED software which supports sea freight (container turnover) in connection with the transport of goods by road and rail. Furthermore, it contributes to the improvement of service in the area of billing services with the client, calculation of the offer based on current price lists and the drafting of a number of documents related to forwarding. The software additionally allows to perform cost-revenue calculations, including determining the profitability level of a specific order, generating reports and sending electronic notifications to clients [7].

The presented examples of software programs used in container forwarding services certainly offer many advantages, especially considering the relatively low cost of their acquisition and implementation. On the other hand, purchasing a tailor-made software, although burdened with a higher cost of usage fees, provides the opportunity to adapt it to the needs of the company, and thus, it can potentially improve the quality of that company's forwarding services..

3. A DEDICATED FREIGHT FORWARDING SOFTWARE ALGORITHM

A desired solution for developing specialized software for the needs of forwarding activities would be to design it already tailored to the needs of a given company. Due to their universal nature, the presented examples of software programs cannot fully meet the requirements of a specific business. Therefore, the best solution seems to be a detailed recognition of the processes carried out in a given company, and based on this data, the development of a dedicated algorithm, which should include within its scope a set of specific forwarding activities. This, in turn, will lead to the optimal performance of the task under the given conditions. The next step would be to provide the algorithm in the chosen language of the software, although this is not the goal of this article. For the purpose of this study, a number of consecutive actions performed by the freight forwarder were defined from among the activities related to the implementation of a specific forwarding order. They will serve as building blocks of the proposed algorithm. The blocks in question should form a relative whole in which the performance of specific activities by the forwarder - constituting in selecting appropriate, suggested options or entering the necessary data - will lead to the completion of a given stage of order fulfillment.

The proposed model includes the following blocks:

- offer,
- sea transport organization,
- transport monitoring
- finance and vindication,
- profitability analysis,
- customer service analysis.

Figure 1 shows an example of the algorithm that includes the blocks mentioned.

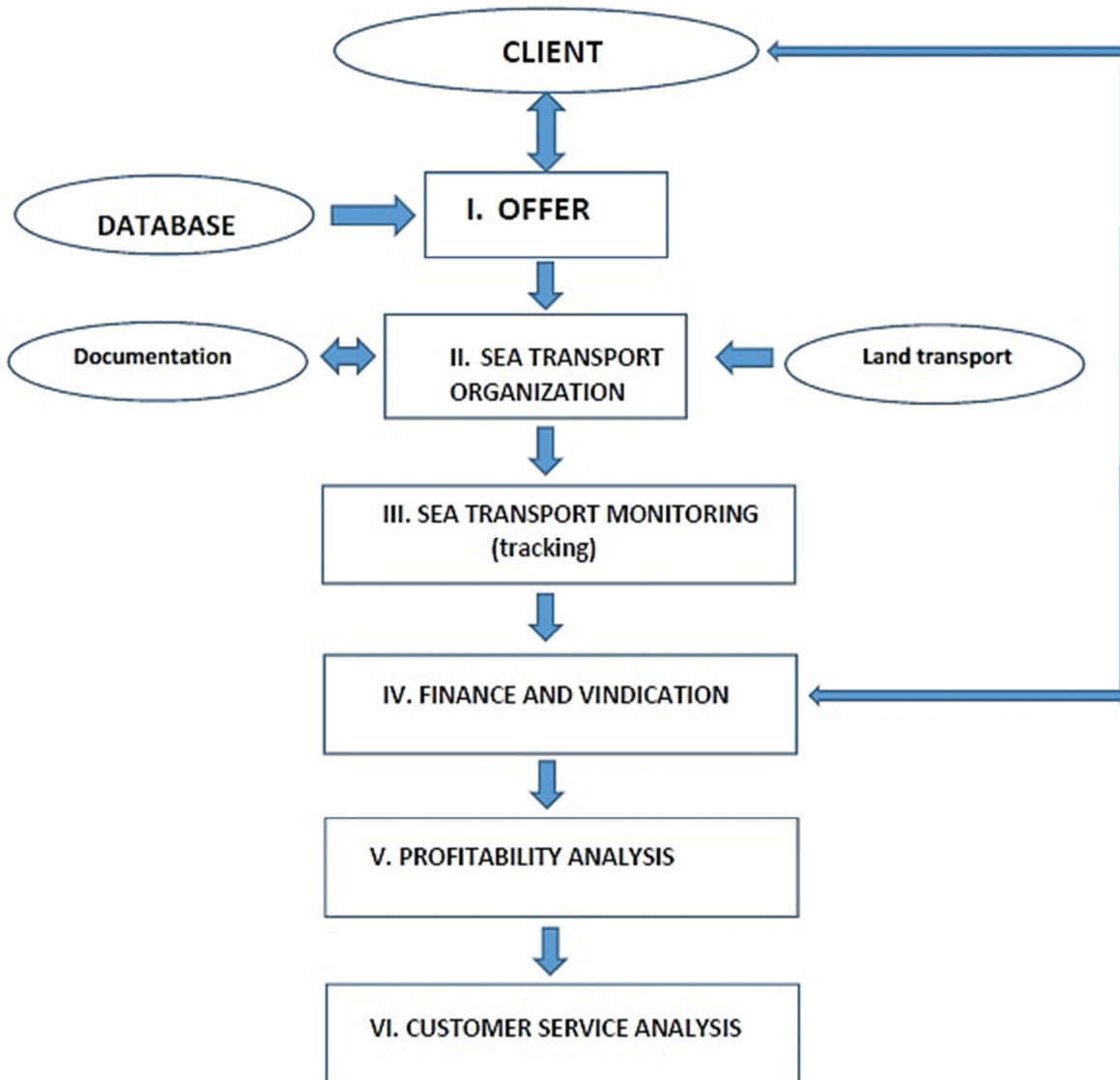


Figure 1 Freight forwarding software algorithm [own study]

The first element of the proposed algorithm is the Offer block, which allows to prepare an offer that is sent to the client. The block must be active, which means that the client must be able to enter the necessary data. The client's basic data can be retrieved from the database as long as it has been previously entered there. This block should allow to enter prices and values of all fees collected from carriers, which in turn will help generate a service price including the freight forwarder's profit margin. The condition for proceeding with the subsequent stages of the forwarding order is acceptance of the offer by the client.

The second element is the block called Sea Transport Organization. Bearing in mind the tasks outlined for this block, it can be considered the most important part of the algorithm. The main variables that need to be included in this block include, among others, the issues pertaining to arrangements for deadlines, cargoes, contractors, ports, sanitary and customs clearings as well as the organization of cargo transport in the inbound and outbound connections with the port. Obviously, the individual components are active and enable introducing and updating the adopted solutions. All things considered, the block should mainly allow to generate a series of documents (both electronic and paper) related to the organization of this stage of the

forwarding order, which include the bill of lading or the sea consignment note, as well as customs and port documentation.

The third element of the algorithm is the block called Transport Monitoring and, as the name suggests, it uses current information from the course of the transport of cargo shipped by shipowners on the tracking websites. This allows the forwarder to track the load route, timely delivery, and thus, makes it possible to inform the client about the current status of the shipment. Among the advantages of this block one should also name the ability to inform the client well in advance about the estimated time of arrival (ETA) of the ship to the port.

The Finance block is used primarily to generate invoices. It is also an active block, as it allows differentiation of VAT rates. It is used for debt collection, and in the case of delays in payment for a given service confirmed by invoice, e-mail reminders are automatically sent. The system should enable in its settings the specification for how long such notifications are going to be sent before any further debt collection activities are undertaken.

Moving on, the goal of the Profitability Analysis block is to assess the service performed in terms of its profitability. This block should also have the feature of evaluating the profitability of all orders during the period analyzed. Another useful functionality would also be the ability to generate profitability analyses of orders divided into specific clients or forwarders responsible for their implementation.

Finally, the Customer Service block is to examine the level of customer satisfaction from the provided forwarding service. The task is carried out on the basis of a multi-criteria survey questionnaire, which is sent automatically after the completion of each order. The filled out questionnaires are analyzed by management, constituting the basis for taking remedies or corrective measures to improve the individual elements of the forwarding chain.

The proposed blocks of actions represent the mapping of the most important activities carried out in connection with the provision of a forwarding service. The correct implementation of each of the proposed blocks of the algorithm enables the provision of the forwarding service at the optimum level, i.e. at a level consistent with the client's expectations, which at the same time guarantees profits to the forwarder.

4. CONCLUSIONS

Transport of goods, especially by sea, is a dynamically developing branch of the economy and a process that requires professional approach from forwarding companies. In order to professionally and efficiently carry out forwarding services, modern IT tools are necessary, especially that forwarding activities are particularly susceptible to the development of modern IT solutions. Developing a freight forwarding software is a complex endeavor, which needs to account for a number of variables that may be subject to further changes even during the implementation of a given forwarding task. Currently, there are many software programs available on the market that support forwarding services, but most are universal, i.e. they are not tailored to the specifics and needs of a specific forwarder. An alternative solution would be to develop a dedicated software that allows active participation of the forwarding company in creating algorithms aimed at coming up with optimal IT solutions for a specific forwarding company. For the purposes of this paper, a software algorithm for freight forwarding services was proposed, focused mainly on the organization of sea transport. The algorithm intentionally takes into account all important, well-defined forwarding activities, divided into blocks of actions, which are to help the forwarder provide services in a professional and efficient way.

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