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221

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IMPORTANCE AND EFFECTS OF THE ELECTRONIC DOCUMENTS IMPLEMENTATION IN THE SERVICE OF LOGISTICS-FORWARDER OPERATOR

In the area of logistics forwarding the needs for the "one click away" information availability is becoming more and more significant. Fast access and information disposability are important to all subjects who take part in the production of transport-logistics services, including forwarding operator who plans, organizes and integrates all transport and logistics activities for his client. In the modern development of the information technologies and greater demand from the clients, quality of the service and the efficiency of the forwarding operator depend greatly on the electronic data exchange (regarding documents and papers). Therefore, this scientific research brings forth the notion of the representation, possibilities and effects of the information technologies and electronic data exchange in the logistics forwarding services, its usefulness in the analysis and systematization of all classical (written) documents that are a part of correspondence of any forwarding operator, and therefore gives examples and the basic characteristic of the electronic documents in transport and trade. Positive effects of electronic documentation being used in the function of competition in the logistics-forwarder business activities are particularly analyzed and defined.

Key words: logistics-forwarder operator, information technologies, electronics documents

1. INTRODUCTION

Main function of logistics-forwarder operator is to relieve his client (importer, exporter or manufacturer) of any "worries" concerning delivery or transit, by planning and organizing all the phase of transport service. Logistics-forwarder operators come across a large variety of complex transactions (and follow up documents) in their line of duty, without which it would be hard to imagine the functioning of the modern transport-logistical system. Their main duties include for example: consultation, concluding contacts of buying and selling, advice on choosing the optimal transportation route, receiving goods, organizing and delivering of transportation and other documents necessary, (...). Group of special services which are performed occasionally and are used to complete the-forwarder service, include a number of services such as signing the contract on packing and marking of goods, scaling and sorting, providing the vouchers, forwarding certificates and FIATA documents (...)

The execution of the mentioned functions and specialised services depend upon the information and data provided in due time. In modern conditions of the information technologies development and electronic business transactions, the only main postulate that will secure the fast and punctual exchange of the large number of documents and papers which follow the process of production and transport-logistics services, is the electronic data exchange.

In accordance to this notion, the main **issue of this research** is to scientifically put a diagnose of current knowledge, possibilities, and effects that use of electronic data exchange has on the service that logistics-forwarder operators provide. **Subject of this research** are therefore, electronic documents and information technologies that enables their usage.

The main **goal of the research** is finding the scientifically arguments on the meaning and positive effects in use of the electronic documents in the function of business efficiency of the logistics-forwarder operators. In order to carry out a defined goal of the research we are mentioning current understandings of representation and application possibilities of the information technologies in the logistics-forwarder operator's business activities, we are analyzing the individual types of electronic documents and positive effects of their use such as: reduction of expenses and service quality increase for the benefit of both parties-client and logistics-forwarder operator as his service provider.

2. APLICATION OF THE INFORMATION TECHNOLOGIES IN THE LOGISTICS – FORWARDER OPERATOR'S BUSINESS ACTIVITIES

Intensive development of information and communication technologies is creating conditions for emersion of a new industrial revolution based upon the information, which is entering all areas of human activities, and is carrying a significant change as a consequence. Subsequently, all segments of economy are assimilating new information profiles, and logistics forwarding certainly mustn't be an exception. Following that trend the relevant systems of the information technologies in the transport and trade business are being analyzed, as well as all possible aspects of their application in the logistics-forwarder operator's business activities.

2.1. Information Technology application in transport and trade

Nowadays, in logistics-forwarding business, administrative data are mostly computer processed, but in some parts still remains the old-fashioned paper format information and document exchange. Exploiting the possibility of computer and telecommunication use in the right way it is possible to improve the business activity, providing better services quality, cutting down costs and mistakes which usually occur with the classical old fashioned "paper format".

Without entering deeper into the elaboration of the term information technology, it could be said that the **information technologies** are a system of intelligent, automatic, informative, telecommunication processes which enable the production, memory, distribution and information exchange between the micro subjects, meta, macro global and mega logistics systems [16, p. 358].

Mentioned information technologies and the use of personal computers significantly contribute to logistics efficiency and successfulness, because it simplifies the communication between the distribution participants, saving time and reducing expenses. Within these analyses, it is necessary to mention the following systems of information technologies in the transport and commerce domain [10, p. 229.]:

- **EDI** (*Electronic Data Interchange)*
- **EDIFACT** (*Electronic Data Interchange for Administration, Commerce and Transport*)
- **EDITRANS** (*Electronic Data Interchange in International Freight Transport*)
- **ebXML** (*Electronic Business Extensible Markup Language*)

There are various definitions of EDI but the one that is commonly used is one that defines the EDI system as a system of structural business data interchange between the computers of individual firms, executed without the manual intervention, electronically, through standard messages which replaced the

standard traditional paper documents.[6]. The same way EDI is often defined as an exchange of formatted business transactions in standard format, computer to computer between the business partners. Taking into consideration that the business partners often have different computer systems and business programs, EDI environment allows sending and receiving of the business documents through standard data layouts and by standard protocols.

Data is formatted in order to allow integration in the set up system. Delivery of business documents is possible within just a few seconds instead of few days, which reduces the possibility of documents being lost or damaged. Unlike other models of electronic communication, EDI allows the computer to process information received, thus eliminating the overwriting tasks and any mistake that could be made while retyping. Information are downloaded from the source through the web, and are directly sent to application where they are processed, which is an additional advantage of this system.

EDI is implemented in industry, shipping, trade, service industry, pharmaceutics, construction industry, oil industry, metallurgy, food industry, banking services, insurance companies, retail sale, state institutions, health care system, textile industry and many others. So, it is an application which can be used in various business applications including business affairs related to: buying and selling of goods and services; production, transport, and storage planning, quality control and sim.

Today's EDIFACT standard is a result of unification of the two independently developed standards, American X.12 and European group of standards named *Guidelines for Trade Data* Interchange. EDIFACT was created after eighteen months of work and series of negotiations, agreements and compromises between the participants. [6] EDIFACT was at firs named EDI for *Administration, Commerce and Trade,* but the term Trade wasn't clear enough it was soon replaced with the word *Transport,* in order to preserve the acronym and to point out that the standard does not refer to the sector of trade only. Although USA as largest users of EDI technology have their own X.12 standard, they accepted the obligation (in 1997.) to make an adjustment in order to apply the EDIFACT standard like the rest of the world. The standard became independent form any application, communication medium and computer platform. Standard's maintenance and development are permanent care of the UN's task force. Changes are obtained once or twice a year in the form of directories which contain messages, segments, data and codes. International maritime committee states the importance of UN/EDIFACT as an electronic data interchange standard applied in administration, trade and transport and regulated by UN.

EDIFACT system refers to combining all participants of the logistics system of transport, production, trade, storage, transport insurance, customs, (. . .), and also logistics and forwarding services which integrates great number

of subjects, procedures and stages of production of the logistics and forwarding services. Main task of that system is to:

- define rules for the EDI procedure
- offer uniquely designed messages based on international law
- replaces paper documents with the electronic files
- speeds up the information circulation and determents basic information
- improves the service and the competition between the service providers, improves trade and all sectors in which it is applied.

The **ebXML** initiative was started in 1999 as a joint standardisation effort established by the United Nations body for Trade Facilitation and Electronic Business (UN/CEFACT) and the Organisation for the Advancement of Structured Information Standards (OASIS) [7]. ebXML provides companies with a standard method to exchange business messages, conduct trading relationships, communicate data in common terms and define and register business processes. It aims to make it easier for organizations to interface with others within and outside their industry, open up new markets with less effort than before and, at the same time, cut costs and simplify process associated with traditional document exchange.

The original project envisioned and delivered five layers of substantive data specification, including XML standards for:

- Business processes
- Core data components
- Collaboration protocol agreements
- Messaging
- Registries and repositories

After completion of the specifications, 5 parts of the work were submitted to ISO TC 154 for approval. The International Organization for Standardization (ISO) has approved the following five ebXML specifications as the ISO 15000 standard, under the general title, Electronic Business eXtensible Markup Language:

- ISO/TS 15000-1:2004 ebXML – Part 1: Collaboration-protocol profile and agreement specification(ebCPP)
- ISO/TS 15000-2:2004 ebXML – Part 2: Message service specification (ebMS)
- ISO/TS 15000-3:2004 ebXML – Part 3: Registry information model specification (ebRIM)
- ISO/TS 15000-4:2004 ebXML – Part 4: Registry services specification (ebRS)
- ISO/TS 15000-5:2005 ebXML – Part 5: Core Components Technical Specification, Version 2.01 (ebCCTS)
- OASIS technical committees and UN/CEFACT retain the responsibility for maintaining and advancing the above specifications.

2.2. Application and the importance of the information technologies in logistics-forwarding services

Subjects included in the logistics chain are: subjects that participate in production of logistics service in their segment, user (client, consumer) who requires the logistics service, or the middleman (logistics and forwarding operator) who coordinates organizes and plans actions making sure the service will run smoothly. Accordingly the meaning of information technology and its implementation in the logistics services can be considered from several different levels: general level (shippers, users,...), logistics-forwarder operators level, transport operator's level(railway, road transporters,...) and state administration level.

Reasons why the Information technology access and electronic data exchange are considered to be of great importance to shippers (users) are the following:

- possibility of the service control (trough direct route info monitoring, reliability, timing, security...),
- possibility of receiving information about the incidents and delays in order to carry out the corrective measures (modifications in production planning, redirecting or sending another shipment etc.);
- possibility of changing the order in international forwarding regarding the route/destination point (flexibility for internal reasons, one or more bills of lading);
- possibility of influencing the late decisions made by logistics or forwarding operators;
- possibility of giving direct instructions to logistics or transport operator through EDI message, and sim. **Logistics-forwarder operator,** as an organizer of the logistics and transport enterprise will also be interested in easy information access in order to obtain the following possibilities for his shipper (user): service control;
- receiving reports on incidents/delays in order to carry out the corrective measures(modifications in production planning, redirecting or sending another shipment etc.);
- making changes in order;
- influences and controls the transport operator (operators) on grounds of the information he received about the problems or delays;
- plans future shipments based on actual indexes and registered events;
- puts EDI orders through to transport operators;
- communicates through EDI with customs, border guards and other subjects

Transport operators should also invest in information technology in order to achieve the following effects:

- bolstering of internal operations making them more efficient and predictable;
- providing the information about current freight position, technical status, occurrences, traffic corridor problems;
- information exchange with other transport operators and their administration, especially concerning the abroad carriages;
- tracking their assets(values) moving outside the national borders;
- better planning the means of transport distribution;
- conducting the accurate statistics in areas of commercial and financial service aspects(traffic per shipper/forwarding agent, full or empty containers, tonnage...);
- tracking the operative indexes with the purpose of improving the service quality (punctuality, reasons and locations of delay...)

Other state administrations should also be supporting and pointing out the necessity for the information technologies implementation for the purpose of:

- accessing the early information on the cargo in order to prepare for their work and control the goods in arrival more efficiently owing to greater input;
- using the early available information about the freight movement to insure the greater flexibility while planning the manpower and equipment needed;
- insuring simple and precise freight data processing according to type, freight quantity, mean of transport, (railway, road,...transport) and according to the origin/destination of transport..

Information compatibility of the subjects that participate in production of logistics-forwarding service on certain traffic route, demands compatibility of information systems which certain subject use and offer in their business (shippers, harbours, railways, road transporters, customs, logistics operators...), and their mutual information coherence and integration.

In that way, for instance, EDI project should insure electronic service (*e-business*), business data and documentation exchange between all business and administrative subjects in the port. [1] Interconnection of information systems inside the port authority should be carried out through application of the *Internet* technology and international standards for information and data exchange, which would help accomplish better business results while quicker in-

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[1] According to UN/ECE savings as a result of electronics business in logistics could amount up to 10% of the merchandise value.

formation flow, along with the proper use of the equipment would save time. [2]
EDI project should include interchange of all business transactions in the area
of harbour service, which are related to the following operations and subjects:
ship traffic, cargo handling, transport and storage equipment use (wagons,
trucks, transhipment and transport machinery), financial transactions, admin-
istrative procedures, port safety, customs, border guards, pilotage, port coor-
dination and sim.[3] In broader context, EDI should be added here for the pur-
pose of custom service, railway, road transport and other subjects that stipulate
shipping/delivery of the cargo from/to port, possibility of freight orders (reser-
vations) and freight tracking. Significance and effects of the information tech-
nology and electronic data exchange can be clearly seen from the following
examples of the maritime and land transport which are also reflected in the
service of the logistics and forwarding operator, whether being in a role of a
transport organizer or transporter. With adequate electronic data exchange,
for example, it was made possible for custom authority to give complete mani-
fests from all overseas ports of origin, before the ships arrival to the port of
call. In the same way in the process of ships intensive capacity increase, we can
see the importance of electronic data exchange through an example that refers
to a problem of freight identification aboard the ship. It would be hard to im-
agine in that sense an organized and swift freight operations on terminals
(container terminal), without a modern electronic plan which locates the par-
ticular freight aboard a ship (containers for example). Equally, the freight
tracking operating problems in the road transport can't be eliminated without
application of a reliable electronic data exchange. The problem is even greater
on stock and customs terminals, where an electronic data exchange is crucial
for reliable communication with custom authorities in order to expedite cross-
ing the border. The importance of receiving the information and electronic
data exchange on time can be perceived through an example taken from the
practise of the Port of Rijeka. Israeli shipper *Zim Israel Navigation CO. Ltd.
(ZIM LINE)* has defined in the Cooperation agreement he was signing (dur-
ing negotiations with the Port of Rijeka container terminal authority) a certain
specifications, demands and expectations regarding the service, requesting the
Port to give a response about the possible realisation regarding those de-
mands. In between the numerous requests as for example: technical descrip-
tion of the port mechanization, operating functions, contact person etc., the
most important place had the requests related to information flow. In the
mentioned example ZIM's shipper requested a guarantee that he will have an
electronic data exchange for all input/output information between the shipper

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[2] According to UN/ECE savings as a result of electronics business in logistics could amount
up to 20% of the merchandise value.

[3] Information obtained from the Information Technology Department, Port authority Ri-
jeka, Rijeka, 2008.

and the terminal. Port of Rijeka Container terminal made a contract commitment of fulfilling the demands regarding the information support and application of the computer program *"Plan Master 32"*.[4] The program is used as an informatics support to: contact the shipper, for data exchange concerning container location aboard ship in order to make a plan of discharging/loading, for plans in relation to ship's arrival and operational plans for discharge/loading as well as the container emplacement, for sending the notification on ships arrival to the port (or berthing), for warding the information about the exact place of berthing. It should be pointed out that the information the above mentioned program provides, are necessary to the shipper and to the terminal as well for setting up the operating working plan (discharge/load). Before the ship's arrival, the shipper sends the following operational instructions which are important for preparation and organization of all operation on terminal block: instructions on loading (24 hours before the ships arrival), delivery notice (24 hours before operation on the terminal start), discharge plan (18 hours before the ship's arrival), and sim.

Container tracking became fundamental requisition, because the shippers are demanding (daily) all information on any movements of their containers across the terminal block. For instance container tracking is necessary on container disposal area where it is often the case that the certain container, due to inadequate tracking system, cannot be traced for hours which is an immense waste of time. On the other hand, shippers would also like to be informed on containers gate in or gate out from the terminal. Often there is a case in port practice that the "untracked" containers from the certain shipper (containers that were not under surveillance), wait for more than a few days after which they are returned to the terminal. Therefore the shippers standpoint according to which the receiving regular notifications of container movement, whether empty or full is one of the main demands of the service quality, is perfectly logical and understandable. As the realization of that demand implies the information exchange between the client (shipper) and service provider (port, railway, transport provider), potential and the level of realization of that demand is determined by information technology which is available for this particular function.

From the technical aspect, implementation, use and development of the efficient information technology requires good telecommunication which will cover all routes, meaning all communication participants. More problems with implementation of information technologies were caused by traffic policy, than technology itself. Organizations under the UN (*UN/ECE- United Nations, Economic Commission for Europe)* leadership including the international transport organizations and transporters associations, should help in defining

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[4] Information optained at Port of Rijeka Container operational terminal, Rijeka, 2008.

needs, encourage their development and advise on the best address when it comes to investments and education.

Conclusions and examples mentioned are emphasizing the importance of application and the significance of electronic documentation of the logistics and forwarding operator's business activities. Together with the classical and electronic documents analysis and with the analyses of the effects of their use this will be the main contribution to this research in the parts that follow.

3. CLASSIC AND ELECTRONIC DOCUMENTS ANALYSIS IN THE BUSSINESS ACTIVITIES OF THE LOGISTICS-FORWARDER OPERATORS

In this phase of research documents that appear in logistics-forwarder operators activities are particularly analyzed: existing documents in "classic" (paper) form, examples of those documents in electronic form and positive effects that the use of electronic documents has in the logistics-forwarder operator's services.
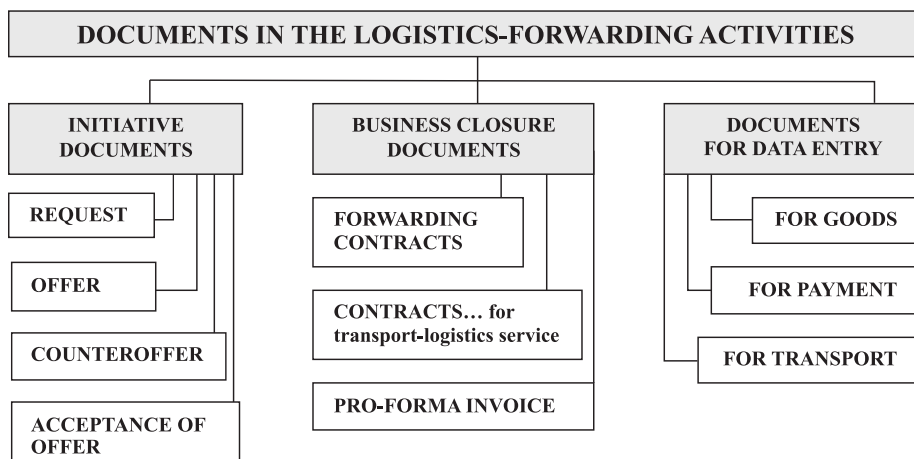
3.1. Classic documents in logistics-forwarder operator's business activities

Scheme 1 shows documentation which is a part of logistics-forwarder services, and that can be divided according to its function:
- initiative documents
- business closure documents (import/export)
- documents for data entry

Initiative documents are documents used for communication establishment with the foreign partner. Scheme 1 shows basic initiative documents. Most important initiative document is offer. Offer is a unilateral statement of the logistics-forwarder operator, forwarded to certain legal entity or natural person (potential client) with the purpose of concluding the forwarding contract and additional logistics services. By composing an offer, the company agrees to all conditions that it contains, and if the potential client accepts the offer it will become the forwarding contract. In most cases the client's offer is quoted inside of the disposition documents. Client accepts one of the offers he received, on the grounds of most acceptable cost of the service and subsequently both parties approach to composing the contracts / contract on business closure, which includes transport-logistics contract (states the obligations on all logistics-forwarding services, or singular contracts are closed separately that depends on clients request), and pro-forma invoice. Mentioned contract is always bilateral. Written form of the contract is required, because only such

has the verification power in case of a dispute. The contract has all relevant elements (name or title, headquarters of the contracting parties, type, amount and the price of goods, delivery date, methods of handing over and sorting delivered goods by quality and quantity, payment deadline and means of payment, court of law authorized in case of any dispute). Transport clause is set up according to Incoterms (parity on delivery, that is obligations of individual subjects regarding freight rate, insurance and sim.), means of payment(most commonly through bank-assignment or irrevocable international L/C documents) or with check, draft, credit letter or cash, bank transfer from the client's (importer's) commercial bank if such is needed etc. Pro-forma invoice which the seller sends to his buyer is an offer which contains all the elements of the forwarding contract.
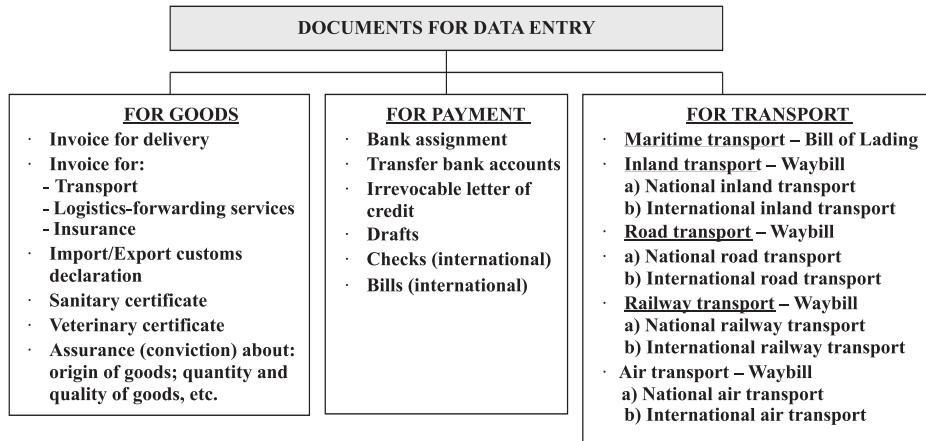
DOCUMENTS IN THE LOGISTICS-FORWARDING ACTIVITIES

INITIATIVE DOCUMENTS	BUSINESS CLOSURE DOCUMENTS	DOCUMENTS FOR DATA ENTRY
REQUEST	FORWARDING CONTRACTS	FOR GOODS
OFFER	CONTRACTS… for transport-logistics service	FOR PAYMENT
COUNTEROFFER	PRO-FORMA INVOICE	FOR TRANSPORT
ACCEPTANCE OF OFFER		

Scheme 1. Documents in the logistics-forwarding activities

Source: Made by the authors

Documents for data input, shown in scheme 2, are a book-keeping base for monitoring the trade with foreign buyers, and can be divided in three groups:

• merchandise documents,
• payment documents,
• transport documents.

In documents for data input there is a large spectrum of documents, and most of them are shown in the previous scheme.

DOCUMENTS FOR DATA ENTRY		
FOR GOODS	**FOR PAYMENT**	**FOR TRANSPORT**

· **Invoice for delivery**
· **Invoice for:**
  - Transport
  - Logistics-forwarding services
  - Insurance
· **Import/Export customs declaration**
· **Sanitary certificate**
· **Veterinary certificate**
· **Assurance (conviction) about: origin of goods; quantity and quality of goods, etc.**
	· **Bank assignment**
	· **Transfer bank accounts**
	· **Irrevocable letter of credit**
	· **Drafts**
	· **Checks (international)**
	· **Bills (international)**
		· **Maritime transport – Bill of Lading**
		· **Inland transport – Waybill**
		  a) National inland transport
		  b) International inland transport
		· **Road transport – Waybill**
		  a) National road transport
		  b) International road transport
		· **Railway transport – Waybill**
		  a) National railway transport
		  b) International railway transport
		· **Air transport – Waybill**
		  a) National air transport
		  b) International air transport

Scheme 2. Documents for data entry

Source: Made by the authors

Multitude of documents which are in this part of the research simply illustrated and classified, appear often and accompany the operator's business activities., There are some other documents that are used if necessary, however they are not mentioned due to certain limitations of this research. In any case numerous and complex documents point out the necessity of: simplification of the documents in traffic, trade and logistics operations reduction the number of documents (especially those which partially contain the same information) simplification of document exchange.

3.2. Electronic documents in logistics-forwarder operator's business activities

Modern technological development discovered new possibilities in the sector of traffic (transport) and trade. Electronic data exchange is cheaper and faster than transmission of the written papers, and it could completely replace the written form of the trade transactions in the near future. Certain problems regarding the legal uncertainties shouldn't be neglected in the process (for example the Bill of Lading, for its complex legal nature).

Further we have an example of the electronic Bill of Lading and electronic disposition as sample of modern electronic exchange of documents in traffic and trade and consequently in logistics-forwarding operator's service as an architect of transport-logistics process inside of the traffic, foreign trade and commercial system.

Bill of Lading is a forwarding certificate in maritime transport issued after the fright is handed over for transport. Shipper confirms that the freight is aboard the ship for transport, and he is obligated to deliver it to the recipient in

the port of call, which implies taking proper care of the freight during transport. Maritime transport documents contain numerous conditions under which the ship undertakes the transport; from information about the clients to court authority in case of a dispute (which is particularly important for electronic transport documentation due to legal uncertainty which surrounds them).

Except the large amount of data found in the Bill of Lading, scheme 3 shows that the information from the Bill of Lading is exchanged between many subjects, (bank in the state of export and import, exporter, importer, insurance companies, customs, port services,...). Logistics-forwarder operator is one of the subjects, who in the form of an integrator of all procedures and correspondence between the mentioned subjects should also "in the right moment" have the access to information from the Bill of Lading, and the Bill of Lading itself.

Everything mentioned including the possibility of mistakes or possible delays caused by the fact that Bill of Lading could not be accessed in time, points to necessity for electronic exchange of the mentioned document.
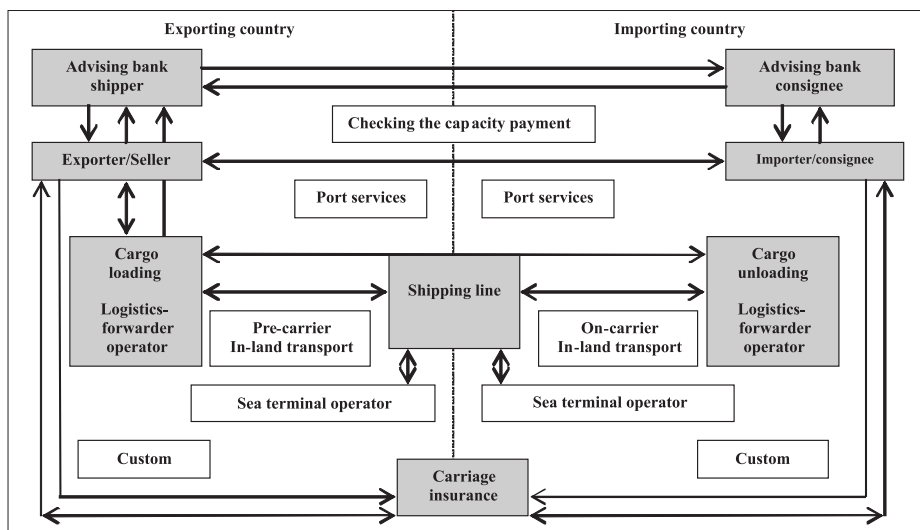
Scheme 3. Bill of Lading – information exchange between logistics subjects

Source: Modified by the authors from Van Oosterhout, M.P.A. Zielinski, M., Tan, Y.: T2. D1a Inventory of Flows & Processes in the Port, Version: 1.2 (final), Erasmus University Rotterdam, Rotterdam, Netherlands. 2000., Virtuele Haven, https://doc.freeband.nl/

Radical changes in maritime transport (which resulted in faster and more secure transport, containerisation and application of other new technologies, use of modern machinery for cargo manipulation) as well as the use of computers and other means of electronic data exchange, have imposed the need

for modification of maritime transport documentations and their adjustment to new conditions in maritime transport.

Reducing the time needed for transporting goods by sea, resulted with unusual phenomena of the freight arriving before the Bill of Lading, which of cores is not in the best interest to the shippers and their merchant partners. Because of the reasons mentioned, replacing the traditional Bill of Lading with the electronic one in cases where transferable document is needed has been a discussion topic for almost twenty years.

A solution to this problem that would lead to radical changes in transport documentation is use of computers and other means of electronic data exchange. There is no doubt that computers are able to transmit the information fast, efficient and economical. In other words, instead of issuing transport papers to stevedore which he will forward to freight receiver by mail, shipper simply has to put all the information into computer and they will instantly be on disposal to the freight receiver, no matter where he was.

With the use of electronic data exchange, paper documents which contain the information on freight, clients and contract conditions are replaced with the information of the same subject matter loaded into computer and are sent electronically instead of regular mail. The only difference is in draft technique and transfer, and once all the faults of the traditional paper Bill of Lading are removed, the electronic Bill of Lading should achieve the same goal and legal role.

The electronic data transfer includes one or two messages as one packet. Transfer confirmation is a notification which confirms the authenticity and integrity of information received and insured with the private key.

Private key is a combination of numbers and/or letters and is unique for every consecutive user, and on which clients can agree in order to insure the transmission authenticity and integrity. Bearer alone doesn't have the right to transmit the private key, this right is given only to the shipper who therefore has the important role in transmission of electronic Bill of Lading, but the obligation of the private key safe keeping lies on both of them. There is a way to encrypt the information with public key and private key [3, p. 117-130]. For example the shipper and the future user submit beforehand issuing of an identity certificate to a third party whom he trusts. Third party verifies their identity on the grounds of papers set forth upon submitting of the claim. If there are no objections, shipper and the future user forward their public key after which the third party creates digital signature and issues a certificate verifying that the key belongs to them. Public key and the certificate are sent at the first contact before further communication. Third party conducts the entire process.

From all the facts mentioned above it can be concluded that there are many differences or better to say advantages that go in favour to appliance of electronic Bill of Lading instead of the classical one, and the most important are: speed, efficiency, economy and simplicity.

4. EFFECTS OF ELETRONIC DOCUMENTS APPLICATION IN LOGISTIC-FORWARDING OPERATOR'S BUSINESS ACTIVITIES

We can analyze the effects of electronic documents application along with general use of information technologies and electronic data exchange in logistics-forwarder operator's activities:

- from the level of logistics-forwarder operator as an independent business organisation, from the level of logistics-forwarder operator as an important subject in the production process of transport-logistics service, with respect to principles of systematic way of thinking and approach.

If we analyze the positive effects that use of the electronic documents has on the business activities of logistics-forwarder operator, we will find that **rationalisation of business expenses** is something that can't be overlooked.

Application of e-documents has a direct influence on rationalisation of the business expenses of the logistics-forwarder operator's service, which can be monitored through the following: [8, p.7]

- lower cost of electronic documents (by 20 % off the classical document cost)
- shorter time required for processing the electronic documents in comparison with the processing time needed for classical document.

There is an interesting example in that sense regarding the documentation expenses(orders, receipts, Bill of Lading preparation, Bill of Lading distribution, preparation and draft of export documents, remuneration for arrival notification,...) which can be as high as 150 USD per shipment. However, part of the mentioned expenses can be reduced up to 80 % with regular technical solutions as implementation of the electronic commerce and electronic data exchange. Transport costs would in that way be reduced from 150 USD to 15 USD per shipment, and this could for an overseas industry mean saving up to 2 billion USD a year. [2]

Crossing over to an electronic data processing, as well as the long-term transfer to electronic business, requires certain investments in the information and communication infrastructure. Considering that those investments would provide the access to Internet with the information traffic rout of acceptable capacity, and computer hardware, software and personnel trained for efficient use and maintenance of those new advanced systems, than in all reality exploitation of such project could reach economical justification in a very short time.

One of the most important positive effects of implementing the electronic documents into logistics-forwarder operator's service is **advancement of administrative process** realised through**:**

- speeding up the administration processes by reducing paper work in creating and archiving
- precision improvement due to reduced manual processing,
- quicker transactions and greater speed of placing orders and data forwarding
- reduction administrational efforts concerning data implementation
- reducing the cost of placing orders, processing and
- optimisation of the transport process, and greater information utility,
- expanded general organisation efficiency by improving the data flow,
- better access to information related to freight tracking,
- reducing mistakes and wrong interpretations
- adequate information and document storage and sim.

Improvement in the administrative process, as a product of electronic documents application, effect the efficiency of the logistics-transport process, due to faster realisation of different activities and operations inside of logistics chain. For example it is possible to carry out trans-shipment just in time, without delays and unnecessary storage, basically eliminating all extra costs.

Improvement of basic indicators of business success as a result of electronic documents usage and the information-communicational technology in general. Business success on commercial market is based on the principle of maximal rationalisation: "...with minimal investment, to achieve maximal results".

For instance if certain actions are taken which order reduce business expenses, it is expected that the final business result (gain/ profit) would be larger. At the same time usage of electronic documents has a clear influence on the work productivity. Human work becomes intellectually more complex, but the amount of time needed to accomplish that work is reduced. Quicker and better work organisation contributes to increasing the quantity and quality of logistics-forwarder services, and also financial results and competitiveness which are the main stipulations for survival and development in the world trade.

Meeting consumer's demands becomes priority in today's global economy, and monitoring all relevant trends in the area of logistics-forwarder service, **by all means meets demands of the user of logistics-forwarder services**. The end-users want their trade transactions to be realised with speed, quality, and in due time, reducing cost of export and import, transport and trans-shipping.. Usage of electronic documents reduces service expenses, increases the work

quality and productivity, work precision and punctuality, speed of data processing which adds to its value and satisfaction of customers. New business concepts are being developed recently like Service Management, Customer Care and Customer Relationship Management, which puts the customers/end-user in the focus of entire organisation. Concepts of that kind are soon going to represent a sustainable strength and recognition of the logistics-forwarder operators on global market.

Prior mentioned effects of electronic documents application in the logistics-forwarder operator's business; lower business expenses, improvement of administration process, improvement index of business successfulness, customer care and customer relationship management are in function of **enhancing** logistics-forwarder operator's **competitive ability**, taking better position in the transport market as well as evolvement and integration in global market. There are various effects that are not here elaborated due to certain limitations of the research. For example: accepting Internet as a channel of business cooperation, information systems that create a platform for administration and organisation management, educational personnel who are capable of combining the acquirements, (...).

Analysing the effects of electronic document implementation, as an important subject of the process of production of transport-logistics service, the important issue is **reduction of transaction expenses** that is the effects of electronic documents on expenses of that sort. For example, reducing the transaction expenses is considered to be on of the main advantages of internet technologies and business models [9, p. 364-380].

Transaction expenses include all expenses of transactions between subjects/organisations in the process of creating transport-logistics service, such as expenses of finding potential business partners, negotiation expenses, writing a contract, agreement protection, expenses of contract induction, expenses that occur if the contract doesn't run as planned, expenses on conflicts and disputes during the contract realisation etc.

With the usage of electronic documents, information & communication technologies and electronic way of doing business, transaction expenses that mostly effect end-users or customers of the logistics-forwarder service, are reduced because of the quicker flow of information and communication that improve coordination activities. Information asymmetry decreases and transaction expenses are cut down by use of the standardized processes that are settled in advance.

In time information is a key factor of successful organisation of the transport-logistics service on a certain traffic route. Transforming information into economy and social values represents the base of a new economy. The emersion of new technologies offers possibility of quick and direct distribution of information/documents which can be exchanged between the nets or systems without any loss to their precision, reliability and security. Use of the elec-

tronic documents greatly effects the minimization of the information quantity needed for performing the transport-logistics service and increases the pragmatic value of the information that is the exact time when the information is received in relation to the event which needs immediate action.

Automatic data processing in the same way simplifies the procedure and reduces the differences in information processing between all participants which contributing to speed and quality of production of the transport-logistics service on a defined traffic route.

Whenever the surrounding is changing, for instance owing to a competition increase, organisations become more complex and they differ in the inner structure and processes. In the business grid this is imposing to the inner coordination activity. Use of electronic, computer or informatics technologies is caused by organisation coordination. Coordination has a great need for information and demands large information input from all parts of the organisation or from all the firms inside the organisation. Main assumption for the influence that electronic documents have on the coordination is **increase of interaction intensity and density between the participants** in the production process of the transport-logistics service, where the amount of interaction can be defined with the amount of documents or messages sent to individual participants and on the other hand it can be defined by the increased use of information technologies. Thereby coordination effects the success and interdependency of mutual work and on success and rationalisation of producing the transport-logistics service.

To enable the use of electronic documents, there has to be information compatibility between the subjects, who participate in production of the transport-logistics service on a particular traffic route.

That sort of a transport-logistics chain represents new organisation model which uses technology to combine people, means and ideas, and to succeed this concept needs the following: mutual trust, newest technology with high performance that would perfectly please the customer/user. Condition that is necessary in order to **form the partnership between the subjects** for production of the transport-logistics service is interoperability [5]**, that is a capability of the information and communication systems and business processes to sustain the information flow and provide exchange of information and knowledge.** Interoperability has to be secured on technical (norms and standards for connecting computer systems and services), semantic (meaning of the information) and process level (definition of business goals, modelling the business processes and cooperation realisation between the subjects).

Modern information and communication technologies are breaking business boundaries and are accomplishing undreamt possibilities in creating new business relations, performance, control and management of the business processes and operations.

Globalization of the production market is creating a large pressure of competitiveness, larger working markets, while intellectual capital is highly evaluated and it is becoming most important factor of fast, secure, rational and profitable production of numerous transportation services [17, p.1034-1053]. **New work organisation** is emerging: team work, creativity, multidisciplinary, acclimatization, and problem solving. Accordingly, key skills which will define a competition between the logistics-forwarder operators on the market that is demanding the usage of electronic business, will definitely be: entrepreneurial way of thinking, informatics literacy, team work and cooperative networking, effective governance with knowledge and possibility of development for purpose of receiving more demanding competence in the area of information technology and electronic data exchange.

5. CONCLUSION

In modern conditions of the information technologies development and electronic business transactions, paper documents are being replaced with its electronic equivalents. Mentioned tendencies are a postulate for the successful business for any subject of economy including logistics and forwarding operator's services.

Moreover, the application of the information technologies became a relevant indicator of the competitiveness and the quality of the service that logistics-forwarder operators provide in today's demanding market.

Complexity of the technology and organisation in transport and logistics service is accompanied by a complexity of procedures and documentation that follow logistics and forwarding operator's service. Numerous initiative documents, documents on business closures, goods related documents with data input, documents related to payment and transport, are in many ways complicating the transport and logistics process and the job of the operator. Implicating a great number of unwanted effects and problems such are: extra expenses, delayed information, inability of preparing stages of the logistics process in due time, delays, misunderstandings, misplacement of documents and mistakes, classical way of communication and paper documentation all reduce the business efficiency and expedition, and therefore they should be replaced by electronic data exchange and electronic documents.

Although the practice shows that the electronic communication and correspondence implicates certain problems (related to payments and transaction security, legal role of some electronic documents, adjustment of information and communication systems, additional education of employees etc.); positive effects that are a consequence of electronic documentation are prevailing and

should be the main reason for encouragement and search for adequate solutions to eliminate the mentioned weaknesses.

Research that was conducted in this paper, indicate a large variety of economical and socio-cultural effects caused by application of electronic data in the logistics-forwarder operator's business activities. We monitored rationalisation of the business expenses, improvement of the administrative process, and consequently improvement of the traffic and technological process, upgrading of the efficiency indicators (especially in productivity and economy), satisfaction of the end -user that leads to achieving sustainable development of the logistics-forwarding service, and consequently insuring the increase of the logistics and forwarding operator's competition capabilities on the global market. Simultaneously, while monitoring the effects of electronic documents application in entire production process of transport-logistics service, we came to conclusion that reduction of the transaction expenses, information provided in due time (as a key factor of successful organisation of transport-logistics service), forming partnerships and new type of work organisation between the participants of the production of transport-logistics service, have a very special role.

With reference to conducted research and conclusions obtained, it can be said that the contribution and the objective of this research which reflects in the scientific elaboration of the importance and positive effects that the electronic documents have as a key to success in logistics-forwarder operator's business, is realised.

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Sažetak

ZNAČENJE I UČINCI PRIMJENE ELEKTRONIČKIH DOKUMENATA U DJELATNOSTI LOGISTIČKO-ŠPEDITERSKOG OPERATORA

U području logističke špedicije zahtjevi za dostupnošću sve detaljnijih informacija, samo jednim pritiskom na programsku tipku, postaju sve značajniji. Pristup i raspolaganje informacijama od bitnog su značaja za sve subjekte koji sudjeluju u proizvodnji transportno-logističke usluge uključujući logističko-špediterskog operatora koji za svog komitenta, tj. korisnika usluge planira, organizira i integrira sve aktivnosti transportno-logističke usluge. U suvremenim uvjetima razvoja informacijskih tehnologija te sve većih zahtjeva korisnika, kvaliteta usluge i uspješnost poslovanja logističko-špediterskog operatora, uvelike je uvjetovana elektroničkom razmjenom podataka (dokumenata i isprava). Sukladno tomu, u ovome se znanstvenom istraživanju navode aktualne spoznaje o zastupljenosti, mogućnostima i učincima primjene informacijskih tehnologija i elektroničke razmjene podataka u djelatnosti logističke špedicije, analiziraju se i sistematiziraju klasični (pisani) dokumenti koji su sastavni dio brojnih korespondencija u poslovanju logističko-špediterskog operatora te se navode primjeri i osnovna obilježja elektroničkih dokumenata u prijevozu i trgovini. Posebno se analiziraju i definiraju pozitivni učinci primjene elektroničkih dokumenata u funkciji konkurentnog poslovanja logističko-špediterskog operatora.

***Ključne riječi**: logističko-špediterski operator, informacijske tehnologije, elektronički dokumenti*

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