



Cost Efficiency Measures In Maritime Electronic Communications

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ABSTRACT

According to maritime specialist opinions, costs reduction thanks to technological advances and higher security on Electronic Data Interchange is one of the effects of globalization (Salama Benazar, 2009). Globalization has also promote increase in commerce and maritime transport. A forecast ending in 2020 indicates that container trade is expected to be 287 million TEUs in 2016, and to exceed 371 million TEUs in 2020 (ISL, 2008) and if efficiency measures relating communications and paper transactions are not taken, understanding and higher costs problems will be unavoidable. Due to this, it is essential to reduce paper documents in order not only to save costs, but because of organizational and operational purposes. These facts motivated the main purpose of this study, to identify the main international organizations that have taken measures standardizing terms and documents and promoting electronic communications in order to present cost efficiency measures. The results are: a) The main measures have been taken by the United Nations, with the syntax called EDIFACT; b) even though international organizations have established parameters to facilitate maritime communications, none of the specialists consulted knew about this work and some of them use standardized abbreviations not knowing its complete meaning; c) 81,25% of the sample considered that electronic communications through standardized documents and terms, reduce the operational costs of their companies because of Savings in paper and ink consumption; 75% because of Time delivery reduction; 43,75% because of Reduction of physical files, among others. The methodology used was a documental and a field study. Documental to collect information regarding international organizations in charge of standardizing electronic terms and documents, and a field study to collect specialists opinion about costs decrease for EDI use and their knowledge of standardized terms and documents established by those organizations for electronic communications.

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1. Introduction

International commerce has increased in higher percentage since 1970, with the generalized use of the container, the so called, information technology revolution and globalization (Salama Benazar and Martínez Marín 2012). During the period 2005 – 2012, the volume of world total exports grew in a higher percentage than the worldwide Gross Domestic Product GDP (World Trade Organization 2013), and taking into consideration that more than 90% of the total commerce is moved by sea (United Nations, 2010), it is evident the number of documents implied in all the transport logistic process, carrying a cost increase in the final product value. The increase in paper volume have represented a problem for maritime

transport since it causes understanding (because of different documents and terms for different countries) and operational problems having to file innumerable transaction records and implying personnel hiring to perform the job. Because of this, in order to reduce costs, international organizations have been looking for trade facilitation and a better understanding among different countries, through documents and terms standardization by electronic communications. This study is useful because it shows measures took by international organizations in order to standardized documents and terms used in electronic communications, comparing them to those really used and known by maritime and logistic specialists.

It is said that if the last 50 year tendency of growth continue, instead of the 8.000 millions of Tons move nowadays, there will be a movement of 23.000 millions of Tons in 2016 (Stopford, 2010), reason why the paper reduction is essential to facilitate operations.

Other of the reason is that since its advent in the mid – 1960s, containerization has been responsible for integration within the transport chain (Brooks, 2000). Nevertheless, tra-

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ditionally, maritime transport comprised a well defined service of related but separate activities, with each participant being responsible for a limited part of the process (Siu Lee Lam, 2011). The maritime transport business is characterized by fragmentation of operating units and a requirement for an intensive network control (Graham, 1998).

Each of those fragments implies different documents to support the all logistic operations, including those at the port to import and export the cargoes. Referring to the output variables of the port system, most researches use the number of containers or cargo throughput to measure efficiency or assess port operation performance (Jim Wu and Goh, 2010), and a way to accomplish the port performance accelerating movements is the fast flow of information, which is possible if the electronic communication (EDI) is established.

When taking into account the input variables, several have been proposed, for example, (Tongzon, 2001) proposed the number of tugs and the amount of delay time as inputs, which also could be improved by an efficient electronic communication between liner shipping and port authorities, as well as consignees.

It could be said that information flow should occur simultaneously or previously to the passengers and goods flow, which would ensure administrative procedures simplification at the unique window, under the premise One Stop Shop (Martínez de Oses and Velásquez Correa, 2012).

Different international organizations have been looking for trade facilitation and transport costs reduction. This is why the general objective of this study is to identify the main international organizations that have taken measures standardizing terms and documents and promoting electronic communications in order to present cost efficiency measures.

Secondary objectives are: to determine maritime and logistics specialists knowledge about the work performed by international organizations in order to reduce costs through standardized terms and documents for its electronic use; to study the knowledge those specialists have about the meaning

of the standardized terms and documents abbreviations they commonly use in their daily work and, to determine the reasons why they consider that terms and documents standardization and its electronic use are measures to accomplish cost efficiency in their enterprises.

2. Methodology

The methodology used to identify the main international organizations that have taken measures in standardizing terms and documents and promote electronic communications was a documental research.

The other methodology used to accomplish the secondary objectives was a field research through the survey technique, applying a questionnaire to an intentional sample of 16 maritime and logistic specialists from international companies of the sector.

2.1. Maritime Transport Tendency

As mentioned above, volume of total exports has grown faster than Gross Domestic Product, GDP, which is a measure that represents the monetary value of goods and services production of a country during a period. This means that commerce (which implied transport), have grown faster than production, originating a variety of documents to import and export between different countries. Graphic 1 shows the relation among the volume of total exports and GDP from 2005 to 2012.

According to Figure 1, world merchandise exports and gross domestic product (GDP) both grew by 2.5 per cent in 2012. World merchandise exports and GDP have recorded positive growth, except in 2009 due to the financial crisis, and from 2005 to 2011, World merchandise exports grew faster than GDP.

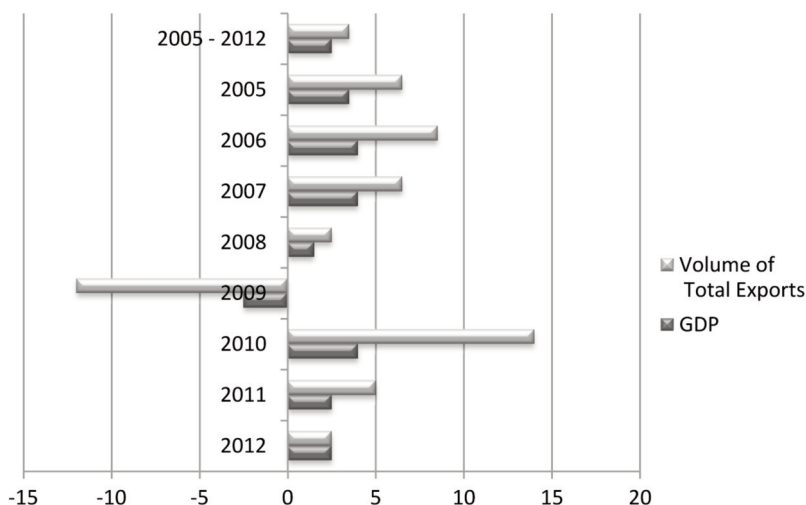
Such increase has also brought together a bigger demand on transport, creating a demand not seen before and a problem because of a higher volume of paper communications. Figure 2 shows the worldwide fleet increase by type of ship.

Bulk carriers and cellular ships represent the biggest increases in number of tons transported, which also have implied a documental increase in logistics and communications.

Container ships carry an estimated 52 per cent of global seaborne trade in terms of value and their share of the world fleet has grown almost eightfold since 1980, as goods are increasingly containerized for international transport (United Nations, 2013), reason why we refer to this type of ship in the present research when talking about documents and standardized electronic communication to save costs in maritime transport.

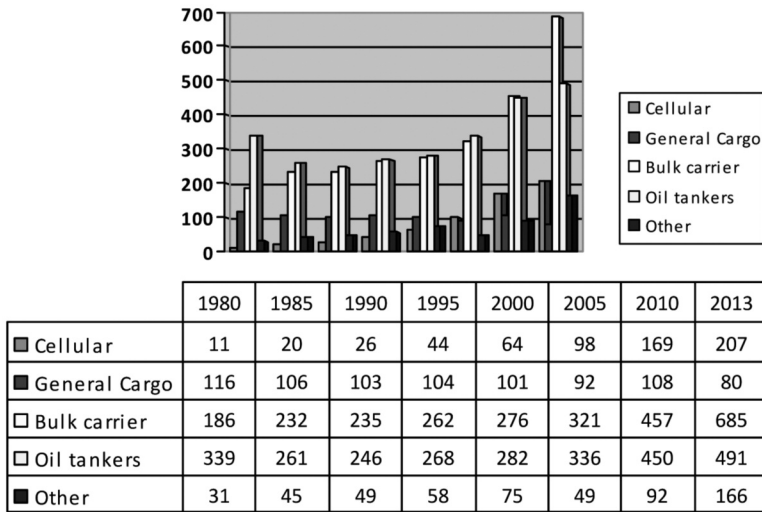
On a related matter, and recalling that container trade remains largely serviced by regular liner shipping services, it appears worth noting that a recent study by the Economic and Social

Figure 1. Volume of world merchandise exports and gross domestic product, 2005–2012.



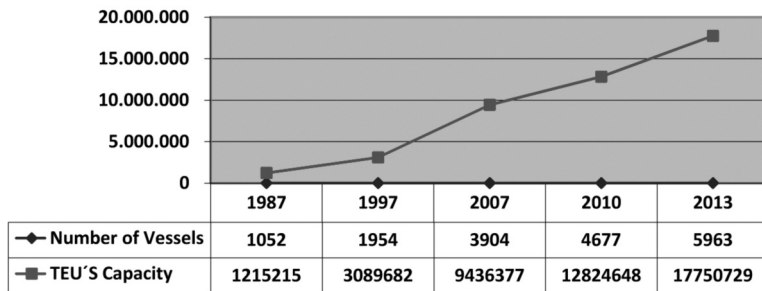
Source: World Trade Organization, 2013.

Figure 2. World Fleet at the beginning of each year (Merchant ships bigger than 100 GT. In millions of DWT).



Source: United Nations, 2013

Figure 3. Number of vessels and the total TEU's moved worldwide in the period 1987-2013



Source: Own construction based on (United Nations, 2010; Alphaliner, 2013).

Commission for Asia and the Pacific and the World Bank (Arvis, et al., 2013), covering more recent data, found that liner shipping connectivity – measuring the capacity of a country to carry its containerized foreign trade using liner shipping – had a stronger impact on trade costs than the indicators for “logistics performance”, “air connectivity”, “costs of starting a business” and “lower tariffs” combined (United Nations, 2013).

Such connectivity, to improve its efficiency, should be accompanied by a good understanding and rapid communications that can be accomplished thanks to documents standardization and Electronic Data Interchange (EDI) promoted by international organizations.

Regarding liner shipping, Figure 3 shows the number of vessels and the total TEU's moved worldwide.

In 1987 the total number of TEU's (Twenty Feet Equivalent Units) was 1.215.215, while in 2013 was 17.750.729 TEU's, which represents a remarkable increase in quantity and volume. Such movements of containers have made ports to improve the way they work, since modernizing its infrastructures to change its operational activities, including paper form – filling and communications procedures. Improving port efficiency and productivity has become a critical yet challenging task in the development of many countries (Turner et al., 2004).

Taking into account Ships order book, it grew in a level without precedents, 42% in 2009 and 49% in 2010, compared to 2008, despite the economic crisis in 2007. (United Nations Conference On Trade and Development ,UNCTAD (2010, p. 15). By Marzo 2013, the total ship order book from 2013 to 2015 was 445 new ships. See Table 1.

Table 1 shows that until 2015 there is an order for 86 vessels between 3 and 5 thousand TEU's, 90 orders for ships between 8 and 10 thousand TEU's and 64 orders for vessels between 12.500 and 16 thousand TEU's. This means that ports have to be prepared for more movements per ships arrivals, having the appropriate infrastructure as well as the capacity and adequate communications systems that help the cost reduction already got with the economy of scale due to bigger ships. A way to accomplish such costs reduction at ports is to eliminate paper documents, since it also implies personnel reduction to file documents. As studies performed in 2009 (Salama Benazar, 2009) and 2012 (Salama Benazar and Martínez Marin, 2012) showed, standardizing documents

Table 1. World Cellular Ships until Marzo 2013 by range of capacity in TEU's.

Teus Size Range	In service today		On Order 2013		On Order 2014		On Order 2015		Total Ship on order	Total TEU's on order
	Nº	TEU's	Nº	TEU's	Nº	TEU's	Nº	TEU's		
0 - 1.499	1.796	1.470.008	25	21.209	12	12.880	2	2.200	39	36.289
1.500 -2.999	1.214	2.648.592	47	99.932	16	33.740	4	8.800	67	142.472
3.000 - 4.999	953	3.910.309	67	284.434	11	50.736	8	29.500	86	364.670
5.000 - 7.999	606	3.686.379	26	160.868	18	95.500	2	13.800	46	270.168
8.000 - 9.999	284	2.432.948	42	368.178	39	343.156	9	81.400	90	792.734
10.000 - 12.499	52	568.028	10	104.800	12	120.000	3	30.000	25	254.800
12.500 - 15.999	119	1.601.293	23	305.916	31	412.686	10	139.350	64	857.952
Over 16.000	1	16.020	7	122.040	10	176.000	11	190.000	28	488.040
Total	5.025	16.333.577	147	1.467.377	149	1.244.698	49	495.050	445	3.207.125

Source: (Informa PLC, 2013, pp. 18-19).

and terms, and using EDI in communications, help to reduce costs in maritime transport and logistics.

Maritime transport is very cyclical and goes through periods of continuous busts and booms, with operators enjoying healthy earnings or struggling to meet their minimum operating costs. (World Trade Organization, 2013), reason why they continuously look for the way to reduce transport cost through trade facilitation.

2.2. International Organizations looking for cost efficiency measures through Standardizing Terms and Documents in Electronic Communications

The use of different modes to transport the cargo grouped in the container, represents an increase in the variety of documents and terms used for the entire process of delivering goods, which caused understanding problems, costs increases and goods delivery delays. Due to such problems it was necessary to harmonize processes, standardize terms, formats, and reduce the number of paper documents involved in the supply chain and the different modes of transport. International Organizations, based on information and communications technologies developments, have promoted terms, documents and processes harmonization, using electronic languages and codes to reduce paper in different transactions.

One of the recommendations to optimized administrative processes and-information flow is to use as often as possible electronic communication processes between operators and carriers. Certain transport companies will even offer the carrier reductions to use electronic communication for administrative tasks relative to transport. Furthermore, this mode limits typing errors and contributes to shipment errors reduction (Free Logistic, 2013).

In the area of trade facilitation intensive work on a global agreement continues under the auspices of the World Trade Organization. In this context, results from UNCTAD's research on national trade facilitation implementation plans illustrate that trade facilitation remains a challenge but is also seen as a priority area for national development by developing countries themselves. (United Nations, 2013)

Nowadays the use of individual modes of transport have been put aside by the integration logistic services and the multimodal transport, searching for security, costs reductions and just in time deliveries. The XXI century have also been characterized by the so called third revolution (Castells, 2006), making reference to the technology information advances that has allowed to facilitate communications regardless of the language and distance.

There have been standardizing initiatives in most sectors; i.e. mechanics, industrial, health, financial, among others. Concerning the maritime and multimodal transport area, it could be taken as a base the initiative of the United Nations (UN) through its different commissions, sections, subsections, working groups and projects, created for different fields regarding the maritime area.

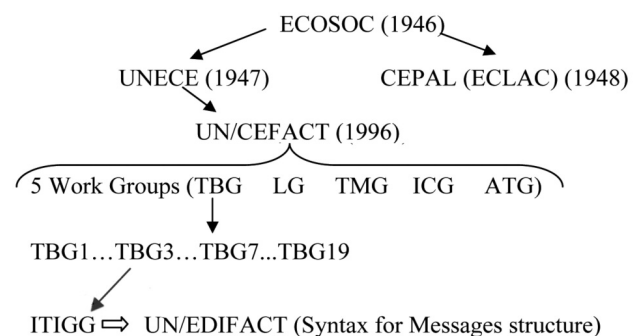
Referring to the economical area, the UN Economic and Social Council (ECOSOC) have set up five Economic Com-

missions. The commission for Europe was set up in 1947, and called United Nations Economic Commission for Europe (UNECE). The Commission for Latin America was set up in 1948 and called Economic Commission for Latin America (ECLA). Lately, in 1984, the commission scope was broadened to include the Caribbean countries and its name was changed to Economic Commission for Latin America and the Caribbean (ECLAC) - the Spanish acronym is CEPAL. Although both commissions were established for economical aspects, it is the European one that has been focused toward trade facilitation through electronic business standards, working not only to facilitate trade in Europe, but worldwide. ECLAC, the Latin American Commission has been aimed mainly to social aspects.

According to the 19th UN/CEFACT Forum description, UNECE serves as the focal point to trade facilitation recommendations and electronic business standards, covering both commercial and government business processes that can foster growth in international trade and related services.

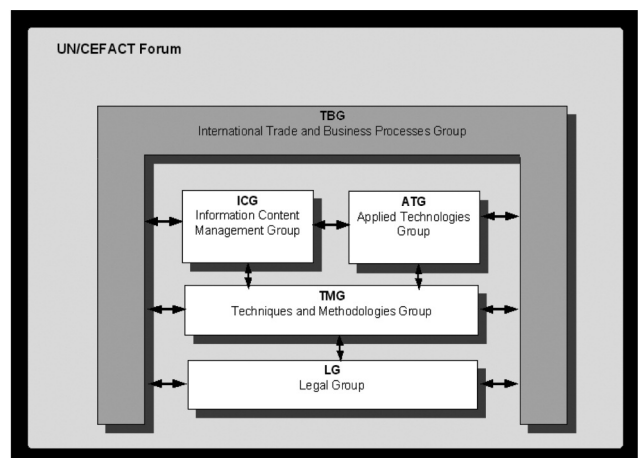
UNECE has more divisions, and UN/EDIFACT (United Nations/Electronic Data Interchange for Administration, Commerce and Transport) has been in charge of standardizing terms through electronic messages. A structure of United Nations Division for economic and transport terms standardization is shown in figure 4, 5 and table 6.

Figure 4. United Nations Structure for facilitating Trade and Commerce.



Source: (Salama Benazar & Martínez Marin, 2012)

Figure 5. United Nations CEFACT Forum Structure.



Source: (Vankenmel, 2009)

Table 2. Composition of the UN/CEFACT TBG Groups.

TBG 1	Supply Chain / e-Procurement	TBG 10	Healthcare
TBG 2	Digital papers (UNeDocs) <i>created Marzo 05</i>	TBG 11	Social Security, Employment & Education
TBG 3	Transport/Logistics	TBG 12	Accounting and Auditing
TBG 4	Customs	TBG 13	Environmental Management & Safety
TBG 5	Finance	TBG 18	Agriculture <i>created Marzo 05</i>
TBG 6	Architecture, Engineering & Construction	TBG 19	e-Government <i>created Sept 05</i>
TBG 7	Statistics	Others: Harmonization, Business Process Analysis, International Trade procedures.....	
TBG 8	Insurance		

Source: (Vankenmel, 2009)

The TBG3 has an official subgroup created in 1995, the International Transport Implementation Guidelines Group, ITIGG, which mission is to provide principles and rules for production of consistent and harmonized implementation guidelines and user's manuals of UN/EDIFACT and XML transport messages throughout the world.

Some standardized electronic messages created by EDIFACT per area, are the following (Free Logistic, 2012):

Besides of the United Nations Committees, there are also the UN Agencies and the main one related to maritime transport is the International Maritime Organization (IMO), with responsibility for the safety and security of shipping and the prevention of marine pollution by ships. IMO has its background in a UN Conference held in 1948, when it was decided to adopt a convention exclusively to maritime matters. It was adopted ten years later, in 1958, (International Maritime Organization, 2012). Then, due to the concern of maritime nations regarding the number of separate documents required

Table 3. Electronic messages created by EDIFACT

Production and Logistics	Dangerous Goods Movement
DELFOR Delivery Schedule Message	IFTDGN Dangerous Goods Notification Message
DELJIT Just-In-Time Delivery	IFTIAG Dangerous Cargo List Message
DESTIM Equipment Damage/Repair Estimate Message	SAFHAZ Safety and Hazard Data Sheet
PRODEX Product Exchange Message	General Transport
QUALITY Quality Data Message	BAPLIE Bayplan - Occupied and Empty Locations Message
RECADV Receiving Advice Message	BAPLTE Bayplan - Total Numbers Message
Customs	GATEAC Gate and Intermodal Ramp Activities Message
CUSCAR Customs Cargo Report Message	IFTMAN Arrival Notice Message
CUSDEC Customs Declaration Message	IFTMBC Booking Confirmation Message
CUSEXP Customs Express Consignment Declaration Message	IFTMBF Firm Booking Message
CUSREP Customs Report Message	IFTMBP Provisional Booking Message
CUSRES Customs Response Message	IFTMCS Instruction Contract Status Message
PAXLST Passenger List Message	IFTMIN Instruction Message
SANCRT Sanitary/Phytosanitary Certificate	IFTFCC International Freight Costs and Other Charges
Container Movement Messages	ITRGRP In-Transit Groupage Message
CALINF Call Information Message	ITRRPT In-Transit Report Detail Message
COACOR Container Acceptance Order	MOVINS Stowage Instruction Message
COARCO Container Arrival Confirmation	REACTR Equipment Reservation, Release, Acceptance and Termination Message
COARIN Container Arrival Information	VESDEP Vessel Departure Message
COARNO Container Arrival Notice	Forwarding
COARRI Container Arrival Message	HANMOV Cargo/Goods Handling and Movement Message
CODECO Container Departure Confirmation	IFCSUM International Forwarding and Consolidation Message
CODENO Container Customs Documents Expiration Notice	IFTCCA Forwarding and Transport Shipment Charge Calculation Message
CODEPA Container Departure Message	IFTRIN Forwarding and Transport Rate Information
COEDOR Empty Container Disposition Order	IFTSAI Forwarding and Transport Schedule and Availability Information
COHAOR Container Handling Order	IFTSTQ International Multimodal Status Request
COITON Container Inland Transport Order Notice	IFTSTA International Multimodal Status Report Message
COITOR Container Inland Transport Order	Transaction
COITOS Container Inland Transport Response	COMDIS Commercial Dispute Notice Message
COITSR Container Inland Transport Space Request	DESADV Dispatch Advice Message
COOVLA Container Overlanded	INVOIC Invoice Message
COPARN Container Pre-Arrival Notice	ORDCHG Purchase Order Change Message
COPDEM Container Pre-Departure with Guidelines Message	ORDERS Purchase Order Message
COPINF Container Pick-Up Information	ORDRSP Purchase Order Response Message
COPINO Container Pick-Up Notice	PARTIN Party Information Message
COPRAR Container Pre-Arrival Message	PRICAT Price/Sales Catalogue Message
COPRDP Container Pre-Departure Message	QUOTES Quotation Message
COREOR Container Release Order	REQOTE Request for Quote Message
COSHLA Container Shortlanded Message	SLSFCT Sales Forecast Message
COSTCO Container Stuffing Confirmation	SLSRPT Sales Data Report Message
COSTOR Container Stuffing Order	PRICAT Price/Sales Catalogue Message
	QUOTES Quotation Message

Source: Authors

from port to port, its variety, number of copies and, as bigger burdens, the language of each one, the paper size and governmental requirements for all vessels traffic, they decided that the situation could not be allowed to deteriorate further and, to take action, governments turned to IMO by the early 1960's. As a consequence, the FAL 65 was adopted to assist the facilitation of international maritime traffic. Among its objectives are "to prevent unnecessary delays in maritime traffic, to aid co-operation between Governments, and to secure the highest practicable degree of uniformity in formalities and other procedures" (International Maritime Organization, 2012). In particular, the Convention reduces the number of documents which could be required by public authorities to ship. Some of them are:

Table 4. Documents which could be required

• IMO General Declaration	• Cargo Declaration
• Ship's Stores Declaration	• Crew's Effects Declaration
• Crew List / Passenger List	• Dangerous Goods

Source: Authors

The 1992, 1996 and 1999 FAL's 65 amendments include documents and processes standardization and electronic Business as follows:

Table 5. Documents and processes standardization and electronic Business

1992	1996	1996
Electronic data processing / electronic data interchange (EDP/ EDI)	Passenger list	Arrival, stay and departure of ships
Submission of pre-import information	Pre-arrival clearance,	Passengers, crews and cargo
Clearance of specialized equipment	Pre-import information	The use of electronic data interchange (EDI) for ships clearance purposes

Source: Authors

The last amendments (2005), include a Recommended Practice for public authorities to develop the necessary procedures in order to use pre-arrival and pre-departure information to facilitate the processing of information, and thus expedite release and clearance of cargo and persons; a Recommended Practice that all information should be submitted to a single point to avoid duplication; also encourages the electronic transmission of information. (International Maritime Organization, 2012)

UN/CEFACT works together with other organizations standardizing processes, for example, the ISO and OASIS. Those international organizations also have taken cost efficiency measures through paper reduction standardizing terms and documents and promoting EDI as is explained below.

2.3. International Standardization Organization (ISO)

ISO, founded in 1946, is the world's largest developer and publisher of International Standards. Its abbreviation "ISO", derived from the Greek isos, meaning "equal". It is a non-governmental organization that forms a bridge between the public and private sectors.

It works through Technical Committees. The ones related to transport are:

Table 6. Technical Committees

TC 8 Ships and Marine Technology	TC 104 Freight containers
TC 22 Road Vehicles	TC 122 Packaging
TC 52 Light gauge metal containers	TC 154 Processes, data elements and documents in commerce, industry and administration
TC 96 Cranes	TC 172 Document management applications
TC 110 Industrial trucks	TC 184 Automation systems and integration
TC 101 mechanical handling equipment	

Source: Authors

The EDIFACT syntax rules were agreed in the ISO Committee TC154, to be an international standard (ISO 9735) in September 1987.

Some countries, as Venezuela, are not signatory countries of ISO; nevertheless standardization established by ISO is applied in different fields, including the maritime and industrial one.

2.4. Organisation for Advancement of Structured Information Standards (OASIS).

OASIS is a not-for-profit consortium that drives the development, convergence and adoption of open standards for the global information society. The Consortium hosts two of the most widely respected information portals on XML and Web services standards, Cover Pages and XML.org (Organisation for Advancement of Structured Information Standards, 2012).

OASIS, together with the UN/CEFACT, launched a project in 1999, the ebXML that stands for Electronic Business Extensive Markup Language. The project objective is to define specifications for a XML exchange architecture. Standardization roles split between (Vankenmel, 2009):

- UN/CEFACT: semantic contents, data and business models based on the considerable asset of EDIFACT, and
- OASIS: technical infrastructure allowing to share registries /dictionaries.

The ebXML is also related to ISO, since its Technical Committee 154 (TC154) has published specifications for ebXML. ISO TC154 supports development and maintenance of application specific standards for: process specification (in the absence of development by other technical committees); data

specification with content; forms-layout (paper / electronic), (OASIS, 2012).

With its focus on e-business, ISO TC154 is involved in work that relates to many OASIS Technical Committees and the UN/CEFACT

The last ISO bulletin related to maritime transport standardization data from February 2011. It is the ISO 28005-2:2011, which contains technical specifications that facilitate efficient exchange of electronic information between ships and shore for coastal transit or port calls. It is intended to cover safety and security information requirements related mainly to the relationships between the ship, the port and coastal state authorities. It can also be used for information exchanges between the ship and the ship agent, the port and ship operator or manager, but not necessarily cover issues such as customs clearance of imported or exported goods or transport service provisions to goods owners. It does not define the message structure, but contains definitions of data elements for Port Electronic Clearance. Those elements are reported as defined in other International organizations such as IMO through: FAL 65, ISPS code (International Ship and Port Facility Security), Resolution A.862 Bulk loading and unloading code, Resolution A.960 ETA reporting to pilot stations. (International Organization for Standardization, n.d.).

Besides international organizations initiatives, there is also a software platform for e commerce called INTTRA which is used by the largest global Freight Forwarders and Shippers. It is used at least by over 30 active carriers, representing 75% of global capacity and originated 15% of global container freight in 2011. (Bunch Rayonier, 2013)

Some of the benefits of using INTTRA are (Bunch Rayonier, 2013):

- To shorten the Booking Cycle: Submit booking requests to all your carriers through one system and receive confirmations online.
- To improve Data Quality and Compliance: Submit shipping instructions with standard templates and set notify parties within a single form.
- To Minimize Transit Delays: Receive and process Bills of Lading quickly
- To achieve Cost Savings: Use INTTRA's eInvoice to save time and money through bill presentment and automated dispute resolution.
- To increase Visibility Track your INTTRA processed shipments and create standard reports to view all your booking and SIs by carrier or by date

"INTTRA has played a key role in standardizing booking and documentation processes. It has enabled both carriers and shippers to take cost out of the supply chain and improve the services provided to our ultimate customers." (Bunch Rayonier, 2013).

2.5. Survey Results

Referring to the questionnaire applied to maritime and logistic experts, it was chosen an intentional sample composed by 16 experts from different international maritime and logistic

companies in order to identify what standardized terms (EDIFACT messages) and documents they know and use through Electronic Communications and why they consider its use as a tool to save costs in maritime transport and logistics, including port operation and efficiency.

It is important to say that an EDIFACT message is a single business document. Each message is identified by a six character name. The specialists interviewed did not know about the existence of this syntax, but they did mention among the harmonized documents and terms used, some of those from UN/EDIFACT and other standardizing initiatives. In other words, EDIFACT syntax was used, however specialists interviewed were not fully aware of the terminology used and level of standardization implemented. In some cases they use the abbreviations without knowing the meaning but just what it was used for.

Below are presented the documents mentioned by the specialists of the survey and that match with those defined by the EDIFACT, even though they do not know that those are terms defined by an international organization to accomplish cost efficiency measures.

Table 7. Standardized documents used by maritime and multimodal specialists.

Standardized documents used by maritime and multimodal specialists	EDIFACT Message
Purchase Orders	ORDERS
Instruction Message	IFTMIN
Arrival Notice	IFTMAN
Invoices	INVOIC
Customs Declaration	CUSDEC
Quotation	QUOTES
Sanitary/Phytosanitary Certificates	SANCRT
Delivery Order	DESADV (Despatch Advice Message)
Stowage Plan / Bay Plan	BAPLIE
Booking	COPRAR

Source: Authors

Other important documents, due to its extended use, are harmonized in different maritime glossaries, including that presented by ISO and mentioned before, the Bulletin ISO 28005-2:2011. That is the case for the following documents mentioned by the specialists of the sample: B/L (Bill of Lading); HBL and MBL (House B/L and Master B/L); AWB (Airway Bill), NOR (Notice of Readiness), CM (Cargo Manifest), FC (Freight Certificate), EMC (Electronic Manifest Corrector); DRV (Daily Report of Vessels); SCD (Single Custom Declaration or DUA in Spanish); LOP (Letter of Protest); LOI (Letter of Indemnity); MOA (Memorandum of Agreement); Packing List; Shipping List; SOA (Statement of Account).

When asking the interviewed specialists what standardized terms they commonly use in their daily work, the answers were:

BAF (Bunker Adjustment Factor); Ballast (Ballast water); Bkr (Broker); CBM (Cubic Meters); CFR, (Cost and Freight); CFS (Container Freight Station); Chrts (Charters); CIF (Cost, Insurance and Freight); CIP (Cost and Insurance Paid); Cnee (Consignee); CP (Charter Party), DD (Dry Dock), Demurrage, Detention; DDU (Delivery Duty Unpaid), INCOTERM already out of use ; ETA (Estimated Time of Arrival); ETD (Estimated time of Departure), EXW (Ex Works); FAS (Free along Side Ship); FCL (Full Container Load); FEU (Forty Equivalent Unit); FIFO (Free In and Free Out); FIOST (Free In, Out, Stowed and Trimmed); FOB (Free on Board); LNG (Liquefied Natural Gas); M/V (Moto Vessel); NOA (Notice of Arrival); NVOCC (Non Vessel Operator Common Carrier); ORC (Origin Charge); POD (Port of Discharge); POL (Port of Load; SOF (Statement of Facts); SS (Special Survey); TEU (Twenty Equivalent Unit); THC (Terminal Handling Charge); ULCC (Ultra Large Crude Carrier); VLCC (Very Large Crude Carrier), Wharfage.

When asking the sample about three reasons that they considered electronic communications and documents/terms standardization to have act as cost efficiency measures, the main answers of specialists are shown in Figure 6

The answers represented in Figure 6 were those reasons why maritime and logistic specialist considered that standardized terms and documents used in electronic communications are cost efficiency measures that reduce costs in their companies.

The percentages are: 81,25%: savings in paper and ink consumption; 75%: Time delivery reduction; 43,75%: reduction of physical files; 25%: speed in information interchange vital for the company; 25%: reduction in returns due to mistakes and confusions; 25%: minor personnel hiring; 18,75%: reduction in

courier and fax expenses; 12,5%: speed locating information; 12,5%: optimizing time response and activities performance, and 6,25%: precision to accomplish efficiency .

3. Conclusions

The initiatives to harmonize documents, terms and processes in maritime and other modes of transport, looking for cost efficiency measures in maritime electronic communications, data from 1948, with inquire of various maritime countries governments that went to the UN looking for regulations, then, 10 years later, IMO was created in order to attend maritime requirements. The documents harmonization commonly use is that established by the United Nations, mainly through the EDIFACT syntax, as well as those established by the ISO.

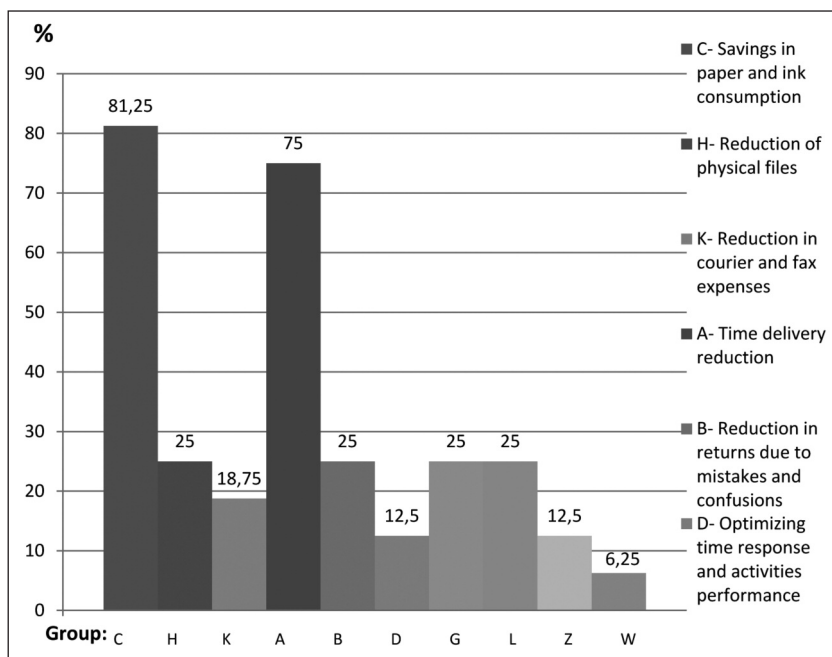
The interviewed maritime specialists do not know about the existence of the EDIFACT syntax as a measure for cost efficiency, but they do use harmonized documents defined by UN/EDIFACT and considered that its use contributes to costs reductions. The main documents used by specialist of the sample and defined by EDIFACT are: ORDERS, IFTMIN, INVOIC, CUSDEC, QUOTES AND BAPLIE. The most common document use as a standardize one is the waybill (Bill of Lading and Airway bill), harmonized by shipping lines and IATA (International Air Traffic Association) respectively and controlled by special rules.

Regarding the standardized terms mentioned by the specialists interviewed as the most used in its daily work are those corresponding to the INCOTERMS (International Commerce Terms), not knowing about the disappearance of some of them in the new INCOTERMS 2010; also, those related to liner freight rates surcharges. As examples are: DDU (INCOTERM out of use); THC, ORC and BAF: Surcharges to the freight rate; FIFO, LIFO and FIOST: Liner terms. In some cases specialist do not know the meaning of the standard abbreviations they use, but they do know what are they used for.

Maritime and logistic specialists consider the following reasons why EDI and standardize documents and terms (paperless) contribute to costs reductions in their companies:

- Savings in paper and ink consumption
- Time delivery reduction
- Reduction of physical files
- Speed in information interchange vital for the company
- Reduction in returns due to mistakes and confusions
- Minor personnel hiring
- Reduction in courier and fax expenses
- Speed locating information
- Optimizing time response and activities performance, and
- Precision to accomplish efficiency

Figure 6: Maritime and logistics specialist opinion about why they considered electronic communications and documents/terms standardization to have act as cost efficiency measures in their enterprises



Source: Own construction based on data from questionnaires applied to specialists (2012)

Recommendations

This study could be amplified including other international organizations in charge of standardizing terms and documents shared by electronic communications, as well as applying the questionnaire to a bigger sample located in different countries.

A suggestion to specialists is the review of the already existing standardized terminology in order to use it by electronic media and achieve a cost efficiency performance.

It is also recommended an study to identify the reasons why specialists do not know about the existence of a syntax language created by the United Nations and other organizations in order to facilitate commerce, and find out about what could be done to divulgate, to specialists, the common standardized terms and documents used in maritime and logistics electronic communications and its meaning, since its use points to cost efficiency measures.

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