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Digital e-CMR consignment note – added value for supply chain partners involved

Cyfrowy list przewozowy e-CMR – wartość dodana dla zaangażowanych partnerów w łańcuchu dostaw

Abstract. The introduction of innovative solutions and digitization in the supply chain are the key to the rapid development of enterprises. The constant development of technology is an important aspect of the supply chain readiness to support Industry 4.0 logistics. One of the breakthrough solutions for paper documentation in the transport process is the electronic e-CMR consignment note. The article reviews the literature in the field of digitization and digitization of documentation. A diagram is presented that explains the functioning of the e-CMR, taking into account the individual participants who use the document at a given time and place. A comparison of was made a traditional CMR letter with an electronic letter was made in terms of various criteria, and then the benefits of introducing e-CMR. Were indicated It has been shown that a digital consignment note can significantly add value to the supply chain partners involved. Based on the research carried out in a selected company providing transport services, the significant benefits of implementing the e-CMR system were also presented.

Key words: digitization, Industry 4.0, logistics, digital technologies in supply chain, electronic Waybill e-CMR, added value

Synopsis. Wprowadzenie innowacyjnych rozwiązań i cyfryzacja w łańcuchu dostaw są kluczem do szybkiego rozwoju przedsiębiorstw. Ciągły rozwój technologii jest ważnym aspektem gotowości łańcucha dostaw do wspierania logistyki Przemysłu 4.0. Jednym z przełomowych rozwiązań dokumentacji papierowej w procesie transportu jest elektroniczny list przewozowy e-CMR. W artykule dokonano przeglądu literatury z zakresu digitalizacji i digitalizacji dokumentacji. Przedstawiono schemat wyjaśniający funkcjonowanie e-CMR, z uwzględnieniem poszczególnych uczestników, którzy korzystają z dokumentu w danym czasie i miejscu. Dokonano porównania tradycyjnego listu CMR z listem elektronicznym pod kątem różnych kryteriów, a następnie korzyści z wprowadzenia e-CMR. Wykazano, że cyfrowy list przewozowy może znacznie zwiększyć wartość dodaną zaangażowanych partnerów w łańcuchu dostaw. Na podstawie badań przeprowadzonych w wybranej firmie świadczącej usługi transportowe przedstawiono również istotne korzyści płynące z wdrożenia systemu e-CMR.

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Słowa kluczowe: cyfryzacja, Przemysł 4.0, logistyka, technologie cyfrowe w łańcuchu dostaw, elektroniczny list przewozowy e-CMR, wartość dodana

JEL codes: L14, L90, L91, R40, Q55

Introduction

Logistics is becoming the foundation of many industries. Enterprises more and more often adapt their procedures in relation to current and upcoming logistics trends, using such solutions as: machine learning, automation and robotics, artificial intelligence [Wolak 2019]. Customers pay attention to the introduced changes and appreciate companies that ensure transparency and availability of activities such as: ongoing monitoring of the order status and the fastest execution of orders. Currently, basically every logistic process uses digital technologies of Industry 4.0 to improve organizational and manufacturing activities [Kubera 2019].

The explosive growth of technology of information technologies in the range of communication forces certain changes in people's behaviour and the adaptation of legal provisions to new techniques [Soomro et al. 2021].This situation also takes place in international road transport, in which a traditional, written form of communication between participants of transport processes has operated for several decades. This rule was changed by the Additional Protocol to the CMR Convention of 2008. It introduced the electronic consignment note into the legal order and the possibility of electronic communication between the parties to the contract. Thanks to this solution, the transport of goods becomes simpler and transparent. Security services also gain, which can more easily track trucks and transported loads [Groński 2020].

In the era of Industry 4.0, in order to meet market requirements, enterprises focus on more and more autonomous flow of resources, goods and information [Koliński and Stajniak 2019, Stanisławski and Szymonik 2021] They decide to implement modern systems, such as Supply Chain Management or Warehouse Management System, which enable, among other things, appropriate supply chain management. Taking into account the introduction of innovations, the area of administration cannot be ignored, which often contributes to delays and provide a bottleneck in the process of handling the delivery [Zaborowski and Stolarczyk 2019]. Therefore, the development of IT technologies has supported the work on the electronic consignment note e-CMR, which allows for real-time tracking of the shipment, ongoing access to transport data, as well as reducing costs related to traditional documentation [Dziechciarz 2018].

The digitization of logistics processes is progressing every year. The use of TMS, WMS or vehicle positioning software does not surprise anyone anymore, and despite the widespread need to improve the method of proving the performance of transport, Europe is still struggling with the implementation of solutions enabling the use of electronic (digital) waybills [Chwalczuk 2020].

In Europe, road freight transport prevails, in this connection the CMR is the most frequently used transport document [Koźlak 2019]. The application of the consignment note results from the Convention on the Contract for the International Carriage of Goods by Road CMR and serves as evidence of the contract of carriage between the sender and the recipient. The application of the International CMR Letter depends on the condition in which the place of sending and the place of delivery of the shipment must be in two different countries and

at least one of them is a signatory to the CMR Convention. [Tomicova et al. 2021]. The consignment note is also an important source of information, inter alia, on the individual parameters of the transport operation, which are important for the proper conduct of customs formalities [Momchmil 2020]. In addition, according to the Polish Chamber of Forwarding and Logistics, from 2026 electronic waybills will be mandatory in the EU. Meanwhile, for this solution to be used, it has to be adopted all over the world. The only thing that is missing for the implementation of the electronic consignment note is the agreement by the United Nations of the digital signature authentication standard [Esoszynska 2021].

The aim of the study is to present the e-CMR digital consignment note as an added value for the involved partners in the supply chain on the example of a selected company dealing with the implementation of transport and warehouse services, to describe the use and operation of the electronic e-CMR consignment note, including the presentation from conduct of interview results and observation research, cost and time comparison analysis of tasks and presentation of significant benefits resulting from the implementation of e-CMR.

The literature review aims to show the significance of the impact of the digital Bill of Lading on the performance of transport services for the parties to the contract of carriage. In addition, showing entrepreneurs-users of the digital Letter what profitable values for the supply chain can bring the implementation of the digital Letter. In addition, to show that digitization is progressing, and as a consequence, an obligation will be imposed on the parties to the contract of carriage to use the digital letter. The research carried out on the basis of the real data provided from the surveyed company is to show future users of e-CMR what "values" they may have to deal with when implementing a digital List in their companies.

In the article necessary were, literature studies such as: Dziechciarz M., "The use of an electronic consignment note (E-CMR)", carrier's guide – [Groński 2020], to familiarize with the progressive digitization and the electronic e-CMR letter. On the other hand, the empirical background for the research was, inter alia, items such as: Ponzoa Casado J.M., Gómez Funes A., García-Doncel J. [2021] "Digital Transformation: Advantages and opportunities of E-CMR in international cargo logistic", Świeboda J., Seluianova O., Shubenko D. [2021] "Electronic Bill of Lading e- CMR – report" and Tomicova J., Poliak M., Aleksandrovna Zhuraleva N. [2021]"Impact of using e-CMR on neutralization of consignment note" and Momchil A. [2020] "Possibilities for Application of E-CMR from a customs point of view". These items primarily helped indicate the selection of criteria to test their relevance and the impact of the digital e-CMR on the transport service process in the supply chain. In addition, it could be proved that the process of implementing the e-CMR brings with it immeasurable benefits for the parties of contract of carriage – users of consignment note. The other sources included in the bibliography supplemented the theoretical and empirical content of the article.

Research methodology

Based on the analysis of literature in the field of digitization and digitization of documentation, a review was made and a preliminary cost and time analysis was carried out resulting from the possibility of implementing an electronic e-CMR letter on the example of a selected company. The analysis included the benefits for both the audited entity and the customers using their transport services. Cost and time savings calculations were carried out, for which the e.CMR.pl calculator was used. However, in order to verify the more precise

results, calculations were made on the basis of data and documentation from the examined company.

Consignment note and CMR convention

The CMR Convention (fr. *convention relative au contrat de transport international de marchandises par route*) signed in Geneva in 1956 is the basis for the rules of international carriage of goods by road. Poland joined it in 1962. The Convention introduces and unifies [Madej et al. 2016]:

- Carrier's liability,
- mode of complaints
- shipping documentation,
- claims arising from carriage,
- contract conditions for the carriage of goods by road
- transport carried out successively by several carriers.

Additionally, it also regulates [Madej et al. 2016]:

- the ordering paymaster right to dispose of the goods,
- carrier's obligations for documentation or its misuse,
- obligations and liability of the ordering party (sender or recipient) towards the carrier,
- carrier's liability for cargo and exceptions exempting him from liability,
- complaints and claims arising from transport, the mode and their limitation
- conditions for accepting the goods from the sender and releasing the goods to the recipient,
- the possibility of the consignee refusing to accept the cargo,
- management carriers of unclaimed cargo.

CMR Convention does not apply [Foltyński 2015]:

- for the transport of dead bodies,
- for the transport of items of resettlement,
- for transport performed on the basis of international postal conventions.

The provisions of the Convention must be followed by carriers who perform the transport in question between two or more states, at least one of these states having ratified the convention.

The document confirming the conclusion of the contract on international transport of goods is the international consignment note (CMR), which contains, information such as [Rożej et al. 2019, Wysocka-Bar 2020]:

- name of the carrier,
- surname (name) and address of the sender,
- name and address of the recipient,
- place and date of issue,
- place and date of acceptance of the goods for transport and the intended place of their release,
- gross weight or other unit of goods,
- number of pieces, their features and numbers,

- the description in common use of the nature of the goods and the method of packing, and, for dangerous goods, their generally recognized description,
- costs related to transport,
- instructions necessary for completing customs and other formalities.

The CMR International Consignment Note is issued in three identical copies, and in accordance with the model developed by the International Road Transport Union – in four copies, each in a different colour [Stochaj et al. 2018]:

- original – blue – intended for the recipient
- quotation – red – intended for the carrier,
- spine – green – remaining at the sending station,
- black – duplicate – issued to the sender of the parcel.

Usually, the International consignment note is issued by the carrier at the place of loading, the shipper of the goods or the forwarder representing them. It is worth noting that the sender can be both the company that physically loads the means of transport, as well as an entity located elsewhere, but only ordering the loading. Under the CMR Convention, the bill of lading is a proof of the contract of carriage and the determination of the terms of such a contract. In its content, it contains not only a number of declarations of will, but also statements of knowledge placed both at the time of concluding the contract and during the transport. The basic functions of the Bill of Lading include [Wrzecionek 2017]:

- evidentiary function – confirms the conclusion of the contract of carriage, its conditions and acceptance of the cargo by the carrier.
- information function – it consists in informing about the transport in the letter, it gives the hint an indication of the content of the contract of carriage, thus allowing the carrier to control the correct performance of the contract.
- instructions function – is essential when something sudden occurs during the transport; it boils down to indicating the contact details of the person with whom to contact in the event of an obstacle.
- ID function – consists in the fact that the possession of the first copy of the letter entitles the sender or the recipient to pursue claims and direct the goods. If the first copy of the consignment note is in the possession of the consignor, the consignor is entitled to suspend shipment, change the place for delivery, or deliver it to an addressee other than that indicated on the consignment note. In the case of the sender, this right shall cease to apply when the second copy is delivered to the recipient.

The carrier is obliged to check the information contained in the bill of lading with the actual state, and in case of noticing any discrepancies, mark it in the bill of lading.

Summing up, the Bill of Lading is an important document of concluding the contract of carriage in international transport of goods, and also protects the interests of all parties involved in the transport. According to the literature, therefore, according to Neider and Marciniak-Neider, the CMR convention is a legal act that regulates the principles, rights and obligations of the parties to the contract of international road transport for profit [Neider and Marciniak-Neider 2011].

Based on information from the researched company, a diagram (Figure 1) of the circulation of a traditional CMR Letter has been shown.

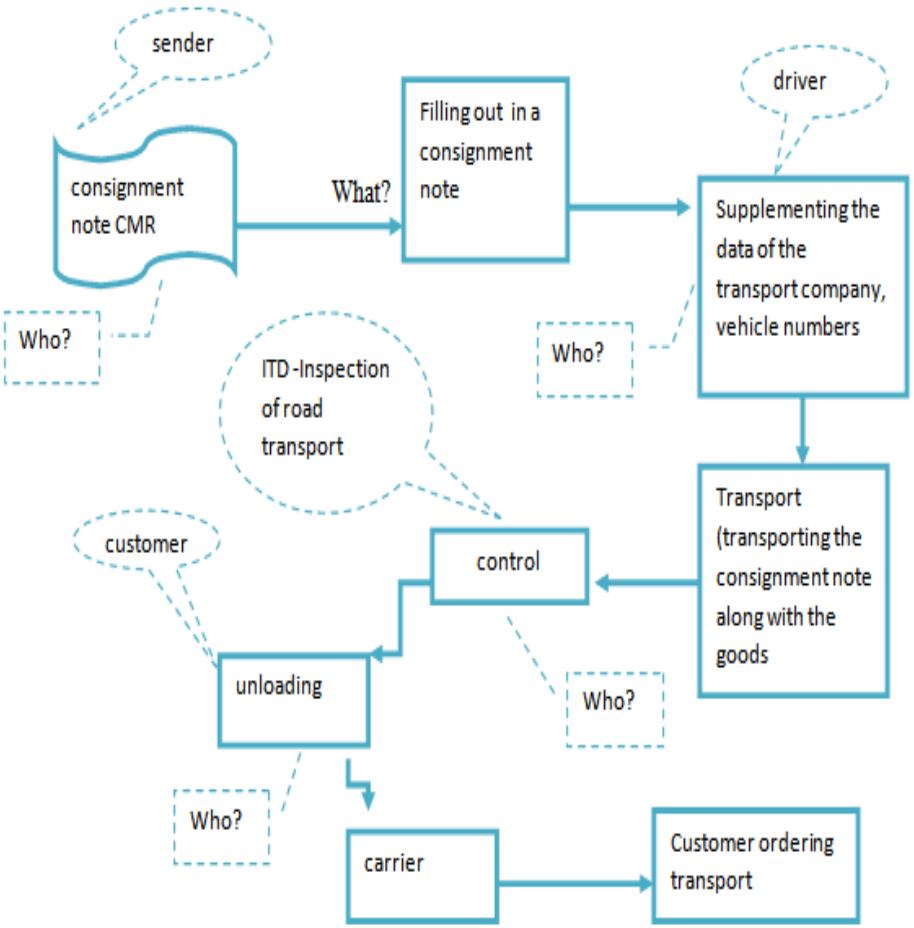

Figure 1. Diagram of the circulation of a traditional CMR Consignment Note on the example of a selected company
Rysunek 1. Schemat obiegu tradycyjnego listu przewozowego CMR na przykładzie wybranej firmy
Source: own study.

In Figure 1 you can see that the traditional CMR letter is in circulation and is successively supplemented by participants who have concluded a contract of carriage. The Bill of Lading is issued by the sender or carrier. The diagram shows the document flow sequence (4 copies), which in the case of the traditional Letter "circulates" successively between the users of the transport service who concluded the contract of carriage. Figure 1 shows which user of the stage of the transport process has successively a given copy of a traditional CMR Letter and is responsible for its filling. It can be noticed that this process works in the form of a chain, which can often affect the reaction or the mode of certain actions related to the

transport service, e.g. verification of a mistake, correction of errors, filing a complaint and others. In addition, this circulation may include other participants, not necessarily concluding a contract of carriage, such as the Road Transport Inspection, Police, Customs and Tax Office or the Border Guard. In addition, inspection services, to check what a given vehicle is transporting, must stop it and inspect it directly.

The use of the e-CMR electronic consignment note in the era of digitization

The E-CMR is a document issued using electronic communication by the carrier, sender or other party interested in the performance of the contract of carriage. It is authenticated by the parties to the contract of carriage using a reliable electronic signature ensuring its linkage with the electronic consignment note [transport-manager 2019]. The Digital Bill of Lading is primarily a convenience for all sides of the supply chain. As shown by the research conducted by the Polish Road Transport Institute, in which enterprises from a diverse sector of the TSL sector participated, showed that the respondents (logistics, forwarders, drivers) would like to work with the electronic consignment note e-CMR by vast majority of votes. The logisticians showed the greatest willingness among the respondents, because almost 80% of the respondents indicated that they support the digitization of the Bill of Lading. Both drivers and shippers, more than half the votes, are also in favour of implementing the e-CMR. In addition, the respondents answering the question: Do you think that when using e-CMR there will be fewer errors and shortening the time of filling in and handling the consignment note? Over 80% of them answered yes. Summarizing the above, all respondents agree that the introduction of the e-CMR will shorten its service time and also reduce the number of errors [Świeboda et al. 2021]. Considering this fact, it can be admitted that going digitization is a source of solutions to some problems, and also significantly improves processes.

According to the procedures, the e-CMR consignment note will be acknowledge when get reliable electronic signature. In addition, the electronic consignment note is to contain the same information as in the traditional CMR. The e-CMR procedure is to ensure the integrity and invariability of the data contained therein, except for the data that occurs during the data transfer between the parties to the contract.

The use of a digital e-CMR consignment note brings many benefits for the carrier, sender, recipient and other participants in the supply chain. The most obvious are, [Dziechciarz 2018, Blog transportowy 2020, Chwalczuk 2020, Lysionok 2021, Tomicova et al. 2021]:

- easy archiving of logistics documentation,
- saving paper and ink,
- saving space for storing documentation,
- improvement of invoicing – no need to wait for the originals to issue an invoice,
- time saving:
  - in finding specific details of documentation,
  - in sending documentation,
- constant control over the load,

- faster initiation of complaint procedures,
- elimination of errors when filling in the consignment note,
- convenience during a pandemic (no possibility of infection),
- maximum shortening of the waiting time for payment.

Summing up, it can be stated that the implementation of the e-CMR electronic consignment note may contribute to the improvement of many aspects of enterprises' operations, as well as raise enterprises to a higher level of functioning quality [Rut and Miłaszewicz 2013]. What's more, a number of presented benefits may also affect the company's development in the future and broaden the horizon for cooperation with other logistics partners. According to the authors: Kulikowska-Wielgus A., Wawryszczyk B., Ziemkowska D., Hennig K., Wolak M., Jakubowska N.,: "Digitization and technologies create a more effective value chain in all sectors of the economy. The transition from paper documents to electronic documents will enable cheaper, faster and more transparent processes in domestic and international transport" [Kulikowska-Woielgus et al. 2019].

Functioning of the e-CMR

The purpose of the Electronic Bill of Lading is to define the terms of a single transport contract. It is drawn up by the sender or carrier, it is a proof of receipt of the goods with all the details of the service provided. It contains, just like in a traditional CMR, information about the place and time of loading and unloading, as well as vehicle data. The e-CMR consignment note is issued via electronic communication, and the parties approve it using an electronic signature [Blog transportowy 2020]. Figure 2 presents a diagram showing the functioning of the e-CMR.

Figure 2 shows, similarly to Figure. 1, the circulation of the e-CMR document, but the main difference is that in the traditional consignment note, each stage is performed in the order in which the transport process takes place and which participants are present at a given stage. In the electronic List, however, this order may change, because digitization means that several participants can have the List simultaneously in real time. To show the advantage of the electronic e-CMR consignment note over the traditional CMR, Table 1 has been prepared in which the criteria that have been compared are listed.

It should be noted that already at the time of issuing the e-CMR consignment note by the sender, the parties interested in the transport service have access to the digital Letter immediately in real time, which allows them to react directly to various situations and events, including for the introduction of corrections, monitoring the status of the shipment. In addition, inspection services do not have to stop the vehicle for inspection to find out what it is carrying. Just enter the registration number of the vehicle into the system and you immediately know what it is carrying.

From the compiled content in Table 1, it can be clearly stated that the implementation of e-CMR in enterprises brings immeasurable benefits. By analysing the above, it can be concluded that the Electronic consignment note in terms of each of the criteria given in Table 1 is better than the traditional.

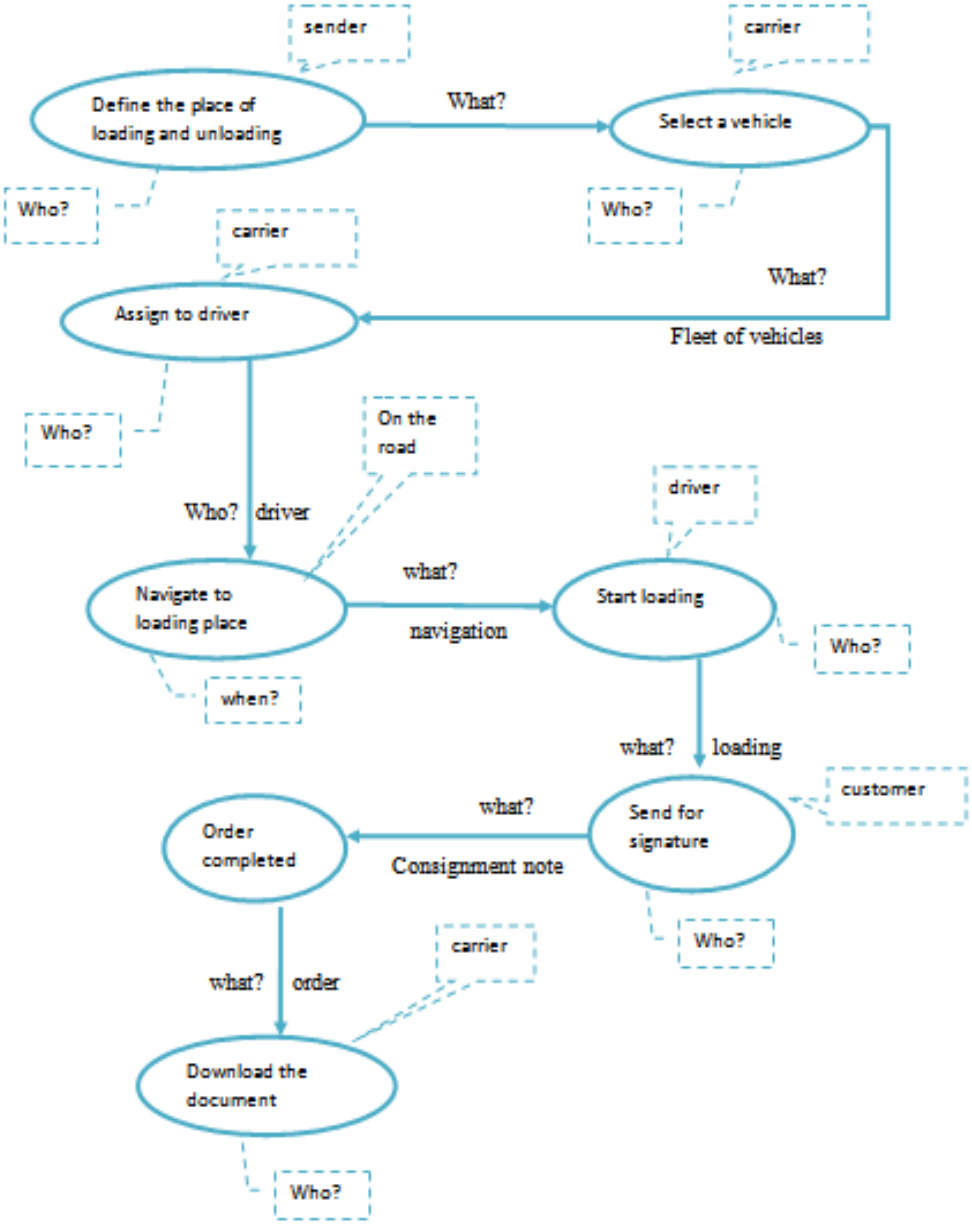

Figure 2. Diagram of the functioning of the e-CMR
Rysunek 2. Schemat funkcjonowania e-CMR
Source: own study.

Table 1. Comparison of the Traditional CMR with the electronic e-CMR
Tabela 1. Porównanie tradycyjnego CMR z elektronicznym e-CMR

Criterion	CMR	e-CMR
Availability of information	The data available to each interested party is that on their copy of the paper consignment note and is therefore only available to the person who owns the paper.	The data are stored on a digital medium, thanks to which it can be made available to all interested persons on various types of devices with Internet access. It also allows simultaneous access for several devices.
Legal certainty	It is recognized by several countries and is widely used across the EU, providing legal certainty to the parties.	It is recognized in some European countries, but there are still countries such as Germany and Italy that do not recognize it. However, the EU regulation of July 15, 2020 sets August 2021 as the deadline for its acceptance in all Member States.
Information consistency	Several copies of the information are made up, one for each stakeholder. Since carbon paper is used, the information on all copies is the same. Even if there are several copies, additional information can be added to some of them.	There is one data repository, which ensures information consistency.
Protection against errors	The recorded information is handwritten by the carrier at the beginning of the transport phase. Some of this information may be obtained by various means, e.g. by telephone, while receiving the load. There are several possibilities for errors to occur.	Information entered by the data controller is not passed on to others. It does not eliminate the possibility of error, but it reduces the risk; the data handler is the one who records it, thus avoiding communication errors.
Squander reduction	Some copies of the paper bill of lading must physically travel between the different actors in the process. Issuing CMR documents at the end of the transport stage to administrative staff in order to issue an invoice causes an ineffective delay. Administrative staff will also need to enter all information into their corporate billing systems.	The information is available in digital format from any terminal with internet access, with the existence of one master copy. In this way, all 'physical travel' is eliminated, and the concept is time-saving. By using the e-CMR platform API, data can be automatically sent to companies' billing systems, reducing time wasted on manual data entry and avoiding human error.
Data integrity	Several copies are generated for each interested party so that if any modification were to take place on one of them, it would be detectable in comparison with the other copies. However, this situation requires different copies to be made available again because there is no reliable trust pattern for all parties. Printed copies may be damaged or lost.	The data are stored and guarded by a third party outside the operational process, which is responsible for its consistency. Data storage on a digital medium allows the use of other technologies, such as blockchain, which fully guarantee the immutability of data. Digital storage also helps to avoid physical deterioration.

Source: own elaboration based on: [Ponzoa Casado et al. 2021].

Electronic consignment note e-CMR in the researched company

The company was founded 30 years ago and operates in the transport and broadly understood logistics industry. The 30 years of experience, customer requirements, and constantly increasing costs begotten resulted in the development and implementation of the latest IT solutions available on the market.

Digitization in the audited entity includes modern TMS systems, cost management and monitoring systems, systems enabling connection with potential and existing customers, dedicated customer portals enabling real-time transport monitoring.

The company's fleet consists of over 100 modern trucks and nearly 200 trailers. The trucks, in addition to the basic telematics system, are equipped with on-board computers for ongoing communication between drivers, planners and customers.

The vehicle that carries out the current customer order can be sent back to another destination in real time, without being contacted by the standard communication path, such as mobile phones.

If the customer changes the status of the order or the order during its implementation, he can report this fact to a special e-mail address of the company. The e-mail is verified in terms of reliability and the ability of the fleet, then goes to the TMS system, and then is sent to the vehicle's on-board computer.

Modern systems and technological solutions are still not able to eliminate the trivial problem of the circulation of CMR transport documents, on the basis of which the company is settled by the customer. That is why the widely progressive digitization gives the possibility of introducing, among others, in the near future the electronic e-CMR consignment note.

Analysis of the comparison of costs and time related to the use of a traditional CMR consignment note in the researched company

In order to verify the benefits of having the e-CMR electronic consignment note, a calculation was carried out (Table 2) based on data from the surveyed company.

Table 2 Comparison of e-CMR with traditional CMR according to the e-CMR.pl calculator
Tabela 2 Porównanie e-CMR z tradycyjnym CMR według kalkulatora e-CMR.pl

Criterion	**Traditional CMR**	**Digital e-CMR**
Printing	4 000 × 1 PLN = 4 000 PLN	4 000 × 0PLN = 0 PLN
Shipment	4 000 × 8.70 = 34 800 PLN	0 PLN
Shipping time	4 000 × 7 day = 28000 days	4 000 × 1 seconds = 4 000 seconds
Total	38 800 PLN 28 000 days	0 PLN

Source: own study.

According to the e-cmr.pl calculator, the surveyed company that carries out an average of 200 transport orders a day can save PLN 38,800 per month and 28,000 days of additional time.

However, in order to show the real benefits for both the carrier and the potential customer using transport services that may result from having an e-CMR, the results are presented in Table 3.

Table 3 Comparison according to the criteria of the examined entity CMR with e-CMR
Tabela 3 Porównanie według kryteriów badanego podmiotu CMR z e-CMR

Criterion	**Traditional CMR**	**Digital e-CMR**
Number of orders	200/1day 4 000 orders/month 48 000/year	
Costs 1 piece	0,60 PLN	0 PLN
Time needed to fill 1 piece	2 minutes	1 seconds
Shipping time1piece	4 working days	0 working days
Filing time per year	48 000 × 2 minutes = 96 000 minutes = 1 600hours	48 000 × 1 seconds = 48 000 seconds = 800 minutes = 13,3hours
Cost of purchasing documents per year	48 000 × 0,60PLN= 28 800PLN	_____
Document workflow until the transaction is finalized	around 20 days	currently
Complaint procedure	even to 20 days	currently
Sheets of paper in [kg]	1 page = 4g 1 order = 4page 4 page × 4g = 16g 48 000 × 16g =76,8kg	0 kg of paper
Receipt of payment for the service	from the moment of receiving CMR + the payment deadline, the document circulation time is extended, i.e. a maximum of 20 days + 30 days = 50 days	from the moment of receiving the e-CMR – only the payment term is taken into account (maximum 30 days)

Source: own study based on data from the enterprise.

Table 3 shows the costs and time of using a traditional CMR, as well as the possible benefits that may be the result of implementing e-CMR. Analysing the above, it can be concluded that the mere filling in of documents, which takes 1600 hours per year, or 200 full-time working days of an employee, shows that one employee can only be hired to fill out the Bill of Lading. Another very important aspect is financial liquidity, which can be made possible by the electronic Waybill by issuing an invoice immediately after completing the transport, and this allows you to save time up to 20 working days on one invoice. It is very important, taking into account the current costs related to the daily operation of vehicles, which must be borne by the carrier, including fuel costs, etc. Considering the circumstances in which the current community functions – where we live in the time of the Sars-Cov-2 pandemic, it is worth emphasizing that the elimination of direct contact with a paper document protects the parties to the contract of carriage against infection. An additional improvement is the complaint procedure, which in the case of a traditional CMR consignment note often lasts 20 days. It is also worth noting the ecological aspect, where by implementing e-CMR we do not generate about 77 kg of paper per year with such a number of orders. The

implementation of the e-CMR system will be reflected in real time when the complaint is initiated. It should also be noted that this comparison did not take into account qualitative benefits that cannot be quantified, such as: comfort and convenience of people using e-CMR, access to current information, or elimination of the risk of infection during a pandemic.

Summary and conclusions

The aim of the study is to present the e-CMR digital consignment note as an added value for the improvement in the supply chain on the example of a selected company dealing with the implementation of transport and warehouse services, to describe the use and operation of the electronic e-CMR consignment note, including the presentation from conduct of interview results and observation research, cost and time comparison analysis of tasks and presentation of significant benefits resulting from the implementation of e-CMR.

The CMR consignment note is an indispensable element of the transport service. Its functions complete the service and make the individual stages of the transport process performed according to the recipient's and sender's criteria. Due to technological and IT progress, the documentation, including the CMR consignment note, has been digitized. The consequence of this will be the complete elimination of the CMR consignment note, turning it into e-CMR. The only thing that is missing for the implementation of the electronic consignment note is the agreement by the United Nations of the digital signature authentication standard.

The e-CMR Electronic consignment note is one of the effects of the current document digitization. The main goal of introducing the e-CMR is primarily to reduce costs. Potential users of the electronic Bill of Lading can also count on other benefits of using this solution, including: efficient exchange of documentation or real-time exchange of notification. As it results from the calculations carried out on the basis of the examined entity, it can be clearly indicated that the everyday implementation of the "tool", which is e-CMR, will bring immeasurable benefits. Elaborated calculation of costs and time is showing, how the convenience of an electronic consignment note.

The research assumed the average number of orders related to the implementation of transport services by the audited entity. The costs associated with the use of the traditional Letter and other determinants were also estimated by the audited entity. It is not possible to provide an exact cost calculation and determinants related to the use of traditional CMR, because these aspects are influenced by the number of orders, seasonality of services, employee leaves, holiday periods, number of working days per month, volatility of printing prices, postage stamps, discounts taken into account, or the supplier of consignment note CMR sheets. The research results are intended to present a visual overview on the basis of the tested entity, what benefits can they affect the use of a digital consignment note, realizing that the traditional letter works according to a specific pattern, and additional the letter receive successively one of the parties to the contract of carriage as the transport process takes place, furthermore, it was presented what the company can expect after the implementation of the e-CMR. The direction of further research may be an in-depth analysis of monthly costs and a review of the documentation of the audited entity in order to provide accurate data related to the use of traditional CMR. In undertaking further research, it should also be

checked whether there is any risk resulting from the implementation of the e-CMR, e.g. related to a long-term suspension of the system, or another failure or a possible "intrusion" of a hacker.

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