



IMPACT AND BENEFITS OF IMPLEMENTING INFORMATION SYSTEMS IN THE TRANSPORT INDUSTRY

Professional paper
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ABSTRACT: *The global market and new geopolitical conditions, as well as continuous changes in the environment and business methods of companies, require a better understanding of modern business, but also efficient integration and exploitation of data in company business processes, which, on the other hand, imposes the need for permanent generation, development and adaptation of the dynamic architecture of adequate, compatible and efficient management information systems - IS in accordance with the needs of successful business. It is obvious that modern business involves generating innovative, adequate and adaptable IS with large databases, which leads to a situation where certain specific business segments, such as the transport industry (with logistics, supply and warehousing), must have or build their own original and indigenous IS, which should be developed as part of a single automated IS business process with an integrated database. Therefore, the policy of optimal and sustainable business today must insist on reengineering and reducing business costs, with special emphasis on the transport phase, so that logistics (transport, supply, storage) and logistics IS can take on a key role in optimizing business, in terms of savings and business efficiency and achieving competitive advantages. Textile and clothing industry companies carry out transport and logistics in two ways - internally - independently, or according to the principle of third-party logistics - 3PL, with the choice of organizational method mainly depending on the size of the company. The paper presents and analyzes the methods and quality, as well as the effectiveness and efficiency of operations of transport and logistics companies, from the aspect of the necessary segments of the business process - departments of transport and logistics companies (ELD, Dispatch, After hous, Brokers, Dispatch, Maintenance, etc.), but also from the aspect of the implementation of adequate IS (Fleet management, Trello, RingCentral, Keep Truckin, BigRoad, etc.), elements of innovative infrastructure equipment (tachograph, GPS, economizer, etc.), traffic infrastructure data (traffic lights, intersections, toll ramps, speed limits, etc.), as well as terrain configuration data, weather conditions, predictive analytics, etc.*



Keywords: transport, logistics, IS, optimization.

UTICAJ I BENEFITI IMPLEMENTACIJE INFORMACIONIH SISTEMA U TRANSPORTNOJ INDUSTRIJI

APSTRAKT: Globalno tržište i novi geopolitički uslovi, kao i kontinuirane promene okruženja i načina poslovanja preduzeća nalažu bolje razumevanje modernog poslovanja, ali i efikasnu integraciju i eksploataciju podataka u poslovnim procesima preduzeća, što sa druge strane nameće potrebu permanentnog generisanja, razvoja i adaptacije dinamičke arhitekture adekvatnih, kompatibilnih i efikasnih upravljačkih informacionih sistema - is u skladu sa potrebama uspešnog poslovanja. Očigledno je da moderno poslovanje podrazumeva generisanje inovativnih, adekvatnih i adaptibilnih is sa velikim bazama podataka, što dovodi do situacije da pojedini specifični poslovni segmenti, kao što je npr. Transportna industrija (sa logistikom, snabdevanjem i skladištenjem), moraju imati ili graditi svoje originalne i autohtone is, koje treba razvijati kao deo jedinstvenog automatizovanog is poslovnog procesa sa integrisanom bazom podataka. Zato politika optimalnog i održivog poslovanja danas, mora insistirati na reinženjeringu i redukovanju troškova poslovanja, sa posebnim osvrtom na fazu transporta, kako bi logistika (transporta, snabdevanja, skladištenja) i logistički is preuzeli ključnu ulogu u optimizaciji poslovanja, u smislu uštede i efikasnosti poslovanja i ostvarivanju konkurentskih prednosti. Preduzeća tekstilne i odevne industrije, transport i logistiku vrše na dva načina – interno -samostalno, ili po principu logistike treće strane - 3PL, što definišu u svojim strategijama poslovanja, pri čemu izbor načina organizacije uglavnom zavisi od veličine preduzeća. U radu su prikazane i analizirane metode i kvalitet, ali i efektivnost i efikasnost poslovanja preduzeća za transport i logistiku, sa aspekta neophodnih segmenata poslovnog procesa - departmana preduzeća za transport i logistiku (eld, dispatch, after hous, brokers, dispatch, maintenance, itd.), ali i aspekta implementacije adekvatnih informacionih sistema (fleet management, trello, ringcentral, keep truckin, bigroad, itd.), elemenata inovativne infrastrukturne opreme (tahograf, gps, ekonomonajzer, itd.), podataka saobraćajne infrastrukture (semafori, raskrsnice, naplatne rampe, ograničenja brzine, itd.), kao i podataka konfiguracije terena, vremenskih uslova, prediktivne analitike, itd..

Ključne reči: transport, logistika, IS, optimizacija.

1. INTRODUCTION

Due to the impact of globalization and in conditions of dynamic market competition, new ways of doing business efficiently are necessary today, and thus some elements of business activities, such as transportation, logistics, sales, marketing, public relations, etc., increasingly represent some of the most important elements of successful, efficient and sustainable business. One of the most important links in the process of supply chains for all, including companies in the textile and clothing industry, is the transport of materials



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and goods, which, with its adequate technological or organizational solutions, enables the reduction of costs, thereby increasing the productivity and efficiency of business [1, 2]. Transportation today represents one of the most important functions of efficient business, partly due to the high costs it entails, and partly because it is the first (transport of raw materials for production) and last (transport of the finished product to the consumer) element of business processes. On the other hand, new ways of doing business impose the comprehensive inclusion and integration of new technologies and adequate, innovative information systems with a high degree of connectivity and automation, which should enable sustainable competitiveness in all business activities, because the traditional ICT sector is often no longer able to follow the development of new technologies and organizational and business changes [3]. Therefore, effective business optimization measures are necessary, through the permanent generation, adaptation and development of high-quality and efficient business information systems and innovative ways of organizing supply, logistics, transport and storage, which are otherwise based on digitalization and the exploitation of invariant, adaptable and modular information systems, all with the aim of realizing the movement of goods, materials and people in an efficient and optimal manner [4, 5]. With globalization, internationalization of supply chains and global competition, as well as shortening the product life cycle and stricter quality requirements, logistics and transport processes have become significantly more complex and dynamic today, and thanks to advanced technologies, modern transport logistics is rapidly changing and achieving more efficient, faster and more sustainable distribution of goods and resources. Today, transport represents one of the most important logistics functions, and due to the complexity of the transport logistics process, external transport operations, as well as warehousing, packaging, consulting, etc., are increasingly implemented according to the principle of third-party logistics - 3PL, i.e. they are assigned to specialized companies for the transport of goods and materials - logistics transport providers. The introduction of modern technologies, such as automated warehouses, real-time supply and tracking systems, or transport management systems - TMS, further increases efficiency and business optimization opportunities [6].

2. TRANSPORT INFORMATION SYSTEMS

The paper presents information systems that should be part of a transport and logistics company (Trello, RingCentral, Fleet management, Keep Truckin, BigRoad, etc.), viewed first from the aspect of the functions and importance of the information systems themselves in the business of transport and logistics companies, then from the aspect of necessary and possible segments of the business process - departments of a transport and logistics company (Maintenance, ELD, Brokers, Dispatch, After hous, etc.), as well as from the aspect of innovative infrastructure equipment (tachograph, GPS, economizer, etc.), traffic infrastructure data (traffic lights, intersections, toll plazas, speed limits, etc.) and terrain configuration data, weather conditions, predictive analytics, etc.. It is obvious that every proposal for the implementation of such information systems depends on many influencing factors - the size of the company, the quantitative and qualitative structure of employees,

the quantitative and qualitative structure of vehicles, the technical and technological equipment of the company, the business strategy, the type, scope and method of work and business, the compatibility and adaptability of information systems, the possibility of integrating different sectors and achieving greater coordination and speed of implementation of business activities, etc.. It should be noted that the number and types of departments, as well as the number and types of information systems, may vary in practice and are part of the business strategy of the company, because each specific company must shape its transport and logistics systems and its departments, according to its requirements and to the extent that they are needed to realize its own goals, as opposed to the divergent goals of other participants [3].

- The **MAINTENANCE** department does not only involve vehicle maintenance, but as technical support it represents one of the key connections between drivers and truck owners. Vehicle - truck maintenance (tire condition, towing, complex mechanical breakdowns) does not end with regular services, but requires a team of experts who continuously monitor the technical condition of each vehicle at all times, providing quick and efficient repairs, in order to ensure safety and assistance on the road. Such an approach requires a quality connection with the fleet and drivers, but also a network of workshops throughout the business area – the country where the business is conducted, in order to be able to intervene quickly and efficiently and provide adequate assistance at preferential prices.

The most famous programs – application software used in vehicle maintenance tasks are:

- **Trello** – a visual platform for managing tasks and projects in the field of maintenance, with elements such as: Table - PM Board – a place for overall task organization, progress tracking and distribution of tasks and responsibilities, List – with separate offers - columns (e.g. PM-DOT active, to be worked on, to do, in progress, done, etc.) and Card – individual tasks and ideas (e.g. create a logo, write text, test the application, etc.). Task descriptions can be added to the above lists, deadlines can be set, attachments (files, images, links, etc.), comments can be written, checklists can be created, etc.

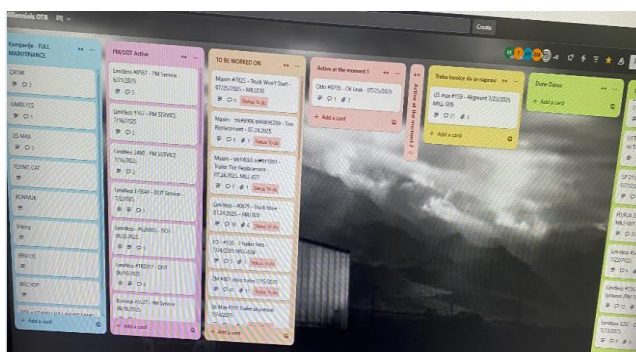


Figure 1: Trello, a visual task and project management platform

- **RingCentral** is a cloud-based communications platform that offers a comprehensive set of tools for phone calls, messaging, video conferencing, etc., and is used in business environments to help teams, drivers, and businesses communicate, manage tasks, and connect with customers. RingCentral does not have high technology as its key tools, but VoIP telephony (telephony over the Internet), video calls and conferences (so that teams can work together, even though they are not physically in the same place), as well as messaging - chat (allows fast internal communication between team members), shows the importance of digitalization and the implementation and exploitation of Internet technologies.
- As a key role in transport and logistics is played by brokers, whose main job is to connect carriers (truckers, freight forwarders) with companies that want to transport goods, it can be said that the **BROKERS** department includes the work of connecting clients and carriers, as well as acting as an intermediary between companies that send goods and carriers (truck, ship, plane), negotiating transport conditions and prices, thus the importance of the existence of this department is imposed. The most famous application software - programs that brokers can use to make transport companies operate more efficiently include:
 - **Highway** application – which is a specific platform that offers vehicle tracking capabilities, route optimization, as well as logistics services for carriers - truck drivers and transport companies, focuses on optimizing daily operations in the transport industry, helping to reduce costs and increase efficiency. It can be said that the Highway application connects carriers and drivers with companies, that is, it serves as an intermediary between carriers and companies that have cargo to transport, then optimizes the route, and also tracks vehicles and deliveries, while through the Fleet management function, it automates and manages the fleet, as it enables monitoring of driver working hours, vehicle condition, fuel consumption and other parameters that are key to optimizing operations.

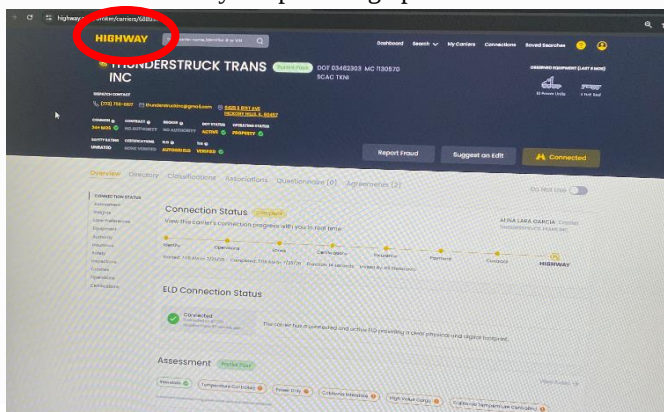


Figure 2: Highway app home page



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○ **Carrier411** - the online platform is another application of the Brokers department, which is used to check the credibility and rating of carriers, but also to check certificates, licenses, etc. In fact, the purpose of the Carrier411 program is to connect companies that send goods - shippers and brokers with carriers (drivers and transport companies), so that all participants can participate and make the best decisions for their own business. As the main task - the Carrier411 function, we can highlight checking the credibility and history of carriers (including information on accident history, delivery delays, complaints or other negative aspects of the business, which helps businesses make the best decisions about choosing a carrier), and then tracking and rating, as well as displaying the status of the carrier (quickly identify reliable carriers, as well as data on the carrier's insurance coverage, licenses and registrations). In addition to the above, some of the tasks of this application include searching for carriers according to various criteria (such as vehicle type, geographic location, type of services, or specific transportation needs), as well as creating reports and analyses, tracking complaints and problems, as well as assisting companies in verifying carrier certificates and insurance.

- In the transport industry, safety is of course the priority, as the risks on the road can be significant, so it is important to have a professional team that deals exclusively with safety issues, i.e. a safety team that ensures drivers, transport and logistics companies act in accordance with legislation, safety standards and best practices in the transport industry. In the transport industry, that specialized team responsible for safety at all levels of transport operations and with a key role in reducing risks, preventing accidents and guaranteeing the legality and safety of the transport of goods and people, is the **SAFETY** department.

Therefore, monitoring safety standards and regulations (including local, national and international laws, as well as industry guidelines - e.g. FMCSA in the US, EU regulations, etc., as well as vehicle control by ensuring regular inspection and compliance with technical and safety standards), managing safety training (with safety procedures, traffic rules, use of safety devices and behavior in emergency situations, as well as accident prevention training), and accident prevention with the inclusion of traffic accident analysis and monitoring of driver behavior (speed, phone use, braking speeds, etc.), are key responsibilities of the Safety Team. Modern and innovative tools and technologies used by the Safety Team are most often vehicle tracking systems (GPS, telemetry), in-vehicle surveillance cameras (for monitoring driver behavior and road conditions), safety sensors (braking, speed, temperature, fuel levels), software for analyzing data on accidents, traffic conditions, and driver behavior, as well as training applications, and one such program used by the Safety Department is ProTransport:

- **ProTransport** as a software program represents a specialized platform for managing transport and logistics operations, designed to help carriers, brokers, logistics companies and other actors in the transport industry to optimize their operations, increase efficiency and reduce costs. The application contains a drop-

down menu with various tool groups (Dispatch, Safety, Accounting, etc.) and their tool offerings (Truck, Maintenance, etc.), related to the transportation industry

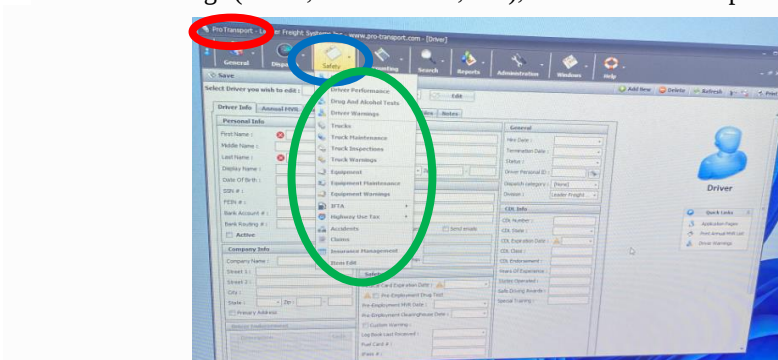


Figure 3: ProTransport software program

Order and transport management, viewed through the receipt and tracking of orders (including cargo type, date and time of transport, destination and other relevant data), as well as through transport allocation and planning and automatic assignment of transport in the safest and most efficient manner, can be highlighted as one of the main tasks of the ProTransport software.

- **ELECTRONIC LOGGIN DEVICE – ELD** is an application used to automatically track driver hours in the transportation industry, and is the name of one of the departments of transportation and logistics companies. ELD devices and applications replace traditional manual logs, allowing drivers and carriers to accurately track the number of hours they spend behind the wheel in order to comply with driver time legislation. In addition to tracking working hours as the main function of an ELD application, this application also deals with compliance with laws (e.g. FMCSA in the US) and connecting to the vehicle, usually via OBD - On-Board Diagnostics devices or other technological interfaces, to automatically track data on speed, distance traveled and vehicle status, managing reports that can be easily shared with superiors, inspectors or regulatory bodies, and also allows for tracking rest periods. The most well-known ELD applications used today include Keep Truckin, Samsara, BigRoad, ELD Mandate, Geotab, and others.
- As dispatchers play one of the key roles in transport and logistics and many other industries, where it is necessary to coordinate workflows and manage resources in the field, the **DISPATCH** department is also necessary and has one of the most important roles in the business process of transport and logistics companies. One of the functions of the dispatcher is to communicate with drivers, providing information about new assignments, as well as route updates or necessary changes, and may also be responsible for resolving problems during the ride, such as vehicle breakdowns or accidents. It should be noted that in addition to the by default technical literacy, dispatchers must also have special abilities, such as a sense of organization and planning, communication skills, as well as the so-called problem-



solving skills, in order to organize the work of the Dispatch department in a quality and efficient manner. Of course, in this work, dispatchers very often use various application software and other technical and technological capabilities, such as Fleet management software, GPS tracking, ELD applications, etc., to ensure that the work of the dispatcher is timely and efficient.

- **AFTER HOURS TRACK AND TRACE** department is dedicated to providing continuous support to drivers and customers - 24 hours a day, seven days a week, and represents the first line of support. In transportation, After hours brings many advantages in terms of flexibility, efficiency and service improvement, and although it carries certain challenges, with proper management it can allow carriers to provide better customer service, reduce delivery times and respond to urgent requests, which for businesses and industries where time is of the essence, shows that After hours operations can be crucial for competitiveness and profitability. It is interesting that, apart from the usual innovative internet communication and tracking systems (sensors, GPS, etc.), this department does not have its own special IS, which indicates the importance of digitalization and the internet for efficient business.
- In times of quantitative and qualitative shortages of human resources - labor, the **RECRUITMENT** department gives a special stamp to the quality and prospects of transport and logistics companies. The Recruitment application can be treated as a specific labor market (truck drivers), which is also the specificity of the Recruitment department, which deals with the recruitment of truck drivers, but also with connecting companies that need drivers and the drivers themselves, which involves daily contact with drivers and providing information about job opportunities and working conditions, but also contact with clients looking for drivers, in order to make the recruitment process, as well as the percentage of success in connecting drivers and companies, as efficient as possible.

In addition to the above, there are other business process departments with their own information systems, which could also, or should, be an integral part of the integral information systems of a transport and logistics company, which of course depends on many business parameters, such as: the size of the company, the type of production or service, the technological and technical equipment of the company, the quantitative and qualitative structure of human resources - employees, the wishes and possibilities of initial investments, the technical and road infrastructure of the area in which it operates, etc. For example, it is obvious that the **SALES**, **MARKETING** or **ACCOUNTING** departments are universal departments of many companies and business processes, so their implementation is subject to special consideration and review according to many parameters [6].

3. ANALYSIS AND DISCUSSION

Through research and continuous analysis of the work and development of transport companies, with a special focus on the implementation of information systems and business automation, the problem of segmentation - partial digitalization and automation, or partial



implementation of information systems, has been identified, which reduces business efficiency and sustainable competitiveness in the open global market [4, 7].

Since the paper deals with the impact and benefits of implementing transport information systems, as well as the analysis of innovative technical and technological solutions for transport and road infrastructure and the possibilities and needs of generating departments of transport companies, i.e. the efficiency of transport company operations depending on qualitative changes in terms of implementing innovative technologies and adequate information systems, but also by generating specific departments of the business process, some regularities can be observed and listed that need to be examined in more detail (by experiment, case study, etc.) and set as rules that should be followed when generating strategies for companies in the transport industry:

- For the efficient and successful operation of transport companies, adequate (according to certain parameters - type of business, number of employees, etc.), indigenous (personal for each company), and compatible (mutually coordinated and supported) information systems are necessary.
- The positive effects of implementing adequate information systems and innovative infrastructure equipment - Personal Digital Assistant devices - can be observed in all phases of the business process, and therefore they are recommended as a mandatory component of adequate departments and business processes of transport companies.
- The generation and implementation of information systems depend on many influencing factors: the size of the company, the quantitative and qualitative structure of employees, the quantitative and qualitative structure of vehicles, the technical and technological equipment of the company, the business strategy, the type, scope and method of work and business, the compatibility and adaptability of information systems, the possibility of integrating different sectors and achieving greater coordination and speed of implementation of business activities, etc.
- Information systems should be generated in a way that directly or indirectly affects savings in terms of time, material and human resources, be mutually compatible and easily and quickly integrated into business processes in accordance with the type of work and the relevant departments.
- The modern market requires specialized and modern transport companies to constantly monitor trends, as well as improve and upgrade their methods of work and business, which largely involve elements of digitalization, information systems and the Internet, and innovative technologies, i.e. elements that enable an easier, more precise and more cost-effective process of organizing and planning transport logistics [5].
- Since the overlap of a large number of information system functions is obvious, it is necessary to analyze the tasks of the department in more detail, and then align the information systems with the needs. In fact, before developing an application, it is necessary to collect a large amount of data on the needs and requirements of the department and the business process, but deeper coordination and cooperation with direct executors in the department (engineers, managers, etc.) is also necessary.



- For successful and efficient business today, it is necessary to generate a uniform and integrated database, on whose basis – data, the work of the company itself would be based, as well as the work of all integrated information systems of a business process [7].
- Partial information systems partially improve the business operations of a company, but efficient operations and successful optimization of the business process are possible only by generating a total - integrated business process information system, composed of individual and compatible information systems, but with a common - unified database [6, 8].
- The company's work and business strategy must be aligned with innovative solutions, implemented information systems, and generated specific departments, where it should be emphasized that the number and types of departments, as well as the number and types of information systems, may vary in practice and are part of the company's business strategy, because each specific company must design its transport information systems and its departments, according to its requirements and to the extent that they are needed to realize its own goals, as opposed to the divergent goals of other participants [6].
- The Maintenance Department, with its timely and adequate actions, modern tools and adequate information systems (Trello, Ring Central, etc.), precise diagnostics, as well as a network of workshops and parts stores with which it has cooperation agreements, can guarantee minimal downtime, and thus reduce maintenance costs by 20% to 50%, and therefore should be an indispensable component of the business process.
- It should be noted that in addition to the Maintenance department, the Safety department with the ProTransport platform and safety sensors (braking, speed, temperature, fuel level), as well as Recruitment, which deals with the selection of drivers, whose skills and training can significantly influence fuel consumption (driving style, acceleration, braking, etc.), are closely linked in terms of savings for the material - fuel consumption parameter [9].
- The Brokers department also deserves its place in the business process, because by exploiting adequate, specific and original application software (Highway, Carrier411, etc.), they can optimize costs, increase efficiency, reduce administrative burden, or access a larger network of carriers and number of clients faster and more efficiently.
- Monitoring safety standards and regulations (local, national and international laws, as well as industry guidelines - e.g. FMCSA in the USA, EU regulations, etc.), as well as vehicle control by ensuring regular inspections and meeting technical and safety standards, are the foundation of the Safety Department, which as such is an indispensable part of efficient operations.
- Efficient order and transport management, seen through the receipt and tracking of orders and including the type of cargo, date and time of transport, destination and other relevant data, as well as through transport allocation and planning and automatic assignment of transport in the safest and most efficient manner, are the



tasks of the ProTransport software, which this software (of the Safety Department) recommends as mandatory.

- A modern monitoring system and automatic registration, management and control of driver working hours spent on the road, on standby or during rest periods, actively working on fatigue prevention and increasing safety, with a tendency to comply with HOS regulations and legislation, are some of the functions of the Electronic Loggin Device - ELD department and application, which directly recommend this information system and department as mandatory in transport companies.
- The Dispatch department is responsible for planning daily tasks, organizing and monitoring vehicle movements (including destinations, routes and delivery or transportation times), creating schedules and allocating resources, as well as communicating with drivers and optimizing routes through various technologies (Fleet management, GPS, radio, mobile applications, etc.), which ensures timely execution of tasks and time savings on the one hand and seriously recommends this department to the group of mandatory departments, on the other hand, with a free choice of the type and number of applications.
- One of the very current specific departments today, which is increasingly sought after and recommended in all types of businesses and all industries, is the After hous department, or in the transport industry known as After hours track and trace, otherwise dedicated to providing continuous support to drivers and clients, where speed and delivery time are crucial (emergencies, international transport, perishable goods, etc.), co as such, it clearly has a direct impact on saving time and efficient business (with an indirect connection to the Brokers and Sale departments, but also to most other departments).

Ultimately, it can be said that digitalization, transport information systems and innovative infrastructure equipment enable more precise tracking of goods and materials in real time, as well as inventory optimization and reduction of operating costs, thus increasing the competitiveness of companies in the global market. All of this, as well as warehouse automation, the increasing presence and exploitation of artificial intelligence elements in route planning, predictive analytics and IoT technologies [10], represent new key elements that will transform existing business methods in the coming period, improve speed and accuracy, reduce overall costs and enable quantitative and qualitative business growth.

6. CONCLUSION

New technologies (digitalization, information systems, internet of things, cloud, etc.) are creating completely new business environments, and therefore a different business architecture, with the possibility of rapid and adequate changes in business processes and the impact on the generation and development of new and efficient business models, which is the basis for the impact and possibility of further development of all industries, including the transport industry. Specific business information systems of the transport industry enable easier and more precise integration of different sectors of the business process, achieve greater coordination and speed of business activities, create opportunities for



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monitoring and managing the fleet and the transport of goods and materials, analyze business trends, optimize routes and generally optimize the business process, with the implemented infrastructure equipment and specific and indigenous information systems becoming key tools in making strategic decisions and maintaining a company's competitive advantage. On the one hand, it can be concluded that the generation and implementation of information systems depend on many influencing factors: the size of the company, the quantitative and qualitative structure of employees, the quantitative and qualitative structure of vehicles, the technical and technological equipment of the company, the business strategy, the type, scope and method of work and business, the compatibility and adaptability of systems and departments, the possibility of integrating different sectors, achieving greater coordination and speed of implementation of business activities, etc., while on the other hand, it can be concluded that information systems should be generated in such a way that they directly or indirectly affect savings in the most important parameters of the business process - time, material and human resources, to be adaptable and mutually compatible and to be easily and quickly integrated into business processes, in accordance with the type of work and adequate departments.

Specific separate information systems of the transportation industry, such as Fleet management, Trello, RingCentral, Keep Truckin, BigRoad, ELD Mandate, Samsara, Geotab, Cape, TransAudit, etc., enable easy, precise and efficient integration of different sectors of the business process - Maintenance, Dispatch, Brokers, Safety, Recruitment, etc., create opportunities for easier monitoring and management of the fleet and the transport of goods and materials, and achieve greater coordination and speed of business activities.

It should be noted that modern business today involves the generation of innovative, adequate and adaptable information systems, but with large integrated databases, which leads to a situation where some specific business processes, such as the transport industry (with logistics, supply and warehousing), must have or must generate their own original and indigenous information systems, which should be developed as part of a single integrated business process information system, with an integrated database.

Since segmental digitalization and implementation of information systems only partially improve company performance, it is recommended to generate innovative and original integral information systems with a single database, which will, under a single interface and through various applications, unify data from all business process information systems, infrastructure equipment and traffic infrastructure data, terrain configuration and weather conditions, thus enabling management to make a high-quality selection of the best business solutions, and the company to effectively optimize its operations and strengthen its competitiveness.

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