EXPERIENCE AND INNOVATION IN INFORMATION TECHNOLOGIES – FACTORS FOR OVERCOMING THE CONSEQUENCES OF THE GLOBAL ECONOMIC CRISIS IN RAILWAY TRANSPORT
(tradition, experience and innovation)

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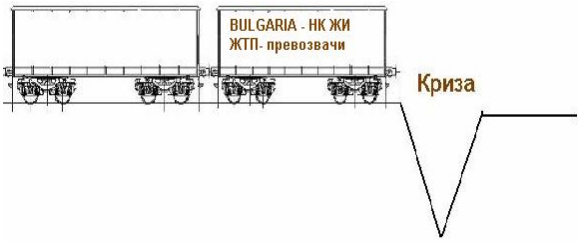
Global crises, both *politically and economically, follow their spiral cycle recurrence. Regardless of the nature and causes of their origin, their outcome may be predictable. In most cases it comes down to strengthening geopolitical spheres of influence, allocation of market territories, expansion and merger of capitals as well as utilization of natural and material resources.*



We are now at the end of an era of relative stability based on market fundamentalism and the theory of perfect competition. The passing financial crisis has been the culmination of a super upsurge associated with the dominant role of the United States and end of dollar expansion as international reserve currency. This time it is not limited to a specific segment of the financial market but covers the entire financial system and all economic sectors.

Transport is a key factor for the timely overcoming of the consequences of the global economic crisis. In our country the progress in railway sector is associated with the development of the national infrastructure and with optimization of the operations of the railway transport company "HOLDING BDZ" EAD. The survival and maintenance of the competitiveness of the company requires timely renewal and adaptation of business models and processes to the dynamically changing characteristics of transport markets and regulatory requirements relating to the wider European railway network. Effective tools for achieving these goals are:

- Organizational restructuring.
- Provision of financial investments for the purchase and placing in service of new vehicles.
- Usage of modern methods and technologies for achievement of *sustainable efficiency of management.*

Management of efficiency is a systematic approach of improvement through identification of the strategic objectives; collection, analysis, implementation and reporting of data; evaluation of the efficiency and usage of information for sustainable improvement of the results achieved by the company operations. The benefits of applying this methodology known as *planning-doing-checking-acting (Plan-Do-Check-Act, PDCA)* are:

- Management is based on achievement of the results set out in the strategic objectives rather than on quantification of the activities (ton/kilometers, passenger/kilometers, etc.)
- Adequate measuring and evaluation of the business processes and activities relating to provision of the transport service. Monitoring and control become an effective mechanism to achieve the business goals of the company.

In general, any organization, any management in the presence of financial and human resources would strive to implement the model ***PDCA***. In railway enterprises the practical realization of this approach is related to the organization and operation of **railway statistics.** Continuity in the work of railway transport manifests itself in the fact that a number of separate specific units move from one condition to another and these conditions, individually taken, correspond to different reported categories of availability. The precise definition of each category of availability of rolling stock (working and non-working railway fleet, full and empty wagons, occupied and free passenger seats, etc.) causes the need for each particular case to distinguish in time one condition from another. The time when one condition transforms into another characterizes the time of reporting. Current conditions require the formulation of time of reporting to include additional instructions for the state and analysis of the registered condition factual signs, such as:

- Structure, subjects (owners, keepers, users) responsible for the technical condition and determining the location of the transport unit;
- Qualitative and financial expression of the transport service (period of delivery, beginning and end of service; prepaid, due, paid value, obligations) and others.

Keeping in mind the peculiarities of railway industry and the specific nature of transport processes, the task of railway statistics is to measure the structure, connections and operations of the business subjects. In the developing its methods for collection, processing and analysis of information transport statistics is based on specific railway subjects and on the achievements of the general theory of statistics. The originality of the applied methods of reporting has identified three main types of reporting:

1. Operational Reporting (OR) – it concerns information about the organization and implementation of the ongoing work related to the activities of the operational structures. Collection of information by telephone and telex is typical for this type of reporting.
2. Accountancy reporting (AR) - reporting of income and expenditure of financial funds
3. Statistical reporting (SR) – it is basically statistical documentary reporting. It serves the purposes of marketing, planning, financing and study of the regularities characterizing the

condition and activities of the company. It differs from operational reporting in its systematic approach and from accountancy reporting - in the peculiarity of the mass approach to the observed phenomena. SR studies the transport process in its mainstream manifestations, which are characterized by the law of large numbers; the nature of the latter lies in the fact that the process regularities stand out the more clearly the more the number of observations increases.

Optimization of activities concerning *statistics for freight and passenger carriage, operational statistics, labor and payroll statistics, accountancy and statistics of major funds and the technical state of railway transport*, etc. are a prerequisite for achieving effective management. With the development of the scientific field of telematics, the problematics relating to railway reporting and statistics relate to the use of innovative Information and Communication Technology (ICT). Today it is a priority of modern information systems to manage business processes in a railway company. Their development and utilization is one of the most essential elements in an effort to increase the market share of railway transport by improving the transport service. For this purpose it is necessary to improve IT processes in order to ensure the most efficient use of equipment, to introduce virtualization technologies so that time of reporting can be done in real time, the accompanying documents be converted into digital ones and the information contained therein can be provided in electronic form to the services related to operation, marketing, financial and accounting activities, etc. This would allow the management team to make decisions based on extremely accurate operational and statistical information, to carry out detailed analysis of the specific business and ultimately to manage more efficiently the company placed under their management.

Unfortunately this was not done in the 90s despite the insured financial funds from the World Bank for creation of information systems for freight and passenger carriage services and for attracting powerful software companies for contractors. On the other hand the attempts to develop through internal development activity did not lead to positive results. A common characteristic feature of the established modules and programs is the long time for their development and implementation as well as the lack of opportunity for their timely development and adaptation.

For unexplained reasons, software products created only over the period of five/six months but with radically different ideas about functionality and practical implementation were suspended. For example, in 2007, the regular operation of the module *„Operational reporting and automated analysis of the financial obligations of customers on Central Payment. Interest accruals"* was terminated. The system was unique because the carriage of goods contracts on Central Payment was successfully algoritmized. As a result the processes associated with the reporting of the commercial stations were automated as well as the control and analysis of financial relationships with freight forwarding companies. This allowed increasing revenue collection, as unfair customers with outstanding obligations had their obligations automatically converted and invoices with the respective interest accruals were printed in an automated manner.

Another example of this kind is *"Monitoring and reporting of valuable samples"*. In 2005, in the phase of Experimental operation, after accepting a Control Example, the work on the system was terminated and its implementation was suspended. Thus, its main objective did not take place, namely:

- Minimization of the costs associated with provision of valuable models of services related to ticket issuing.
- Automated accountancy and control for the availability and continuity of the numerization of valuable samples.
- Automated determination of the financial obligations of persons that have received valuable samples for storage and use. Formation of the value expression of the batches under the method or a weighted average or First In, First Out (FIFO).
- Besides maintenance of the minimum necessary quantity of tickets, cards and computer paper, it is a task the system also to reduce the time required to perform financial audits of the ticket counters (minimizing the non-working condition of the premises).

Against the background of the economic crisis, the negative consequences caused by the lack of modern information systems at HOLDING BDZ EAD also confront the present management of the company with serious hurdles associated with the organization of effective management of the company. Bulgaria's membership in the European Union since 01.01.2006 imposes the requirement to comply with the rules and regulations of the European Parliament and the Council of Europe in the field of railway transport. A number of documents, decisions and projects are linked to this objective – improvement of servicing, delivery and implementation of transport services, such as:

Regulation (EC) No 1371/2007 of the European Parliament and of the Council of 23 October 2007 on rail passengers' rights and obligations.

In this respect, with a Decree by the Minister of MTITC of 26.01.2010 Railway Administration Executive Agency is entrusted to organize monitoring for consistency of the timely and accurate reporting of the information relating to passenger services on the electronic site of BDZ EAD and on the light panels and LCD monitors in the railway stations in Sofia, Plovdiv, Bourgas, Varna and Mezdra.

The conditions, in which HOLDING BDZ EAD works, impose the necessary of creating an integrated passenger information system, which enables the realization of the core business functions as well as the exchange and access to information of other informational systems of railway undertakings in Europe and external institutions in Bulgaria - automobile carriers, airline carriers, customs, border police and others.

In general, the creation of modern *Information Systems (IS),* including *the Geographic Information Systems (GIS),* involves interaction between MTITC, EA "Railroad Administration", the National Railway Infrastructure Company, railway companies and carriers. For their successful implementation in addition to outsourcing, tradition, experience and innovative thinking of the employees of railway industry, significant financial resources are needed, too. One way for their acquisition is the possibility of applying for projects in the Operational Programs of the European Union *("Transport", "Development of the Competitiveness of the Bulgarian Economy over the period of 2007-2013", Fund "Working Conditions", "Covering of internationally recognized standards and implementation of management systems in enterprises").* Operational reliability and safety, flexibility, speed, accuracy and ability to offer comprehensive service provide railway transport with a significant advantage in gaining the competition in passengers and cargo railway carriage both in internal and international communication.

Moreover, in order to use the existing opportunities, we'd better recall the paradigm - ***it's not just how big but also how fast, responsive and active you are,*** because the consequences of the crisis will be overcome faster in regions, countries, industries and companies that are using highly effective information and communication technologies.

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