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RISK MANAGEMENT IN A LOGISTICS COMPANY

THE CONCEPT OF RISK

Risk:

The effect of uncertainty on objectives *(ISO Standard 31000).* The effect may be positive, negative, or a deviation from the expected;

The combination of the probability of an event and its consequences *(Institute for Risk Management, 2015)*. Consequences can range from positive to negative;

The uncertainty of an event occurring that could have an impact on the achievement of the company's objectives *(Institute for Internal Auditors, 2016).*

The risk is measured in terms of probability and impact (consequences).

Risk management process: identifying, assessing, mitigating and monitoring the company's risks, in order to keep them within acceptable tolerance levels.

PURPOSE OF THE STUDY

The objective of the paper:

To conduct a thorough risk management analysis of the operations of the Romanian logistics company Deutsche Bahn Cargo.

Research Question:

What are the most significant risks the company faces and what are the most appropriate mitigation actions, so that their impact and/or probability of occurrence are reduced and even eliminated?

COMPANY DESCRIPTION:
Deutsche Bahn Cargo Romania

Short company history:

Active in Romania since 2000;

Initially operating as Logistic Services Danubius.

February 2003 - February 2009: the company also carried out railway shunting activities in Bulgaria;

In September 2003 and July 2004, two more work points were established in Deva and Alesd (Romania);

In August 2006, the company obtained a railway carrier license in Romania, and since December 2006, it has been carrying out train towing activities for domestic traffic.

In 2009, the office in Bucharest was established.

In May 2011, the name of the organization changed from Logistic Services Danubius to DB Schenker Rail Romania SRL.

In the summer of 2012, DB Schenker Rail Romania built its own depot in Turceni, Romania.

COMPANY DESCRIPTION:
Deutsche Bahn Cargo Romania

Products and services offered:

DB Cargo Romania operates nationally and internationally in freight transport by rail.

It has a fleet of approximately 60 locomotives (Diesel, Diesel-Electric, Electric) and over 2000 wagons.

DB Cargo Romania works with approximately 55 active clients, of which 20 have high volumes and constant activity.

Clients industries: automobiles, containers, grain, cement, and metallurgy. The transported products include: construction materials, chemicals, fertilizers, industrial and consumer goods, metals, and coal, but also components and vehicles.

IDENTIFICATION OF RISKS

Risks:

R1. Axle breakage in motor or towed railway vehicles

Causes: failure to carry out or superficially carry out the planned overhaul for locomotives, carrying out the control with an unverified metrological device, not introducing the wagons for the overhaul when due, improperly carrying out repairs during the overhaul of the wagons.
Responsible: Maintenance department and dispatch department through supervisory actions.

R2. Exceeding regular traffic speed

Causes: fatigue due to exceeding the maximum service allowed on the locomotive.
Responsible: Dispatch Department, training and control staff.

IDENTIFICATION OF RISKS

Risks:

R3. Overcoming stop signals

Causes: lack of concentration when following the route due to fatigue and exceeding the work schedule, human error, deviation of attention from following the route, and off-duty discussions with the assistant mechanic.
Responsible: Dispatch Department, training and control staff.

R4. Failure to follow the line and course in traffic

Causes: Tiredness/low attention due to exceeding the maximum allowed service on the locomotive, off-duty discussions with the assistant mechanic.
Responsible: Training and control staff, Dispatch Department.

IDENTIFICATION OF RISKS

Risks:

R5. Failure to adapt traffic speed to visibility conditions

Causes: Locomotive staff ignore safety precautions under the pressure of delivering the goods to the consignee.
Responsible: Dispatched Department, training and control staff.

R6. Breakdowns of the en-route locomotive

Causes: poor maintenance of locomotive sub-assemblies and circuits, the unauthorized intervention of locomotive personnel on locomotive, locomotive leaving from the traction units with faults of the electrical equipment, the use of improvisations to remedy some locomotive defects, failure to carry out the planned revisions at the established terms, carrying out revisions without respecting the guidelines included in the nomenclature of approved revisions.
Responsible: Maintenance department, locomotive operation service and staff, training center and staff with training duties.

IDENTIFICATION OF RISKS

Risks:

R7. Movement of loaded goods in the wagons

Causes: Inadequate verification of the insurance of the loaded goods, the use of non-compliant devices when securing the goods.
Responsible: Training and control staff.

R8. Theft of goods from wagons

Causes: Failure by the transport operator to guard the train in stations or in some traffic sections.
Responsible: Guards of the trains operating on the problematic railway sections.

IDENTIFICATION OF RISKS

R9. Danger of fire at the locomotive

Causes: Failures manifested under load operating conditions are not identified, not all static tests are performed in order to identify the operating parameters of the locomotive, tests are performed by unqualified personnel or under time pressure, and some checks are omitted.
Responsible: Maintenance department.

R10. Hitting vehicles during the shunting activity over the level crossing with the railway

Causes: Personnel negligence, ignorance of regulatory provisions, ignorance of the characteristics of the maneuvering area.
Responsible: training personnel.
These risks cannot be tolerated, as they have very severe consequences, from damage to vehicles to significant material losses and even losses of human life.

RISK ASSESSMENT

Risk Index Method:

Ri = P x I

where: Ri = Risk index
P = Probability that the risk materializes
I = Impact (consequence) if the risk materializes
with P, I take integer values between [1…10]:

	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
Probability	3	7	7	2	6	7	3	3	2	6
Impact	8	7	8	10	9	4	8	7	9	10
Risk index (R_I)	**24**	**49**	**56**	**20**	**54**	**28**	**24**	**21**	**18**	**60**

RISK ASSESSMENT

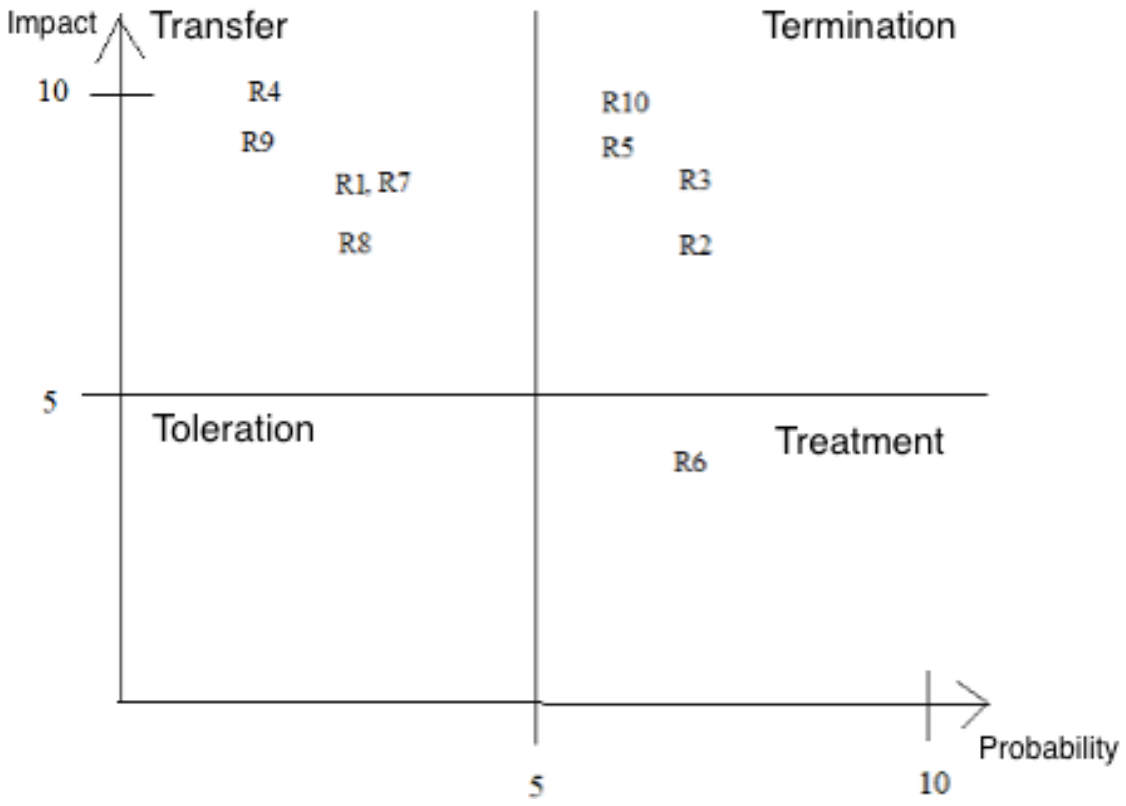
The highest values of the risk index are associated with: R10 - Hitting automobiles during the maneuvering activity over the level crossing with the railway and R3 - Overcoming stop signals;

The lowest values are associated with: R4 - Not following the line and the route in circulation and R9 – Danger of fire at the locomotive.

The values obtained by the risk index for each risk will be represented on the Risk matrix.

RISK ASSESSMENT

Risk Matrix



RISK MANAGEMENT STRATEGIES

Risk	Risk management strategy
R1. Axle breakage in motor or towed railway vehicles	Transfer
R2. Exceeding regular traffic speed	Termination
R3. Overcoming stop signals	Termination
R4. Failure to follow the line and course in traffic	Transfer
R5. Failure to adapt traffic speed to visibility conditions	Termination
R6. Breakdowns of the en route locomotive	Treatment
R7. Movement of loaded goods in the wagons	Transfer
R8. Theft of goods from wagons	Transfer
R9. Danger of fire at the locomotive	Transfer
R10. Hitting vehicles during the shunting activity over the level crossing with the railway	Termination

RISK MITIGATION SOLUTIONS

Risks	Mitigation solutions
R1. Axle breakage in motor or towed railway vehicles	Ensuring contracts with repair entities
	Complying with the procedure for recording measuring devices, marking the measuring devices with the due date for checks
	Ensuring that repairs are carried out by qualified personnel
R2. Exceeding regular traffic speed	Daily verification of staff orders, in electronic format
	On-site verifications of compliance with rest, duty times, waiting times
R3. Overcoming stop signals	Ensuring that the locomotive staff is aware of this risk, establishing clear guidelines for controlling the communication in the locomotive cabin

RISK MITIGATION SOLUTIONS

Risks	Mitigation solutions
R4. Failure to follow the line and course in traffic	Awareness of the staff of compliance with the duties of service, validation by attendants and control actions.
R5. Failure to adapt traffic speed to visibility conditions	Control actions to identify staff who tends to ignore safety measures;
	Strict actions to ensure that staff respects
	Staff awareness that when towing the train, the most important thing is to reach the destination safely, not in the shortest time.
R6. Breakdowns of the en-route locomotive	Provision of spare parts and materials according to operating terms;
	Verification of the way of carrying out intermediate revisions;
	Permanent monitoring of locomotives and collaboration with the dispatcher for their withdrawal.

RISK MITIGATION SOLUTIONS

Risks	Mitigation solutions
R7. Movement of loaded goods in the wagons	Staff awareness of not admitting wagons with uninsured goods to transport;
	Checking anchoring devices for their integrity and not accepting improvised devices that do not conform to established standards.
R8. Theft of goods from wagons	Identification by company management of CF stations or haulage sections that are flagged as having problems. Ensuring the security of these trains in the identified stations.

RISK MITIGATION SOLUTIONS

Risks	Mitigating risk solutions
R9. Danger of fire at the locomotive	Entry in the log book of irregularities manifested in the operation of the locomotive;
	Checking the knowledge of the personnel performing the maintenance activity.
R10. Hitting vehicles during the shunting activity over the level crossing with the railway	Training staff not to deviate from all mandatory activities in a case. Instructing the staff to request a second agent in the event of a breakdown of the means of communication.

CONCLUSIONS

The paper presents the risk management analysis process a prominent Romanian logistics railway operators, DB Cargo Romania.

The analysis included the identification and description of risks, their evaluation and mitigating solutions.

Ten risks were identified, and solutions were advanced to counteract them.

The most threatening risks identified: *R10 - Hitting automobiles during the maneuvering activity over the level crossing with the railway* and *R3 - Overcoming stop signals.* These risks are critical and cannot be tolerated.

The lowest risk values were associated with: R4 - Not following the line and the route in circulation and R9 – Danger of fire at the locomotive. Although dangerous in themselves, these risks are not as critical as the others, as they have a low probability of occurrence.

CONCLUSIONS

Most of the risks that the company is facing have both a high probability and a high impact, making them difficult to tolerate and asking for urgent and efficient mitigation methods.

Generic, as well as specific mitigation strategies were proposed for all identified risks in order to reduce both their probability and their impact.

By implementing the recommended risk management solutions, the company can reach a tolerable residual risk level.

Thank you for your attention!

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