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Aplicação de transferência de tecnologia em práticas de gerenciamento de risco logístico

Application of technology transfer in management of logistic risk's practices

Claudia Tania Picinin

UTFPR
Endereço: Rua Afonso Celso, s/n, ao lado 634, ap. 07
Bairro: Uvaranas – Ponta Grossa – PR
Telefone: (42) 32204805
E-mail: claudiapicinin_adm@yahoo.com.br

João Luiz Kovaleski

UTFPR
Endereço: Rua Bernardo Sávio, nº 77
Bairro: Jardim Carvalho – Ponta Grossa – PR
Telefone: (42) 32204882
E-mail: kovaleski@utfpr.edu.br

Dálcio Roberto dos Reis

UTFPR
Endereço: Av 7 de setembro, nº 3.165
Bairro: Rebouças – Curitiba – PR
Telefone: (41) 33104545
E-mail: dalcio@utfpr.edu.br

RESUMO

Este artigo visa explicar as formas de transferência de tecnologia no gerenciamento de risco logístico. O desenvolvimento de um planejamento estratégico para uma área isolada de uma empresa depende de informações no negócio no âmbito geral. O gerenciamento de risco é utilizado para administrar riscos reais e potencias para o negócio da empresa, bens materiais e vidas envolvidas. O gerenciador de riscos deve estar informado de todos os processos decorrentes do planejamento estratégico do gerenciamento. Justifica-se a importância da pesquisa devida a necessidade de transferência de informação ao gerenciador de risco para que o processo seja seguro. O referencial teórico aborda o gerenciamento de risco logístico e suas fases, transferência de tecnologia, e análise da empresa avaliada, reportando-se a autores como Lima, Reis, Ribeiro, Santos e Vasconcelos.
Palavras chave: Transferência de tecnologia; gerenciamento de risco; logística.

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ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

ABSTRACT

This article aims to explain the way technology transfer occurs in logistic risk management. Generally, the development of a strategical plan for an isolated area of a company depends on information in the business. The management of risk is used to manage actual and potential risks to the business, properties (vehicles and freight) and lives involved. The risk manager must be informed of all proceedings which arise from the strategic planning of the management.The need for information transference from all the other sections of the company to the risk manager is extremely important in order to keep the process safe. Since this paper highlights exactly this process, this research seems to be appropriated. The theoretical framework deals with logistic risk management and its phases, technology transfer, and analysis of the evaluated company, referring to authors such as Reis, Ribeiro, and Vasconcelos.

Keywords: Technology transfer, risk management, logistics.

1. INTRODUCTION

Technology transfer can occur in several ways: directly by the people, by literature, by participating in conferences and exchange information for the direct purchase of goods and services through licensing, co-production, direct investment or technology consortia (ROMAN and PUETT JUNIOR, 1983).

During the development of a strategic plan for an isolated area of a company depends on information in the business of the company under general. With this search and review of information, there are new ways of handling, use and interpretation of data. Currently the transfer of technology is a determining factor of success for this information and continues to generate improved results as they should. All the methods available for the manager may be provided through the transfer of technology, and this can occur in several ways. Considering these arguments, the study defines the problem is to explain the ways of technology transfer to some of the logistical management of risk.

In the moment of drafting a strategic plan for the logistics industry or for any other segment of the service, the specification of any part of the project is essential. In the case of

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

strategic planning focus to risk management logistics, transfer of technology acquired, developed or sold in the description of the project is the key to the smooth running of the project.

Following the context of the management of risk is used to manage actual and potential risks to the business of the undertaking, property and lives involved, the risk manager must be informed of all proceedings arising from the strategic planning of the management. In summary, the study of the transfer of technology in strategic planning for the logistical management of risk is justified as necessary to complete the manager of risk information, information to consistent planning, tactical and operational requirements must be of this professional knowledge.

The main objective of this paper is to explain the forms of technology transfer in the logistical management of risk.

2. Theoretical reference

2.1 Risk Management

The management of risk is carried out to predict or estimate the risks involved in transport. The tactic to be used for the management to be effective, offering a response to security risks has been assessed or has triggered incidents. This means that an organization worry about responding to the occurrence of security incidents in a calm and rational at the same time in determining the reasons for the incident will be able to better protect against similar problems in the future and to respond more quickly to other incidents that may occur. (Microsoft, ch 2, 2004).

The complete process of management involves several steps, and the protection of lives involved, contain potential risks, assess damage caused by risks, determine the cause of the risk that caused the damage, repair the damage, and analyze the process as a continuous cycle. The description of each stage can be summarized as follows, illustrated in the diagram:

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ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

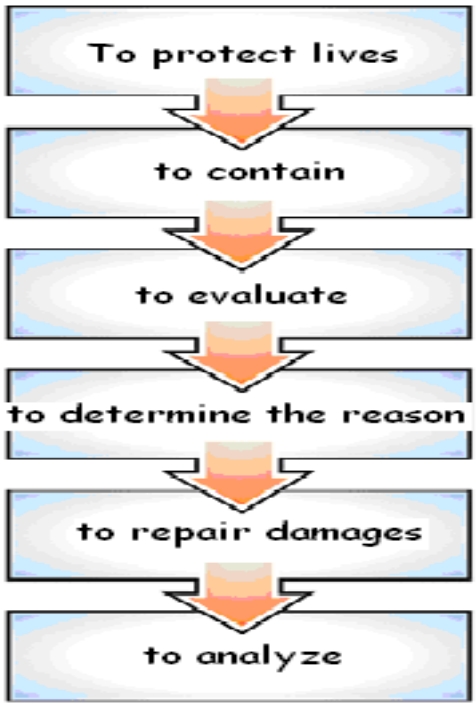

Figure 01: Stages of the risk management
Source: Microsoft, ch. 2, 2004

Often, the various people involved with the process of managing risks define the word risk in different ways. To ensure consistency in all phases of the cycle of risk management, the process of managing security risks requires that all involved understand it and agree on a single definition of risk. (MICROSOFT, ch 3, 2004).

> According to Microsoft (ch 3, 2004), "[...] risk is the probability of occurrence of an event that affects the business. This definition requires the inclusion of a statement of impact and estimates of when it may occur or, in other words, the probability of impact. When both elements of risk (probability and impact) have been included in a declaration of risk, the process that called for a declaration of risk and structured".

The process of managing risks in total comprises four main phases: risk assessment to support decisions, implementing controls and reviewing the effectiveness of management. The process of managing risks to ensure the company reliable forms of paths, or notes to calculate the risks to be incurred with the objective of reducing them. Benefits offer an environment of control able to drive and even the risk to an acceptable level. The stage of risk assessment is a formal process of identification and prioritization of risks within the organization. (MICROSOFT, cap 4, 2004).

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

According to Microsoft (ch 4, 2004), the process of risk management provides a detailed guidance on the conduct of risk assessments and divides the process stage of risk assessment in three stages:

Table 01: Phases of the risk assessment

1.	**Planning** – building the basis for a risk assessment successful
2.	**Data Collection** – collecting the information at risk.
3.	**Prioritization of risks** – classification of risks.

Source: Adapted from Microsoft, ch 4, 2004.

The result of the phase of risk assessment is a prioritized list of risk that provides the data for the initial phase of support for decisions.

2.2 Transfer of technology

2.2.1 Management of technology

When using the technology as a tool to support the achievement of organizational objectives, it is necessary the use of management of technology that, according to Vasconcelos (2002), would be the use of techniques of administration in order to maximize the potential of this technology.

> The trends in industrial investments are difficult to translate to technology choice and transfer. It is obvious, though, that increasing international investments infuence the rate of technology transfer, although it gives no information on the way and what technology is transferred (WORRELL, 2001).

According to Santos (2008) in Technology Management, identify needs and opportunities for transfer, from then began the planning, development and deployment of solutions in the technological process. This factor is important for competitiveness (productivity) is the ability to restrict developments in technology, innovation and technical progress within a strategy of the business sector.

“By applying activity chains, it becomes possible to discuss, and integrate, the set of activities which contribute to the fulfillment of customers demands and, furthermore, to link underlying technology to those activities” (DREJER, 1997, P. 30).

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

2.2.2 Conceptualization

According to Lima (2004), technology transfer is the acquisition, development and use of technological knowledge in another environment that is not where it was created. It would be the process of introducing an existing technological knowledge, which has not yet been designed, or executed. Light (1997), the transfer of technology also the tacit knowledge, experimental, personnel and development of technical skills, and creative expertise, knowledge formal decoded by means of technical ideas, documents, information and data, practical knowledge, which is knowledge by do.

The term "technology transfer" can also refer to the process of importing technology. The proprietary technology is protected by a legal monopoly by the patent system. Cysne (1995, p. 8), addresses the transfer of technology with a different perspective, as "[...] the acquisition, understanding, absorption and application of a technology or a technological process".

And summarized in a simple transfer of technology in the definition of Urdaneta (1992, p. 115), "refers to the export by the holder of technology, and imports, by its receptor in a specific technological development."

The transfer of technology can be an alternative for organizations that do not have updated technology resources or do not meet the conditions for the development of technology. This feature is also used when there is a need to implement new products or processes without having to take risks and expenditure of time, arising from development. (PINTO, 2006). For Schrader (1995), the informal exchange of information can be observed in several industries.

2.2.3 Types of access to technology

Ribeiro (2001, p. 17) asserts that the two forms of transfer of technology:

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

– Purchase and absorption of technology - the most common and fast way to get a technology is through direct purchase in the country or outside in the holder, be it business or other institution. Emphasized, however that this way is not necessarily the easiest, because it involves a whole process of evaluation, negotiation and contracting, which are defined the feasibility, suitability, conditions of transfer, pricing, timing and basis for the absorption by the organization purchaser.

According to Lin, Tan and Cheng (2002, p. 1), "[...] even companies with large financial and technological capacity are not able to manage productive activities of R & D quickly. Thus, the ability to exploit external knowledge is a critical component of successful innovation".

For Ribeiro (2001), the technology can be acquired for industrial, engineering, technological development and research centers. The contracts of technology transfer may take the following forms:

Table 02: Contracts of technology transfer

Contract forms	**Objective of the contract**
Exploration of patents	Licensing of granted patent already or in process of concession.
Use of marks	The licensing for use of registered mark is contracted or in process of register.
Reinforcement of technology	Acquisition of knowledge and techniques, not supported for industrial property law.
Surmounting	Temporary concession of rights of use of marks, usually combined with any or assistance services technique another modality of technology transfer.

Source: Ribeiro, 2001.

– Provision of technical services and scientific and technical assistance - to Pinto (2006), such services are usually subject to specific contract between the parties, with detailed definition of rights and duties of each. Usually the fee for services occurs during their service in stages and cash previously set. As a rule this contractual instrument is subject to relevant registration or registration with the federal agency responsible (INPI) as a condition for permission to send your payment to entities located outside the country or when dealing exclusively and effective technology transfer.

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

The choice of ways to access the technology considers the degree of ownership, understood as the capacity for assimilation or absorption and the level of exclusivity that desire. The author considers twelve forms of access to technology: Buying, Export spells of technology, monitoring technology, copy, sub-contractors, cooperative research, training of personnel, licensing, research commissioned (by contract), contracting specialists, associations and alliances and strategic research and development (REIS, 2004).

2.2.4 Stages of technology transfer

To throw (2002, p.56, 57), transfer of technology follows a logical sequence of steps for its implementation, which are the selection of technology, selection of suppliers of technology, trading technology, implementation of technology transfer; assimilation and adaptation of technology and improvements in technology. Within each stage there are risks to be considered. Is required prior analysis of the company as the requirements of the organization as a potential technology for the selection of technology, careful negotiation.

According to Pinto (2006), exploration technology has an important role in mechanisms of planning and integration of technological strategies in strategic planning of the organization. The author points out that if the choice of technology being used is driven by criteria such as current technology, optimization of production processes, profitability and others, can both validate the choice of technology and limit its effects, depending on the company's own technical training or in other words, its capacity for absorption or assimilation and dissemination of the technology chosen.

Vasconcelos (1992), presents some sources of technology, which the author considers it necessary to merge the same:

– Team of the company's own research;
– Foreign Companies;
– Research institutes abroad or national;
– National and foreign universities;

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

- National Suppliers;
- National Clients;
- Enterprise engineering nationals;
- Joint-ventures;
- Business leaders like;
- Competitor.

For the chances of success in transferring technology are positive, Proença (1996) suggests that it is treated as an active process and adapted with the participation of government, administrators and workers, where the importing country of the awareness of search technology its geographical identity, economic and cultural trying to insert the system in reality.

3. Methodological procedures

The methodological processes for the development of this research are classified in the following way: Under the terms of the objectives, the research is characterized as applied. Through applied research, aimed to generate knowledge on technology transfer applicable to management logistics risk, and these were applicable to Realizad company, providing practical solutions.

From the standpoint of addressing the problem, the research is classified as qualitative. The qualitative approach suggests the existence of interaction between the reality of the business and environment. Thus, the search becomes dynamic.

Qualitative approach was used for analysis of data collected by the method of observation. According to Roesch (1996), qualitative research is designed for formative assessment, when it comes to improving the effectiveness of a program or plan, or when it comes to selecting the targets of a program and build an intervention.

Research is classified as a case study from the perspective of technical procedures. The case study was conducted in logistics service company, in order to study the specific way the logistical process of the company, noting the peculiarities. The case study examines the process in detail, seeking to contextualize. i, Leal and Hostins (2004, p. 33-34), a case study

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

"[...] is thorough, comprehensive in general a particular situation, a group of an organization, a particular event [...]".

Under the terms of the objectives, the research is classified as exploratory. The level of the research was exploratory, aiming to clarify and develop concepts and ideas related to technology transfer can be used in strategic planning of risk management of logistics. "[...] the main purpose to develop, modify and clarify concepts and ideas in view, the formulation of the most accurate searchable or hypotheses for further studies"(Gil, 1999, p. 43). Find a general vision about a fact.

By the inductive method search is chance to solve the problem exposed in this study. The inductive reasoning is a generalization from observations of actual reality. Knowledge of the particular leads to generalization. In the case of the proposed study is to explain the forms of technology transfer in the logistical management of risk.

4. Results

The company evaluated the branch carrier operates two and a half decades. The company operates in the field of national and international transport, loaded with technology in all vehicles. Forms of technology available in the market to meet the transport sector and provision of logistics services, the company uses is:

– Satellite tracking: the system is used to ensure the safety of its employees and products transported. Besides providing more accurate and at the time of its occurrence to customers. This is an important tool used to support the logistics management of risk. It will aggregate the systems of the company, allows the load monitor in real time;

– Micro PC-board: One of the main functions is to control speed, as by requiring the optimal speed of rotation greater effective security to the driver and the goods involved, and generate lower amounts of maintenance;

– Mobile telephony: basic medium for communication, but very necessary. Through this tool the communication process between customer, driver and carrier is optimized to speed the delivery of the goods;

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

– Buonny: The company uses is the insurer of risks Buonny, where all drivers have register.

The company specializes in the field of transport of loads complete (full truck load - FTL) with controlled temperature, especially foodstuffs. The transport is carried out "door to door" in routes of short, medium and long distances. The main products are transported fruit, meat, fish, vegetables, cheese, sausage, ice cream and chocolates.

Some services are provided in aggregate form, such as storage and transport of cargo via the port of import, customs clearance and transportation of dry cargoes such as raw material for industries and for damaged goods. The process of risk management is very important for the proper conduct of procedures and security. The strategic planning of risk management, logistics planning should be instilling in the company, and this is essential to prevent unwanted situations. In the process of risk management may include transfer of technology, which in the case of study may occur in different ways, as shown in table 03:

Table 03: Forms of technology transfer destined to the management of logistic risk.

Type of Transfer of Technology	**Conceptualization**
From one sector to another within the same organization	For Valeriano (1998) apud Lima (2004), to technological innovation, technology transfer can be understood as the process by which a set of information, knowledge, techniques, machinery and tools are transmitted from one environment to another, in order to be used in the production or provision of services.
Holding company of technologies for third	Azevedo (2005) defines technology transfer as the movement of knowledge and technology of an individual or organization to another, through a formal channel.
From college to university for business or company (including completion of ongoing projects, theses and dissertations)	According to Flores (2005), the transfer of technological knowledge is a two-way street, being the exchange of experiences that benefit both parties. When technological knowledge is transferred to a company, the two or more parties have to participate in this process of communication characterized by various trade essential to the effective understanding of the significance and production technology.

"The increasing amount of robberies and burglaries to trucks and cargo, increasing the insurance policy to the high value of the load and the risk of transmission, management has demanded a more accurate handling of the vehicles. Not only to avoid damage, but also achieve the highest quality services in a very competitive market. " (BORDIN, 2008, p. 05).

For an adequate planning and with greater perspective, the company must have minimum of technologies and procedures and well developed. The basic item to the support of the risk management system is the tracking tool, as it ensures the location of each vehicle

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

and major requirements for risk management decisions. The mapping of the routes frequented by business also assists in the development of strategic planning, because the boundaries are crossed paths. For security reasons, if a vehicle deviates from the path set may be certain actions to be performed according to the seriousness of the deviation, the value of the cargo or the dangers of the journey. Nothing prevents this route is flexible, open to changes, reductions or enhancements during the journey, but with previous combinations of risk manager and driver of the vehicle.

Most of the systems for registration and control of routes have a simple operation, where the map is pressed with the mouse trajectory chosen, the city of departure and destination. Through these systems you can get information of position, and these security measures. (BELÓRIO, 2005).

The management of risk can not be seen as a cost but as an investment by the company. Likewise, security is not the main focus or benefit provided, but the quality and quantity of information available to be managed the fleet and made the best decisions.

Through the registration of the routes taken by companies in the area of road freight transport in systems suitable for the task, it is possible that at the beginning of the journey is inserted a fixed route for a particular vehicle. This process occurs through processes of monitoring, with specialized tools in order to manage the travel of the rich.

At the beginning of the trip to central monitoring forms a route that the vehicle must travel where the driver of the vehicle not to follow the marked path, or breach the route bypassing the local set, the person responsible for making the tracking of vehicles can determine some arrange to be followed, according to the potential of the region or state. If required in the performance of course, can be detected a situation of theft of vehicle / load, assaults or accidents of various genres. (BELÓRIO, 2005).

The company that provides tracking of equipment installed in its fleet, it is possible to offer their customers comprehensive security coverage, supporting road accidents, breakdowns and shortages of goods, by fire, theft, and the management and administration of information and fleet. The drive system is monitored by tracking, obtaining information from each vehicle during the entire journey. (Moura, 2004).

The mapping of the routes together with systems for tracking and managing risk allows greater control of operational cycles, shown in Figure 02.

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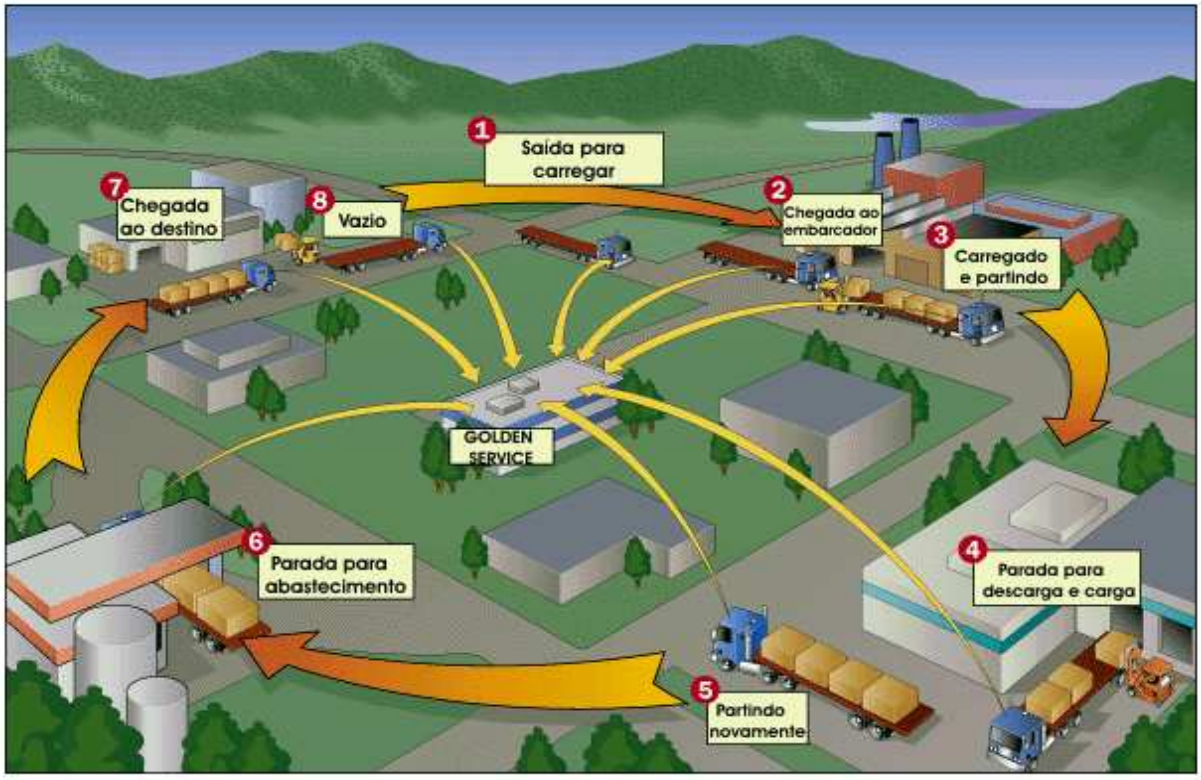

Figure 02: Control of the operational cycles of transport and distribution
Source: Soares e Miniuchi

The figure shows all possible paths in road freight transport outsourced. The starting point (1) is marked by the exit to the loading. The second point (2) corresponds to the arrival board, and then the vehicle is loaded for the trip and (3). The next stop (4) is where the new loading and unloading is. Today, like any other point, the vehicle can return the company to which it belongs, the carrier, but is more common to occur in the position of the paragraph. 4. Failing to return to the company, the vehicle part again (5), makes stop for supplies (if necessary - 6) and follow until the arrival of destination, performs the download (7) and is empty for the company (8), which performs preventive maintenance, adjustments, supply (usually in the company's own pumps), closing the cycle and starting a new one.

According to Soares and Miniuchi, the sequence of tasks for the management of risk is as follows:

– Board: create a travel request, inform the Risk Management and carrier, origin and destination information, informed local collection and delivery, typing documents related to charges;

– Transport: Consultation request, driver information, vehicle information and cart;

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ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

– Risk Management: Consultation request found there data and driver, vehicle and route, configure and plan travel trips, there's information load and confronted with data from the insurance policy, start monitoring.

Besides the crawler and tools for the mapping of routes, the on-board computer is a valuable ally, as it complements the activities or functions of the crawler. With the help of equipment important to plan can be developed with more security. Every detail or action should be carefully planned. Subsequent development of strategic planning of risk management, there will be a transfer of technology obtained, so that the company will have total control of the situation (university-enterprise). In other circumstances, technology transfer can occur in other stages of the process and in different ways, as shown in Figure 03:

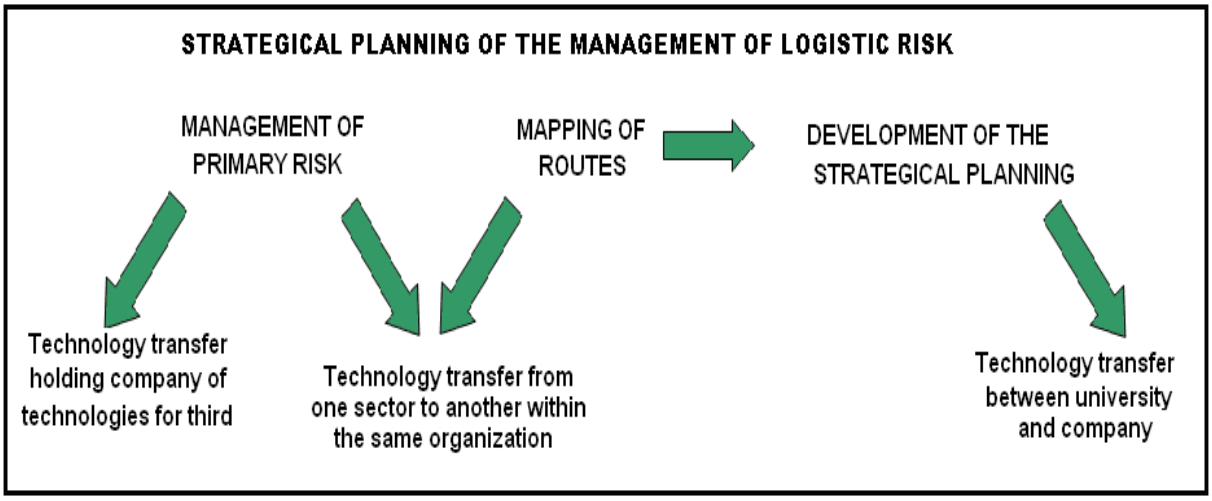

Figure 03: Technology transfer in the strategical planning of the management of logistic risk

As mentioned previously, the transfer of technology in the process of strategic planning for the logistical management of risk can occur in three ways: The first where the company holds the seat technology through formal permission to use another company if this technology. The process occurs as a rent of technology. The second form occurs when the technology is transferred from one sector to another within the same organization. Certain circumstances require a technology that the company already has, but is not used for this purpose. And the third and final transfer of technology is the way university-industry, where the academic out the project with a particular form of operation and then transferring their knowledge, along with the technology to the company, ensuring that the process occur as planned.

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

5. Final considerations

The management of risk can not be seen as a cost but as an investment by the company. Likewise, security is not the main focus or benefit provided, but the quality and quantity of information available to be managed the fleet and made the best decisions.

One company well equipped for the process of managing risk is equipped with the necessary tools for communication, identification, analysis, among other locations. The likelihood and degree of loss are related to each risk and the tools help in the prevention of risk, and damage analysis of solutions, providing a broad overview of the process of managing risk.

Besides the crawler and tools for the mapping of routes, the on-board computer is a valuable ally, as it complements the activities or functions of the crawler. With the help of equipment important to plan the logistics of risk management, emphasizing the transfer of technology can be developed with more security.

The company evaluated the branch carrier operates two and a half decades. The company operates in the field of national and international transport, loaded with technology in all vehicles. When using the technology as a tool to support the achievement of organizational objectives, it is necessary the use of management of technology.

Technology transfer can occur in several ways e. can be interpreted in different ways, and a process of introducing an existing technological knowledge, which has not yet been implemented, or the tacit knowledge, experimental, personnel and development of technical skills, and creative expertise, knowledge formal decoded by means of technical ideas, documents, information and data, practical knowledge, which is knowledge by doing.

The company studied has three possibilities for technology transfer, it can be introduced into the organization in several ways. The first by acquiring or "leasing" of technologies already developed, the second by providing a technological sector to another within the same company and the third way in technology transfer between universities and business, thus complying with the proposed objective.

ISSN 1676 - 1901 / Vol. X/ Num.I/ 2010

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