Risk Assessment Model Proposal in Outsourcing Logistics: Label'Vie Case

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Abstract

Outsourcing logistics has known a considerable development since 1990. However, though their expected results, most of outsourcing logistics projects could not meet their expectations. The unplanned risk assessment is one of the causes. Therefore, risk assessment has become a main objective in terms of outsourcing [1] [2].

Our suggestion in this paper would be a creation of a risk assessment model linked to the outsourcing logistics process. To achieve this objective, we propose as a first step some modeling tools, and then we will apply the ARIS Model to outsourcing logistics process for the sake of prioritizing, anticipating and managing the risks. Last but not least, our study will end up with an operational model determining guidelines and processes. Our proposal will be validated upon a real outsourcing logistics case which will enable us to understand how the case study is assessing the potential risks and what their backs up strategies are.

Keywords*: Outsourcing logistics, risk assessment, modeling, ARIS Model.*

1. Introduction

Today's competitive and challenging environment has forced market participants to be more active, to focus on more efficient and innovative organization and constantly new approaches to stay ahead of their competitors. Companies whether industrial or commercial have proceeded for twenty years to outsourcing operations. These actors have made great efforts to improve their basic skills, and therefore have developed new trends to outsource certain activities (IT and transport, for example) considered as an integral part of the company. The reason for this first wave of outsourcing was then purely economic [3], based on cost criteria. Other factors are then built from this

phenomenon, including the lack of internal references capacity to achieve these benefits.

It is in this context that the phenomenon of outsourcing is then developed and multiplied. This reengineering process seems to affect almost everyone involved, from industrial to distributors through service providers. The point is to reduce costs[1] in a context where the logistical issues have become more complex. However, under the constraint of the economic environment and looking for more competitiveness, companies are developing collaborative relationships increasingly close.

Simply, the outsourcing decision falls within the strategic choice of companies to organize themselves to manage one or several activities that contribute to the value added [3]. Before touching the basic functions of the business, outsourcing has been able to identify mainly the field of make or by, to finally arrive at the functional services. In other words, the process of outsourcing has become increasingly complex, costly and lengthy.

In fact, outsourcing logistics has become an attractive option to take advantage of global opportunities to acquire state of the art logistics practices, significantly improve customer service and allow the company to focus on its core business. Evolving well and offering increasingly complex services and increasingly integrated with industrial distributors or services, much more Elaborated services have emerged, companies even today come to give someone the control of all their logistics.

2. Problem

Getting into an outsourcing logistics process is an important strategic act that its implementation is done in a hurry, especially since it often excludes any possibility of going back. This is performed prior to a

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[1] This is the main reason of outsourcing for 85% of managers surveyed by Lacity, Willcocks and Feeny [4].

thorough study. Thus, criteria of human economic characters, organizational, technical, etc ... can be used in deciding whether to have resort or not to outsourcing logistics.

Thus, due to the increasing outsourcing of logistic activities, logistics service appears to be a pertinent field of analysis for the study of inter-organizational relationships [5]. These relationships, for their long term and stability, require a minimum number of mutual trust and an agreement between actors [6].

Therefore, companies have realized that they need to cooperate with the special logistics services providers, so they can focus on their core business [7]. However, despite the advantages and benefits of outsourcing logistics, many relationships are not renewed at the end of their contract or fail to live till the end of the initial term [8] [9]. It is in the core of this finding that our goal lies. We propose, as a first step, some modeling tools. We apply then the ARIS[2] model to the outsourcing logistics process. In the end, our work will lead to the development of an operational model specifying arbitration elements and the action plan. Our proposal will be validated on the case of Label'Vie operating in supermarkets whose main activity is the receipt, storage, preparation and shipping of items. These activities are completely outsourced to the service provider IDlogistique (IDL). The goal is to determine the perception of Label'Vie about potential risks in the process of outsourcing logistics and eventually its strategies to control them.

3. Modeling the risk of outsourcing logistics

3.1. The modeling tools

Modeling reduces reality to a certain purpose: to communicate, train, manage, capitalize, simulate. Among all the modeling approaches, the approach per process encourages analysis and reorganization focusing on processes of the enterprise. Logistics management is based on aprocess approach and inter-organizational to secure the entire of the chain,and the achievement of physical operations in the best conditions of cost, quality and deadlines [10]. It is a way of identifying agents directly involved in the implementation process and those of the support processes and management focusing on customer satisfaction process vision. This identification is required for a better performance evaluation. Perfect

and precise knowledge of the pair (actor, action) facilitates the extraction of information needed to build a comprehensive view and draw the desired information, the assumption that each actor identified contributes to total quality, it's also used to conduct a pointed analysis of the risks that may distort the expected result process [11].

Among the tools used for process modeling, there is the logical flow diagram to represent the course of a procedure. It describes the sequence of operations performed by the actors. This is a simple tool that promotes understanding by the maximum number of people involved in the process. Another tool is the Value-added chain diagram (VCD), it offers a concise overview of the activities of a process and the links between them. Note that these are tools that we have borrowed from the ARIS model, this model provides a framework in which the company's processes can be represented and improved and in which the transposition of these processes can be described. Therefore, modeling methods implemented by ARIS add opportunities to describe problems within the organization; particularly the specialized descriptive level that allows the ARIS concept to play a role of guidance in the development, analysis and evaluation of process chains.

3.2. Concept of risk

The outsourcing logistics phenomenon is therefore, like any strategy, carries risks. These cannot be deleted. However, it is necessary to find mechanisms to better identify and control them. Figure 1 illustrates the concept of risk as we designed in ARIS.

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[2] A modeling tool to represent different views of the organization, ensuring consistency between them.
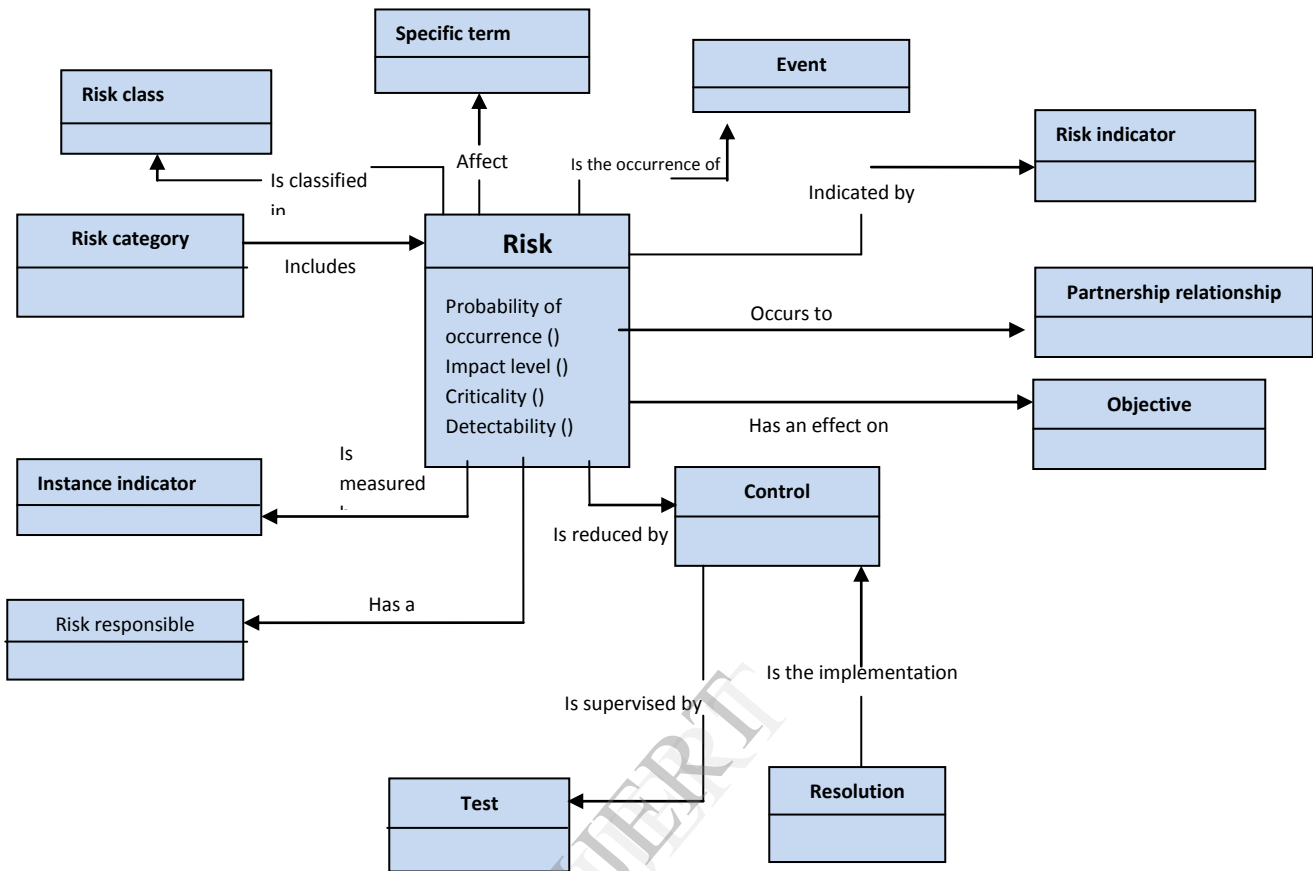
Figure 1: Conceptual risk model in ARIS

3.3. Risk management in its environment

We used SADT/IDEEF0 tool to develop risk management as shown in Figure 2. In our view, it would be very interesting for modeling to make the SADT tool compete with other modeling tools in order to assess the relevance of each so as to better explain the outsourcing decision on risk management.Risk management can be seen as an activity in which several categories of actors are involved, such as the Risk Manager who advises the Executive management on how to manage the various random events that can occur in the life of the company, particularly in an outsourcing process. This activity can transform knowledge of the study system and information about its operating environment decisions (objectives, guidelines and other constraints) and instructions that management or support systems can use.
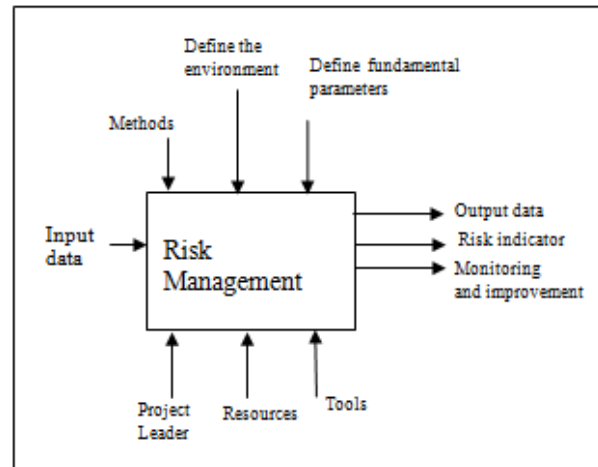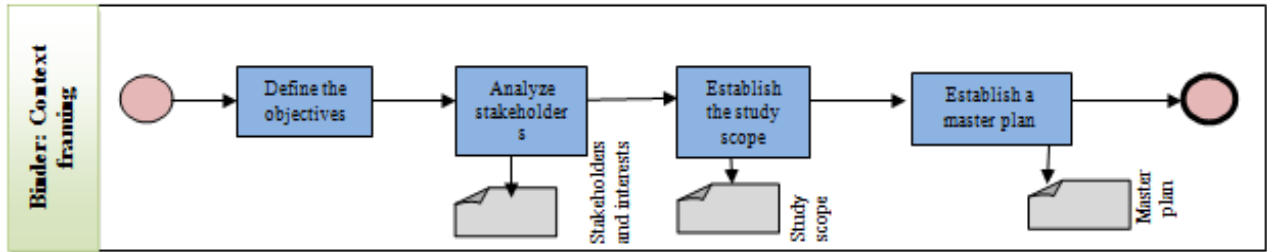

Figure 2: Risk management – An external view

In developing this representation, we divided the "risk management" entity into four binders: "Context Framing" binder, "Risk assessment" binder, also divided into three stages (identification, analysis and evaluation), "Risk Processing" binder and finally "Risk monitoring" binder.

a- Binder: Context Framing

Figure 3: Context framing

The first binder used to frame the process of risk management in setting the boundaries of the study by delimiting the environment and fundamental parameters.

Description: The elaboration of the context is done by the Risk Manager in collaboration with agents directly involved in the activity, with the definition of the parameters of study in which the study system achieves its purpose, and delimitation of the doublet (business / logistic service provider LSP). Then the actors identified in the process will be appointed to accompany the rest of the analysis. Finally, a master plan is established by specifying the basic parameters of the management and the sequence of steps. This amounts to applying the five Ws method (Who is it about? What happened? When did it take place? Where did it take place? Why did it happen? How did it happen?) at every step to make the process operational.

b- Binder: Risk assessment:
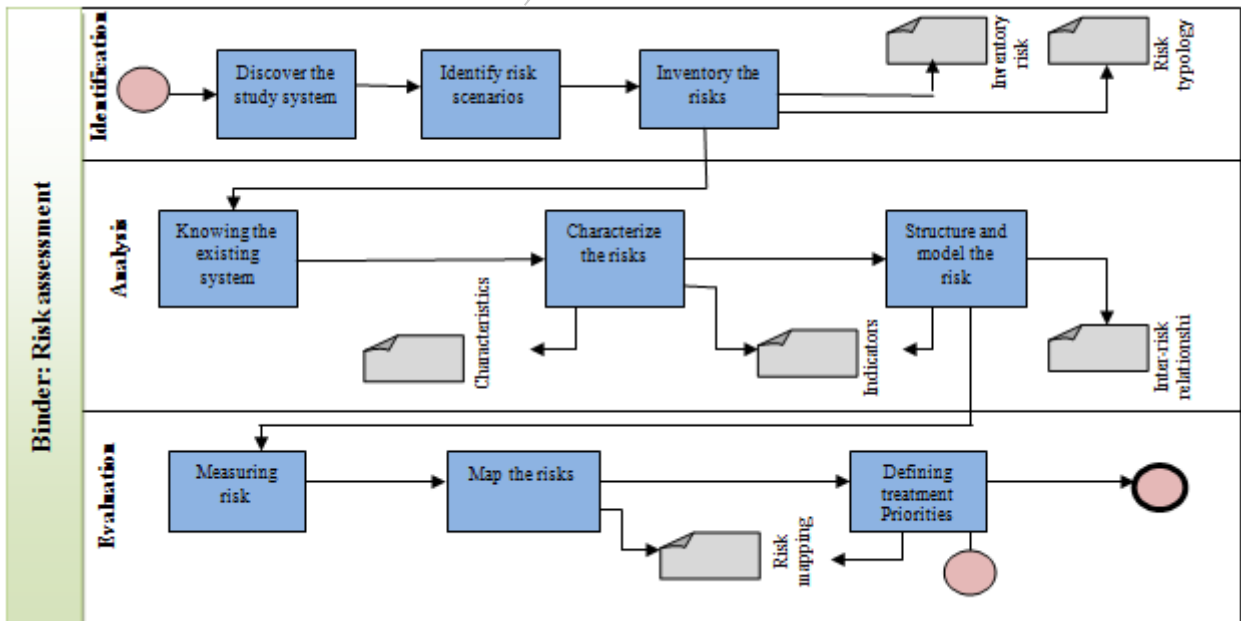
Figure 4: Risk assessment

Identifying the risks: Identifying the existence of potential risks by developing a comprehensive inventory of existing risks.

Description: This step is mainly to identify and document the risks and information to understand the context in which they occur. Risk identification is achieved through the establishment of a register and a typology of risks to establish a shared vision of the risks that the project is exposed to.

Risk Analysis: Characterize the risk and understand the operating procedure.

Description: The first step is to discover the existing system, that is to say, a comprehensive risk assessment of the situation by a group of actors according to criteria defined in accordance with the predetermined context.

From the first stage, comes a detailed analysis of the causes characterized by a set of risk factors that can influence a risk event and the result is a dichotomous structure consisting of the risk situation and the risk impact. Thus emerges a structuring of risk that will determine the risk participants and specify the criteria under which the risk will be defined [12].

Risk Assessment: Assess the risks in terms of quantitative or qualitative scale and develop a prioritization of them in order to guide decisions towards the treatment.

Description: This stage begins with the assessment of the attributes of each risk including the probability (or frequency), its impact; if it occurred and the time that is available before having to do something.

A classification of the identified risks will be established to define a consistent set of measures to manage them. When each risk is assessed, the Risk Manager will prepare a risk map based on their priority to be able to determine what risks will be tackled first. An information exchange ensures that the assessment is carried out taking into account all available information and thus helps to establish a strong support for the planning of preventive measures.

c- Binder : Risk processing
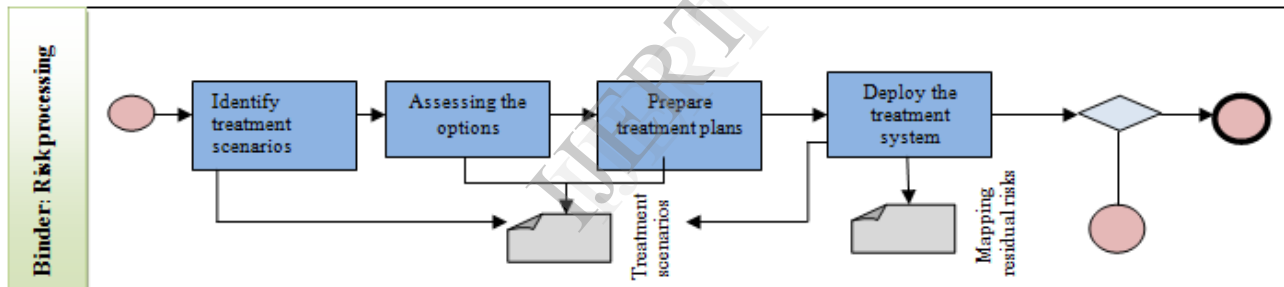
Figure 5: Risk processing

Risk processing: The processing stage is to establish the processing measures and, where necessary, appropriate measures to reduce risk to an acceptable level and make it more manageable.

Description: Generally the Risk Manager must define treatment measures which aim to reduce the probability (or frequency) and the impact of each risk, two attributes that the analysis phase will have determined. Four processing tactics can achieve these objectives: to accept the risk, avoid the risk, share the risk and master the risk while having as much detail as is necessary in order to earn profits [13] [14]. The processing stage must therefore allow each actor involved in the activity to answer the following questions: does this risk concern me? What can I do? And how far should I go and how? while maintaining this process as new risks arise during the carrying out of the outsourcing project.

d- Binder : Risk monitoring
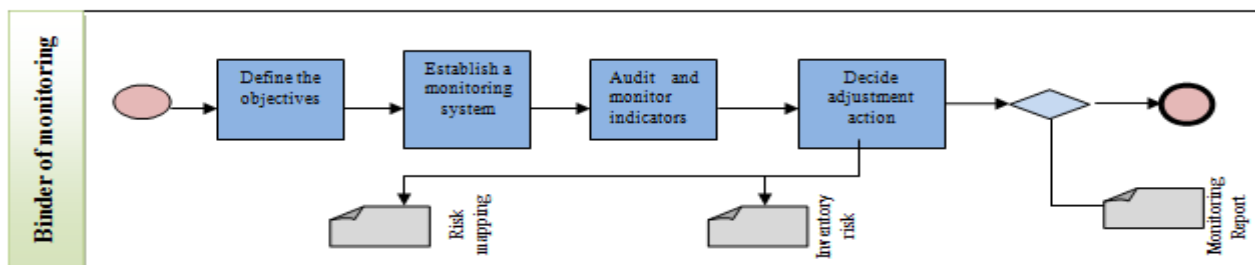
Figure 6: Risk monitoring

Risk Monitoring: Observing the internal and external environment to understand the evolution of risks, and collect the information needed to update the records of risks.

Description: The follow-up stage is subject to regular monitoring and is periodically communicated to stakeholders. This stage is made operational by setting goals and putting in place a monitoring system to oversee the implementation of processing actions for stakeholders, who review the monitoring information, to interpret them in the appropriate context of the product or service covered by the outsourcing project. This is in order to identify trends to which it is subject and identify new risks it is exposed to.

3.4. Modeling Risk Management: The Case of LABEL'VIE

Label'Vie SA is a limited company under Moroccan law. Its mission is the buying and selling, in the self-service form or any other form, of any item and food and non-food consumer product. With the acquisition of Metro Cash & Carry in 2011, the group Label'Vie now covers all forms of distribution. The surface of the Skhirate platform, the studied case, is spread over an area of 24,000 sqm. This area includes the cool and dry warehouse (APLS/surgelés + F&L + Marée), plus the car park area dedicated to unload trucks. The total storage capacity is 23,012 pallets; 19,316 pallets in height and 3696 pallet picking.

The main logistic activity in the Skhirate platform is characterized by four processes: receiving, storage, preparing and shipping. The following figure shows the risk management model of outsourcing logistics as we have conceived.
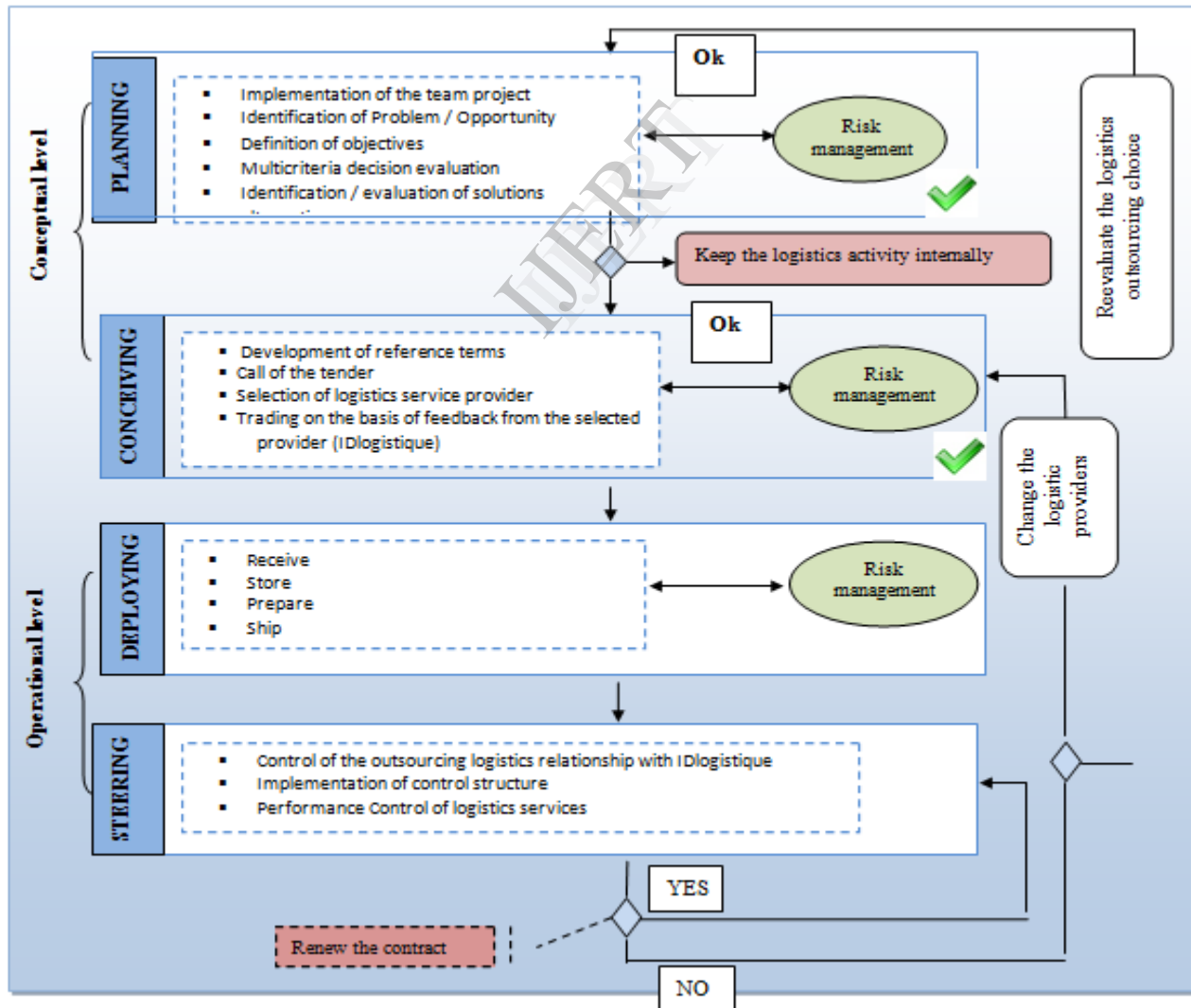

Figure 7: Risk management model of outsourcing logistics

The planning stage sets goals and a master plan. It sets up a team of officials from the platform to conduct the outsourcing procedure by defining the objectives of outsourcing their warehouse and evaluating the decision to keep the activity of internal storage.The design stage is characterized by collaboration between each manager in order to define a structure and modes of operation. Indeed, this stage is to develop the specifications and choosing the right provider at the base of criteria. The deployment is the phase where the service provider IDL manages the warehouse of Label'Vie namely: receiving, storing, preparing and shipping.

Finally, the piloting stage is the implementation of dashboards to assess the capacity of IDL to deliver a service that meets the specifications defined in the contract. When the contract expires, Label'Vie can renegotiate and renew the contract with IDL. Otherwise, there are two options available: (1) Reassessing the choice to outsource by re-planning the process again (restarting from the planning phase). (2) Deciding to continue to outsource its logistics function but changing the service provider (restarting from the design stage).

Note that the first two phases (Planning, Receiving) have already been completed, so we agreed, in consultation with the head of the platform to model the risk management of the "Deploying" phase (figure below), carried out by the IDL service provider and subject of the study.
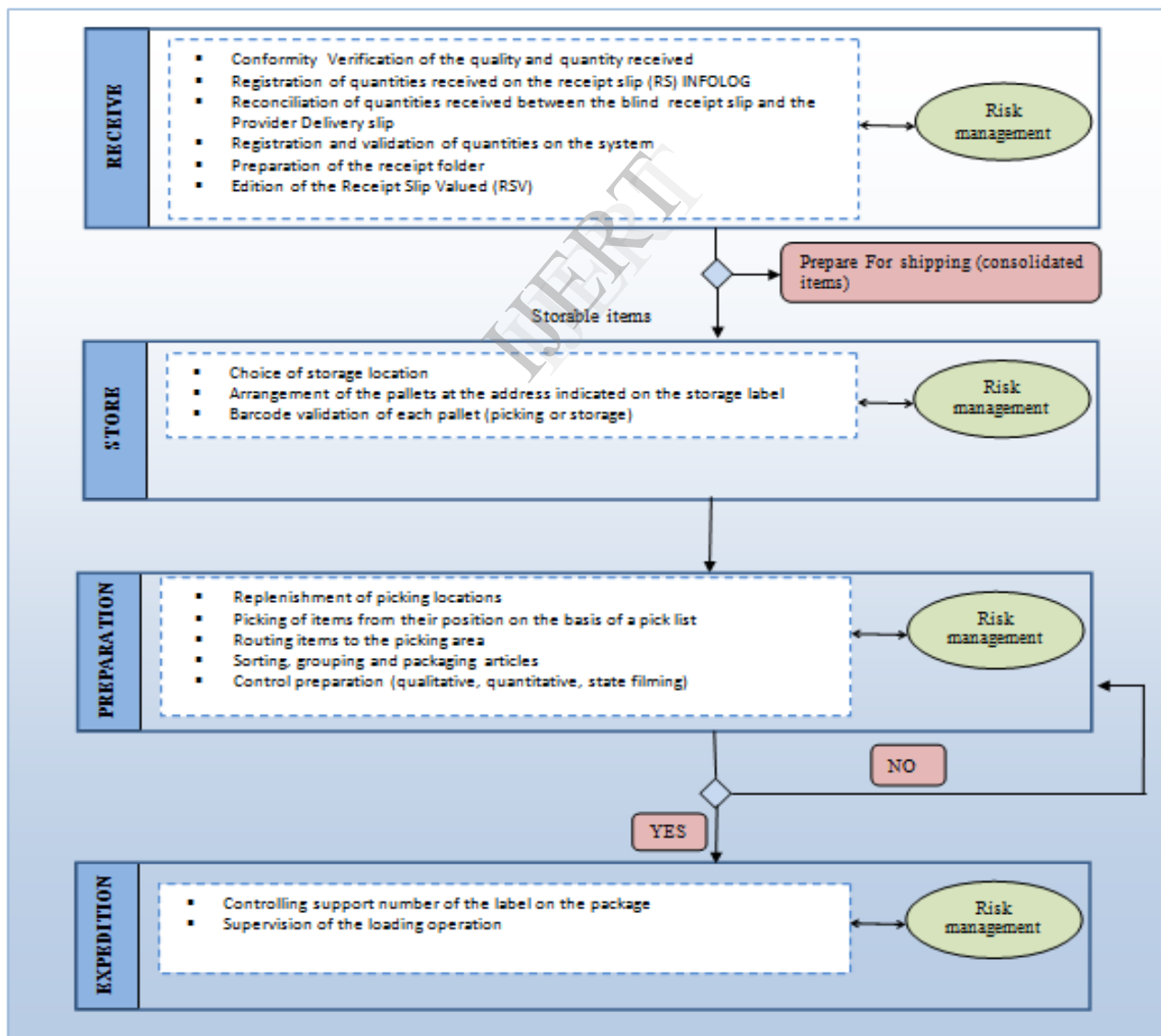

Figure 8: Modeling "Deploying" phase

Discussions

We conducted an analysis of the risk management of outsourcing logistics in the field of mass-market retailing, the case with the service of Label'Vie IDLogistique. This analysis showed the risks, through interviews with managers and staff directly involved in the platform, which can impact the outsourcing relationship. The division of the outsourced service in sub constituent processes encouraged identifying areas of risk that should be monitored. We proposed a risk matrix (see appendix) enabled with the head of the platform and the head Control and Pilotage as well as the various stakeholders in each activity. This matrix summarizes the risks posed, the description of each risk and activity corresponding to each risk, the action plan and the measures to be taken. For example, if the supplier requires that products are always available, hence, there is a safety stock at all times for all items. If the inventory manager wants instead to minimize the stock levels and keep only the bare minimum, the vision of these two individuals would be different and this makes it difficult to establish an effective risk management. In which case you have to sit all the players around the table and develop a common strategy to deal with risk management. Consequently everyone must act accordingly on a daily basis.

In case of a non-completion of the course before May 10, an update of the matrix will be made during the presentation at LOGISTIQUA. This update will include the details of the AMDEC method and the criteria for risk measures based on the assessment of two parameters:

- The impact that evaluates the consequences on the platform.
- The probability of occurrence that assesses the uncertainty of the   occurrence of the risk.

Thus, modelling has allowed us according to the analysis of aspects of the mission, nature, and structure to establish a generic risk management process. In fact, we ended up with a set of risks whose monitoring is shared between the officials of each entity and the officers directly involved in the activity, with the ultimate objective to ensure a successful performance. This notion of sharing also highlights the need for collaboration between the platform and the supplier to achieve the overall performance.

In conclusion, two conditions must be met for an effective risk modelling:

- This strategy requires changing the approach of risk managers and their state of mind; they must understand that they are capable of identifying, qualifying and managing risks.
- Risk management must be transversal in the platform. This model is therefore useful at three levels, being at the same time:
- A guide for analysis
- A diagnostic tool
- And finally an organisation and planning for actions and prevention measures.

4. Conclusion

At a time when the increase in the organizational and operational complexity is forcing companies to consider new constraints and recourse to external service providers, a reflection on a risk management approach to the outsourcing logistics seems quite relevant. Risk management is not necessarily synonymous with dodging or risk avoidance, but depends on the purposes of the rules and values that each organization chooses to adopt in its relations with its environment and with other actors in the supply chain. Taking into account the risks and the implementation of a risk management approach would promote the success of outsourcing logistics and building a partnership for a long time, along with limiting the causes of its failure.

Thus, we have found that modelling is required as a guide to analysis and also as a diagnostic tool. It has served us to organise and implement a program of actions of treatment for previously identified risks in relation to each outsourced activity (receiving, storage, preparation and shipping). It should not be forgotten that these actions are necessarily measured by the resources that we want or that we can mobilize in risk management in relation to expected earnings.

Nevertheless, we believe that the work is only in its beginning, the research perspectives will improve the risk matrix and make it finer, conducting the integration of the dimension "impact risk" and "probability of occurrence" in order to identify the criticality of each risk, and offer thereafter, increasingly customized measures of prevention that we can apply to any company that operates in the mass-market retailing.

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APPENDIX

Table 1: Risk Matrix

Risk	Risk description	Impact degree	Activity concerned	Action plan
Receiving unsolicited or erroneous articles	Risk of receiving unordered articles or with incorrect barcodes.	**low**	Receipt	- The receipt must be made on the basis of a customer orders copy
Receipt error	Number of items approved does not match the quantity shown on the delivery slip.	**low**	Receipt	- Blind counting. - Back office rapprochement (administrative agent)
Delivery condition	Failure risk of the supplier in deadline and / or quality, unprofessionalism, non-conformity of the goods received according to the standard packaging, status of delivery trucks, etc...	**Critical**	Receipt	- Hold regular meetings (1/month) with the top 10 suppliers to evaluate their performance and engage them on penalties for non-compliance with service level agreed at these meetings
	Bulk delivery which results in additional costs to the platform (temporary, stretch film ...)		Receipt	- Engage suppliers, in addition to their billing charges, to penalties for non-compliance with the contract terms
Expiry date for consumption	Receiving items with near expiration dates	**Significant**	Storage	- Provide to receptionists supports indicating deadlines consumption to tolerate when receiving.
Referencing articles	Risk of non-attachment of barcode of articles (ex: change the bar code by the supplier)	**Significant**	Storage	- Require to the provider to notify Labelvie of any change of barcode and apply penalties for non-compliance

Out of stock	Risk of disruption due to delivery delays or exceptional provider command, provider is in disruption, increasing prices for items.	**Critical**	Storage	- Identify the actual cause of the failure and apply appropriate corrective action as appropriate. - Update procedures to compensate for any cause risk of rupture (eg, exceptional control, increasing price ...)
Overstock	Risk of stock excess related to a decline in orders from stores, forecast stockpiling and flow management ineffective, etc..	**Critical**	Storage	- Have a stock management pattern that instantly shows the relationship between the real-time stock available and demand changes - hold follow-up meetings with the procurement department.
Storage condition	Risk related to the organization within the platform, addressing problem, lack / connection error at the SI, misplacement, etc..	**Critical**	Storage	- Update and improve the traceability system stock, avoid errors in preparation and delivery of items, awareness and monitoring of storage agents
Non-filling the warehouse (financial risk)	Mismanagement of supplies, non-availability of items from suppliers, delay placing orders ... etc.	**Critical**	Storage	- Provide a list of suppliers to contact in case of failure of principal suppliers.
activity volume / destination exceeds truck capacity (planning)	Inadequate coordination with transportation service that can lead to a mobilization of space, risk of theft (exchange items not loaded with those damaged on the stock)	**Significant**	Preparation	- Communicate at Day - 1 the shipping forecast to the transport service to provide the necessary logistics - Provide more providers for the transport operation.
Errors in shipments	Risk of error in the preparations sent to stores (error location of supports)	**Significant**	Preparation	- Provide a post preparation control to ensure that items ship correspond to delivery slip. Include in the control the verification of the destination. - Claim of stores within 24 hours.
Damaged shipment	Risk of damaged shipment due to a misuse of product during the journey to the store, non-optimal preparation, case of unsecured transport,	**Critical**	Expedition	- Plan to include expenses to the transport provider related to breakage during transport operation. - Provide a spot check on receipt of delivery to the store.

The rest in preparation areas after loading the trucks	Risk is in port linked to an estimation error of tonnage, rush orders, special orders, etc..	**Significant**	Expedition	- Communicate at Day -1 the shipping forecast to the transport service to provide the necessary logistics
Late delivery to stores	Risk of delayed supply shops, forgetfulness / lack of order processing, order not down at the system level (order valued but not sent).	**Significant**	Expedition	- Provide regular delivery schedule containing all stores. - Provide a support system in which allows to estimate the commands based on historical statictics and compare them with the commands received. - Provide back-up trucks by region.
Contractual failure in logistics discounts	Risk that the discount logistics are not contracted, including those relating to historical suppliers.	**Significant**	Monitoring & Control	- Provide a standard model of logistics contracts indicating all the elements to be agreed in the contract.
Lack of communication of volume with purchases service	Risk associated with non-compliance with volumes such as negotiated by purchases service (purchases forecast is largely disconnected from the forecast of stores).	**Significant**	Internal	- Make shops aware to be engaged in more commands.
Risk security (Personal/means)	Risk personnel security at the platform (safety device, handling equipment, etc.).	**Significant**	Internal	- Update and ensure compliance with safety procedures within the platform.
Diversion / theft	Risk of diversion / theft of goods at the platform	**Weak**	Internal	- Evaluate the security system of the platform and intervene when necessary.
Exchange of information between the GOLD system (Labelvie) and INFOLOG (provider IDlogistique)	Risk of late / no exchange of information between GOLD and INFOLOG can cause loss of information, ineffective monitoring, etc..	**Critical**	IS	- Integrate into the interfacing system (batch control) to ensure the exchange of information flow between GOLD and INFOLOG.
Network failure	Risk of network outage that may impact the functioning of the platform operating system	**Significant**	IS	- Provide a special procedure in case of network failure - Installation of a secondary network (must be able to take over in case of failure of the primary network).