

Risk Management and Security Practice in Customs Supply Chain: Application of Cross ABC Method to the Moroccan Customs

Lamia Hammadi, Abdellah Ait Ouhman, Aomar Ibourek

Abstract—It is widely assumed that the case of Customs Supply Chain is classified as a complex system, due to not only the variety and large number of actors, but also their complex structural links, and the interactions between these actors, that's why this system is subject to various types of Risks. The economic, political and social impacts of those risks are highly detrimental to countries, businesses and the public, for this reason, Risk management in the customs supply chain is becoming a crucial issue to ensure the sustainability, security and safety. The main characteristic of customs risk management approach is determining which goods and means of transport should be examined? To what extent? And where future compliance resources should be directed? The purposes of this article are, firstly to deal with the concept of customs supply chain, secondly present our risk management approach based on **Cross Activity Based Costing (ABC) Method** as an interactive tool to support decision making in customs risk management. Finally, analysis of case study of Moroccan customs to putting theory into practice and will thus draw together the various elements of a structured and efficient risk management approach.

Keywords—Cross ABC Method, Customs Supply Chain, Risk, Risk Management.

I. INTRODUCTION

THE risks such as smuggling of drugs, weapons or counterfeit highlighted the vulnerability of the Customs supply chain. Indeed, the economic, political and social consequences of these were felt far beyond the borders of the affected countries. Risks in customs context can sometimes be caused by minor events amplified by faults of organization which are increasingly complex as well as the visibility and knowledge possessed each of the actors in this complex ecosystem are sometimes limited by the lack of tools to aid their understanding and sharing of information.

Risk management in the customs supply chain is becoming a crucial issue to ensure the sustainability or provide a competitive advantage for many actors in the commercial world. The need for risk management of the supply chain is

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even more important than trade relations tending to become more complex in terms of the number of partners involved, and exposure to economic, financial and political constantly changing environment. Many methods of risk management currently exist for the study of physical systems or industrial processes. In the world of supply chain risk management is a more recent topic and the proposed solutions are not yet able to meet the various characteristics of these organizations [1].

Indeed, our risk management approach based on ABC Matrix aims to identify Risk classes in Moroccan Customs supply chain, and to propose measures for treatment of these risk classes. To identify risk scenarios, the analyst is assisted by the calculation of criticality as indicator of risks and undesirable events.

However, our proposed policy is not intended to address in detail the risk scenarios, but rather to establish a tool for supporting decision making during the various phases of risk management, and to draw a sequential process helps to define the various elements of a structured and efficient risk management approach to ensure compliance with customs requirement and to achieve an appropriate level of security, safety and facilitation of trade.

II. CUSTOMS SUPPLY CHAIN

It's evident that the customs logistics specialists have already dealt with the customs supply chain with great interest. Nevertheless, its practical usage has always been full of ambiguity. Consequently, it's necessary to clearly spot its conceptual, structural and functional sides.

A. Definition of Customs Supply Chain

Customs supply chain incorporates all aspects of moving cargo from the exporter through the transport process, the logistics operations and customs crossing to the final importer. The customs crossing refers to declaration processing, customs clearance, data analysis, risk assessment, document checking, scanning, physical inspection, etc. The customs supply chain is no longer contained within countries borders, but encompasses all nations, whether they are exporters, importers or manufacturers.

B. Customs Supply Chain Actors

Any organization takes part in the routing of flows from the starting point to its destination in the best conditions is called link or actor in the supply chain [2]. During the research internship carried at the Casablanca port, we determined the

actors and their roles in the Customs Supply Chain; the results are summarized in Table I.

TABLE I
ROLE OF ACTORS IN THE CUSTOMS SUPPLY CHAIN (CASE OF MOROCCO)

	Actors	Role in the supply chain
Customs operators	Importers	Importers, in international trade, bring in (goods, merchandise, commodities, ect...) from a foreign country into a domestic country (Morocco) for use, sale, processing, reexport, or services.
	Exporters	In International Trade, "Exporter" refers to selling goods and services produced in the home country to other markets
Transport process	Air/rail/sea carriers	Carriers transport cargo via air, rail, or sea
	Border highway carriers	Highway carriers transport cargo for scheduled and unscheduled operations via road across the Algerian or Mauritanian borders.
Customs crossing	Customs officer	Officers clear goods through customs. The responsibilities of a customs agent include documentary control, the preparation of the registration form and deposit, the determination of duties and taxes to pay, and arranging for delivery to the importer.
	Freight forwarder	Is a person or company that organizes shipments for individuals or corporations to get goods from the manufacturer or producer to a market, customer or final point of distribution. A forwarder does not move the goods but acts as an expert in supply chain management.
Logistic process	Freight consolidators/ ocean transportation intermediaries and nonvessel-operating common carriers	<ul style="list-style-type: none"> - A freight consolidator is a firm that accepts partial container shipments from individual shippers and combines the shipments into a single container for delivery to the carrier. • - A transportation intermediary facilitates transactions by bringing buyers and sellers together. - A nonvessel-operating common carrier is a company that buys shipping space through a special arrangement with an ocean carrier and resells the space to individual shippers.
	Port authorities/terminal operators	<ul style="list-style-type: none"> - A port authority (in Morocco: National Ports Agency, ANP) is an entity of state or local government that owns, operates, or otherwise provides wharf, dock, and other marine terminal investments at ports. - Terminal operator (in Morocco: Marsa Maroc) responsibilities include the overseeing and unloading of cargo from ship to dock, checking the actual cargo against the ship's manifest (list of goods), checking documents authorizing a truck to pick up cargo, overseeing the loading and unloading of railroad cars, and so forth.

C. Functional Analysis

It is widely accepted that the case of customs supply chain is classified as a complex system, due to not only the large number of components (customs, businesses, companies categorized, freight forwarders, individuals,...), but also their Structural links, and the interactions between these components. Indeed, to establish links between actors in the customs supply chain, we opted to Functional Diagram for positioning the system in its environment (Fig. 1).

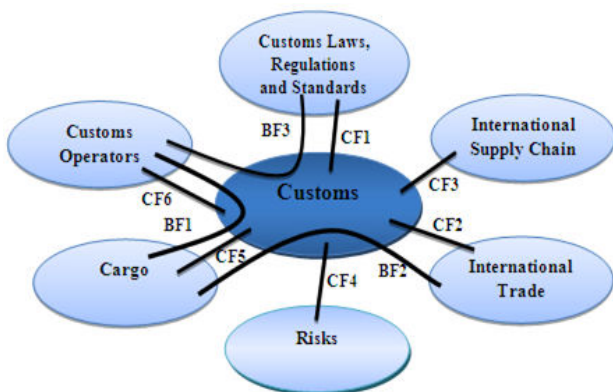


Fig. 1 Functional diagram of the customs supply chain

System Functions: Basic Functions (BF) and Complementary Function (CF):

- ⊕ **BF1:**
 - Reduce clearance delay;
 - Simplify customs clearance procedures
 - Covering the customs duties and other taxes,
- ⊕ **BF2:** Achieving an appropriate balance between trade facilitation and regulatory control.

- ⊕ **BF3 :**
 - Fight against fraud;
 - Comply with customs regulations (sanitary, phytosanitary, technological, etc...);
 - Comply with customs laws.
- ⊕ **CF1:** Achieving compliance between Customs procedures and international regulations and standards
- ⊕ **CF2 :** Facilitate commercial exchange;
- ⊕ **CF3:**
 - Achieving Customs supply chain safety and security ;
 - Monitor and manage the supply chain.
- ⊕ **CF4:** Managing risks to ensure that the customs objectives are achieved as efficiently and effectively as possible.
- ⊕ **CF5:** Control cargo by the use of risk-based selectivity
- ⊕ **CF6:** Identifying high risk operators (the WCO's SAFE Framework of standards).

III. RISK MANAGEMENT APPROACH

Our approach (see Fig. 2) is based on a sequential process whose goal is to design an interactive system to support Decision Making in customs risk management and establish a logical link between its steps. Therefore, it is appropriate that our formalism and our manner to present data will be generic and especially adaptable to different contexts come from customs world. The risk management process, as the systematic identification and implementation of all measures necessary to limit exposure to risk, consists of several procedures that Customs and other actors in customs supply chain should put through: risks identification; risk analyses risk assessment, risk evaluation; risk treatment; monitoring and reviewing, and communication and consultation within

national Customs administrations, C2C (Customs to Customs) and C2B (Customs to Business) [3].

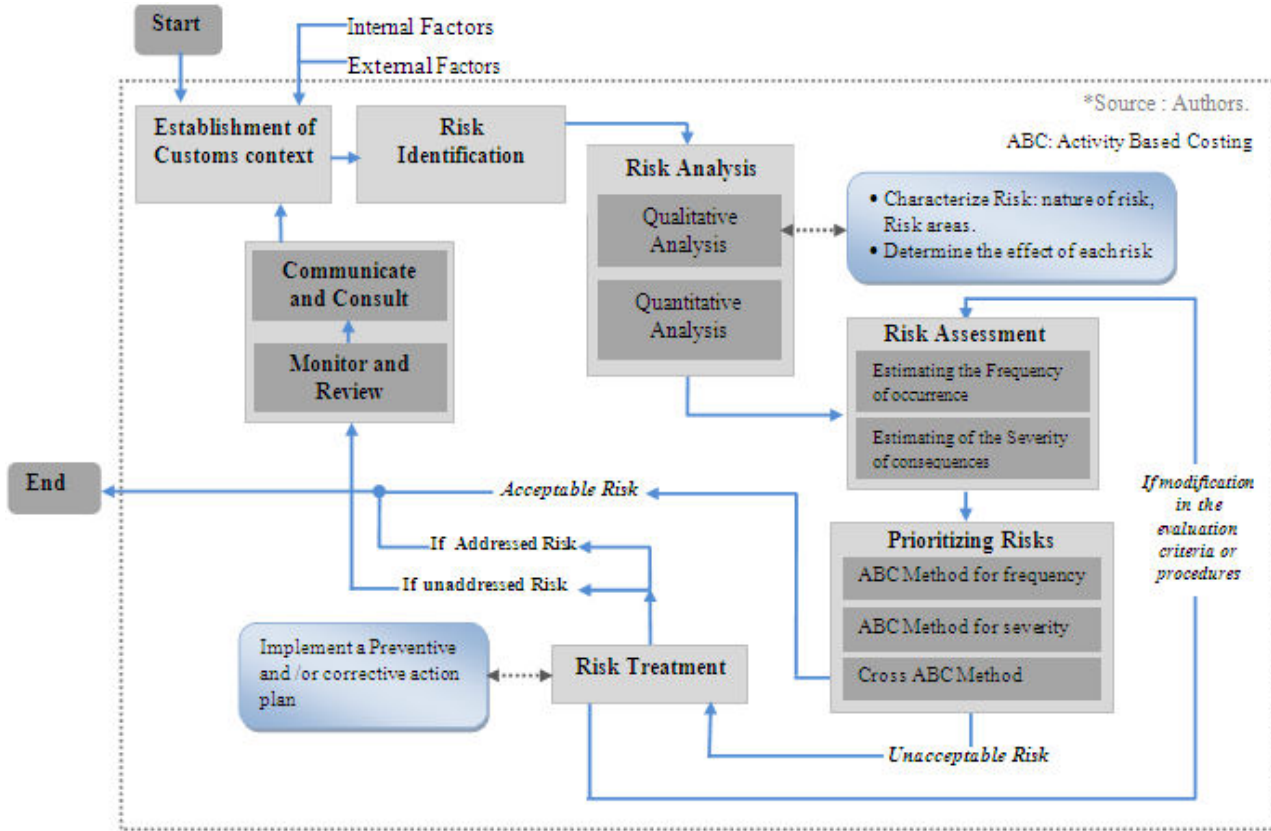


Fig. 2 Risk Management process based on Cross-ABC Method

A. Establishing the Moroccan Customs Context

The process of establishment of risk management in customs supply chain starts with defining of the Moroccan customs context in which risk management will take place. Determining what needs to be managed helps set the criteria and parameters for the rest of the risk management process.

1. Organization of Moroccan Customs Administration

The Moroccan Customs Administration (MCA) as a legal enforcement entity operating within the framework of the Ministry of Economy and Finance is piloted by a General Management and structured into network throughout Moroccan territory. It's functionally organized by central divisions (four in number in addition to a directly attached to the Directorate General Division) and geographically by regional directorates (nine in number) [4].

2. Presentation of Moroccan Customs

Moroccan customs can be studied in two ways: in its functional aspect or in its structural aspect.

a) Functional Aspect

Every description of a system consists to express its aim. For this, it is necessary to ask the three questions of function block diagram:

- To whom customs serve?
- On what it acts?

● In which aim?

The response to these questions allowed us to define and draw together the various roles of the Moroccan customs in the global supply chain as summarized in Fig. 3.

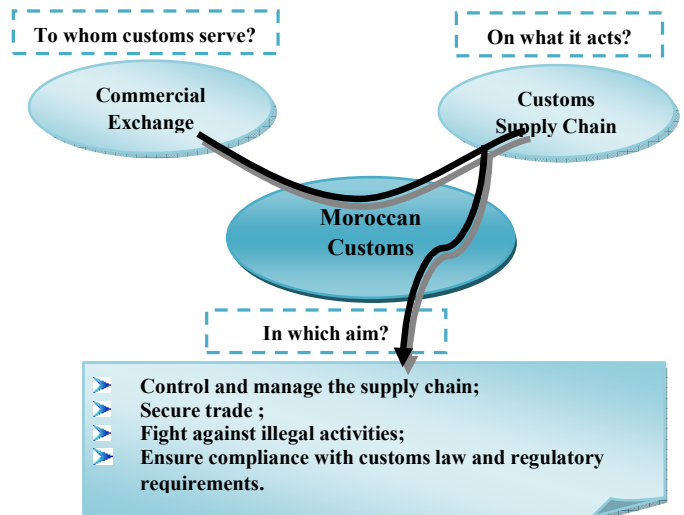


Fig. 3 Function block diagram of Moroccan Customs

b) Structural Aspect

It's often assumed that when we talk about Structural Aspect of a system, we have to answer the question "how does

it work?" In discussing this question with the officials of Moroccan customs, the primary answer was "Identifying the missions of Moroccan Customs Administration".

Traditionally MCA charged of the collection of customs duties and taxes, the fight against the illicit traffics and with the control of the goods and the persons at borders, Moroccan customs saw confiding new missions of strong economic and security stakes as depicted in Table II.

TABLE II
MISSIONS OF MOROCCAN CUSTOMS ADMINISTRATION

Moroccan customs administration	Fiscal mission	<ul style="list-style-type: none"> Collection of budget revenues. 	Reassurance of the Customs supply chain
	Economic mission	<ul style="list-style-type: none"> Regulation and protection of economic market, Development of trade and support of companies, Fighting against all the forms of commercial fraud. 	
	Social mission	<ul style="list-style-type: none"> Protection and the preservation of the national heritage, Environmental protection by traffic check of products harmful to the environment. 	
	Safety mission	<ul style="list-style-type: none"> Consumer's protection by watching the respect for regulations applicable to the import, regarding control of the technical standards, the sanitary measures. 	
	Security mission	<ul style="list-style-type: none"> Fighting against the risks of transnational criminality, Anti-money laundering Protection of the intellectual property rights. 	

3. Characteristics of Moroccan Customs Context

Fig. 4 is the Strengths, Weakness, Opportunities and Threats of Moroccan customs (SWOT Analysis). It is essential to know these attributes as it will help us to determine what needs to be managed, understand the problem areas that require to be solved and analyze the internal and external environment of Moroccan customs to determine its position and its strategic options.

Origin	Internal	<p>Strength</p> <ul style="list-style-type: none"> Implementing contemporary improvement and development in standardization and harmonization of customs procedures and management system; Moving from control to facilitation; Increasing Moroccan companies competitiveness; Reducing both time and procedures of clearance. 	<p>Weakness:</p> <ul style="list-style-type: none"> The quality of service provided to external customers is still insufficient; The articulation between central and external services is lacking to efficiency and reactivity Lack of cooperation with other institutional actors (WCO, WTO, and INTERPOL...) Customs human capital could be better valorized (training, working conditions ...).
	External	<p>Opportunities</p> <ul style="list-style-type: none"> Implementing Risk Management in various stages of Moroccan customs supply chain, Strategic Plan (2011-2015) aimed to stimulate the services efficiency and capacity building. Reinforcing the competitiveness of Morocco and promote investment (National Pact for Industrial Emergence and development of logistics competitiveness). 	<p>Threats</p> <ul style="list-style-type: none"> Risks in Moroccan customs supply chain Criteria of selectivity do not cover all types of risks in the Moroccan customs; Integrity and the lack of congruence between the written policy of Risk management and what happens in practice, Criminals, smugglers and traffickers are always in search of other entry routes;
		Helpful	Harmful
		Factor	

Fig. 4 SWOT Matrix of Moroccan Customs

The top left quadrant of the matrix **Strengths** (internal origin, helpful factors) represent positive internal factors in which Moroccan customs achieve an improvement and development in trade facilitation, simplification and harmonization of its procedures and management systems, and in social security and safety.

The top right quadrant **Weakness** (internal origin, harmful factors) represents negative organizational factors and events occurring that prevent Moroccan customs from achieving its objectives,—provide international trading community with an appropriate level of facilitation, and ensure compliance with customs laws.

The bottom left quadrant **Opportunities** (external origin, helpful factors) depicts the possibilities of development, technological changes, general economic trends, and political and regulatory changes expected that Moroccan customs must consider so as to involve in all international modernization process.

Finally, the bottom right quadrant **Threats** (external origin, harmful factors) represents elements in the customs supply chain environment that could cause trouble for Managing supply chain, trade security, compliance with customs laws and regulatory requirements and community protection.

The important consideration from our SWOT analysis perspective is to ensure that the vulnerability of the customs supply chain is related to Risks facing in customs, to avoid and/or to limit the possibility to expose to these menaces, Customs Administrations in all over the world must implement an efficient and effective Risk Management Approach (RMA).

B. Risk Typology

1. Understanding the Concept of Risk in the Customs Context

Whenever, we are asked to provide a consideration on risks in the customs context, there are many questions to be answered, "What are the risks? How will be identified, recognized and assessed? Where, When and How the risk is likely occurred? Who does it affect? and Why are there possibilities of fraud?". Determining the answers of these questions are not always as simple as it sounds, due to not only the relative difficulty of actors to understand the true nature of risks, but also the large number of partners involved in customs supply chain and the economic and financial environment changing.

The concept of risk in customs context refers to the possibility of events and activities occurring that may prevent the organization from achieving its objectives [5]. And it is commonly held belief that risk is a strategic prevention and response to potential threats [6]. The important consideration from a risk perspective is to ensure that the potential risk has been correctly identified, assessed and treated, so as to achieve three primary objectives— secure the customs supply chain, ensure compliance with regulatory requirements and guarantee balance between the needs for trade facilitation and the level of regulatory control and intervention.

2. Risk Identification

The global supply chain consists of a number of risks in various stages. In the customs supply chain these risks are related to the potential for noncompliance with customs laws, regulatory requirements and international standards such as restricted and prohibited goods, rules of origin, duty exemption regimes, security and safety regulation, sanitary, environmental and technical standards, intellectual property, transnational crime, commercial fraud, and illicit traffics, as well as the organizational risks.

Customs supply chain, like any other supply chain, needs to manage its risks. This requires the systematic implementation of Risk management principles to limit exposure to those risks, which can ensure compliance with Customs laws and regulations in a way to achieve a high level of both performance and safety. The underlying elements of such a strategy are identifying, analyzing, evaluating and treating risks. Before analyzing risks in Moroccan customs supply

chain it is important to understand the true nature of risks faced in this area/ domain. This part is risk identification where we aim on finding the risks that have an impact on the community, company and on national, regional and international economy. Risk identification is a very important step that leads on to further assessing of problem. For identifying risks faced in different stages of Moroccan customs supply chain and determining their distinctiveness, we used three techniques of gather information-- Brainstorming, Conducting survey and Interviews with senior officials from Moroccan customs administration who had been tasked with implementing the risk management in Moroccan customs.

a) Nature of Risks in Customs Context

Three main risk natures identified in customs operations adopted by Morocco, they are Customs frauds, threats on social safety and security, and organizational risks as depicted in the Table II.

TABLE II
 TYPES OF RISK IN CUSTOMS SUPPLY CHAIN

Nature of Risk	Characterization	Risk	
Fiscal	- Customs frauds, as evading payment of tariffs and other duties, are treated through: declaring and accepting improper customs value; declaring and accepting misclassification; declaring and accepting improper origin of goods; discharging of import for processing; discharging of outward processing; illicit removal of goods from customs supervision; and undeclared import goods for customs clearance, are one of the most important and highly recognized risks in Customs management strategies worldwide.	<ul style="list-style-type: none"> ⊕ Commercial fraud <ul style="list-style-type: none"> • Tax evasion in terms of value and volume. • Tax code and country of origin ⊕ Money laundering 	
Social safety and Security	-Threats on social safety and security in terms of public health, environment and consumers, including proper implementation of measures related to import and export of goods to and from Morocco,	Illicit traffic	Smuggling of Narcotics, weapons and explosives, drugs and precursors, illicit trade in dual-use goods; smuggling of cultural heritage, smuggling endangered animal and plant species; smuggling of nuclear and radioactive material;
		Safety	Counterfeit and pirated goods, smuggling of goods, dangerous products or not corresponding to the required technical standards
		sanitary	products not corresponding to the required sanitary standards, toxic waste, substances impoverishing the ozone layer, polluting products
Organizational	-Events and activities occurring that may prevent Moroccan customs from achieving its objectives (the collection of customs and duties taxes)	<ul style="list-style-type: none"> ⊕ Lack of staff competence, ⊕ Integrity, ⊕ Ineffective procedures, ⊕ Lack of coordination with other agencies, ⊕ limited human and material resources, ⊕ And IT Failure. 	

Source: Authors.

b) Risk Areas

After setting the parameters and context for the Moroccan customs supply chain and understanding the true nature of risk, the next step is identifying the "risk areas", which determines risks that may prevent the system from achieving its goals. The main objectives of the system, here Moroccan customs supply chain, relate to revenue effective and efficient collection, ensuring community protection and security, preservation of the national heritage, protection of the natural resources and ensuring compliance with the laws and regulations administered by Customs in a way that guarantees facilitation of trade.

Determined risk areas, along with the information from different sources (IT system for processing declaration; internal detailed records from different related units within Customs Administration; information from external governmental institutions; international customs cooperation), are the main basis for *identification of risk areas*. Based on the obtained information, the major risks are divided into "Risk Areas" and the key risks under each area are decomposed into more elementary categories, so continued until obtaining the "Risk ontology". This ontology would classify graphically and allocate risks between different objectives as follows in Fig. 5.

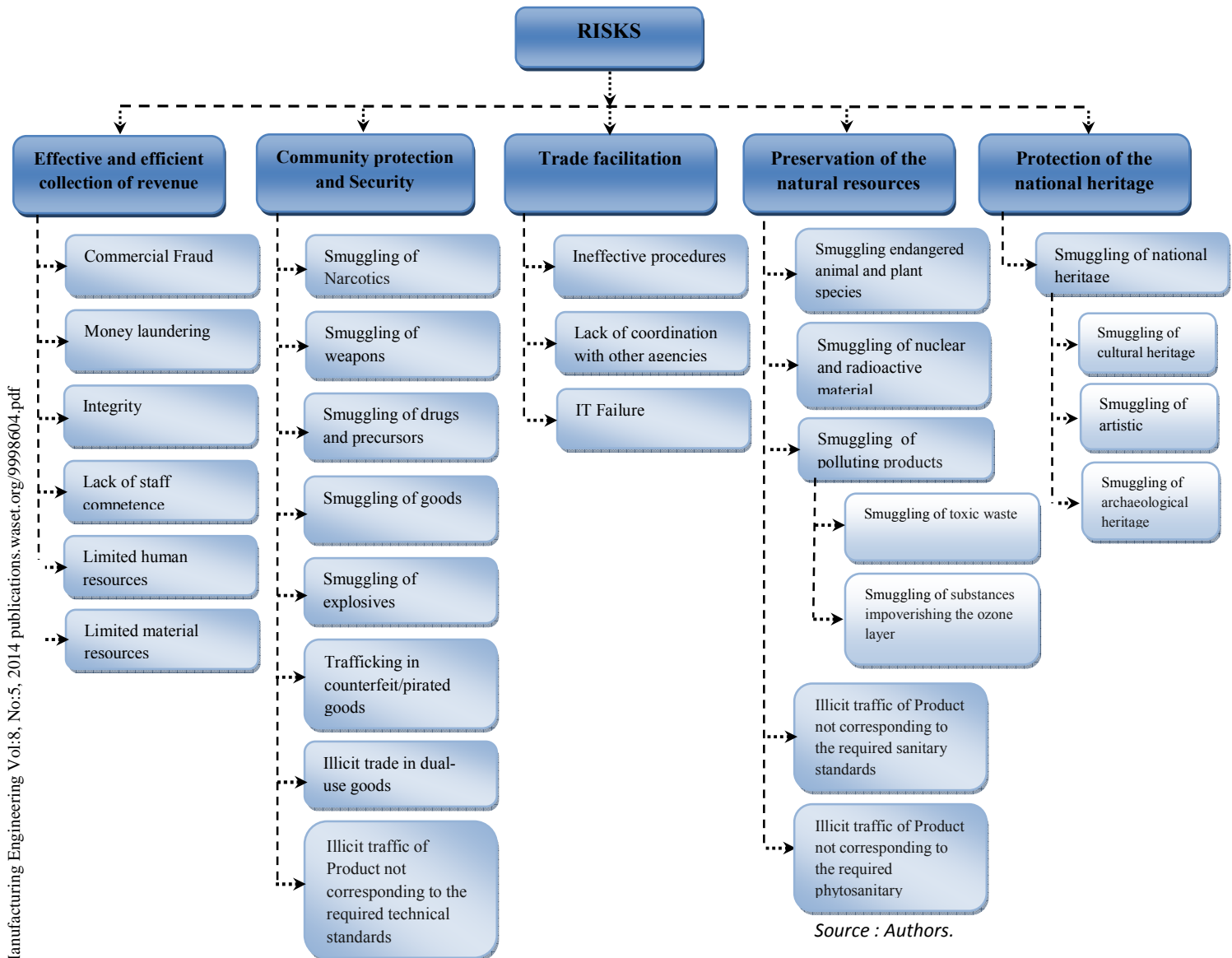


Fig. 5 Risk areas in Moroccan customs supply chain

c) Risk Consequences in Customs Context

The risks in customs context have economic, political, environmental and social impacts, which cause serious harm to the countries, businesses and the public. Its deleterious consequences occur every day by:

- The loss of revenue for the countries which makes its governments unable to provide the same vital public;
- Services because revenues are diverted by smugglers, criminals and corrupt officials;
- A slowdown in industrial and commercial development due to the huge loss of turnover for some domestic companies;
- A transfer of economic power from the market, government and citizens to criminals leads to the increase of crime rate;
- Investment in criminal activities (terrorism, arms trafficking);

- The proliferation of hazardous and noxious products, which do not meet the standards of quality and consumer's health;
- Environmental deterioration or death cases due to the drugs or counterfeit medicines consumption.

In conclusion, the illicit trade affects negatively a country's economic growth, grind down its social development programs and erode investor confidence

C. Risk Analysis

This part consists of an analysis of each risk identified in the previous phase. Risk analysis is principally about quantifying risk in terms of both probability and consequences of risk occurrence. In short, the analysis considers:

- ✦ **Frequency:** how likely is an event to happen; and
- ✦ **Gravity:** what are the potential consequences and their magnitude?

For each risk scenario, we estimate the frequency and gravity of consequences can be generated according to systemic grid of likelihood and gravity of potential risk previously defined as depicted in Tables III & IV. After analyse each of the individual risks under the risk categories in terms of their likelihood and consequence, using a very high (V), high (H), medium (M), and low (L) scale. They jointly come up with the following results in Fig. 6.

TABLE III
 SYSTEMATIC GRID OF LIKELIHOOD

Likelihood	Description	Indicator	weight
Unlikely (remote)	Is not likely to occur and less than 5% chance of occurring.	Has not occurred in the last 3 years or more.	1
Possible (rare)	Could occur but less than 20% chance of occurring.	Has occurred between 1 year and 3 years ago.	2
Likely (occasional)	Likely to occur a 50% chance that this is the case.	Has occurred in the last 1 year	3
Very likely (frequent)	Likely to occur over a 80% chance that this is the case.	Has occurred between 1 month and 12 months	4

TABLE IV
 SYSTEMATIC GRID OF GRAVITY

Impact	Description	Indicator	weight
Low	Adverse risk cause minor delays in service provision.	The advent of an adverse risk can be absorbed into the standard operating procedures.	1
Medium	An adverse risk occurring would obstruct workflows and harm community or business	Prejudice the ability to meet the needs of the community and business	2
Serious	Adverse risk may have negative consequences on the community, business and the national economy	Prejudice the ability to meet the objectives and organizational commitments to the government, community and business	3
Very serious	If adverse risk occurs then there could be a severe community, economic or political crisis.	Long-term ramifications of a government or organization	4

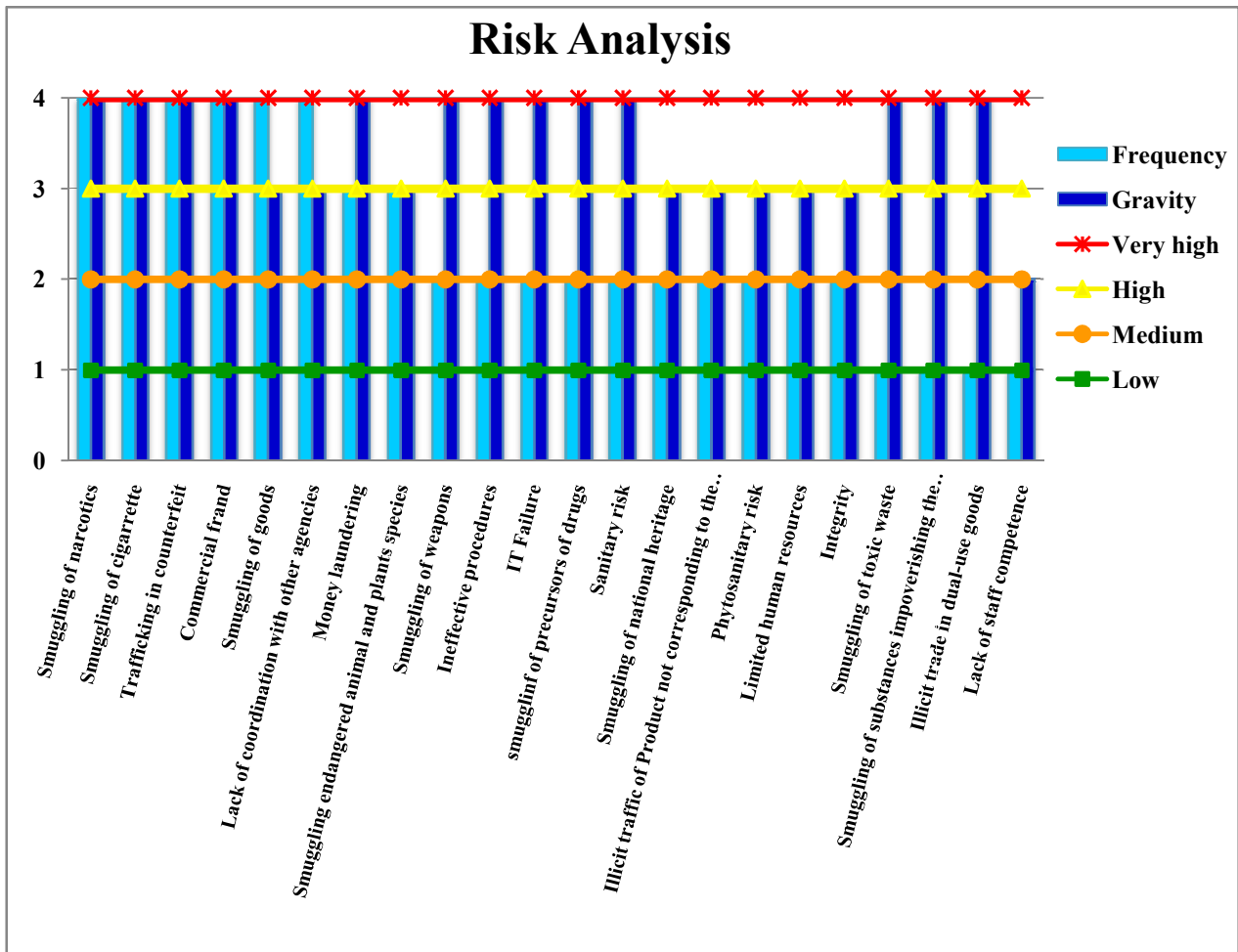


Fig. 6 Estimate of frequency and gravity of Risks in Moroccan customs supply chain

According to the result of our analysis (Fig. 6), there are some risks have a very high level of both frequency and gravity, and that is result of not only that the criteria of selectivity do not cover all risk areas in the Moroccan customs, but also human and materiel resources allocated for the control remain inadequate and insufficient as well as the criminals, smugglers and traffickers are always in search of other entry routes; such risks need an effective and specific treatment. To achieve this, a rigorous study of the level of risk must be conduct.

D. Risk Evaluation and Prioritization

The purpose of this step is to derive classification of Risks in our case study. In order to address this classification, the assessment of the level of risks identified is analyzed and grouped into six overall classifications by using Cross ABC method.

1. Evaluation and Prioritization Method

ABC Cross matrix gives an effective risk classification; target critical risks to develop an action plan can limit their criticality and provides an easy tool to exploit so as to communicate the priorities of risks in intern [7].

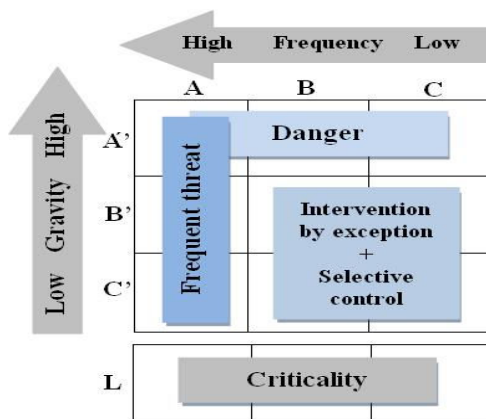


Fig. 7 ABC Matrix

The ABC matrix as depicted in (Fig. 7) puts into perspective how likely is a risk to happen, and the magnitude of consequences of risk can be generated. In addition to the A, B, C categories of the frequency defined by the ABC curve, we find categories A', B', C' where the risks are classified according to their gravity. A fourth line called L for Criticality of risks completes the chart. This creates three domains:

- The **danger** should be managed, even if some of this category of risk is hardly to deal with, because they have economic, political, environmental and social impacts, which cause serious harm to the countries, businesses and to the public.
- The **frequent threats**: those risks should be limited, to secure the customs supply chain.
- All other risks must be dealt with by **scrutiny**, in order to keep precious time and efforts for potentially high risk and determine where future compliance recourses should be directed.

2. Risk Assessment and Prioritization Processes

Effective assessment and determination of classes of risks in customs context is the key to implement an appropriate action plan so as to prevent or respond to the frequency of risks, if we highly assumed that, the gravity of risks is constant. This is an extremely simplistic view, as it supposes that the only way the customs may be secured is by assessing its risks as effectively as possible. To fulfill this, we draw the various steps of such a risk evaluation as depicted in Fig. 8

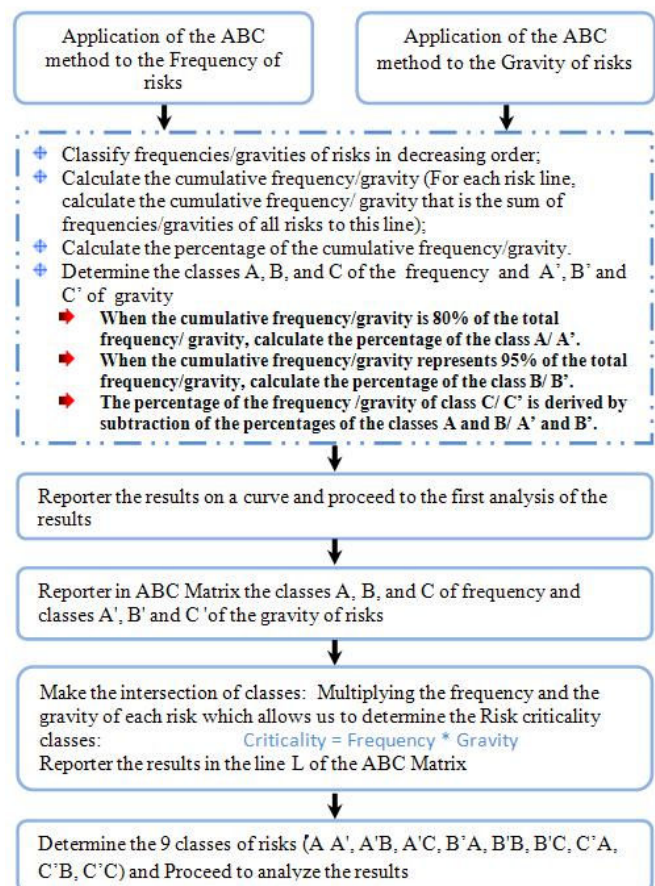


Fig. 8 Risk assessment and prioritization methodology

3. Application of Cross ABC Method

a) Application of ABC Method to the Frequency and Gravity:

After applying the ABC method which is governed by the principle of Pareto,

- Class A: accumulating items 80% of the observed effect,
- Class B: items after accumulating 15%,
- Class C: accumulating items remaining 5%.

We defined the classes A, B and C of the frequency of risks and A', B' and C' of the gravity, the results are summarized in ABC Curve in Fig. 9.

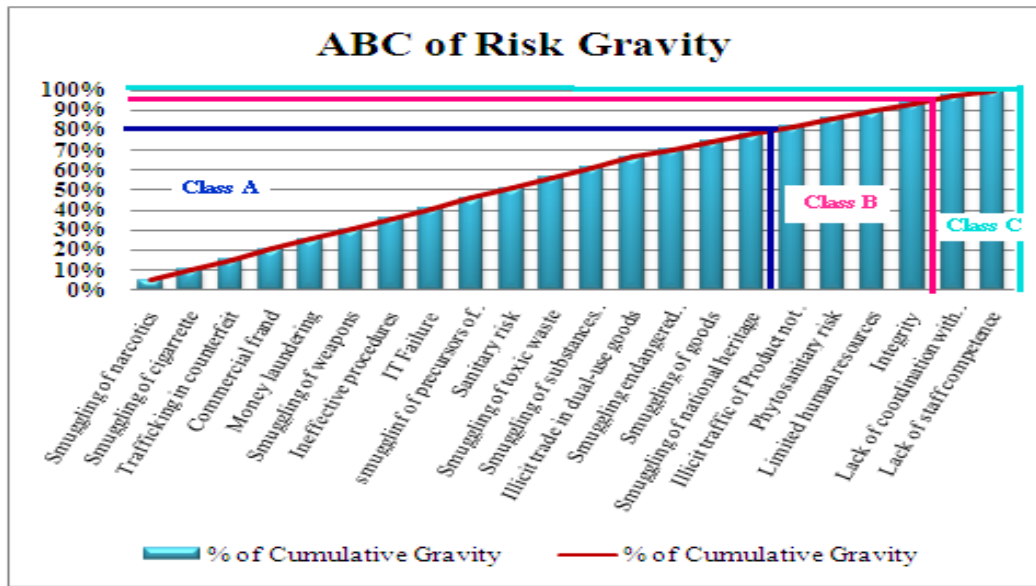


Fig. 9 (a) The A', B', C' Classes of the Gravity defined by the ABC

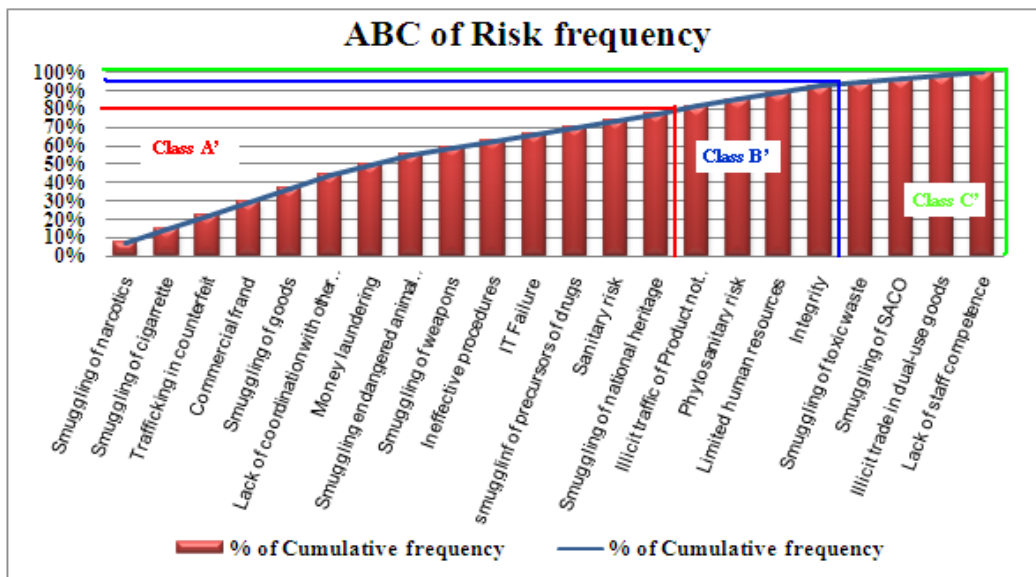


Fig. 9 (b) The A, B, C Classes of the Frequency defined by the ABC

a) Risk Classification by ABC Matrix

This step entails comparing the assessed risks with a pre-determined criterion which is typically considering the risk level of each of the risks (criticality) as described by our relevant management team in the matrix (Fig. 10).

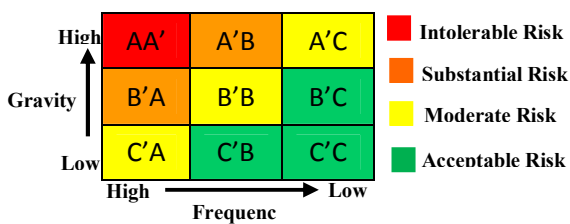


Fig. 10 Risk Significance Matrix

The process of establishment of Risk classes, starts with making the intersection of A, B, and C classes of risk frequency and A', B' and C' of the risk gravity.

Such intersection uses the multiplication of frequency and gravity of the same risk in the classes concerned. Six main Risk classes under four Risk categories (Intolerable, Substantial, Moderate and acceptable), are defined in customs operations adopted by Morocco as depicted in Fig. 11. According to the results of evaluation and prioritization of risks, we determined the critical risks which required a specific treatment. Such treatment is impacted by many different issues, including: internal capability; internal capacity; risk rating/level/ nature return of treatment, and

financial, human and material resources allocated to addressing risk.

		Frequency		
		A	B	C
Gravity	A'	AA': Smuggling of narcotics, Smuggling of cigarettes, Trafficking in counterfeit, Commercial fraud, Smuggling of goods, Money laundering, Smuggling endangered animal and plants species, Smuggling of weapons, Smuggling of precursors of drugs, Sanitary risk, Ineffective procedures, IT Failure.	A'B : -	A'C : , Lack of coordination with other agencies
	B'	B'A: Smuggling of national heritage, Smuggling of toxic waste.	B'B : Import/Export of Product not corresponding to the required technical standards, Phytosanitary risk, Limited human resources, Integrity	B'C : -
	C'	C'A: Smuggling of substances impoverishing the ozone layer, Illicit trade in dual-use goods.	C'B : -	C'C : Lack of staff competences
L	AA'	16,16,16,16,12,12,9,8,8,8,8,8.	A'B : -	A'C : 12.
	B'A	6,4.	B'B : 6, 6, 6,6.	B'C : -
	C'A	4,4.	C'B : -	C'C : 2

Fig. 11 Risk Classes using ABC Matrix

E. Risk treatment

Risk treatment refers to decisions or actions taken in response to Risk classes. For this, the risk analysis department of Moroccan customs, need to propose preventive measures for adoption, to monitor the risk management activities, to

coordinate the activities on different level, and to control the fulfilment of measures and procedures in the field of risk management. The preventive measures proposed for the mitigation of the risks are summarized in the Table V below.

TABLE V
CLASSES OF THE RISKS BOUND TO THE MOROCCAN CUSTOMS SUPPLY CHAIN AND PREVENTIVE ACTION PLAN

Class of Risks	Risks	Treatment / recommendations
Intolerable Risk	Smuggling of narcotics, Smuggling of cigarettes, Trafficking in counterfeit, Commercial fraud, Smuggling of goods, Money laundering, Smuggling endangered animal and plants species, Smuggling of weapons, Smuggling of precursors of drugs, Sanitary risk, Ineffective procedures, IT Failure.	Treat: a strategy and a plan detailed by mitigation are required - Strengthening of the control at the level of the points where practices the customs control and in zones except the latter, and Continuous training of the agents dedicated to the control; - Monitoring continuously through SOPs (importation of weapons, Smuggling of toxic waste, Integrity). - Strengthening the sharing and the exchange of the information concerning the risks and the current techniques of fight against the fraud; - Strengthening the coordination with other agencies and stakeholder engagement strategy and plan needed.
Substantial Risk	Smuggling of national heritage, Smuggling of toxic waste.	- Promotion of the local, regional and international cooperation concerning the fight against the illicit traffics and insurance of the congruence between organizational policy of risk-based compliance management and operational practice (what happen in practice)
Moderate Risk	Lack of coordination with other agencies, Import/Export of Product not corresponding to the required technical standards, Phytosanitary risk, Limited human resources, Integrity, Smuggling of substances impoverishing the ozone layer, Illicit trade in dual-use goods.	- Public awareness on the dangers of the illicit trade ; - Evaluation of the current techniques of fight against the illicit traffic and the control mechanisms used to improve them. - Studying the possibility of concluding bilateral or multilateral agreements for exchange of information and experiences concerning the fight against risks in customs context. -Applying the sanction against criminals and smugglers, including administration penalties or, in more severe cases, prosecution and license revocation. - Tolerate "Ineffective procedures" after a thorough review and alignment against international best practices.
Acceptable Risk	Lack of staff competence	Tolerate with: -An additional training is dispensed to the staff, Monitor continuously.

IV. CONCLUSION

Risk management as systematic identification and implementation of all measures necessary to limit exposure to risks in customs context, can ensure compliance with Customs law and regulation in a way to ensure customs supply chain security and safety. By effectively identifying, analyzing, evaluating and treating risks, Customs significantly increase its performance and streamline its processes and procedures. In this context, Moroccan customs has developed a modern risk management system on strategic, tactical and operational scale. Such approach is currently being done on two levels:

- ✦ the risk analysis based on the principles of automatic selectivity,
- ✦ documentary control or physical inspection as a means of risk mitigation.

Unfortunately, such approach is inadequate and insufficient, as the criteria of selectivity do not cover all risk areas facing in the Moroccan customs supply chain, the current control policy is absent in some points of Moroccan customs territory, The articulation between central and external services is lacking to efficiency and reactivity as well as the lack of congruence between the written risk management policy and what happens in practice. For these reasons, our risk management approach has a broader vision because it's based on preventive action plan. Which requires the involvement of all stakeholders in Moroccan customs supply chain, strengthening internal and external cooperation and coordination, as well as investment in technological and IT solutions?

Finally, the most important consideration from a risk management and security practice is that the principles of risk management must be applied in all administrations, regardless of whether they operate manual or automated systems, and in different contexts come from customs world in order to achieve an appropriate level of security, safety and facilitation.

V. PERSPECTIVES

Our future work consists of the development of a model for handling risks to the customs supply chain. This proposal will continue and confirm the practice field and serve as a basis for developing a solution for decision support in the customs supply chain exposed to multiple risks. The principles applied are the simulation and evaluation of risk scenarios, while providing research solutions vulnerabilities.

The method of analysis and evaluation will allow proposed operational or strategic decisions for risk management in the customs line. Finally, the goal is to provide an environment of risk modeling open enough to accommodate work with regard to the study of different aspects of this complex system (Customs).

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