HANDBOOK

ON COMPLIANCE RISK MANAGEMENT FOR TAX ADMINISTRATIONS

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SAT
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IDB
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Handbook
on compliance
risk management
for tax administrations

SAT
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Handbook on Compliance Risk Management
for Tax Administrations

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1   The views expressed in this chapter are those of the authors and do not necessarily represent those of the International Monetary Fund or its policies.

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Barbados Revenue Authority	Barbados
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Secretaría da Receita Federal	Brazil
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Dirección de Impuestos y Aduanas Nacionales	Colombia
Dirección General de Tributación	Costa Rica
Servicio de Rentas Internas	Ecuador
Dirección General de Impuestos Internos	El Salvador
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Servicio de Administración Tributaria	Mexico
Dirección General de Ingresos	Nicaragua
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Superintendencia Nacional de Aduanas y Administración Tributaria	Peru
Her Majesty Revenue and Customs	United Kingdom
Dirección General de Impuestos Internos	Dominican Republic
Dirección General Impositiva	Uruguay

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WORDS FROM CIAT'S EXECUTIVE SECRETARY

It is a pleasure for me to have the opportunity to present this new Handbook, which joins CIAT's collection of Handbooks on paramount issues for the proper functioning of tax administrations.

Tax Compliance Risk management is a crucial task for tax administrations. I always say that if taxpayer registries are tax administrations' "soul" and the checking accounts their "heart", risk analysis is the "mind" of today's tax process, in which we must deal with huge databases and with ever fewer resources.

The challenge nowadays is to perform this task in a planned, systematic, and, whenever possible, centralized manner, making use of information technology and telecommunications. This is easy to say; however, at the CIAT, we understand the effort required of most tax administrations of developing countries to lay the foundations for the successful implementation of modern risk management systems. This involves not only staff training and investment in infrastructure, but also a change in organizational culture and the way things are done. Perhaps one of the most significant internal organizational effects of today's risk systems is to reduce the level of discretionary decisions, thereby creating greater transparency and certainty in the actions of tax administrations. Similarly, an adequate risk management system also allows for the timely allocation of treatments, including those with preventive effect and in real time.

This Handbook covers all these topics in great detail and constitutes an example of coordination of efforts among tax administrations, cooperation agencies, and international partners, which fulfills most of the aspects that make up the Inter-American Center of Tax Administrations' mission, among them: "To promote international cooperation and the exchange of experiences and information, and to provide technical assistance services, research, and training, thereby contributing to the strengthening of tax administrations in its member countries".

I am deeply grateful to Chile's SII for providing its experience as the technical basis for this Handbook, to Germany's GIZ for supporting and funding this initiative, to the IMF for its technical contribution on customs aspects of risk management, and to Mexico's SAT, Spain's AECID, and the IDB for their contributions to materialize the meetings of the Tax Compliance Risk Management Network. Likewise, I thank all tax administrations of CIAT member and non-member countries that offered feedback and technical contributions for this Handbook.

Márcio F. Verdi
Executive Secretary – CIAT

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GLOSSARY

ADF	Action Differentiation Framework
AEMETIC	Association of Information Technology, Communications, and Electronics Companies
AMPO	Multifunctional Programmed and Objective Analysis
ARCH	Hydrocarbon Regulation and Control Agency
ATO	Australian Taxation Office
BEPS	Base Erosion and Profit Shifting
CAPTAC-DR	Central America-Panama-Dominican Republic Regional Technical Assistance Center
CART	Classification and Regression Tree
CEPAL	Economic Commission for Latin America and the Caribbean
CHAID	Chi Squared Automatic Detector
CIAT	Inter-American Center of Tax Administrations
COE	Risk Management Center of Expertise
CRA	Canada Revenue Agency
CRC	Taxpayer Risk Classification
CRISP–DM	Cross Industry Standard Process for Data Mining
CRM	Corporate Risk Management
CSMS	Case Selection and Management System
DECRED	Credit Card Transaction Return
DGC	Qualitative Taxpayer Information Collection Tool
DGII	Dirección General de Impuestos Internos - República Dominicana
DIMOB	Real Estate Activities Information Return
DIRPF	Annual Individual Income Tax Adjustment Return
DITR	Rural Territorial Property Tax Return
DPF	Department of Public Finance (FMI)
ENAMI	National Mining Company
EP	Petroamazonas EP
ERM	Enterprise Risk Management
EU	European Union
EUIPO	European Union Intellectual Property Office
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (International Cooperation Agency for Sustainable Development)
GRACO	Large Taxpayers
GRC	Governance, Risk and Compliance Systems
ICIJ	International Consortium of Investigative Journalists
ID3	Iterative Dichotomy 3
IMF	International Monetary Fund
INACER	Regional Economic Activity Gazette
INE	National Statistics Institute – Chile

ISR	Income Tax
ITBIS	Tax on Transfer of Industrialized Goods and Services
KDD	Knowledge Discovery in Databases
MODA	Analysis Model
NTA - 1	National Tax Administration – Japan
NTA-2	Net Transaction Amount
OECD	Organization for Economic Cooperation and Development
ONTSI	National Observatory of Telecommunications and of the Information Society
TLS	Tax Liable Subjects
OTAG	Manageable Active Liable Subjects
TAP	Treatment Allocation Policy
PGCT	Tax Compliance Management Plan
PNI	National Inspection Plan
POCT	Tax Compliance Operational Plan
PRICO	Main Taxpayers
PT	Transfer Pricing
RAIS	Annual Report on Social Information
RDF	Risk Differentiation Framework
RFB	Brazilian Federal Revenue Service
SAC	Sub-Directorate of Compliance Analysis
SAR	Servicio de Administración de Rentas – Honduras
SEC	Securities and Exchange Commission
SERPRO	Federal Data Processing Service
SET	State Sub-Secretariat of Taxation – Paraguay
SGC	Audit Management System
SGF	Audit Management System
SIF	Sistema de Gestión De Casos Denominado
SII	Servicio de Impuestos Internos de Chile
SNAT	National Tax Audit System
SPOT	Tax Obligations Payment System
SRI	Servicio de Rentas Internas – Ecuador
TAP	Treatment Allocation Policy
TBS	Treasury Board of Canada Secretariat
TET	Effective Tax Rate
UGGE	Regional Units of Large Company Management
USAID	U.S. Agency for International Development

METHODOLOGY

In January 2017, CIAT's Executive Secretariat, Chile's Servicio de Impuestos Internos (SII) and Germany's GIZ signed a collaboration agreement for the development of a regional Handbook on Tax Compliance Risk Management. Under this agreement, a team composed of officials from Chile's Servicio de Impuestos Internos (SII), with knowledge and experience in risk management issues, was created to work on the structure, development and drafting of the Handbook. This initiative was proposed at the first meeting of the CIAT Tax Compliance Risk Management Network (hereinafter "the network"), held in Mexico in 2016, whose aim was to create and supply tax administrations with a practical Handbook on how to develop risk management systems, without necessarily defining a specific model within the CIAT.

The structure of the Handbook was discussed by the network members and agreed upon before proceeding with its development. In the development stage, in order to provide such a practical approach to the Handbook, experiences were collected through questionnaires addressed to tax administrations, which were motivated to be shared at network meetings. Many of these experiences have been included in various sections of the Handbook. This Handbook also addresses the theoretical component, referring to the vast literature available on the subject.

In July 2017, the first draft of the Handbook was completed and submitted for review among the network countries. The content of the first draft and feedback from tax administrations were presented and discussed at the second network meeting, held in November 2017 in Guatemala.

Once the previous procedure was concluded, the work team proceeded to develop a second version of the Handbook, considering more details, the supplementary information proposed by the network and the experiences of other tax administrations. The CIAT's Executive Secretariat accompanied the entire process and reviewed the text of the Handbook at each stage.

INTRODUCTION

Since its foundation, one of the main goals of the Inter-American Center of Tax Administrations (CIAT) has been to follow the evolution of tax administrations and identify issues of common interest that represent strategic priorities and where coordination of efforts could allow product development and peer assistance, so as to mitigate the gap in the development of its tax administrations.

Tax Compliance Risk Management constitutes a relevant issue of common interest to tax administrations, affecting most of their processes. All tax administrations manage risks; however, there is significant room for improvement, given technological advances, changes in context, and, in specific cases, the need to strengthen and integrate processes.

An efficient and effective risk management is indispensable to achieve the desired success in different fields of activity. The prompt identification of risks and their adequate treatment allows not only an efficient use of resources to optimize tax collection, - in other words, do more with less - but also provide a suitable treatment for each taxpayer according to their behavior.

Given the impact of customs activities on tax collection and the complementarity of many of its processes with those of tax administrations, this Handbook includes a specialized section on the comprehensive management of customs Compliance Risks.

Since there are common principles for the adoption of risk management by tax and customs administrations, that section focuses on complementary aspects for the implementation of a comprehensive risk management, considering the particularities of customs operations. It also considers practical elements that aim to contribute to establishing a comprehensive risk management strategy, as well as to conducting a self-diagnostic exercise by presenting good practices related to the implementation of risk management under the main customs control functions.

This Handbook is intended to become a useful tool for tax administrations of those countries that are considering the development of an integrated platform for tax Compliance Risk management. It presents the fundamentals of tax Compliance Risk management and details the most relevant components that constitute the essence of a risk management model, all from a practical perspective.

In this sense, the key agents related to the administration of tax obligations belonging to the managerial and operational arenas, such as tax experts and data analysts, can make use of this Handbook as a tool that will allow them to deepen on the possibilities offered by risk management, among them:

- Understanding the different phenomena associated with tax compliance.
- Defining structures, processes, systems, tools, and human and physical resources.
- Identifying information sources and evaluating their quality.
- Learning about the platforms and analytical skills of related professionals with an eye to the future. Technology increasingly influences business models and the transformation of tax administrations.

Chapter 1

General Aspects

I GENERAL ASPECTS

1 Current Context of Tax Compliance Risk

Tax Administrations have necessarily had to modify and adapt their strategies following the dynamic trends generated through the relations with their taxpayers as a result of technological development and economic globalization. This scenario imposes challenges that imply continuous learning, greater innovation in tax matters and frequent legislative changes, and, in general, the need to develop initiatives to improve the effectiveness and efficiency of taxpayer compliance.

The structures of Tax Administrations and the characteristics of their work teams have evolved over time as a consequence of the approach to tax compliance management used. A few decades ago, Tax Administrations used to follow a tax- and function-based design. Later, a segmental approach focused on taxpayer size was introduced. Thus, work team structures were established under related designations, such as "Income Tax Department or Unit" or "Small Taxpayer Unit". Today, some Administrations have introduced process-based management, including a matrix approach, whereby units are arranged according to key and supporting functions. It is important to note that none of these approaches have been abandoned, but, in practice and after several years, they have been accumulated and harmonized, considering progressively higher levels of digitalization, automation, and advanced analytics. In this context, risk management models are starting to be introduced: some of limited scope, for the selection of audit cases, and others of comprehensive scope, aiming to manage structural levels of tax compliance based on different actions or measures. Regardless of the approach used, the management team of a Tax Administration is expected to have the appropriate tools that allow it to take a strategic view on the short- and long-term performance of the institution in managing tax compliance. In this sense, it is important to be able to identify and analyze the actions that are losing their initial effectiveness and those necessary to keep up with the evolution of society and persons' behavior. In relation to this last aspect, we highlight the rise of the digital economy, which has changed behavior patterns in the supply and demand for goods and services, making it necessary for the tax system to guarantee acceptable levels of efficiency, effectiveness, proportionality, and collection. This means that management teams must be able to understand and envisage in a timely manner the implications within their organization of the changes caused by these approaches when foreseeing initiatives aimed at materializing significant reforms.

Therefore, the Tax Administrations of developed countries have migrated from a controlling and formalistic model to one that seeks the highest possible levels of tax compliance on the part of taxpayers, by performing control functions only in cases where there are greater signs of noncompliance. Similarly, technological advances have allowed for better and greater access to information, as well as a greater ability to process it. This, in certain cases, increases the compliance cost for taxpayers, but also their demands on the level of facilitation of their tax compliance through the information concerning them. Some examples of facilitation would be: computerization of platforms, the greater use of online systems, more intensive use of so-called 'social media'[2], among other aspects. In the wake of this change, it becomes necessary to

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2   "Social media" refer to online applications or platforms for sharing information, such as Twitter, Facebook, and LinkedIn.

understand and deepen the tax and economic aspects, and even the sociological and psychological aspects of taxpayers that cause or motivate such behavior or conduct, and the measures to be adopted in each specific tax situation. This is how some strategies proposed in this line of thought influence the relationship between Tax Administration and taxpayers, allowing a scenario characterized by greater mutual trust, better assistance, high levels of education, clearer information policies, greater transparency, better quality and service, and stricter and more rigorous audit in case of noncompliance with tax obligations. Thus, exemplary actions can be exercised in the eyes of taxpayers.

Consequently, Tax Administrations have developed ways to understand and approach taxpayers and their environment according to the level of tax compliance. Most of them seek to increase their comprehensive and systematic knowledge of taxpayer behavior and their surroundings in order to analyze the possible risk factors that may manifest themselves associated with noncompliance, with emphasis on the causes or factors that determine the existence of such risks. In this way, treatment actions can be promoted through comprehensive programs that can eliminate, prevent, or correct them, ensuring proper tax compliance.

In conclusion, increasing taxpayers' compliance levels should be the result of better services to facilitate compliance and adequate forms of control. The focus of these services is closely related to improving the quality of the products offered and to reducing the compliance cost - eventually arising from noncompliance itself - by creating a tax culture among taxpayers. As for control, it should begin at the assistance phase, by gradually incorporating contrasted tax data. Furthermore, the number of taxpayers subject to tax compliance should be increased and improved, with the aim of strengthening audit actions and increasing the perception of control, thus boosting the level of voluntary compliance by taxpayers.

2 Risk Management Model

The concept of a model is widely defined and documented. Notwithstanding, it has been established that a model is "a conceptual, graphical, or visual representation of a given phenomenon or process." Thus, a model, within the present topic of analysis, makes it possible to determine a result from input data, as well as to process that data.

Two definitions of the risk-based management model will be presented below. One is that proposed by the Organization for Economic Cooperation and Development (OECD) and the other by the European Union (EU). Their main objectives and scope will be indicated, in addition to what is established under ISO-31,000:2009[3].

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3   Objetivo Gubernamental de Auditoría No 3 - 2011, Proceso de Gestión de Riesgos.

2.1 OECD [4] [5]

The context or starting point provided by the OECD model is in taxpayers' compliance with tax obligations, classified into four broad categories:

1. Registering in the system.

2. Submitting the required tax information on time.

3. Communicating information precisely and accurately.

4. Paying tax liabilities in due time.

If a taxpayer fails to comply with some of the obligations, it will be necessary to establish distinct levels of noncompliance, based on what is described or interpreted from law and administrative norms.

Risk-based compliance management becomes relevant when establishing a methodology that allows its management in a comprehensive manner. It constitutes a structured process that allows for the systematic identification, assessment, classification, and treatment of identified tax risks, as shown in the following illustration, which represents the model in question.

Illustration 1: OECD Risk Management Model

Context of operation

- Risk identification
- Risk priorization
- Compliance behavior analysis
- Determination of treatment strategies
- Planning and implementation of strategies
- Evaluation of obligation results
- Monitoring

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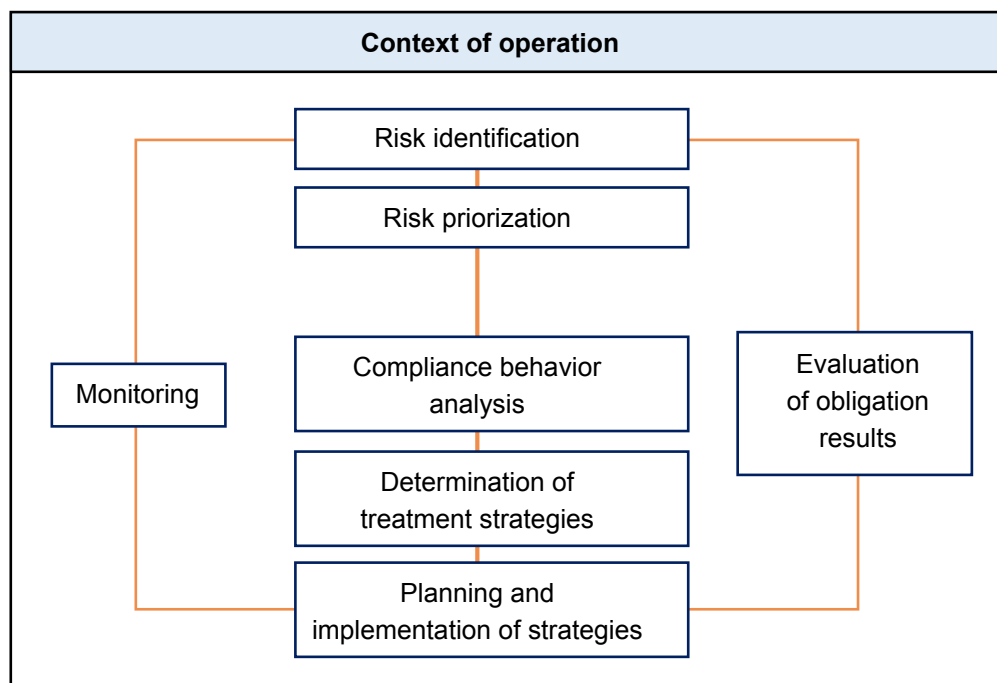
4   OCDE, Guidance note; Compliance Risk Management: Managing and Improving Tax Compliance, October 2004, p. 8-9.
5   OCDE, Managing and Improving Compliance: Recent Developments in Compliance Risk Treatments, March 2009, p. 9-12.

The model presented involves improvements in the decision-making process and focuses on the following areas:

1. Responding promptly to changes in context (legislative, regulatory, among others).

2. Applying treatment actions considering factors of priority, timeliness, compliance, and success.

3. Optimizing audit and collection actions.

2.2 European Union (EU)[6]

The starting point of the EU model is the collection of all taxes and taxpayer liabilities as stated by the tax laws of each country. Some taxpayers - through ignorance, misunderstanding of the rules and/or procedures, or deliberately - do not fully comply with their obligations. Therefore, Tax Administrations permanently develop strategies to deal with tax compliance and hope to improve the perception of tax compliance effectiveness and satisfaction.

For this reason, most Tax Administrations in the European Union have incorporated a model called the Compliance Risk Management Model[7] that considers the steps described in the following illustration.

Illustration 2: European Union Risk Management Model
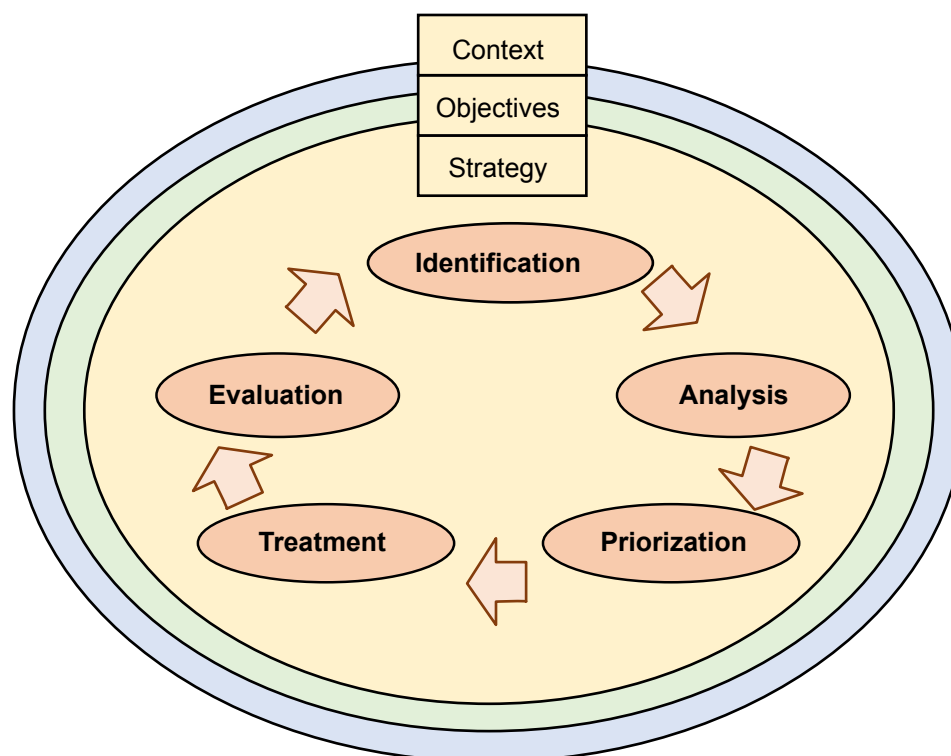
Context

Objectives

Strategy

Identification

Evaluation

Analysis

Treatment

Priorization

The process occurs by establishing a strategy, correctly defining objectives, and considering the context of its development. These three elements are crucial to the process because methodological, legislative, or regulatory changes, scope, efficiency, among others, affect the results and subsequent decision-making.

Finally, this model seeks to positively influence taxpayers by generating positive effects on their conduct, improving the level of proactive compliance, reducing compliance gaps, and facilitating the definition of proportional treatment actions in light of the nature and consequences of the compliance gap, among other improvements.

In relation to the models described above, the model adopted by Chile's *Servicio de Impuestos Internos* (SII) considers the best elements of those already listed, based on the reality and context in which the country operates and best practices of other Tax Administrations, e.g., the Australian Taxation Office (ATO).

2.3 The ISO 31,000 Standard of December 2009[8]

This international standard recommends that organizations develop, implement, and continually improve a framework for action, the aim of which is to integrate the overall risk management process into the entity's governance, strategy, planning, operational management, information processes, policies, values, and culture, so that it is an integrated process for the entire entity. In this way, risk management can be applied to an entire organization, extending to all areas and levels, as well as to specific functions, projects, or activities, at any time.

Organizations of all types and sizes face internal and external factors and influences, which generate some uncertainty about the achievement of the objectives they set and, where applicable, the respective timeframes for this to occur. The effect this uncertainty has on an organization's objectives constitutes 'risk'.

As organizations seek to manage risk to some extent, this standard establishes several principles that should be followed for risk management to be effective. This standard recommends that organizations develop, implement, and improve - on an ongoing basis - a framework for working towards integrating the risk management process with governance processes. According to the standard, governance process is defined as the system by which strategic and managerial decisions that influence an organization's values and culture are developed and implemented.

Each instance of risk management, including those related to specific sectors and applications, implies individual needs, target groups, perceptions, and criteria. Therefore, one of the key points of this standard is the inclusion of "establishing the context" as an activity at the beginning of this generic risk management process. Establishing the context makes it possible to define the organization's objectives, the environment in which these objectives are sought, the stakeholders, and the diversity of risk criteria. All these elements help to reveal and assess the nature and complexity of its risks.

The application of the theoretical framework of the risk management process must always be adapted to the entity and the sector to which it belongs. In this specific case, it is related to the Tax Administration.

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8   Norma ISO 31000:2009 - Risk Management Principles and Guidelines.

Potential benefits of implementing risk management:

- It improves the chances of achieving the organization's objectives on the defined terms.
- It increases the level of understanding of key risks and their implications for the organization.
- It allows the internal identification and designation of responsibility for business risk management.
- It allows the concentration of efforts on issues that are truly important to the organization.
- It contributes to the reduction of unforeseen events and crises in the organization.
- It increases the possibility of success in initiatives/projects and in implementing changes.
- It improves the ability to take greater risks for greater social and economic rewards.
- It generates more information and offers transparency about the risks identified and the decisions taken.

Each institution must determine its own strategy to accept, mitigate, or eliminate risks. This involves determining the maximum level of risk that it is possible to accept in order to fulfill its institutional mission and strategic objectives and provide quality service, adding value to users, beneficiaries, or the entire community.

For risk management to be effective, it is advisable to consider the following:

a) Risk management creates value by contributing to the achievement of the organization's objectives and optimizing their execution. This would affect the levels of safety, regulatory compliance, citizen perception, quality of products and services, management, and efficiency of processes (operations) and projects, governance, and reputation.

b) Risk management is a comprehensive part of all organizational processes. It is not an independent activity, separate from the main activities and processes of the organization.

c) Risk management is part of decision-making at strategic and tactical levels. It facilitates informed decision-making by prioritizing actions and distinguishing alternative courses of action.

d) Risk management considers uncertainty, its nature, and how to manage it.

e) Risk management has a systematic, timely, and structured approach, which contributes to efficiency and consistent, comparable, and reliable results.

f) Risk management is based on the best information available: historical data, experiences, stakeholder opinions, observations, predictions, and expert opinions. It even makes it possible to analyze and manage situations where no information exists, since this absence is considered an anomaly of the issue under analysis (compliance).

g) Risk management is aligned with the external and internal context of the entity and its risk profile.

h) Risk management must consider human and cultural factors by recognizing the abilities, perceptions, and intentions of persons and situations that can facilitate or hinder the achievement of the organization's objectives.

i) Risk management should be transparent and inclusive. Adequate and prompt involvement of stakeholders, particularly decision-makers, at all levels of the organization ensures that risk management remains relevant and up to date, that stakeholders are represented, and that their views are considered in determining risk criteria.

j) Risk management should start at the taxpayer assistance stage and be incorporated as a transparent system that encourages certain behaviors, taking into account the sources of direct and derived information made available to taxpayers when conducting their obligations.

k) Risk management is dynamic, interactive, and adaptable to change, as it must be flexible to adjust to different scenarios.

l) Risk management facilitates continuous improvement on the part of the organization, which must develop and implement strategies to improve the maturity of its risk management system, along with all other aspects of its management.

2.3.1 Risk Management Framework Based on ISO 31,000:2009

The success of risk management depends on the effectiveness of the framework for managing the risks that provide the foundation and principles that guide the organization at all levels. The framework ensures that the information derived from this process is appropriately communicated and used as the basis for decision-making by, and accountability to, authorities.

The organization's commitment to a risk-based approach is key when designing a risk management framework that considers the understanding of the institution's context, the establishment of policies and responsibilities, the integration of risk management with processes, the resources to be provided or used, the establishment of external and internal forms of communication, and the mechanisms for reporting. Subsequently, the risk management framework and process should be implemented, monitored, and periodically reviewed to achieve continuous improvement.

The framework describes the components that make up the risk management system and how they interrelate. The framework is shown in the following illustration.

Risk Management Process under ISO 31,000:2009


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                    Terms and Commitments

              Design of risk management work framework

              •  Understanding of organization and its environment
              •  Obligation to render accounts
              •  Integration in organization´s processes
              •  Resources
              •  Establishment of internal communication and reporting mechanisms
              •  Establishment of external communication and reporting mechanisms


                                          Implementation of risk management process

Continous improvement of work framework   •  Implementation of risk management work framework
                                          •  Implementation of risk management process


              Monitoring and review of work framework
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2.3.2 Phases of the Risk Management Process

The phases into which the risk management model can be broken down, in general terms, are as follows:

Establishing the context: defining the strategic, organizational, and managerial contexts in which the risk management process will occur. The criteria to be used to assess risks must be established, and the analysis framework, roles and responsibilities must be defined.

Identification of risks and opportunities: determination of the risks that could hinder, ruin, or delay the fulfillment of the organization's strategic and operational objectives, as well as the opportunities that could contribute to the achievement of the aforementioned objectives.

Risk analysis: the analysis should consider the categories of consequences or potential risks and their respective probabilities of occurrence. The consequences and probabilities are combined to produce an estimated risk level. In addition, the respective risk mitigation measures must be identified and analyzed.

Risk assessment: comparison of identified risk levels with pre-established risk criteria (if, in fact, they are previously established), considering the balance between potential benefits and adverse outcomes. It involves ordering and prioritizing the analyzed risks by means of a ranking.

Risk treatment: according to the ranking and level of risk previously established by the organization (in case it has been established), is the definition of its treatment and monitoring, by developing and implementing specific strategies and action plans that keep the risk within the levels accepted by the organization.

Monitoring and review: definition and use of mechanisms to monitor and review the conduction of the risk management process and the accountability of the evolution of the risk level in critical processes for management.

Communication and consultation: definition and use of mechanisms to communicate and consult with internal and external stakeholders, as appropriate, at each step of the risk management process. Such mechanisms should enable authorities to make prompt decisions regarding risks with major deviations from acceptable risk levels.

The following illustration (No. 4) shows a representative scheme of the relationship between the generic phases that make up a risk management process.

Illustration 4: Representative Scheme of the Risk Management Process - ISO 31,000
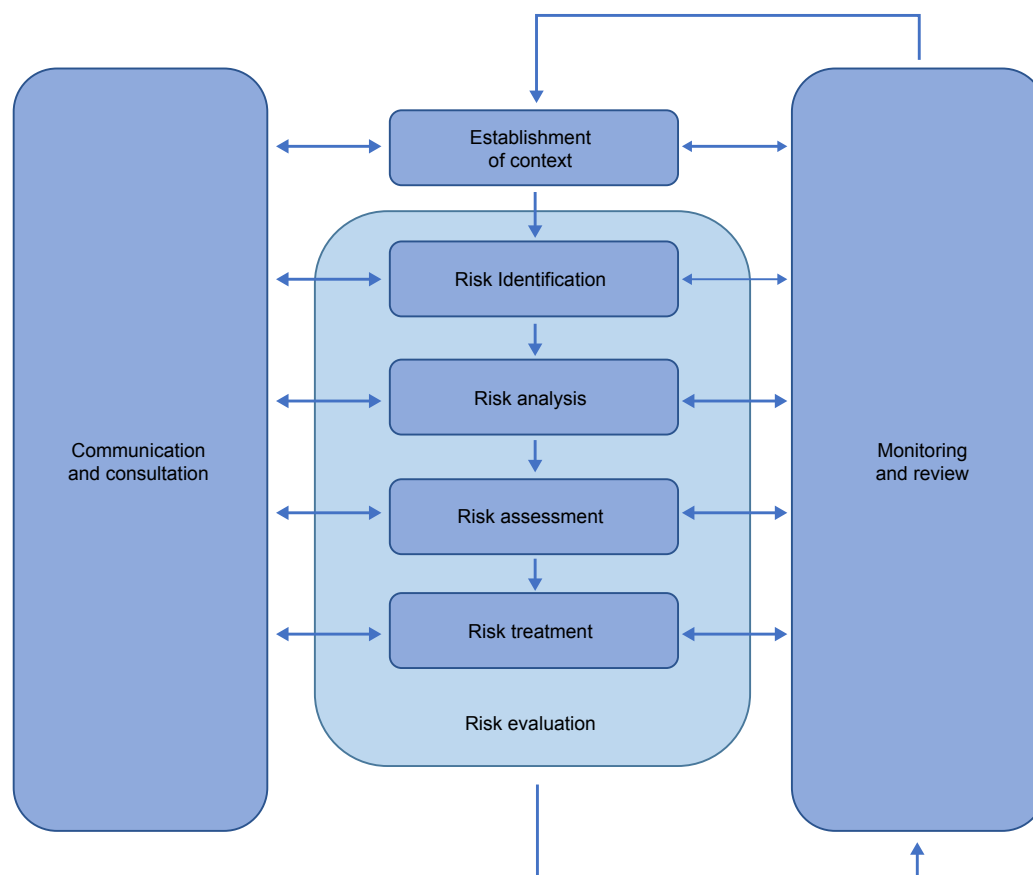
ISO 31,010:2013 is a supporting standard to ISO 31,000, as it provides guidelines for the selection and application of systematic techniques for risk evaluation.

2.4 Risk Management Approach in Tax Administrations

2.4.1 Definition of Model Based on Risk Management in Specific Cases[9]

Tax Administrations that operate under the risk management methodology seek to optimize certain processes in their tax systems. One example is the establishment of a risk score for each taxpayer, based on the historical compliance with their tax obligations. The creation of a score for a given taxpayer aims precisely to try to maximize tax compliance compared to taxpayers with similar characteristics. Despite the efficiency of this model, due to its specificity, it is a tool that needs to be used and interpreted carefully. In this sense, for each taxpayer, an ideal level of tax compliance is set and, therefore, a certain form of treatment, according to its level of risk, from online assistance to audits with sanctions, depending on each scenario.

This could have an impact on the principle of proportionality of actions on a given taxpayer compared to others and according to the strategies defined by the Tax Administration. Thus, the score of a particular taxpayer is not necessarily comparable with others of the same score because the score is obtained from a combination of different attributes for each taxpayer, and the criteria for defining that a certain taxpayer is more prone to risk than others may not necessarily be technical (there may be political influences on the criteria). This could create a kind of tension between efficiency and the institutional values of the Tax Administrations, precisely because of the proportionality that may not necessarily apply to taxpayers. Moreover, the available literature suggests using this method in conjunction with others, as it could be affected by changes in the general tax context, both legislative and on the part of the taxpayers themselves, which would end up changing the algorithm with which the score is obtained for each taxpayer.

2.4.2 Definition of Model Based on Comprehensive Risk Management

Unlike the score-based model, Tax Administrations that operate under the comprehensive risk management methodology seek to optimize the efficiency of the system as a whole. In this way, they select the taxpayers with the highest risk of noncompliance with their tax obligations, maximize collection levels and carry out audit actions that make the best use of technological and human resources. Therefore, an increase in the level of voluntary compliance is sought, by involving the entire organization[10].

Risk-based management aims to establish priorities when deciding on a certain action, taking into account particular relevant variables that define such actions: determining the noncompliance risks to be addressed, the establishment of clusters, i.e. segments of taxpayers, and defining the strategies for each of them.

For this reason, compliance risk management could be defined as "a structured process for identifying, evaluating, classifying, and treating noncompliance risks under tax law"[11]. This implies the use of resources (human, financial and technological), whose expected goal is a balance between audit and taxpayer acceptance.

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9   Bakker A., Kloosterhof S., Tax Risk Management from Risk of Opportunity, 2010, p. 117-118
10   Ruibal Pereira, Luz. Experiencia internacional sobre medidas de reorganización de las Administraciones Tributarias. Universidad de Santiago de Compostela, 2010, p. 147.
11   OECD (FTA), 'Compliance Risk Management: Managing and Improving Tax Compliance', 2004, p. 8.

Therefore, the risk management process can be summarized according to the following structure:

1. Establishment the context and structure of the organization's strategic planning.
2. Identification of the risks according to the lines of action or the objectives.
3. Risk evaluation and prioritization.
4. Analysis of results.
5. Determination and implementation of treatment strategies.
6. Evaluation of results.

The following is a brief description of the aforementioned steps:[12] [13]

1. **Establishing the context:** at this stage, the internal and external factors that may influence decision-making on noncompliance risk management are analyzed. Among these factors are the legislative framework, availability, access to and exchange of information, organizational structure, human resources, evolution of the country's main activities, and tax culture.

2. **Identification of risks:** at this stage, efforts are made to define as many variables as possible that make it possible to identify behaviors (the type of tax, the taxpayer segment, the risk, among others), in order to minimize noncompliance and facilitate an analysis that considers the different cases.

3. **Risk assessment and prioritization:** the aim of this stage consists in separating the main risks from other smaller risks, according to the aforementioned identification. The implication of this step is to produce a summary that ranks the risks according to their priority. This requires a study of the identified risks, an evaluation of the consequences of these risks, and, finally, an analysis of the probability of noncompliance.

4. **Analysis of results:** at this stage, the different treatment options are matched with the risks detected. These forms of treatment may include mass emails to alert about a certain anomalous situation, summonses and attendance in offices defined by the Tax Administration, educational activities for taxpayers, automated posting of tax differences, among others.

5. **Determination and implementation of treatment strategies:** at this stage, the goal is to choose the best strategy depending on the behavior of the taxpayer, as well as the effectiveness of the selected treatment. Next, an operational plan is defined with the implementation of the actions taken.

6. **Evaluation stage:** at this stage, one must remember that risk management is a continuous process, so it is necessary to obtain periodic feedback to evaluate results or the effectiveness of the treatment applied. This, in turn, is useful for making future decisions. Therefore, this step implies a permanent control of both the actions and the

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12   Ruibal Pereira, Luz; 'Experiencia internacional sobre medidas de reorganización de las Administraciones Tributarias'; Universidad de Santiago de Compostela, 2010, p. 150-155.
13   OCDE, Guidance note; Compliance Risk Management: Managing and Improving Tax Compliance, October 2004.

results obtained, considering that these will not necessarily meet what was previously defined.

Several Tax Administrations have considered and implemented current best practices in the matter, but have not necessarily adhered to a single form or methodology to promote tax compliance. It is necessary to adapt the recommendations to each context and to the results of monitoring the changes that are generated as a consequence of evolving technology, domestic and international standards, and best practices, among other aspects.

A point of great relevance, which goes beyond the methodology itself, is related to the role of the Tax Administration management team, especially in the implementation and operation of a risk management model.

Undoubtedly, the design and execution of a risk model that follows the standards suggested by the OECD, the European Community and ISO 31,000, duly adapted to the cultural and regulatory scenario of the jurisdiction in question, implies, in practice, that the Tax Administration management team takes on numerous challenges that must be managed at the highest level. To this end, it is advisable to formulate plans and define activities that ensure adherence, verifying that understanding and execution are consistent with the objectives pursued by the risk model and that strategic decisions are made. This team should consider, for instance:

- An intervention in the existing processes to incorporate risk rules and related measurements, especially in those processes directly related to the analysis and treatment of taxpayers, which requires a management methodology and process management that may be different from those regularly used by the Tax Administration, including having to entrust its performance to a special dedicated team, able to convene and unite the collaboration of several teams located in different areas of the organization.

- A displacement of the analytical teams from their comfort zones to a zone where they analyze and propose actions to address structural issues, considering progress and new behaviors observed. These teams are often successful in identifying specific collection differences in audit cases, but in their comfort zones, they do not distribute structural levels of tax compliance across specific taxpayer segments.

- Changes in the working culture of the audit teams, which have traditionally had room and wide discretion to select cases for audit, often basing their decisions on targets linked only to the detection of differences. Strengthening of risk analysis and their respective control tools could lead to a loss of autonomy in the analysis and selection carried out by the audit teams, obtaining, in exchange, significant improvements in the allocation of traditional audit resources to those situations considered to have the greatest impact, according to their probability of occurrence and their consequences.

These simple examples highlight the importance of relying on high-level governance support to signal, monitor, and ensure the implementation of the risk model.

Chapter 2

Necessary Aspects to Consider for Risk Management

II ASPECTS TO CONSIDER TO ACHIEVE EFFECTIVE RISK MANAGEMENT

This chapter seeks to explain, through practical examples, the risk rating of a taxpayer and its respective assessment.

The classification of taxpayers according to their risk of noncompliance makes it possible to guide the Tax Administration's control and assistance strategies, to evaluate the tax system based on compliance levels, and to detect patterns of behavior and focuses of noncompliance (certain geographical regions, types of taxpayers, activities, processes, or taxes).

Taxpayer risk assessment can be determined by calculating two components: **probability** and **consequences**.

Regarding **probability**, three calculation methodologies are identified:

- **Frequency:** evaluates attributes or variables over time;
- **Evaluation models:** evaluate the willingness to comply with taxes, in which qualitative variables can appear
- **Mathematical modeling:** based on certain attributes or variables that seek, for instance, to predict taxpayer behavior in a given period, identify associations, anomalies, or groups of taxpayers, among other goals.

Any of these three methodologies have attributes as their starting point. These are understood as variables, whether dichotomous or not, associated with anomalies, noncompliance, and noncompliance risks.

As for **consequences**, two calculation methodologies are presented:

- Revenue or size: the consequences of taxpayers for the tax system are considered according to their size, which could be explained by the volume of their revenue, purchases, capital, or other factors that allow them to be sized.
- Techniques that use data mining: based on mathematical modeling. For example, through segmentation, it is possible to associate the consequences of a taxpayer with an estimated value in terms of number of clients, suppliers, revenues, and assets.

1 Taxpayer Risk Rating

Taxpayer risk is directly related to their willingness to comply with tax obligations (registration, submission of the required information, return, and payment) and the consequences they would face if they do not comply. This risk is directly associated with taxpayers, in terms of their "attitude" towards their tax obligations, according to the regulatory framework.

Taxpayer risk is classified through an estimate of their risk of noncompliance (their intrinsic risk), which seeks to summarize the risks considered significant by the Tax Administration.

To assess a taxpayer's willingness to comply with their tax obligations, an indicator used is the probability that the taxpayer will comply with their tax obligations. On the other hand,

the consequence of noncompliance is evaluated through the relative estimate of the individual contribution to the tax system or the impact that noncompliance may have on it.

There are several ways to assess a taxpayer's level of compliance. Among these, one way mentioned in the relevant literature is related, in some Tax Administrations, to the classification into four categories: high, medium, and low risk, and a fourth category known as "key taxpayers". These levels are constructed by combining two variables (probability and consequence). This is seen in the following illustration:

Illustration 5: Classification of Taxpayer Risks
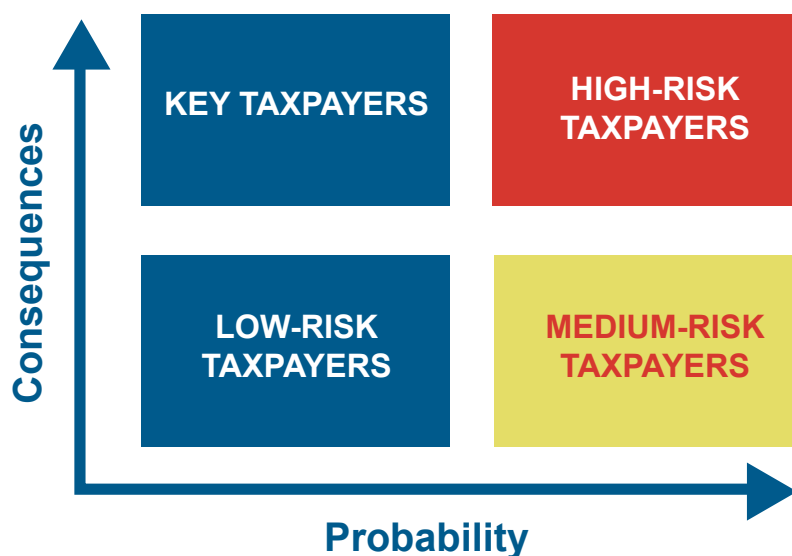
The previously described categories of taxpayer risk rating are detailed according to the following definitions:

- **High-risk taxpayers:** taxpayers that have a high probability of noncompliance with their tax obligations and that have some specific characteristics, such as large size or high levels of revenue or tax contribution, which may cause such noncompliance to generate significant consequences for the tax system.

- **Key risk taxpayers:** taxpayers that, due to their specific characteristics - large size, high revenue, or tax contribution levels -, can generate important consequences for the tax system. The probability that these taxpayers' risks will occur is low.

- **Medium-risk taxpayers:** taxpayers that have a high probability of not meeting their tax obligations, but given their specific characteristics, such as size, revenue levels, or tax contribution, the impact or consequences of such noncompliance are not very relevant for the tax system in comparative terms.

- **Low-risk taxpayers:** taxpayers that have a low probability of noncompliance and given their specific characteristics, such as not very relevant size or low levels of revenue or tax

contribution, entail consequences that are not significant or are of low relevance for the tax system.

It is worth noting that taxpayers in the high and middle segments have a similar probability of noncompliance with the tax system, but the consequences of each are significantly different.

Next, several risk rating categories used by some Tax Administrations will be pointed out. The sole purpose of this is to exemplify their diversity, as they are not limited only to nomenclature, but also to the basic criteria used in classification.

Table 1: Scenario in Select Tax Administrations

Country	Scope of Application	Categories
Costa Rica	Monthly, by tax and economic subsector	A (lowest risk), B, C, D and E
Bolivia	Under study	a) Low risk b) Medium risk c) Higher risk d) High risk
Brazil	Under study	A (lowest risk), B, C and D
Ecuador		First a) High b) Medium c) Low Second a) Very high b) High c) Medium d) Low e) Not as low
Chile	Universe of taxpayers	High, medium, low, and key
Colombia	Applies to those liable for income tax and VAT	Very high, high, medium, low, and single score
El Salvador		Severe, moderate, and minimal
Guatemala	General VAT regime	Extreme, high, medium, low, and undetermined

1.1 Attributes for Risk Assessment

The attributes for the assessment of risks correspond to definitions and technical elements that make it possible to distinguish the tax behavior of taxpayers in relation to compliance with their obligations and their own characteristics, whether individual or of their sector. Thus, the following can be examples of attributes: "number of times that a group of taxpayers declares belatedly the form associated with Value-Added Tax in the last 12 months"; "non-filer of Value-Added Tax in the last 12 months"; and "company without employees and with revenue in the last fiscal year".

These variables must identify situations that, though not necessarily classified as tax noncompliance, are anomalous, in view of the tax, business or market knowledge and experience. Additionally, the number of occurrences of these variables and their timing must be synchronized. To this end, it is relevant to consider the life cycle of taxpayers, from the beginning to the end of their business activity.

Attributes can be classified as dichotomous, categorized, or continuous. As an example, regarding the first type of attribute, it would be possible to assign the value "1" when the taxpayer presents the phenomenon to which the attribute refers and "0" when the taxpayer does not present such phenomenon. However, regardless of the type of attribute used, the purpose of these attributes is to contribute to the interpretation of tax behavior.

Examples of attributes

- **Attribute 1:** taxpayer does not file income tax return but is liable for doing so.

  o **Description:** applies to taxpayers who do not complete the Annual Income Tax Return Form. It represents noncompliance based on a binary obligation to annually declare Income Tax, which is based on annual information.

- **Attribute 2:** taxpayer still has not declared expenses that are not accepted as deductible.

  o **Description:** within some legislations, there is a concept of expenses not accepted as deductible, i.e., not considered for tax base calculation purposes. This is an attribute with characteristics associated with the annual income tax return, due to the exclusion of expenses that are not accepted as deductible.

- **Attribute 3:** new taxpayer in the segment or different geographical location.

  o **Description:** new taxpayer in its segment of companies or persons, which implies an entry or a change within "natural" groups of taxpayers, whether of revenue, associated geographical location, activity, etc.

- **Attribute 4:** inconsistency in the Income Tax Return of the last two years.

  - o **Description:** taxpayer presented structural inconsistencies (formal differences) in their annual income tax return in the last two tax years. Attribute constructed from cross-referencing third-party information with the taxpayer's own information for the annual income tax return. Structural differences are generated in relation to the retrieved information, both for the current and earlier periods.

- **Attribute 5:** legal representative of "N" companies.

  - o **Description:** constructed from the corporate information and the legal representation of the company, where "N" is the limit from which an anomaly arises. This limit is defined according to criteria set by mathematics experts.

- **Attribute 6:** taxpayer with debt.

  - o **Description:** has a debt in the last 12 months. Attribute that denotes an anomalous behavior on the part of the taxpayer in relation to the payment of such debts, specifically given by debts held with the Tax Administration in a certain period of time. The amount of debt can also be a component of the attribute.

- **Attribute 7:** non-Value-Added Tax filer.

  - o **Description:** taxpayer has not filed Value-Added Tax return in more than one period during the last N months (e.g., 12). This attribute has a continuous nature; decisions can be made based on business rules, so as to make it dichotomous or categorical. Attribute that implies an unwanted behavior on the part of the Tax Administration, given the noncompliance with its monthly obligation to file Value-Added Tax returns.

- **Attribute 8:** taxpayer "approached" by the Tax Administration.

  - o **Description:** taxpayer has been audited in the last 12 months or has been subject to some form of treatment action. The various levels can be grouped according to the audits to which the taxpayer has been subjected, on the understanding that, as these actions require a greater amount of resources for the Tax Administration, they have a staggered sequence of implementation, depending on the results obtained by each taxpayer. This attribute is constructed from the information generated by the Tax Administration related to the treatment applied to the taxpayer in a given year.

- **Attribute 9:** company with employees but no revenue.

  o **Description:** attribute that denotes anomalous behavior by the taxpayer regarding their return. It refers to a company that informs that it has employees but does not include information about the revenue of the last fiscal year in its income tax return.

- **Attribute 10:** contamination of company/partners.

  o **Description:** contamination is focused on how partners can negatively influence the behavior of a company and, on the other hand, how the negative behavior of the company affects the behavior of its partners. Therefore, contamination could exist when this attribute is greater than 0.5, for example:

    ▪ Contamination of the partner to the company: established by means of the consequence - which is based on the taxpayer value - and the partner's percentage interest in the company. Thus, the goal is to determine the "real" influence that a partner may have in the company, not only based on their declared participation percentage, but also on the relationship between the partner's value and the company's value. With this, an approximation is sought between the control that the partner may exercise based on the economic impact and the percentage of contamination attributed.

    ▪ Contamination of the company to the partner: quantified in a similar way to the above, using the relationship between the value of the company and the value of the partner, along with the partner's stake. In this way, it is possible to determine the influence that the company can exert on each of the partners, and how the partners' probability can be increased by a negative influence of the company.

    ▪ Under this approach, the contamination is calculated from the original probabilities and only in one stage, by definition, since otherwise the contamination could enter a trap and, eventually, increase mutually until it reaches 1, which is undoubtedly not the desired effect.

Illustration 6: Probability of Contamination
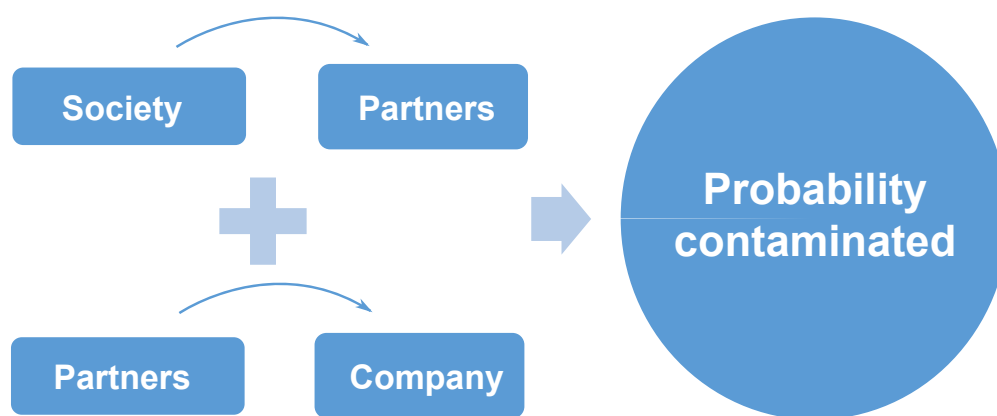
- **Attribute 11:** complexity of taxpayer.

    o **Description:** attribute that seeks to measure the degree of complexity of the taxpayer in terms of their structure or business. For example: the number of suppliers, clients, employees and products, the number of branches, the level of presence in the country, the number of companies in which it participates or has participated (both nationally and internationally) and the complexity, knowledge and renovating of its organizational network.

- **Attribute 12:** qualitative aspects.

    o **Description:** attribute that seeks to depict qualitative aspects of taxpayer behavior, e.g., corporate governance associated with tax issues, internal control systems, computer systems associated with accounting and tax management, and internal tax teams in the company. This topic will be discussed in more depth in a later section. However, at this point, it is important to consider how it is constructed and how it is used to "profile" taxpayer risk.

Ecuador: Possible Variables and Candidate Variables in Tax Risk Models

The construction of risk models consists in the development of robust work practices guided by different statistical and analysis techniques, whose main input is the set of risk variables established according to their control objective and scope, in which experts in taxation, mathematics, and information technology participate. Among the main risk models developed by the *Servicio de Rentas Internas*, we can name the following:

    i)   Models of strategic taxpayer segmentation.

    ii) Models of income tax verification.

    iii) Models of atypical operations.

    iv) Models for detecting shell companies and/or nonexistent operations.

To construct these models, which are based on data mining, the methodology used is called CRISP-DM[14].

Based on the objective or problem to be addressed, the variables to be considered in each model are established in the second and third phases of the aforementioned methodology, corresponding to data analysis and compiling. The types of variables that have been used in risk models can be classified as follows:

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14   CRISP-DM (*Cross Industry Standard Process for Data Mining*): constitutes an open standard process model that describes the common approaches used by data mining experts. It is the most widely used analytical model.

Table 2: Types of Variables Used in Risk Models

Variable Type	Variable Description	Examples
Taxpayer attributes	Characteristics of taxpayer with respect to identification data, economic sector, start of activities, type of taxpayer, jurisdiction, among others.	Segment to which taxpayer belongs; business name; tax domicile; economic activity; year of start-up; economic sector and subsector; revenue category; taxpayer size; etc.
Risk variables	Previously identified acts of noncompliance, possible atypical operations that represent some kind of tax risk, or results from other risk models.	Compliance with tax obligations; rate applied; amount of secured debt; taxpayer complaints; number of employees; amount of purchases from shell companies; audit report opinion; differences identified; foreign currency sent to tax havens; amount of operations registered in financial system; estimated veracity gap; etc.
Financial indicators	Taxpayers' financial performance rates.	Liquidity; financial profitability; transactions reported by financial system related to expenses over total costs and expenses that generate cash flow; etc.
Tax indicators	Rates that make it possible to evaluate tax behavior of taxpayers, based on trends, comparison of their peers, among others.	Income tax posted over total taxable income; differences in revenue over total revenue; purchases for shell taxpayers over total purchases; exempt revenue over total revenue; foreign currency outflows over imports; etc.
Anomaly index	Alerts of anomalous behavior in relation to taxpayer's historical information, identified through predictive models that detect atypical operations.	Anomalies in taxable income; deductible expenses; transactions with related parties; posted tax; taxpayer's assets; etc.
Horizontal analysis	Variations, expressed in absolute and relative values, of main components of taxpayer's financial returns, in relation to previous period.	Significant variations in revenue from ordinary activities; costs and expenses; taxable profit; posted income tax; assets and liabilities; equity; transactions with related parties; etc.
Vertical analysis	Indicators that make it possible to measure the relationship between main components and subcomponents of taxpayer's financial returns declared in the same period.	Inventories over total assets; cash and cash equivalents over total assets; exempt revenue over total revenue; interest expense over total cost and expense; employee benefits expense over total cost and expense; sales cost over total cost and expense; etc.
Behavior analysis	Set of variables that explain taxpayer behaviors, with the goal of estimating tax noncompliance.	Detection of shell companies, for instance, by contrasting company's returns with its economic situation as reported by third parties.
Risk indicators	Traces of risk established based on results of tax indicators, financial indicators, risk variables, behavioral analysis, among others.	In cases where taxpayer shows behavior that is different from the pattern of their peers in their stratum or segment, in relation to the aforementioned risk indicators or variables.

1.2 Calculation of Probability

Probability is defined as a number between 0 and 1, where 0 implies the absence of combinations of attributes that mean undesirable behavior on the part of the Tax Administration and 1 means the aggregate presence, in general terms, of attributes that, as a whole, manifest behavior that can harm the tax system. Some techniques to calculate the probability, as well as to identify the possible limitations that each one of them may have, will be briefly discussed below.

1.2.1 Simple Frequency Model

We can use different methods to calculate a probability and relativize it according to overall or segment maxima. One approach is the following formula:

Formula 1: Simple Attribute Frequency

$$\frac{(\sum_j Atributtes)_i}{Max(\sum_j Atributtes)}$$

Each attribute, which can be dichotomous, categorical, discrete, or continuous, has the same intrinsic importance since the sum is calculated without any other specific input conditions.

Regarding the denominator, seeking the goal of obtaining a number between 0 and 1, it is possible to associate the sum of attributes per taxpayer to a maximum. This score, calculated according to the entire population or cluster chosen, is the reference for other taxpayers.

Limitations and Recommendations

Considering the nature of its construction, this method does not present variables with specific, determined weights, which may imply an estimate with an error. This error must be evaluated by the Tax Administration.

This methodology is recommended for exploratory purposes since simple calculations can be performed with reduced processing times.

1.2.2 Frequency Model with Weights

Given the nature of attributes, they are grouped according to the stages of tax compliance (registration, submission of information, return and payment; see section 3 of this document, entitled "Obligations and Gaps"). Within each stage, attributes are grouped into factors relevant to each. For example:

Illustration 7: Frequency of Attributes with Weights
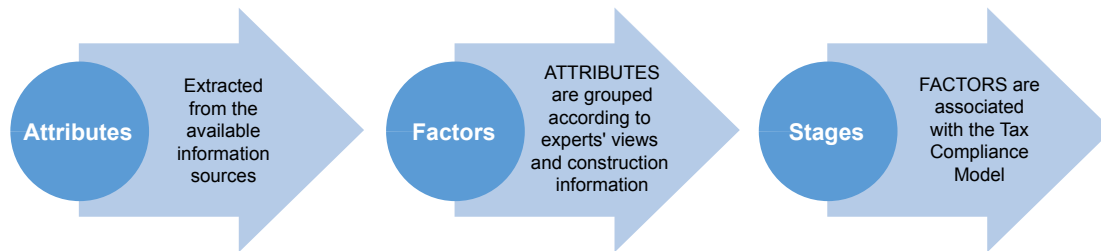
By way of example:

- At the registration stage, the factor "Issuing of Tax Documents" entails a higher level of risk in taxpayers who file corporate income tax returns without having electronic documents that are compatible with the taxed activity they carry out, compared to other taxpayers who have such documents.

- At the declaring stage, the factor "Personal Tax Withholding" may show a higher level of risk in taxpayers who report a reduction in salary expenses on their corporate income tax returns without declaring and paying the tax to workers.

- At the information submission stage, specifically in the factor "Income Tax Return", a taxpayer who declares a reduction of expenses, credits, or other specific items on their income tax returns, without filing annual income tax returns, e.g., forms associated with Income Tax, have a higher level of risk.

- At the payment stage, the factor "Value-Added Tax" encompasses a higher level of risk for those taxpayers who have, on a permanent or repeated basis, outstanding working capital or invoices originating from their own returns or from audit procedures, as opposed to taxpayers who do declare on time and for amounts that are reasonable for the activity they perform.

According to what has been previously discussed, the following technical elements must be considered to assess the probability of noncompliance that gives rise to taxpayer risk:

Probability: corresponds to the general possibility of noncompliance of the obligations to which each taxpayer is subject. For its estimate, we should consider attributes that make it possible to distinguish between different tax behaviors, such as those mentioned above.

Factors: correspond to clustering according to the nature of the attributes that enables taxpayers' tax compliance to be characterized and distinguished. These factors are used to group and weigh several sets of attributes, considering the organization's knowledge and the decisions specific to the business in question, in order to aggregate the diversity of concepts involved and assign a specific weight to each of them in relation to taxpayer risk.

Dimensions: consists of clustering of factors that, in the scope of business and institutional policy, make it possible to weigh the concepts in the different stages of tax compliance: registration, submission of information, return, and payment.

Example of clustering of attributes, factors, and stages

For this calculation, we should use the values obtained for the different attributes based on the technical definitions previously mentioned. Therefore, these values should be grouped by factor (F) and added based on their weight. I.e., to obtain the value of each factor (F), the relevance of each attribute is used, assigning a weight (β) that, multiplied by the value of the attribute (A), will give the relative relevance of the attribute for this factor (F).

Formula 2: Factor for Clustering

$$F_j = \sum_{1}^{n} \beta_i \times A_i$$

The use of weights makes it possible to differentiate the relative importance of a factor among the other factors established to measure taxpayer risk. Thus, for example, the factor "Return on VAT Withholding", which corresponds to the information submission stage, may have a higher weight than the factor "Notice of Vehicle Sale", which corresponds to the registration stage.

Consequently, the assessment of a particular compliance stage (S) will be determined through the relevance of each factor (F). A weight will be assigned to it (δ) that, when multiplied by the value of the factor (F), will give the relative relevance for that compliance stage.

Formula 3: Compliance Stage

$$S\varkappa = \sum_{1}^{m} \delta jxFj$$

Finally, the assessment of the probability (P) is done by combining the value of the four compliance stages, similarly to the previous calculation, through weights (y) according to the relevance of the compliance stage (S):

Formula 4: Assessment of Probability

$$P = \sum_{1}^{\rho} w_k \times Sk$$

The process described above is grouped into the stages as shown in the following diagram:

Illustration 8: Process of Clustering by Variable, Factor and Stage

Variables

Extracted from the available databases and information sources

Factors

The variables are grouped according to the experts' view and the information that constitutes them

Stages

Associated with the taxpayer's obligations

Calculation of Probability
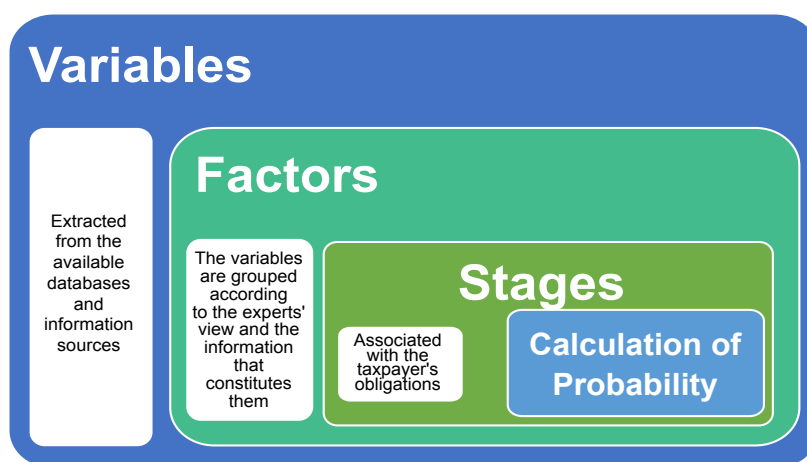
Limitations and Recommendations

The construction of this model can be applied to the extent that there is minimal contact with, or even knowledge about, the taxpayer. It is recommended to generate tests, trials, or a pilot study of the tool in question, in order to adjust it to specific information needs.

Attributes can be associated with a weight that allows for a variation in the relative importance of each item. These weights can be constructed based on auditors' experiences.

1.2.3 Mathematical Modeling

These models consider a wide range of statistical modeling, machine learning, and data mining techniques, which analyze current and historical data, for instance, to predict behavior or analyze events that could occur in the future. Likewise, they make it possible to determine associations or correlations between taxpayers or activities, detect anomalies, and compile clusters according to similar characteristics, among other important functions.

Predictive models make it possible to identify relationships between different attributes, which allows probabilities to be valued based on a set of conditions. In practical terms, an example of a predictive model is the Knowledge Discovery in Databases (KDD) process, which is essentially "the non-trivial process of identifying valid, novel, potentially useful, and ultimately understandable patterns from data".

As can be seen in the following illustration, this process consists of five phases:

1. **Data selection:** the sources of data and the type of information to be used are determined. At this stage, data relevant to the analysis are also extracted from the identified source(s).
2. **Preprocessing:** consists of preparing and cleaning the data extracted from the different data sources identified, which provides them with the necessary format and quality to be used in the subsequent phases. At this stage, various strategies are applied to deal with missing, "blank", inconsistent, or out-of-range data, obtaining, at the end of this phase, a data structure suitable for its further transformation.
3. **Transformation:** encompasses the preliminary treatment of data to prepare for its transformation and, consequently, to generate new variables from the existing ones. This makes it possible to have an adequate data structure. This phase comprises aggregation or normalization operations, consolidating the data so that they can be used in the next phase.
4. **Data mining:** the modeling phase per se, in which intelligent methods are applied, with the goal of extracting previously unknown, valid, novel, potentially useful, and understandable patterns that are contained or "hidden" in the data.
5. **Interpretation and evaluation:** identification of the patterns obtained and that are helpful, in order to analyze the results found.

Illustration 9: Knowledge Discovery in Databases (KDD) Process
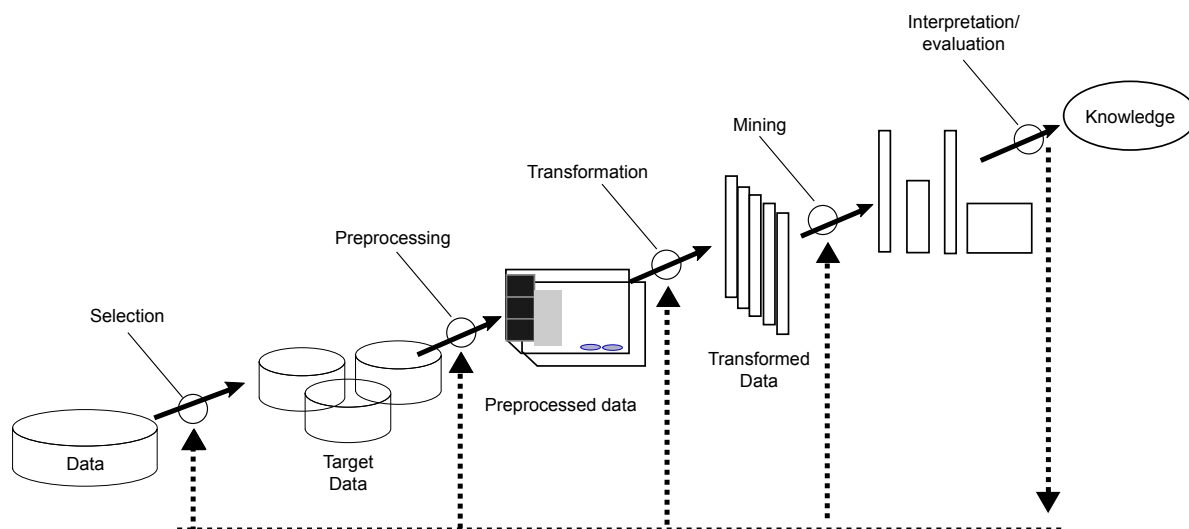
The selection, preprocessing, transformation, and evaluation phases are relevant for any type of algorithm used in the data mining phase, whether predictive or in clusters, supervised or unsupervised.

Illustration 10: Knowledge Discovery in Databases (KDD) Process
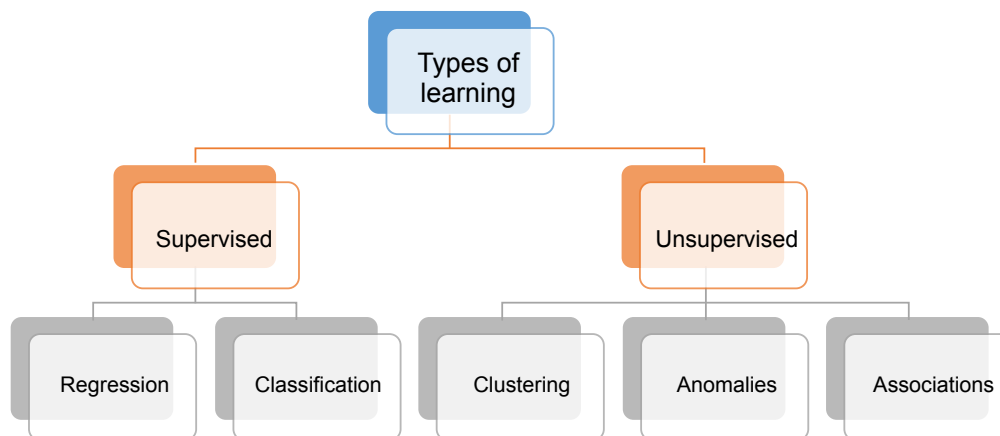
Supervised learning: a set of techniques that allow predictions to be made based on behaviors or features analyzed in labeled historical data.

Unsupervised learning: a set of techniques that allow inference models to extract knowledge from data sets in areas where, a priori, there is lack of knowledge.

Semi-supervised learning: a set of techniques that use both labeled and unlabeled training data, usually a small amount of labeled data along with a large amount of unlabeled data.

Among the techniques available to calculate the probability, we can mention linear regressions, logistic regressions, decision trees, neural networks, among others.

1.2.3.1 Neural Networks

Artificial neural systems mimic the hardware structure of the nervous system, with the intention of constructing parallel, distributed, adaptive information processing systems that can exhibit some intelligent behavior[15].

A conventional computer is essentially a *Von Neumann* Machine, constructed around a single central processing unit (CPU), which sequentially executes a program stored in the memory. On the contrary, the brain is not composed of a single processor (in this case, a neuron), but rather of billions of them, albeit very elementary ones. It is worth pointing out that neurons are much simpler, slower, and more reliable than a CPU, and despite this, there are many problems, such as speech recognition, verification of objects immersed in natural environments, among others, which a conventional computer is currently far from being efficient to perform. Therefore, the idea behind artificial neural systems is a primitive, theoretical approximation of how the human brain works, in order to efficiently tackle this kind of problem.

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15   Martín, Bonifacio and Sanz M. Alfredo; (2007). "Redes Neurales y Sistemas Borrosos", 3era edición. Editorial Alfaomega. México

Neural Network Architecture

We understand architecture to be the topology or connection pattern of a neural network. In an artificial neural network, nodes are connected by synapses. This synaptic structure determines the behavior of the network. Synaptic connections are directional, that is, information can propagate in only one direction, from the presynaptic neuron to the postsynaptic[16] neuron.

Neurons are grouped into structural units called layers. The neurons in a layer can be grouped into neural clusters. Within a cluster or layer, neurons tend to be of the same type. Therefore, a set of one or more layers constitutes a neural network. Basically, there are three types of layers: input, output, and hidden[17] layers.

Illustration 11: Neural Network Diagram
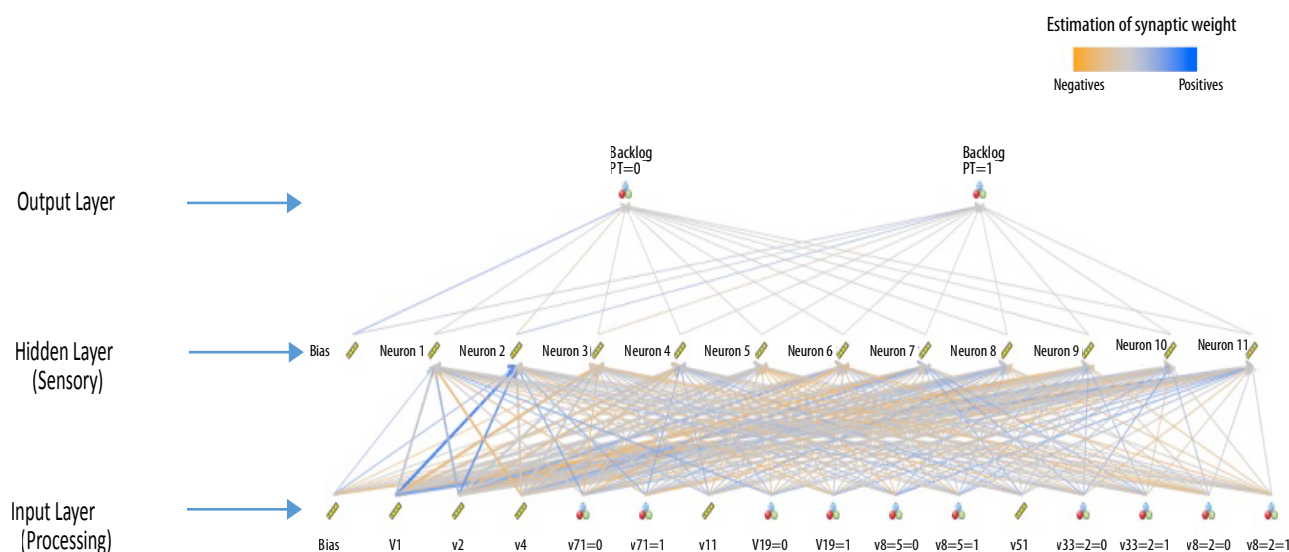
It is worth noting that, in relation to the application of neural networks in tax fraud detection, several countries have developed their own models, among them: Spain (valuing of real estate)[18], Peru (importation of goods)[19] and the Netherlands (e-business segmentation using *Kohonen* Maps)[20].

1.2.3.2 Decision Trees

Decision trees are data mining techniques that allow the inference or classification of observations of a dependent variable, which use attributes from a set of observations by constructing decision rules. Decision trees are composed of:

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16   Rumelhart, D. E.; McClelland, J. L. (1986). Parallel Distributed Processing, Vol 1, MIT, USA.
17   Figure extracted from modeling with Rapid Miner software.
18   Gallego M.; (July 2004). La inteligencia artificial aplicada a la valoración de inmuebles. Un ejemplo para valorar. Catastro. Madrid, Spain, p. 5.
19   SUNAT, Superintendencia Nacional de Administración Tributaria Perú, 2001-2005 Term. P. 6.
20   Xenon system developed by the Dutch Tax Administration (Belastingdienst).

- A root (root node), which contains all the elements of the set of observations to be analyzed.

- Leaves, which show the category or prognosis for that subset.

- Branches, which make it possible to split the set, using the possible values of the attributes as decision variables.

The following diagram shows a hypothetical decision tree to verify the feasibility for a taxpayer to enroll in a specific simplified tax regime.

Illustration 12: Sample Decision Tree
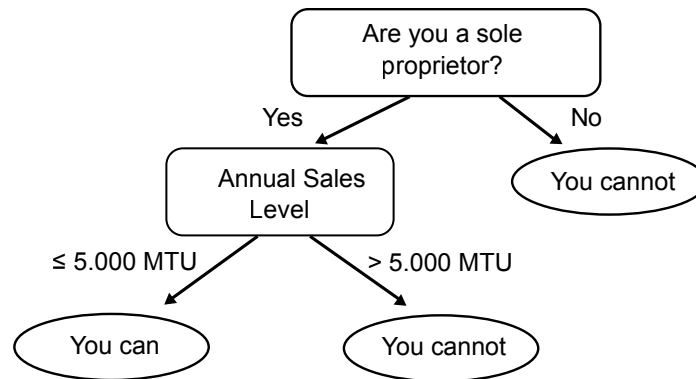
Decision trees are characterized as being simple to interpret because the decision rules are explicitly stated. This makes it possible to verify that the results are consistent with the actual problem being modeled.

Algorithms

There are several algorithms for constructing a decision tree, which differ according to the type of problem being modeled. For example, some algorithms allow multiple indicators (more than two categories) or binary (only two), as well as more than one criterion, for decision-making and evaluation. Some examples are given below.

Chi Squared Automatic Detector (CHAID): a classification method that uses Chi-Squared statistical data to identify ideal divisions. It consists of verifying the dependency between attributes and the classification result and selecting those that are most important.

Classification and Regression Tree (CART, also known as C&RT): a method that splits the tree into binary classifications, with the goal of cleaning the subsets.

Iterative Dichotomy 3 (ID3): a method developed by Ross Quinlan that selects the divisive attributes and uses statistical methods based on the entropy (a measure of the level of disorder) of the generated sets).

The ID3, C4,5 C5.0: is found in most commercial data mining packages and has been improved in terms of performance and new features, giving rise to the C4.5 and C5.0 algorithms. A more detailed description of how these algorithms work is given below.

The ID3-based algorithms use the entropy of the subsets obtained with each attribute, so that it is possible to choose a specific one with which to open the tree. Entropy is defined as the level of disorder in the set of observations and makes it possible to determine the proportion of each response type that is present in each node. In the case of a binary classification problem, i.e., one that has only two classes - positive (+) and negative (-) - the following formula is used to calculate the entropy of the set of observations.

Formula 5: Entropy

$$Entropy(S) \equiv -p_{(+)} \log_2 p_{(+)} - p_{(-)} \log_2 p_{(-)}$$

Where:

$p_{(+)}$ represents the proportion of positive cases in relation to the total.

$p_{(-)}$ number of cases and represents the proportion of negative cases in relation to the total number of cases.

$\log_2$ is the logarithm to base 2.

The tree construction starts from the root node and then selects the attribute that best classifies the set, using as a criterion a statistical measure called information gain, also known as simply "gain". This measure is calculated for all attributes A by subtracting from the entropy of the node the sum of the entropies of the possible values U of the attributes, weighed by their number of elements over the total S_v/S, as shown in the following formula:

Formula 6: Gain

$$Gain(S, A) \equiv Entropy(S) - \sum_{v \in Values(A)} \frac{S_v}{S} Entropy(S_v)$$

Next, the algorithm calculates the gain based on the newly generated sets, choosing the new attributes, and repeating them until there are no more attributes available to open a new branch, or the entropy of the subset is zero.

Among the ID3 updates, the C5.0 algorithm incorporates some improvements, both in processing time and accuracy. Some of the new features and improvements introduced are:

- Including misclassification costs: the target function can also be to minimize the cost of misclassifying a case rather than to quantify the misclassification error.

- Automatic attribute reduction: if there are too many attributes, C5.0 automatically discards the attributes that it does not consider relevant.

- New data types: allows the inclusion of attributes such as date, time, ordinal, and trademark formats.

- Missing values: this algorithm also accepts blank data for attributes, interpreting them properly, without having to relate them to another existing value.

Illustration 13: Sample Decision Tree
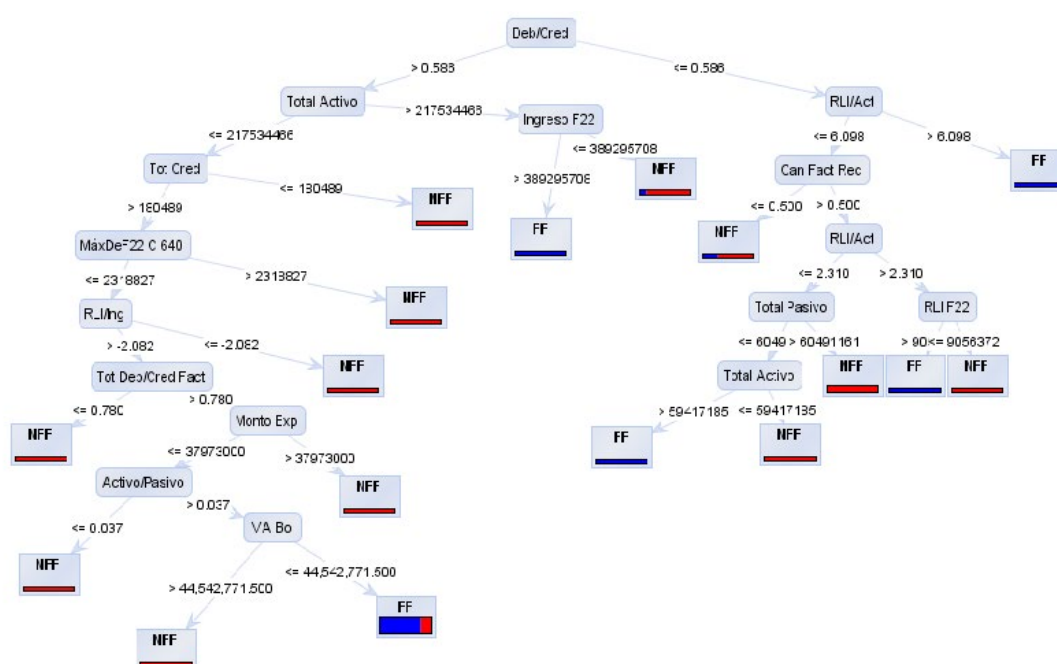
1.2.3.3 Logistic Regression

Logistic regression is a statistical technique that seeks to predict the outcome of a categorical variable (a variable that can take on a limited number of categories) as a function of the independent variables.

This technique is useful for modeling the probability of an event occurring as a function of other factors. Probabilities are modeled as a function of attributes or independent variables,

using a logistic function. It can be used to correlate the probability of a binary qualitative variable with one or more variables represented by a vector x. The probability of the event is approximated by a function such as:

Formula 7: Logistic Regression

$$\pi(x) = \frac{e^{(\beta_0+\beta_1 x)}}{e^{(\beta_0+\beta_1 x)} + 1} = \frac{1}{e^{-(\beta_0+\beta_1 x)} + 1}$$

Where x is the vector of attributes, β_0 is the intersection point, and β_1 is the vector of weights that fit the model.

This model has the advantage of measuring the probability of noncompliance by keeping the explained variable always within a range between zero and one. The main advantage of the logistic regression model is that it does not generate any demands on the distribution of the continuous input variables. Its main disadvantage is that categorical and ordinal variables cannot be included. Accuracy has been shown to improve when continuous input variables are in the range [0,1].

Limitations and Recommendations of Mathematical Modeling

It is essential that the _KDD_ process is carried out in all its phases, which implies repetition among its phases with the goal of improving each one of them and, consequently, the final result. Within predictive models - whether supervised or unsupervised -, it is necessary to construct a 'target vector': in simplified terms, this is the dependent variable, which implies having within the data the success and failure cases, in order to train the algorithm to be used.

Experience has shown that 'neural networks' predict with greater certainty. However, being a "black box" algorithm, it is not possible to obtain the rules that determine the prediction. Decision trees and regressions consider specific rules and weights associated with the relevant variables, which could be explained and complemented by experienced personnel in the field.

It is important to point out the high cost of predictive models in terms of time and money associated with the training of human resources, the hardware that supports the data, and the software tools capable of exploiting them. However, it is important to consider the relative cost in terms of the benefits that these techniques provide.

1.2.4 Evaluation Models

1.2.4.1 Model Based on Taxpayer Perception

Another way to derive a score to associate with a probability is the perception of taxpayer behavior. For example, it is possible to generate a qualitative tool associated with the specialized approach of the Tax Administration personnel who interact with the taxpayer.

For this purpose, the following structure of a tool created for large taxpayers can be mentioned as an example.

Illustration 14: Model Based on Taxpayer Perception
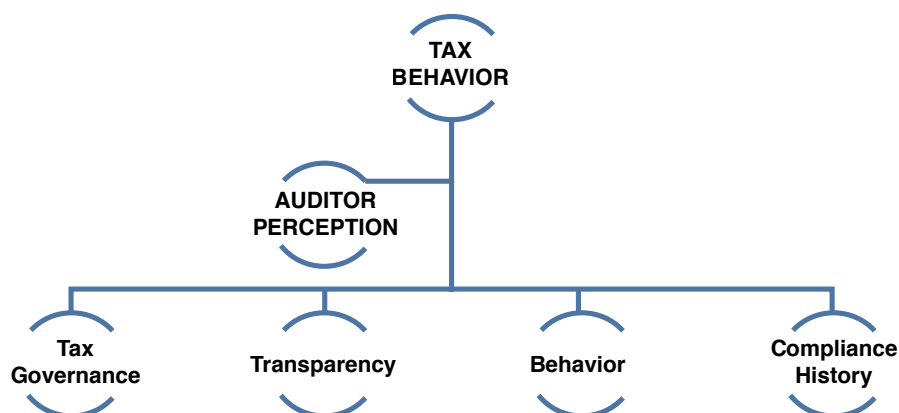
This model is related to the taxpayer's attitude with respect to compliance. To achieve this goal, a tool was created whose purpose is to transform the qualitative information that the Tax Administration has under its powers, to standardize the score to create a simulation of the probability of noncompliance by the taxpayer.

Those running the tool are given numerical, continuous questions, binary questions, a Likert Perception Scale (five categories), and open questions.

For example, cluster analysis of business variables would involve calculating cluster averages for assets, revenues, liabilities, number of employees, and so on. Furthermore, it is important to work with similar units of measurement, to clearly see the differences between the clusters from the center outward. In Illustration 15, different colors were used to differentiate and highlight the clusters.

Example of Cluster Analysis

Conglomerate, or cluster, analysis is a multivariate statistical technique that seeks to group elements (or variables) by attempting to achieve maximum homogeneity within each group and the greatest difference between them. It is a multivariate statistical method for automatically classifying data.

In this specific case, one seeks homogeneous groups of taxpayers associated with variables relevant to the business at stake. The main objective is to access comparable groups based on the similarity of their behavior.

Illustration 15: Clusters Associated with Variables of Interest
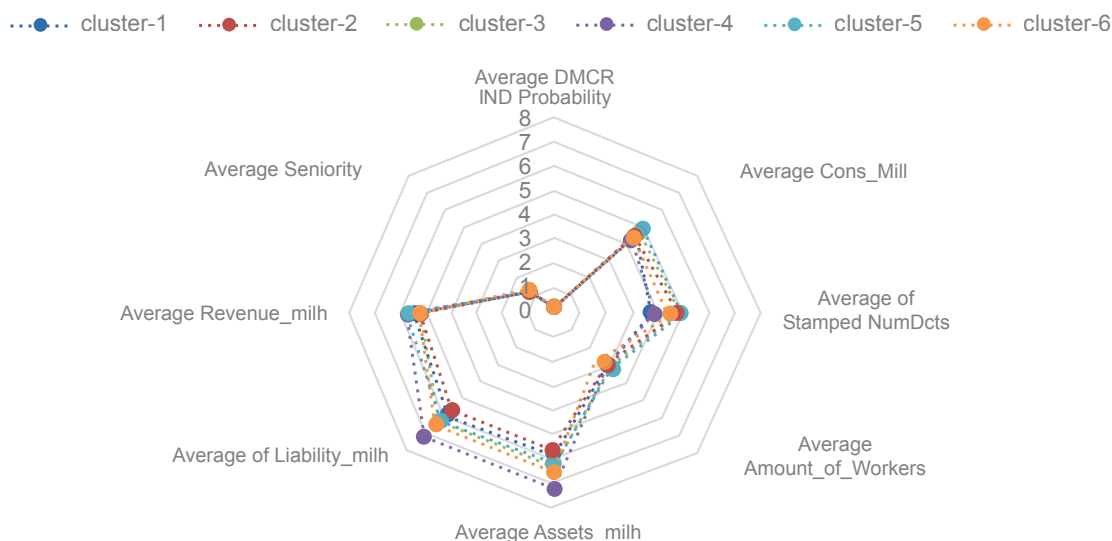
Cluster 1:

"Novices", on average, are the youngest of all clusters and have the lowest number of documents (invoice sheet authorizations) and of their respective stamps.

Cluster 2:

"Agile Ones" is the cluster with the lowest assets, liabilities, and revenue, and is composed of distinct categories. However, the most important category within this cluster is retail.

Cluster 3:

"Most Likely" is the smallest cluster and has the highest average probability indicator and the highest average number of stamped documents (or invoice sheets), and are, along with cluster 6, the oldest.

Cluster 4:

"Robust Ones" are by far the taxpayers who, on average, have the most assets, liabilities, and revenue.

Cluster 5:

"Those of Interest": this cluster groups 19 companies. The consequences of this cluster, in short, represent more than 30% of the total of all clusters and have about one ninth as many assets and liabilities as the cluster above. However, its revenue is the second highest in the entire sample and its probability is, on average, 0.64, which makes it have the second-highest probability.

Cluster 6:

"Consolidated": this cluster has the lowest average probability and the highest number of years, as well as the lowest average number of workers. It encompasses the participation of taxpayers in three economic activities: financial brokerage, business activities, and wholesale trade.

Another type of analysis that can be performed is based on the participation of clusters by economic activity. In this case, it is possible to see the relevance of each cluster within a particular economic sector.

Illustration 16: Clusters by Number of Companies Associated with Specific Economic Activities
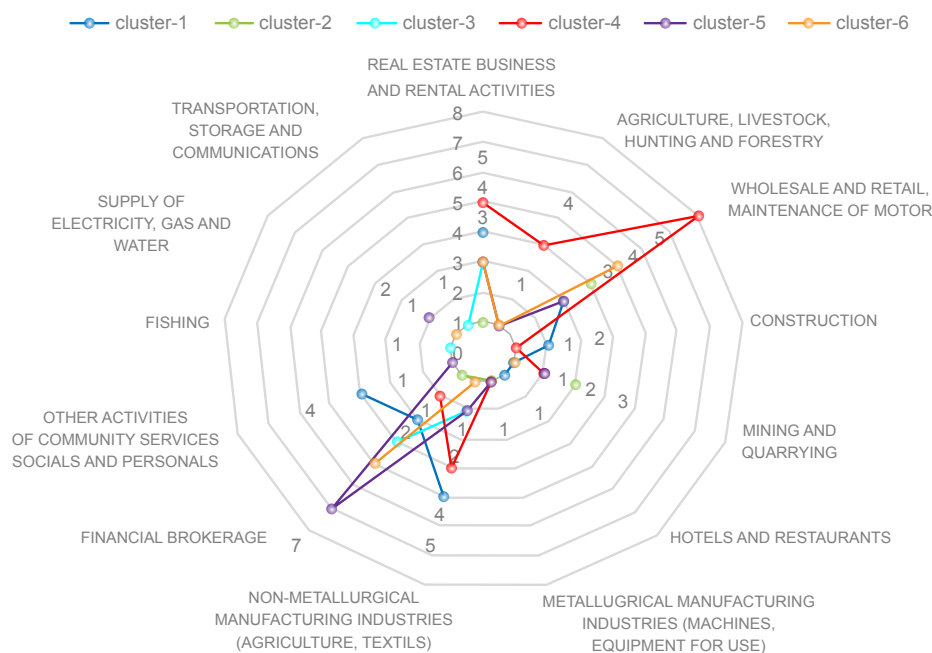
Limitations and Recommendations

This type of tool can be applied to the extent that there is minimal contact or knowledge about the taxpayer. It is advisable to pilot the tool to adjust it to the specific information needs.

Questions can have a weight that causes the relative importance of each item to vary. These weights can be constructed based on auditors' expert approach.

1.2.4.2 Model Based on Willingness for Tax Compliance

There are four motivational stances that characterize how individuals relate to the Tax Administration and the tax system. These stances are based on sets of values, beliefs, and attitudes adopted by the individual (Braithwaite & Wenzel, 2008).

In this context, a classification of beliefs and attitudes into a pyramid called the Tax Compliance Pyramid is generated, which has become a widely used tool by Tax Administrations to illustrate the four motivational stances, along with corresponding compliance strategies.

Illustration 17: Model Based on Willingness for Tax Compliance
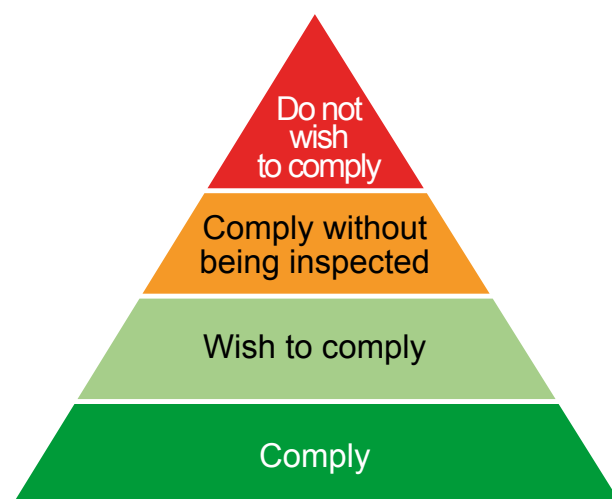
After classifying taxpayers according to their willingness to comply with tax obligations (Braithwaite, 2009), this model splits the determinants into a set of factors - industry, business, environment (economic, sociological, and psychological) -, which affect taxpayers' attitudes and behavior towards tax compliance. These factors are grouped together in the BISEP Model.

The attitudes contained in the pyramid are dynamic. A taxpayer could adopt any of them at different times, without determining the characteristics of a person or group. These attitudes reflect the interaction between the person, the environment and those who impose certain demands on them (Braithwaite, 2009). Generally, the latter is the role of Tax Administrations.

Limitations and Recommendations

This type of tool can be applied to the extent that there is accurate information on taxpayers' attitudes and constant monitoring of their business cycles, the industry in which they work, and other factors mentioned above. Both the taxpayers and the industries involved must be checked in order to generate a measurement methodology that can explain these multifactorial changes in taxpayers' relative stances.

1.3 Calculating Consequences

The classification of taxpayer risk must consider the evaluation of the impact on the tax system of all the forms of noncompliance with obligations at the distinct stages: registration, return, submission of information, and payment.

To measure the consequences of taxpayer risk, it is important to define a variable that makes it possible to estimate the individual contribution relative to the tax system, that is, the damage relative to the total number of taxpayers that such a gap would produce if the taxpayer did not comply with their tax obligations. For example, if it is considered that the annual revenue of taxpayers is a good parameter to estimate their individual contribution relative to the tax system, under the assumption that taxpayers with higher revenues should make a greater contribution (not only in monetary terms, but also in terms of data and the spread of their tax conduct), this could be the estimator used to prioritize taxpayers in terms of the consequences of likely noncompliance with their obligations.

To quantify the impact of taxpayer behavior for the Tax Administration, noncompliance with different taxpayer obligations is structured under the concept of general consequences.

1.3.1 Consequences Based on Revenue or Size

This is understood as the construction of a unit of measurement in monetary terms. One form of measurement consists in using the taxpayer's revenue as a starting point, whether it is monthly, biannually, or annually, and taking it to an equal (preferably annual) time base.

These revenues are summed with the values updated in the proposed time unit, which serves as a basis for assessing the potential consequences that would be borne by taxpayers.

Formula 8: Equation as a Function of Revenue or Size

$$f \text{ (Consequences)} = \sum_{1}^{n} \text{Annualized Revenue}$$

Limitations and Recommendations

The construction of this model is not complex, as a unit of measurement is partially correlated with, for instance, tax payments.

The sum of the revenues obviously does not imply that this will be the only component of a taxpayer's tax base, on the understanding that, for this to happen, expenses and costs would have to be deducted. If the above procedure is not carried out, there would be a risk of overvaluing the consequences for a taxpayer.

It is recommended to use adjustments in comparison variables (evolution of aggregate demand) that consider inflation, in order to be able to analyze values at constant prices that do not distort the proportions obtained.

1.3.2 Consequences using Mining Techniques

A methodology for calculating the consequences that could be useful for Tax Administrations is the one that makes it possible to estimate the taxpayer value according to their contribution in taxes, with such value being corrected according to the segment of taxpayers with similar characteristics. The aforementioned procedure is exemplified in the following three stages:

1.3.2.1 Taxpayer Value

It is the value that quantifies the impact of a given taxpayer, constructed in currency units and associated with the value in terms of the tax potentially payable by the taxpayer. The sources of information for this new value are:

- Companies: Income Tax forms, other taxes, Value-Added Tax.

- Persons: information from different sources containing:

  o Wages/salaries or income from work.

  o Income from investments or capital.

1.3.2.2 Clusters to Determine Group Membership

To determine group membership, it is necessary to group the taxpayers by means of clustering techniques, which are constructed by identifying patterns of behavior. First, the taxpayers are divided by segment (private individuals and legal entities) and then by category (micro, small, medium, and large businesses). Subsequently, the following clustering characteristics are used for each of them:

- Private individuals: regional location or territorial area, titles, age, number of companies, and revenue.

- Legal entities: regional location or territorial area, titles, seniority, number of companies and partners, revenue, number of invoices or receipts, number of employees, number of monthly information returns, and relationship between sales and purchases with different time spheres.

With these variables, in alongside statistical conglomerate methods, e.g., K-Means, groups are generated for individuals and for each of the categories of legal entities (micro, small, medium, and large taxpayers).

1.3.2.3 Consequence Calculation

Clusters aim to identify the "taxpayer value" that taxpayers belonging to a given group should have. For example, a taxpayer should have a taxpayer value within the range between the average of the taxpayer value of the taxpayers belonging to its group and two standard deviations. This value is what is called the consequence. Therefore, this stage also makes it possible to identify possible irregularities in taxpayers who have significant deviations from this value.

The process described above is grouped into the stages shown in the following diagram.

Illustration 18: Factors Involved in Calculating Consequence

Taxpayer Value
- It is composed of information from Income Tax Forms and Returns.

Persons
- Information from different sources containing salaries:
  - Earned Income
  - Investment or capital income

Companies
- Through forms:
  - Income Tax
  - Value-Added Tax
  - Other taxes

Cluster

For each segment, we tried to find groups, using characterization variables

Companies

Features:
- DR
- Income
- Item
- No Companies
- Antique
- Debit/credit ratio
- Invoice preparation
- No Employees

Persons

Features:
- DR
- Income
- Item
- Nº Companies
- Antique

Consequences

For each Cluster, the measure of **Taxpayer Value** is calculated. The **Consequence** will be:
- The taxpayer value, when it is greater than the average.
- The average, when the taxpayer value is lower.

Limitations and Recommendations

The construction of this model is more complex than the example with size or revenue. As a unit of measure, it has a strong correlation with the tax potentially paid by the taxpayer.

This logic and its calculation process involve a conglomerate analysis, constructed with taxpayer production variables, as well as taxpayer clustering according to experts' approach (individuals, companies, among others). This implies a costly process, due to the volumes of data used and the training of human resources responsible for these activities.

It is worth highlighting the importance of the information in terms of data quality, availability, and relevance, among other characteristics that will be discussed in this handbook.

Regarding the updating of taxpayer risk calculation models, the following table summarizes the scenario in some Tax Administrations:

Table 3: Scenario in Select Tax Administrations

Tax Administration	Frequency of Taxpayer Risk Update	Notes
Spain	Annual	
Colombia	Annual, bimonthly, and monthly	According to tax type
Bolivia	Annual	
Ecuador	Annual	
Chile	Monthly and annual	Universe of taxpayers
Costa Rica	Annual	
Brazil	Annual and monthly	According to taxpayer size
Italy	Annual	

Regarding the personnel authorized to consult the taxpayers' risk profile and the possibility for the taxpayer to access their own risk profile, the following table summarizes the scenario in some Tax Administrations:

Table 4: Scenario in Select Tax Administrations

Country	Is taxpayer risk known to the administration?	Is the taxpayer aware of their risks?
Spain	System is transparent to entire administration and segmented by functions according to different risk models.	Yes
Colombia	Not available.	No.
El Salvador	Not available.	No.
Bolivia	Restricted to personnel in areas related to risk management and audit, as well as certain executive management levels.	No.
Ecuador	Restricted to implementation units.	No.
Chile	All personnel.	No.
Costa Rica	Restricted to analysts of Directorate of Large National Taxpayers*.	No.
Brazil	Not available.	No.
Italy	Restricted based on level/function.	No.

2 Taxpayer Segments

A segment is a group of taxpayers with similar characteristics, whose impact on the context in which they operate is considered relevant. Therefore, it is necessary to concentrate treatment actions that adequately ensure their compliance. Its impact can be evaluated considering different variables, such as the number of taxpayers involved, the associated tax gaps, the number and value of refunds requested or taxes declared, among others.

Segmentation makes it possible to know the universe of taxpayers subject to the actions of the Tax Administration, whether focused on assistance or control, and to identify certain groups that, due to their relevance or complexity, require special attention, dedication, or expertise. By delving deeper into this function, it is possible to generate treatment strategies for the various groups, which would have an impact on the way assistance or control is implemented. This can even affect the organizational structure, giving rise to the creation of groups or units dedicated to these taxpayers. In general, there are segments that require special attention

because their mode of operation is different from the average taxpayer, because their impact is significantly greater (e.g., multinationals), because they make use of exemptions or special regimes, or because their volume of operations, organizational structure, or technology require expertise. For taxpayers whose tax obligations are minor and, consequently, their taxation is simple, it is logical to assume that the actions or treatment strategies envisaged to manage them are simple and of low relative cost to the Tax Administration.

It is important to emphasize that there are not necessarily correct or incorrect approaches to segmentation. The approach to be adopted will depend on the characteristics of each Tax Administration's context and capabilities.

For the classification of segments, several aspects can be considered, e.g., whether they consist of private individuals or legal entities, the economic sector, the size in terms of revenue, the capital or equity, the adoption of special regimes, the type of operation, among others. In a similar rationale to the above, there are different methodologies to identify segments, from techniques such as clustering to criteria by specialization (benchmarking). For example, for some relevant segments, it is not necessary to apply a specific detection technique. In Chile, mining is historically an economically relevant sector that requires special attention. High net worth individuals and large taxpayers, among others, also require such consideration. In addition, they can be deemed as traditional segments that are recognized and studied at the global level, which may even allow access to information and knowledge of indicators and reference characteristics to evaluate the performance of the segment at the local level (business groups, high net worth individuals, the self-employed, trade, and the informal economy).

2.1 Classification of Taxpayer Segments

Three types of taxpayer segment classifications are outlined below:

2.1.1 Macrosegments

This classification of taxpayers refers to the total number of taxpayers in the Tax Administration. Generally, this clustering is done according to the size of the taxpayer. The following can be pointed out as an example of macrosegment classification by size: small, medium, and large businesses. On the other hand, private individuals can be classified according to their net worth: individuals in general and high net worth individuals.
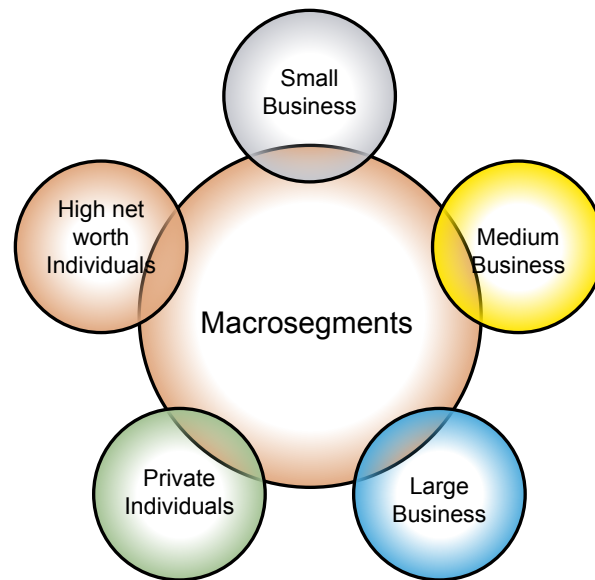
This classification of macrosegments by size is usually calculated based on net revenue, but it can also be defined based on their assets, the size of their capital, the taxes paid, or the number of workers.

A strategy that has been adopted in several Tax Administrations is to use segmentation to guide the development of the organizational structure. Thus, among the trends used by Tax Administrations, we can identify the creation of Large Taxpayer Offices to control and provide services to taxpayers that together represent 60%-75% or more of the total tax revenue of the State. Because of their high revenue, these taxpayers must be constantly monitored. Any change in their operation can have a major impact on the strategic objectives of a Tax Administration. Similarly, some Tax Administrations have created special groups for high-net-worth individuals, since they are taxed differently than companies.

Spain: Relevant Net Worth Segment

Taxpayers with a high net worth, when they decide to evade, have sufficient resources to do so. They often create structures that allow them to distribute or avoid the payment of the tax burden.

Although the risks are calculated for all individuals, a dynamic group of relevant assets has also been constructed, in order to focus attention on them in advance.

A series of relevant asset risks that constitute a profile of this segment has been defined, by determining ten profiles for the overall analysis of the different challenges specific to this group of taxpayers.

Since the risk scores are homogenized in advance, it is possible to add the risks of this type of taxpayer, which allows the combination of specific analysis of high-impact risks with aggregate analysis of a large number of low-scoring taxpayers.

To analyze these risks using big data technology, tools have been devised to determine the direct and business net worth of a taxpayer and their entire family environment.

For example, for this type of person, not registering a domicile on private property constitutes a risk. Oftentimes, they reside in a property of the company, for which this constitutes a non-deductible expense that must be attributed to the partner as income, based on market assessments. In this case, we are using a segment of high-net-worth individuals who declare that they do not own their primary residence but are nonetheless partners in more than a certain percentage of companies that own residential real estate.

If a taxpayer owns, for instance, 72.5% of the property of legal entity D (hereinafter LE D), which owns residential real estate, the registries are checked to see if LE D's real estate has the same location as the domicile declared as habitual residence. This risk is assessed and analyzed within a profile called "lifestyle", along with a series of other risks that characterize the high standard of living of a person with high net worth.

On the other hand, small taxpayers generally constitute the largest segment in most countries, as well as the most difficult to control in operational terms, due to their large volume and the lack of proper maintenance of their registries.

As an example[21], in Denmark, companies are segmented according to gross turnover, complexity of issues, and compliance history. Individual taxpayers are classified according to the type of tax return, whether it is only from employment income (active personnel or retirees) or the full tax return (capital and employment income).

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21   OECD, GUIDANCE NOTE; Compliance Risk Management: Managing and Improving Tax Compliance, October 2004, p 19-20.

In Austria, taxpayers are segmented according to the number of employees. The categories include:

- Largest taxpayers (G1): more than 500 employees or turnover generally greater than 18.2 million euros.

- Large taxpayers (G2): more than 100 employees or turnover greater than 6.25 million euros.

- Medium to large taxpayers (G3): more than 50 employees or turnover generally greater than 2.181 million euros, except for self-employed professionals, whose turnover must not exceed 0.727 million euros.

- Average taxpayers (M): more than 25 employees or turnover greater than 0.364 million euros.

- Small taxpayers (K1): more than 10 employees or turnover greater than 0.11 million euros.

- Smallest taxpayers (K2): both variables are considered but setting a threshold below those established in K1.

Below is an overview of the scenario in some Tax Administrations regarding the classification of segments:

Bolivia

Firstly, taxpayers are broadly segmented into four regimes, according to their tax obligations:

General Regime: various economic activities that are required to file tax returns under national jurisdiction for each tax period.

Simplified Tax Regime: taxpayers of some specific, less relevant activities that make unified or single-tax payment.

Comprehensive Tax System: taxpayers of smaller-scale transportation activities with a single consolidated payment.

Unified Agribusiness Regime: taxpayers of agricultural or livestock activities according to a certain geographical location and the size of their facilities, with single-tax payment.

In the General Regime, there is an additional segmentation: Main Taxpayers (PRICO), Large Taxpayers (GRACO), and the Rest.

These regimes are determined according to the economic activities carried out and the economic relevance, criteria that define the obligations and, thus, the related payments.

In the General Regime segments, the classification is related to the economic importance of the taxpayers in terms of payments and type of legal entity. The PRICO segment, which is a subset of GRACO, incorporates the taxpayers with the largest payments to the Tax Administration (usually around 100 companies of various categories); Large Taxpayers (GRACO) are categorized by their importance in tax terms and include all joint-stock companies and state-owned enterprises; finally, the Rest segment is composed of all taxpayers that were not categorized in the above-mentioned segments.

Spain

Individuals who do not exercise an economic activity.

Individuals who exercise economic activity under the regime of signs, indices, and modules.

Individuals and legal entities who exercise economic activity under the direct estimation regime (computable revenues minus deductible expenses) and who carry out their functions as small and medium businesses.

Large businesses are those that:

- Have a volume of transactions that exceeds €6,010,121.04 in VAT during the preceding calendar year.

- It is so ordered by the Special Delegate of the *Agencia Tributaria*, in view of the importance or complexity of its operations within the scope of the respective Special Delegation or because of its link or relationship with those mentioned above or with other liable subjects to which the Regional Units of Large Company Management (UGGE) extends its competence.

- Comprise entities representing an economic group that is taxed under the consolidated corporate tax regime or dominant entities taxed under the special VAT regime for the corresponding group of entities.

Taxpayers are considered very large if they are:

- Legal entities whose turnover exceeds 100 million euros in VAT during each of the three tax years preceding the one in which the registration as this category is carried out.

- Excise duty operators.

- Customs operators.

The classification by size is directly proportional to the difficulty of verification and its relevance to the total collection volume.

The classification regarding customs is due to the fact that customs revenues belong to the European Union.

The classification of excise duties meets the need for specialization.

Ecuador

Among the main taxpayer segments that the *Servicio de Rentas Internas* has identified for tax control purposes are the so-called Economic Groups, Large Taxpayers, Special Taxpayers, and Others, which will be described below:

Economic Groups: according to current tax regulations, an economic group is defined as a group of private individuals and legal entities, both domestic and foreign, in which one or more of them owns, directly or indirectly, 40% or more of shares in other companies. In addition, the *Servicio de Rentas Internas* may consider other relationship factors between the parties that make up the economic groups, with respect to management, administration, and business relations. To date, 215 economic groups have been identified, which represents approximately 0.35% of the registered taxpayers, but which, nevertheless, considering their actions as withholding or collection agents, contribute about 50% of the total collection.

Large Taxpayers: the *Servicio de Rentas Internas* defines Large Taxpayers as those private companies, both national and international, considering their important tax movement. The Large Taxpayer Registry is currently composed of 185 taxpayers.

Special Taxpayers: these are all individuals or legal entities to which the Tax Administration confers the characteristic of "special", due to their importance for tax collection and their strategic interest. The number of Special Taxpayers is currently 5,125.

Others: this category corresponds to individuals or companies that are not part of the aforementioned groups.

It is important to mention that, for tax control purposes only, specific registries have been created for private individuals - simply called "Private Individuals" * - regardless of whether they are part of the four categories of taxpayers indicated in the previous paragraphs. For these purposes, private individuals are all persons, domestic or foreign, who carry out legal economic activities. For control purposes, they have been classified into the following groups, according to the source of income where they register the highest amounts on their income tax returns:

- Capital owners
- Professionals
- Entrepreneurs
- Relationship of dependency

Economic Groups

Economic groups are constructed based on the corporate composition reported in the Annex of Shareholders, Participants, Partners, Board Members and Administrators (APS), where one or more shareholders hold, directly or indirectly, at least 40% of shares in other companies.

Large Taxpayers

For this type of taxpayer, a mathematical and data mining model is used, in which variables of revenue (tax importance) and size (financial importance) are applied, such as assets, liabilities, revenues, costs, and expenses.

Special Taxpayers

To define Special Taxpayers, we must analyze:

- Their importance in tax collection: for these purposes, we must consider variables related to the effective collection of taxes, mainly the volume of economic transactions.

- Their strategic purpose: according to the Tax Administration, all Large Taxpayers, besides other taxpayers whose economic activities are considered important, are given the designation "Special Taxpayers".

Private Individuals

To determine taxpayers' main source of income, the previous year's income tax return is used. This information is supplemented with data from the Annex of Dependency Relations, in order to include workers who are not required to file income tax returns.

Brazil

Criteria for special and differentiated legal entities:

- Declared gross income;
- Reported debts;
- Salary Account;
- Participation in the collection of taxes administered by the *Secretaria da Receita Federal do Brasil* (RFB);
- Other criteria of tax interest can be used for the inclusion of legal entities for differential monitoring.

Criteria for Standard Legal Entities:

- Annual gross revenue;
- Salary mass (Finances Brazil (FINBRA), Time Guarantee Fund Return for Social Security (GFIP) and Annual Report on Social Information (RAIS);
- Posting (adjustments) of financial revenues in the Financial Movement Information;
- Output reported in electronic invoices referring to sales.

Criteria for differentiated individuals:

- Income reported in the Annual Individual Income Tax Adjustment Return (DIRPF);
- Posting of financial revenues in the Financial Movement Information Return;
- Assets and rights informed in the DIRPF;
- Rents in the Real Estate Activities Information Return (DIMOB);
- Rural property informed in the Rural Territorial Property Tax Return (DITR).

Criteria for high contribution individuals:

- Income reported in the Annual Individual Income Tax Adjustment Return (DIRPF);
- Posting (adjustments) of financial revenues in the Financial Movement Information Return;
- Credit card purchases reported in the Credit Card Transaction Return (DECRED);
- Assets and rights informed in the DIRPF;
- Rents in the Real Estate Activities Information Return (DIMOB);
- Rural property informed in the Rural Territorial Property Tax Return (DITR).

Regarding the updating of the segments, a summary table outlining the scenario in some Tax Administrations is shown below:

Table 5: Segment Updating - Comparative Outline

Country	Update	Adjustments to Segment Criteria
SPAIN	Annual	New entities that become Large Businesses are notified of their membership in the segment and of their obligations
COLOMBIA	Annual	No
EL SALVADOR	Annual	Yes, according to analysis of each case
CHILE	Annual	Yes, according to improvements in information quality or eventually to strategic priorities
BOLIVIA	Annual	Yes
ECUADOR	Annual	Yes
COSTA RICA	Every three years	Yes, according to analysis of each case
BRAZIL	Annual	No
ITALY	Annual	Yes, according to improvements in information quality or annual audit plans

The scenario in some Tax Administrations regarding the internal organization to deal with different taxpayer segments is presented below:

Bolivia

The organizational structure envisaged having three administrative offices specialized in the GRACO (Large Taxpayers) and PRICO (Major Taxpayers) segments in the three main cities of Bolivia: La Paz, Cochabamba, and Santa Cruz de la Sierra. If the categorized taxpayers are in another location, they simply belong to one district operational administration, albeit with differentiated obligations and procedures.

Within specialized management, there are special teams with their own structure, without significant differences from operational management of a given size. However, these teams have limited autonomy, as they depend on the central administration. On the other hand, the task of generating cases based on risk management and fiscal intelligence procedures has been partially centralized in the recently created area called Studies and Risk Management, which reports directly to the central executive level - Executive Presidency.

Ecuador

The *Servicio de Rentas Internas* (SRI) uses two treatment strategies for control: the intensive strategy and the extensive strategy.

a) To carry out intensive controls (audits), there is a Tax Audit Department in each Regional Directorate of the SRI, which maintains the following coordinations:

- Large Taxpayers and International Taxation.
- Companies.
- Private Individuals.

The audit teams, in general, are composed of professionals with knowledge in accounting, taxation, finances, and related fields. In the Large Taxpayer and International Taxation areas, auditors are required to have a certain level of experience within the Tax Administration in order to be appointed.

b) To carry out extensive controls, there is a Tax Management Department in each SRI Zonal Directorate, which has the following coordinations:

- Special Taxpayers.
- Companies.
- Private Individuals.

The tax management teams are responsible for large-scale control of certain identified risks that do not merit a tax audit and are generally made up of professionals with knowledge in accounting, taxation, finances, and related fields.

In the case of the control of economic groups, there is no specific control through a special team; the members of an economic group in which tax control risks are identified are designated according to the type of taxpayer and the control strategy to be followed for both audit and tax management.

Costa Rica

The Directorate of Large National Taxpayers has implemented a work methodology with the aim of identifying, prior to the development of any control action, the existence of tax risks inherent to companies classified as large national taxpayers. The prior identification of these risks is the responsibility of two work groups called "Analysis Units", which work under the competence of the Sub-Directorate of Compliance Analysis (SAC) of the Directorate of Large National Taxpayers.

Regarding the audit phase, the working groups are organized according to various sectors of the economy: financial, wholesale, retail, industry, international taxation, among others, which allows the development of a certain degree of specialization in relation to the various verifications carried out in this phase. These working groups are linked to the Sub-Directorate of Audit.

The composition of the work teams, both in the analysis and audit phases, is very similar, with a group coordinator, who oversees up to four professionals.

The experience acquired daily has led some members of these teams to specialize in very specific areas of knowledge, such as transfer pricing. The same happens in sectors of the economy that, due to their particularities, require specialized training. It is worth mentioning the financial sector, which requires an increasing level of specialization in order to conduct both analysis and audit activities.

When it comes to the identification and classification of the risks of large territorial companies and other taxpayers of the massive sector that adhered to the tax simplification regime, the risk area of the Directorate of Tax Intelligence, together with the Directorates of Audit (intensive control) and of Extensive Control, performs the task of identifying tax risks and assist, in an organized way, in directing control actions.

On the other hand, specific tax auditors were appointed within each regional Tax Administration to carry out the audit of large territorial companies, who stood out due to their greater training in audit activities, given their experience in certain economic sectors that had a high impact on the country.

The remaining taxpayers are also audited and monitored by specialized employees dedicated to this activity within the Tax Administration:

There are two specific work teams for the largest corporate taxpayers:

- Behavior monitoring team, which performs self-regulation actions (actions that generate alerts to taxpayers for noncompliance with their obligations, allowing them to correct distortions);

- A team that performs the audits that have been selected by the behavior monitoring team when the result is not obtained with taxpayer self-regulation.

In the remaining segments, there are two teams:

- A team to select cases for audit, in order to establish the tax credit and apply sanctions;

- A team that performs the audits that have been selected by the behavior monitoring team when the result is not obtained with taxpayer self-regulation.

In the case of an individual with high ability to pay, there are two specific teams:

- A team to select cases for audit, in order to establish the tax credit and apply sanctions;

- A team that performs the audits that have been selected by the behavior monitoring team when the result is not obtained with taxpayer self-regulation.

Differentiated individuals are evaluated by two teams, one for selection and the other for the execution of the audit. These teams have their own organizational structure (Special Delegation for Major Individual Taxpayers).

These teams are made up of persons with distinct levels of education and experience, with most specialists being assigned to the teams that select the cases to be audited and the teams that perform the audits.

For the remaining taxpayers, there are audit case selection teams and audit execution teams, with distinct levels of training and experience.

Below is a summary table in relation to the taxpayer's knowledge about their belonging to a segment, for which the Tax Administration should designate a special team and/or implement differentiated strategies to control and assist their tax compliance.

Table 6: Segment Disclosure

Country	Segment Disclosure
SPAIN	Yes
COLOMBIA	No
EL SALVADOR	Yes
CHILE	Yes, only segment size
BOLIVIA	Yes
ECUADOR	Yes (not private individuals)
COSTA RICA	Yes (not private individuals)
BRAZIL	Yes (not private individuals)
ITALY	Yes, for certain taxpayer types

2.1.2 Economic Segments according to Business Rules

To understand the various stages of the life cycle of taxpayers, business analysis rules are used. The objective of these rules is to define distinct groups to generate different treatment actions, since these groups may have different obligations and, therefore, different risks, which implies avoiding efforts and committing greater resources to those taxpayers that, for instance, have already ceased their activities. These segmentation rules can be modified according to the needs of each Tax Administration.

The following illustration shows some segments that use business rules. For example, they are classified according to whether or not there is a date of death. For taxpayers who are part of the "deceased" segment, efforts can be directed at monitoring the correct payment of inheritance and gift taxes to their heirs, or at monitoring the succession due to death or the companies that continue the administration of the deceased's estate. This can be identified through death certificates or other sources of information.

Illustration 20: Examples of Segments with Business Analysis Rules

Taxpayers with no start of activities (no enrollment in the taxpayer registry): correspond to those taxpayers who have started any type of business or work likely to produce income taxed with Income Tax. The economic damage that this segment generates for the treasury not only corresponds to the loss of taxable income, but also extends to the consequent damage consisting in the undue enjoyment of subsidies, grants, pensions, and other items of the public expenditure budget. Likewise, this segment constitutes one of the most damaging cases of unfair competition among economic agents. Its identification can be established through different sources of information, such as complaints, studies on the Issue, purchases made by suppliers in the formal market, purchases of goods, information from third parties, among others.

Segment with conclusion of activities (cancellation of subscription in the taxpayer's registry): this segment has already completed its life cycle. However, monitoring must be maintained in several aspects, e.g., by verifying that they have effectively ended their activities or that they do not continue to issue invoices. The attribute for their identification encompasses information from internal entries regarding the end of their business activities or the payment of the form that closes their business.

Inactive segment: refers to taxpayers who have started activities, but who, according to prior information available in the Tax Administration, can be determined as having concluded their business or ceased their activities without having communicated the respective notice. They can be persons, entities, or unincorporated groups. By way of example, this segment may have the following attributes:

- No invoices issued for the past 18 months,
- Persons, entities, or unincorporated groups who fail to comply with their obligation to file tax returns, either monthly or annually, for a certain period of time.
- Liable subjects have filed the above returns without regard to any income, related non-taxable transactions.

Novice segment: active taxpayers that have started activities, for example, within the last two or three years. While they may have the same obligations as active taxpayers, the treatment strategy for this segment focuses on education and assistance, at least during the first years after start-up.

Active segment: taxpayers who have been in business for more than three years and who do not belong to any of the segments described above. They correspond to taxpayers who have carried out some type of activity and filled out an annual or monthly form for the Tax Administration recently, for example, in the past 18 months. They are still a large number of taxpayers; therefore, new segmentations can be generated for these taxpayers, in order to apply the corresponding treatments. Based on this classification, several types of segments could be generated. For example, among the segments classified as economic, we could highlight agriculture, construction, commerce, mining, restaurants, tourism, livestock, forestry, or others, according to the relevance and strategic needs of the Tax Administration.

2.1.3 Other Criteria for Taxpayer Segmentation

Other segments can be established for active taxpayers, which can be classified by operation criteria, by special laws, by economic sector or by Tax Administration processes. These segments can be created at the central level or exist because of geographical conditions, special laws, or segments that are relevant at the local sphere.

Illustration 21: Examples of Operational Segments, Special Laws, Economic Sectors and Processes of the Tax Administration (TA)

Operations
- ✓ Services and Products
- ✓ Multinational Companies
- ✓ Multiregional National
- ✓ Intragroups
- ✓ Production, Manufacturing, Distribution
- ✓ Intermediaries

Special Laws
- ✓ Free zones
- ✓ Exemptions for training, construction
- ✓ Extreme laws
- ✓ Special Regimes

Economic Sector
- ✓ Economic Groups
- ✓ Economic Relevance
- ✓ Strategic Sectors
- ✓ Regulated Sectors

TA Processes
- ✓ Income Tax Filers
- ✓ VAT Filers
- ✓ Refunds
- ✓ Withholding Parties

These segments were determined by their relevance or interest to the tax system. Consequently, it is important to keep track of their levels of behavior, as seen above, in order to know what their risk ratings are and how they are distributed among the quadrants of taxpayer noncompliance risk. Similarly, a *set of* financial, economic, tax, and management indicators is a robust pillar to monitor their adequate tax compliance.

Colombia: Cluster Creation by Applying Complex Network Theory

In very simple terms, Network Theory is the name given to the study of the interactions that exist between points (nodes), through links that constitute the connections between these nodes. These points (nodes) can be, for instance, individuals or companies. The link in the first case would correspond to family relationships (parent-child, for example), and, in the second, to partners, legal representatives, or accountants. By examining these connections between nodes, we can construct structures that allow us to identify relationship patterns that can be analyzed and studied through mathematical and matrix methods, which guide the structures created.

The use of these methodologies makes it possible to analyze information with a novel approach to networks that focuses more on interrelationships than on individual attributes, and, thus, to establish structures that are aimed at addressing risks in specific segments of some clusters within a structure.

Based on the publications of the ICIJ[22] journalists, the so-called *MosFon Papers*, and the widespread practice of using fictitious suppliers or false invoices, a new strategy was needed to segment risk structures and control transactions that are centered more on relationships than on attributes of individuals.

The focus herein was the possibility of changing the paradigm by focusing control on the interrelationships that make up the structures, rather than on the attributes of individuals or companies, which is usually done in isolation.

This methodology is being used since 2016 and involves complex networks, in which the relationships between nodes are paramount when performing analysis and consulting or auditing processes.

The goal of implementing this methodology is to determine structures and/or clusters in which it is possible to focus control actions by segments. Improvements and/or adjustments have been made in order to focus control actions on specific risk sectors and/or segments.

When it comes to the results, in quantitative terms, improvements were made in the treatment of risks, which are more agile and use few resources to generate high impact, e.g., the identification of eleven clusters in the *MosFon Papers* to concentrate control by prioritizing intragroup transactions and seven clusters in the excessive use of tax credits.

From a qualitative perspective, the use of a new way of approaching research focused on transactional structures by clusters adds value to the organization by gaining analytical capability and potential control in specific transactions or subjects. This, in turn, provides a broader approach that leads to better use of resources.

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22   ICIJ: International Consortium of Investigative Journalists. www.icij.org

Illustration 22: Prepared by the authors based on anonymous information
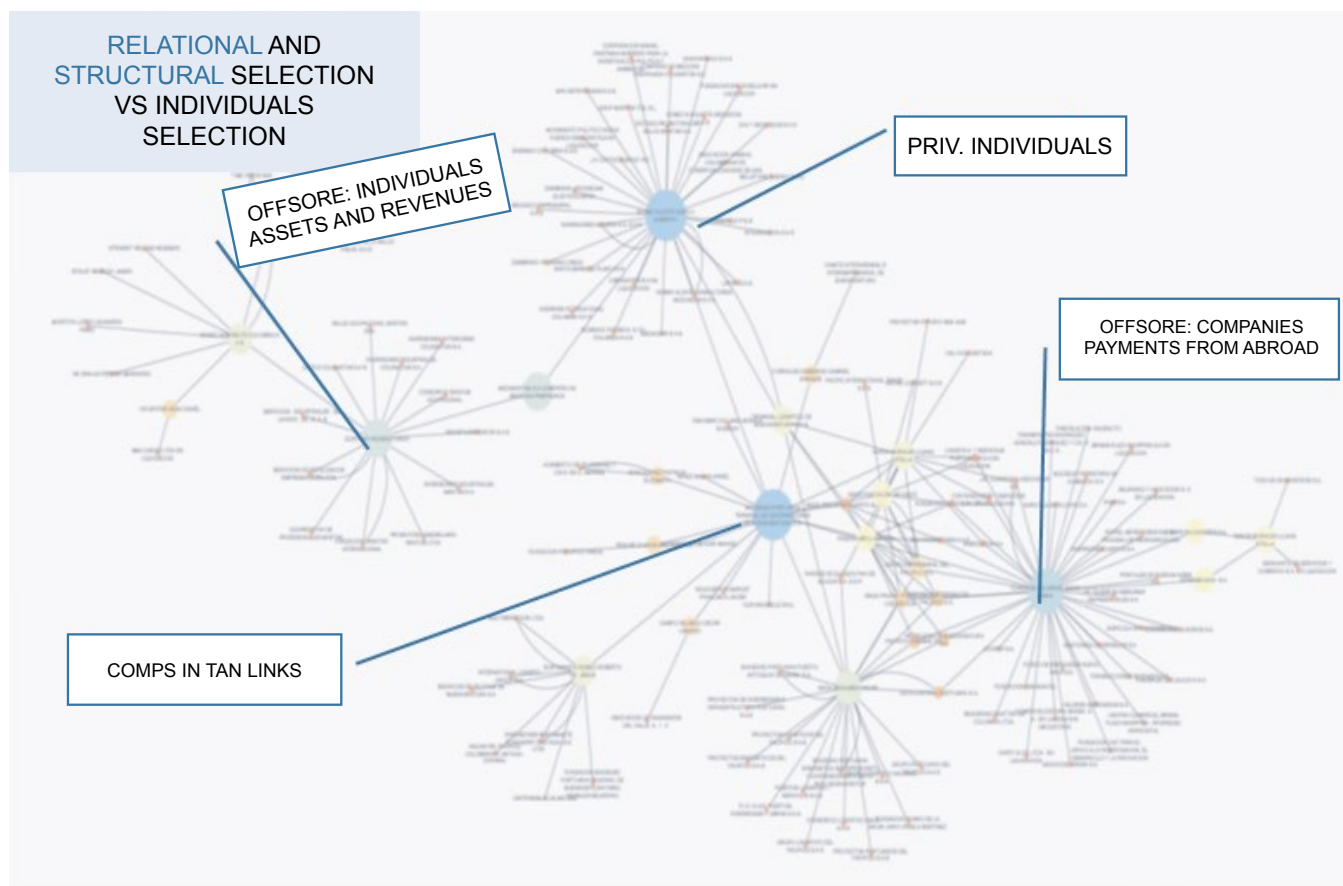
The following are some examples of segments in which the Chilean Tax Administration may be interested:

> **Mining Activity**
>
> Segment by economic relevance, both in terms of effects on revenue and employment and the economic set of services it generates. Other variables that determine this are the complexity of the production process, the size of the investment, and the fact that these are long-term projects with long amortization periods. Excise duties and *royalties*, for example, are also frequently applied, given the exploitation of the natural resources necessary for the activity.
>
> **Banking**
>
> A segment of a few taxpayers of great economic significance. The level of contribution that this group of taxpayers represents in terms of annual income taxes and monthly return taxes and their strategic role in the financial sphere were weighted.

Construction and Real Estate Activities

The choice of this sector is based mainly on the analysis of the categories and subcategories of regional economic activities with the highest representation, based on three parameters: number of taxpayers, total amount of tax, and average tax per taxpayer. As a result, the construction sector has the best combination of the established parameters, accounting for 24% in VAT and 18% in the total tax in the region under analysis, added to the sustained growth of the sector during 2015, according to INACER[23]. For the study of the segment under analysis, two activity codes were incorporated: "Real Estate Business and Rental Activities" (701009) and "Extraction of Stone, Sand and Clay", i.e., extraction of aggregates (141000), which complement the category and the business chain.

Logging and Related Forestry Services

The segment chosen includes all services related to forestry activities, among them tillage, planting, pruning, clear-cutting, harvesting, and the manufacture and collection of logs, i.e., everything needed to bring wood to outlets.

This activity often occurs in locations that are difficult to access for auditing purposes and involves multiple agents.

This segment encompasses the following economic activities: Logging (20010), Forestry Services (20041), and Woodcutting Services (20042).

Free Zone Users

The entry of goods into Primary Free Zones is exempt from internal taxes and customs duties. The importation of goods occurs at their transfer to the general regime. This importation is taxed with all the taxes established under Decree-Law No. 825, with the sole exception of Value-Added Tax. In addition, it is subject to the additional tax on manufactured tobacco products established in DL No. 828/1974, as well as the tax established under Article 11 of Law No. 18,211/1983.

Of special relevance is the control of compliance with Resolutions No. 2,191/1996, which obliges Free Zone users to withhold, declare, and pay the tax on alcoholic beverages, non-alcoholic beverages, and related products, and No. 2,192, which obliges Free Zone users to withhold, declare, and pay the excise duty on manufactured tobacco products.

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23   Regional Economic Activity Gazette

> **Cattle-Raising Activity**
>
> Contributes 40% of the VAT collected from the agriculture, livestock, hunting, and forestry economic sector and 10% of the regional total.
>
> Contributes 42% of the revenue of the agriculture, livestock, hunting, and forestry economic sector and 12% of the regional total.
>
> Accumulates 45% of the total number of refunds reported by the economic sector, and 8% of the regional total.
>
> Exceeds by 38% the RLI reported by the region, which is negative.

2.2 Indicators of Characteristics

Below is an overview of different indicators of characteristics that make it possible to monitor and control segments in different stages.

Table 7: General Information about Segments

GENERAL INFORMATION	
Characteristic	Description
Name or corporate name	Name (if private individual) or corporate name (if legal entity) of taxpayer
Type of taxpayer	First level of taxpayer's corporate structure
Belongs to high-net-worth payroll	Indicator of one's belonging to high-net-worth payroll
Economic sector	Economic category to which main activity belongs
Seniority	Level of seniority ("age") of taxpayer based on activity start date
No. of partners	No. of partners that taxpayer currently has
No. of shareholders	No. of shareholders that taxpayer currently has
No. of salary earners	Identification no. of workers other than those from whom taxpayer withheld Second-Category Tax
No. of companies to which one belongs	No. of companies to which one belongs (regardless of ownership percentage)
No. of family members of partners or shareholders who work at company	Identification no. of those belonging to family group of partners or shareholders who receive salaries

Table 8: Historical Information about Segments

INFORMATION	
Field	Description
Tax regime	Identification of tax regime to which taxpayer belongs.
Tax category	Indicator of taxpayer's tax category.
Exporter?	Indicates whether taxpayer can be classified as exporter.
Importer?	Indicates whether taxpayer can be classified as importer.
Liable for VAT	Indicates whether taxpayer is liable for VAT.
Bankrupt (or in process of liquidation)?	Indicates whether taxpayer has any current records related to bankruptcy and/or liquidation.

Table 9: Segment Indicators

STATISTICS AND INDICATORS	
Field	Description
Sales amount [$]	Estimated amount of taxpayer's annual sales.
Adjusted debit/credit ratio for period	Index corresponding to annual debit/credit ratio.
Total debit	Total amount of debit declared in VAT form.
Total credit	Total amount of credit declared in VAT Form.
Total First-Category Tax (Income)	Amount declared for First Category Tax on Income Tax Form.
Total presumed income tax (Income)	Amount declared for First Category Tax on Income Tax Form.
Total First-Class Single Tax (Income)	Amount declared for First Category Tax on the Income Tax Form.
Total additional withholding tax	Total annual amount of additional tax withholdings for persons without residence or domicile in the country.
Amount income (individuals)	Amount of personal income of individual taxpayers.
Amount exports	Total annual value of exports.
Exporter VAT Refund	Total annual value of exporter VAT refund.

Table 10: Segment Compliance Indicators

COMPLIANCE	
Field	Description
Tax debt amount	Total amount of tax debt.
Age debt	No. of years of debt.
No. noncompliance incidents	No. of gaps that taxpayer has.
Registry	No. of gaps that taxpayer has (registry).
Information	No. of gaps that taxpayer has (information).
Return	No. of gaps that taxpayer has (return).
Payment	No. of gaps that taxpayer has (payment).
GRR	Global Risk Rating of taxpayer.

Table 11: Segment Business Indicators

CLIENT–SUPPLIER RELATIONSHIP	
Field	Description
No. of invoices received	No. of invoices received.
Amount invoices received	Net total of invoices received.
No. invoices issued	No. of invoices issued.
Amount invoices issued	Net total of invoices issued.
No. of related suppliers	Suppliers are related persons or companies.

2.3 Reports

The main segments defined by the Tax Administration must be continuously observed and controlled. For this reason, information must be provided for decision-making. One way to achieve this objective is through the creation of continuous reports with indicators on the segments considered relevant. The following are some examples of reports that can be prepared, on a national or regional scale, with indicators of the most relevant taxes, percentage of noncompliance, exemptions, noncompliance risks of the segment, or taxpayer risk rating.

Illustration 23: Country-Level Report
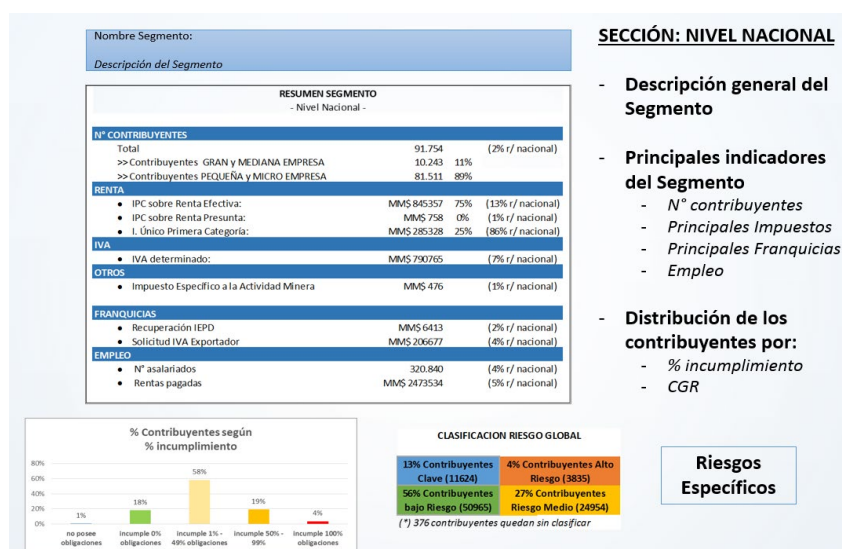
This illustration is only available in spanish.

Illustration 24: Segment-Level Report
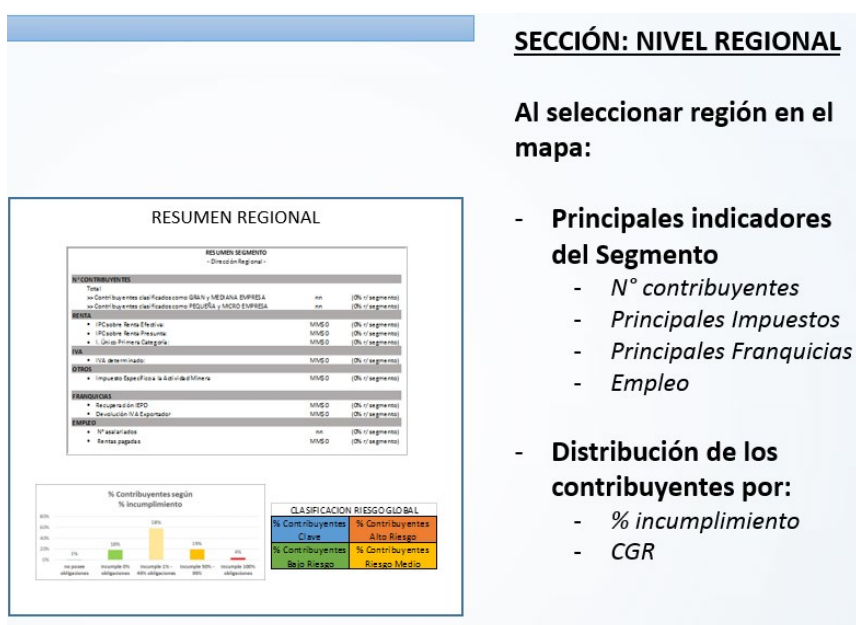
This illustration is only available in spanish.

Illustration 25: Regional-Level Report

This illustration is only available in spanish.

Illustration 26: Segment Summary

This illustration is only available in spanish.

3 Obligations and Gaps

3.1 Obligations

Tax compliance management, by determining the treatment actions applied according to the characterization of certain groups of taxpayers and their proportionality, seeks to contribute to facilitating compliance with the tax obligations on the part of such taxpayers. This type of management focuses on the so-called "compliance gaps" and "noncompliance risks" of taxpayers' tax obligations.

Correctly identifying tax obligations is essential to the tax system, to perform the corresponding analysis for the proper control of taxes. The obligation catalog, understood as a library or list of the different obligations and their characteristics, is relevant to guide the Tax Administration's compliance control actions. It is essential to communicate this catalog to taxpayers, as well as to clearly inform them about how they must comply with such obligations, thus making it a tool to facilitate compliance, especially for those taxpayers who do wish to comply.

Tax obligations, in general, establish a legal bond between taxpayers and the State, between the actions and prohibitions to which they are subject, as well as the compliance between both parties. Therefore, it is possible to classify these tax obligations into four groups.

Illustration 27: Tax Obligations

Obligation to Register

These obligations are linked to the taxpayer's registration and life cycle; they are related to the information to be provided at the time of incorporation and to the subsequent update made by taxpayers of any impact on identification, domicile, type of economic activity, tax regimes, or obligations, according to the provisions of the legal and regulatory bodies in force. Examples:

- Performing start-up activities to formalize operations.
- Registering and updating branches.

- Registering information on partners, shareholders, and companies in which they participate.
- Carrying out closure of activities when appropriate.

Obligation to Inform:

Constitutes the submission of information (either own or third-party) on tax obligations related to revenues, excise taxes, real estate, among others. Examples:

- Submitting a return on withholding taxes to third parties.
- Submitting a return on withdrawals from companies.
- Submitting an annual return of forest property.
- Submitting a transfer pricing return.

Obligation to File a Return:

Refers to the obligation to file tax returns, in due time and form, e.g., using forms, account for taxes involving payment or refund. Examples applicable to Chile:

- Annual Income Tax Return.
- Monthly Value-Added Tax Return, using the respective return and payment form.
- Return of the monthly taxes reported on the Monthly Return and Simultaneous Tax Payment Form.

Obligation to Pay:

Involves the timely payment of tax obligations, as described by the respective legal and regulatory framework in force. Examples:

- Paying the Value-Added Tax established in the respective Form.
- Paying the tax posted each year by filling out an Annual Income Tax Form.
- Paying final taxes in advance.
- Informing withholdings made to third parties.

Taxpayer behavior can be categorized by their levels of compliance in of the tax obligations described above, which can be as follows: noncompliance with the obligation, compliance with the obligation after the deadline, or incorrect compliance with the obligation. The categories mentioned make it possible to simplify and classify the level of compliance and analyze the levels of compliance by different taxpayer profiles, which, in the latter case, would mean that the targeted actions could be different according to the taxpayer profile.

There are obligations that affect all taxpayers, such as start-up, i.e., enrolling in the taxpayer's registry. Any taxpayer who starts any kind of business or work that can produce income that is subject to corporate taxes (legal entities) or personal taxes (private individuals) that are

covered by the Income Tax Law is required to file a start-up return. There are also specific obligations that fall upon certain taxpayers, e.g., an informative return on the movement of investments in financial instruments or values in the custody of the receiving institutions. A return like this must be filed exclusively by intermediary institutions (stockbrokers and other persons who carry out intermediary transactions).

Likewise, obligations can be direct or indirect; among the former, there are those related to taxpayers themselves. For example, the taxpayer must file a return associated with the posting of their tax. In the case of indirect obligations, these are related to the submission of information or the withholding of taxes from third parties. For example, a change of taxpayer or withholding mode of VAT implies that in transactions where withholding agents make purchases of certain goods or services, they must process or issue purchase invoices in which the amount and percentage of VAT withheld from third parties must be specified, in addition to declaring and paying the withheld tax.

The relevance for the Tax Administration of the compliance with the obligations depends on the effect of noncompliance. For this, it is important to measure such effect and, consequently, to assign the respective level of relevance to each obligation. On the other hand, some obligations can be identified and measured more easily than others, depending on the information that the Tax Administration must determine the obligation of each taxpayer.

For example, it might be straightforward to determine the number of taxpayers liable for submitting the VAT form. Under this logic, the obligation could be individualized, as well as those taxpayers who performed any of the following actions:

- Start-up: for legal entities and private individuals, with the material beginning of operations, that is, when any act or operation that constitutes a necessary element for the determination of the periodic taxes that affect the activity to be developed takes place. Usually, Tax Administrations rely on this information.

- Return: the obligation to file a return on the total income that must be declared by an individual may be more complex, because it is likely that not all the information necessary for its calculation is available. Some Tax Administrations might encounter limitations, such as financial or professional secrecy, in accessing taxpayers' financial transactions or balances. This makes it more difficult to determine the total amount of income to be declared by an individual or company in the income tax form.

A tax return is an obligation that can be relatively easy to identify in a timely manner. This can be done using a specific form to be submitted within a particular time period. On the other hand, verifying the correct return has a higher level of complexity, as it is necessary to access and process secondary information from the taxpayer and third parties. The difficulty of accessing certain information makes this analysis even more complex.

For management purposes, it is advisable to construct an obligation map. This map is, more specifically, a list of all obligations (or most of them), which allows the Tax Administration to have a global overview of the obligations that make up the tax system. Later, in the section on risk catalogs, we will provide additional information on the implications of a group of risks that may be associated with an obligation. A simple example of an obligation map is shown in Appendix IV.

In this regard, a specific case from Spain's Tax Administration will be presented below.

Spain

In Spain, annual campaigns are held to remind individuals to comply with their obligations.

A tax calendar is formulated annually, which lists all the obligations and is sent to professionals and small businesses. It is also available on the *Agencia Estatal de Administración Tributaria* (AEAT)'s website and at its electronic headquarters.

Notifications of gaps against legal entities are made at the AEAT's electronic headquarters. Individuals can also request this means of communication. If they have not done so, they will receive provisional postings by registered mail.

Low-impact gaps with a high probability of noncompliance, such as failure to file, late filing, or errors derived from inaccurate calculations or information cross-checks with third parties, give rise to automated posting proposals, which are notified immediately - on the respective electronic headquarters, in the case of entities -, so that the taxpayer may allege or justify the discrepancies observed. If the taxpayer does not present allegations or documentation justifying the return within the established deadline, the posting becomes definitive and an acquaintance with direct debit is sent to the taxpayer.

Other types of risks give rise to requests to provide specific documentation or justifications.

If it is deemed appropriate or the verification requires the use of other tools, due to competing risks of high probability and impact, an intensive verification or audit procedure is initiated.

This process is continuous and sequential, as it is determined by campaigns that begin as the returns are filed and usually extend throughout the year.

3.2 Gaps

Tax gaps arise when the available information indicates with certainty that a taxpayer has or has not complied with a specific obligation. Within a global risk management policy, it is highly advisable to provide transparency to the relative gaps (calculation errors and contrasts between sources of information, among others) in which taxpayers may have incurred in complying with their tax obligations.

The difference between a tax gap and a tax risk is certainty. A gap has a real and effective means of contrast (evidence), and a clear, certain knowledge of noncompliance. Certainty depends on the information and its quality. Consequently, if the probability of noncompliance equals 1, we are faced with a gap. A probability that is less than 1 constitutes a risk.

When managing tax compliance, it is important to know the different obligations and monitor them. Tax gaps are indicators that allow us to quantify the problem, visualize compliance levels, and, thus, assist in deciding which problems the tax authority should focus its resources or actions on.

It is understood that if a taxpayer fails to comply with one of the tax obligations, a gap is created that affects compliance levels in the tax system as a whole.

The tax gap is an indicator that identifies the difference between full compliance with an obligation and real compliance.

This indicator is expressed in terms of the percentage of noncompliance. For example, if the score for the "VAT Form Filers" gap is 10%, we can interpret that, of the total number of taxpayers required to file a VAT Form, 10% of them have not filed such a return.

As this indicator is a percentage, it is necessary, for its construction, to rely on a numerator and a denominator, where:

- The denominator corresponds to the total universe of taxpayers that are liable for carrying out a certain action, due to the existence of a tax obligation. This denominator is known as total compliance (TC).

- The numerator can be calculated from two alternatives, depending on the information available. These are:

    a) Real compliance (RC): when the taxpayer's compliance information is available; for example, the information is known by taxpayers who have completed the VAT Form.

    b) Effective Noncompliance (EN): when there is information about the taxpayer's noncompliance.

For calculating a given gap of real compliance (RC) of an obligation, the following formula is used:

Formula 9: Gap in Relation to Real Compliance

$$Gap\ (\%) = (1 - \frac{RC}{TC}) * 100$$

For example, in the case of the "VAT Form Filers" gap, total compliance (TC) would occur in the case of taxpayers who, in the respective period, are liable for declaring VAT in at least one previous period, and real compliance (RC) would take place with taxpayers who have declared the above-mentioned form in all periods in which they are liable for doing so before the respective period.

For the purposes of calculating a given gap based on the effective noncompliance (EN) of an obligation, the following formula is used:

Formula 10: Effective Noncompliance Gap

$$Gap\ (\%) = (\frac{EN}{TC}) * 100$$

For example, for the "VAT Form Non-Filers" gap, total compliance (TC) would occur with the taxpayers required, up to the respective period, to file VAT returns in at least one period, and effective noncompliance (EN) would be the number of taxpayers registering at least one non-filing entry on the VAT Form in effect up to the respective period.

It is worth pointing out that in cases where information is available on both real compliance (RC) and effective noncompliance (EN), we must choose the information that best meets the attributes of simplicity, efficiency, and effectiveness in processing and obtaining the data themselves.

There are different ways of assessing the compliance gap, such as the number of noncompliant taxpayers or the monetary value of noncompliance. In some cases, the latter can be determined in terms of an estimate. Such estimates may use a range of internal and external data, as well as different analytical techniques to produce them in annual or monthly periods, which should be continually monitored as more accurate and/or updated data become available. By determining how many VAT forms are missing and estimating how much tax is remaining for each form, it is possible to calculate the VAT evasion of registered taxpayers.

In the relevant literature, we can often find the term tax gap, which would be a simulacrum of 'evasion'. In the context of compliance management, this concept has a broader scope, as detailed in the previous paragraphs.

The specific calculation of tax gap may change over time due to several factors, such as legal changes and accuracy of information sources, which could modify one or more of its components. In the same way, the different areas that make up the Tax Administration, according to their experience and level of knowledge, can contribute with improvements in the construction of the different tax gaps, which can be added to the so-called "Gap Table". This table is used to structure each tax gap and maintain the information necessary for their construction. As an example:

Table 12: Gap Table

Characteristic	Description
Obligation	Declaring F29
Gap Name	F29 Filers (VAT Only)
RC/EN[24]	Taxpayers with at least one entry of being liable for filing VAT, without filling in the form (F29), and in force up to the date in question
Total compliance of obligation	Taxpayers liable until xx/xx/20xx to declare VAT in at least one period

Despite the above example, it is observed that some Tax Administrations have difficulty in establishing the number of taxpayers required to comply with a tax obligation, due to regulatory aspects, information sources, levels of internal process development, computer systems, and low perception of control, among other factors.

An example would be the obligation to file a transfer pricing information return, for which there is not necessarily certainty as to the total number of companies required to report their related-party transactions. In this case, it is not possible to precisely measure the level of noncompliance or the gap. However, it is essential to have an indicator for this important obligation concerning large businesses, whose impact on tax collection is relevant, although not directly measurable. In order to mitigate these challenges, a list could be drawn up of those

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24   Where RC/EN stands for real compliance and effective noncompliance, respectively. In this column, either of the two appears, depending on data availability.

presumed to be liable for filing such a tax return, comprising all large businesses that submit remittances or payments originating from and/or sent abroad for a certain amount or threshold, or that send and/or receive flows from territories with low taxation or none at all for a certain monetary threshold, without taking into account the existence of transactions with related parties. Such an approach would serve to establish a series of obligations that would allow the gap to be measured with a high level of certainty. This would subsequently make it possible to manage the measures, in order to improve the indicator and the expected compliance levels.

Another example could be the case of unregulated or unsupervised close or private companies managing third-party funds, in which case it would be expected for them to receive information on income or revenue earned on behalf of third parties (usually investors who prefer markets with high opacity). The total number of intermediaries required to provide information could be determined by the type of economic activity declared to the tax authority, or by the amount of investments and portfolios declared in their account balances. In this case, it would also be possible to establish several liable subjects, which allows the measurement of a gap and, therefore, generates valuable information to assess the tax compliance levels of the beneficiaries of these intermediated investments.

Once the tax gaps have been constructed, they should ideally be systematized by means of a tool that could be called a "gap map".

The "gap map" is an information system application that makes it possible to graphically represent the available tax gaps, which provides the user with different views for decision-making at the aggregate level. For example, gaps are represented by taxpayer risk level, economic sector and category, regional location or territorial zone, segment size, among other criteria. The map provides annual and monthly information according to obligation; gaps are grouped according to registration, Information submission, return, and payment obligations. The information should be updated periodically, ideally once a month, so that opinions and decision-making can be more efficient.

Below is an example of a gap map:

- Speedometer approach: indicates the level of noncompliance with an obligation. The closer the needle is to the red zone, the more serious is the noncompliance. The definition of the red zone is arbitrary and is based on the policy of the Tax Administration, depending on its tolerance to noncompliance.

- Geographic approach to noncompliance: highlights which regions of the country have the highest level of noncompliance. It is presented in an atomized form, according to the level of disaggregation that is possible with the available information.

- Tabulation with traffic lights: shows the level of noncompliance classified by obligation type and other variables. For example, the rows indicate the gaps, and the columns show the segment/size of the taxpayer.

- Evolutionary approach: indicates how much the gap has changed over time. Comparison between the gap at the time the obligation was complied with and at the time the analysis is conducted. For example, the gap related to VAT registration in October 2018 was 10%; however, this same obligation calculated as of October 2019 was 5%.

Illustration 28: Sample Gap Map
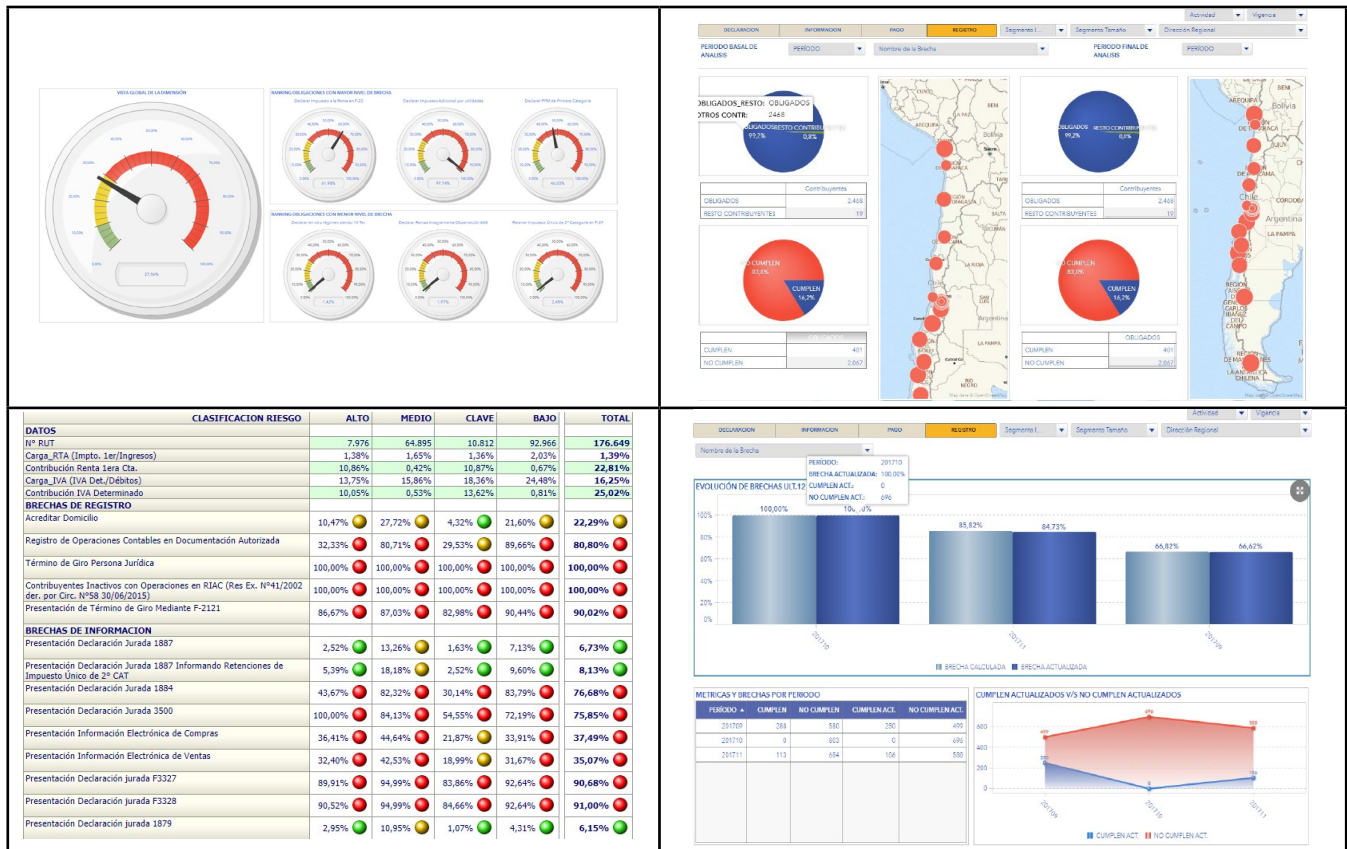
The following illustration shows a further approach to comparing gaps with respect to the global risk rating.

Illustration 29: Sample Global Approach to Gaps and Risks
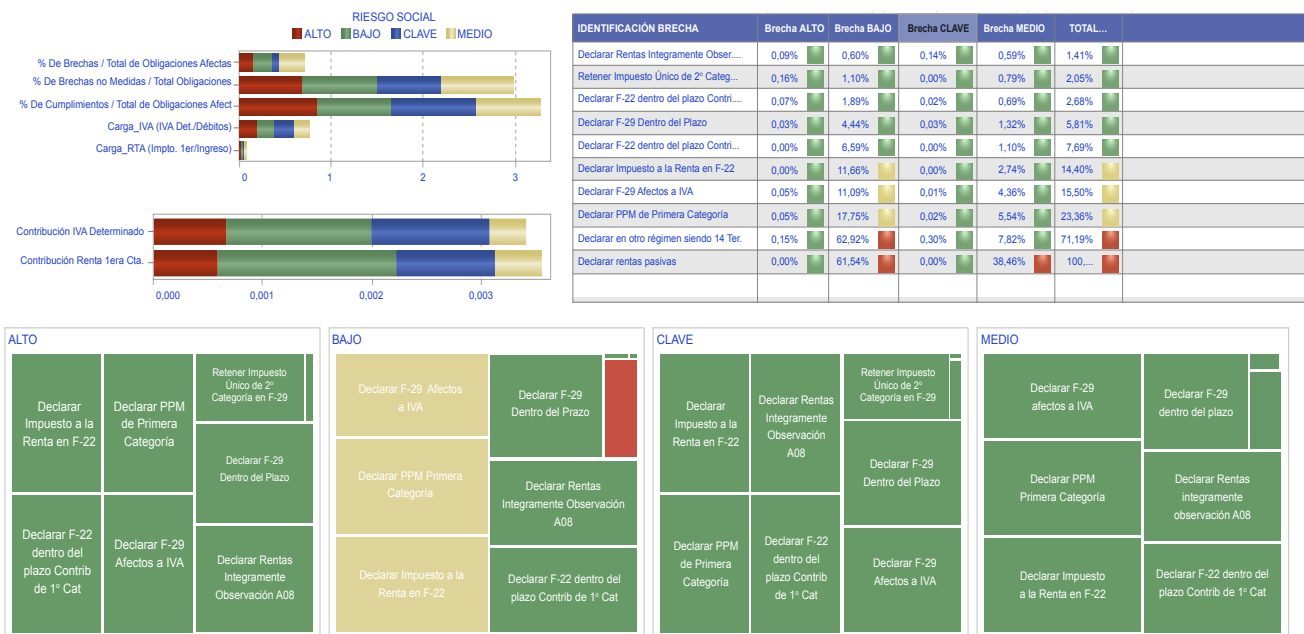
Below, we will present the frequency of updating obligations and gaps in some Tax Administrations, and their subsequent disclosure:

Table 13: Tax Obligation Update

Country	Update
Bolivia	Monthly
El Salvador	Monthly
Costa Rica	Biannual
Chile	Monthly
Colombia	Annual
Ecuador	Monthly

Table 14: Disclosure of Tax Obligations

Country	Communication	Means
Spain	Yes	Entry validation system, annual training campaigns, fiscal calendar, automated communications, system to assist in correct identification.
Bolivia	Yes	Official notification documents, tax mailbox, and virtual office.
Chile	Yes	Systems, messages, phone contact, and written contact.
El Salvador	Yes	Contact center, email, or field management (corrective); moreover, they can be managed through audit.
Costa Rica	Yes	Written media, radio, institutional website, professional associations, and chambers.
Colombia	Not informed	There are different mechanisms sent by the Collection Department, through email, in-person services, or text messaging, which indicate delays or debts.
Ecuador	Yes	*Servicio de Rentas Internas* website.

Uruguay: Identifying Specific Taxpayers to Measure Gaps

The practice of identifying specific taxpayers to measure gaps is to use third-party information to calculate minimum gaps. The general principle was to identify the critical taxpayers for compiling third-party information, such as those that concentrate transactions or those who were in central locations in the supply or production chains.

For example, credit managers provide the total credit card sales made by all national companies. Another case of particular relevance is the information on purchases and sales carried out by producers and distributors of beverages or flour, which makes it possible to determine the registration or return gap, by studying the accumulation of purchases made by private individuals when they exceed the reasonable purchase for households. Using third-party information, it is possible to determine the minimum amounts that must be declared by reported taxpayers, by calculating the gap with the formula of real compliance over total compliance.

Consequently, it is possible to determine the so-called minimum gaps, defined as such because the value considered total compliance is calculated based on third-party information and may be less than the value of the real total compliance, but for whose calculation we have no information.

Once the third-party information has been cleaned and its quality assured, this provides certainty to the calculated gap, which allows us to measure the gaps at the level of sectors, specific activities, and taxpayers. This ultimately enables an evaluation of the treatment strategies proportional to the gap and a measurement of the effective outcome of the forms of treatment applied. The advantage of detecting a gap rather than a risk is that, given certainty, it allows direct corrective action to be taken on the specific omission or difference. Gaps are calculated using computerized processes that are easy to automate, while controls are performed with highly standardized, simple, semi-automated processes.

This process is also used to determine return gaps, which, in turn, impact the registry, by detecting taxpayers whose level of activity, measured in terms of their purchases or sales to third parties, exceeds the limits established for the benefits of the reduced or simplified regimes. These taxpayers are subject to different treatments, aimed at correcting their registration information, as well as their tax obligations.

Within this group of third parties, *online* sales platforms, in particular food ordering platforms, have recently been incorporated into the analysis. These analyses make it possible to identify gaps when taxpayers declare amounts lower than the cumulative sales figures reported by these platforms, or reporting risks when, despite over-reporting, the declared amounts are marginally higher and deviate from the expected ratio between door-to-door and on-site sales for their industry.

Specifically, the following results were obtained, with the classification below:

Quantitative: measurements of these gaps indicate a significant reduction in the number of taxpayers identified, as well as their value, of approximately 70% over the past three years, in general terms. However, there are no specific studies that measure whether the results achieved with the reduction of gaps are due to this practice alone, often with various forms of control having been performed on the taxpayers detected.

Qualitative: it was determined that requesting and using this type of information generated an increase in perceived detection risk.

In sum, it is highly advisable for Tax Administrations to rely on a set of gaps representing the most relevant obligations in the tax system, which allows a comprehensive approach to tax compliance levels and a targeting of actions deemed necessary to achieve structural changes in such levels. This implies the development of a gap map on a computer platform. These aspects, in turn, make it advisable that the gap map, its permanent strengthening and updating, and the monitoring of its effective use by the various relevant stakeholders be the responsibility of a dedicated team formed specifically for this purpose, must be part of the is central level and

be duly trained to make recommendations and request improvement actions from the different persons responsible for the respective tax issues and obligations.

4 Information

Tax Administrations' ability to access information depends mainly on the rules that regulate their actions, such as the Tax Code, procedural norms, or norms that may influence them directly or indirectly, such as non-tax-related norms that limit or allow access to information by the Tax Administration[25].

For compliance management purposes, a key element is information, whether it is for classifying taxpayers, identifying segments, gaps, or noncompliance risks, or performing behavioral analysis of conduct and monitoring over time.

Consequently, at least five key information-related elements are measured:

4.1 Information Access

Tax Administrations have been characterized by the establishment of a series of obligations to provide information to taxpayers, whether their own or from third parties. This has the effect of increasing the perception of control by taxpayers, since, by submitting the information, they become susceptible to being analyzed by the administration. Under this logic, it is known that third-party information entails greater importance to provide this perception in the taxpayer.

Those required to provide information can be taxpayers in relation to their own information or that of third parties, other Tax Administrations, or public or private, national or international bodies or institutions in relation to obligations in which they participate or of which they are aware. Firstly, it is necessary to know what kind of information is available in the organization, who is required to report it, how often, and what is their purpose (or for what process or purpose they are required and used).

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25   Latin American Tax Administrations information sources, CIAT, 2016.

There are different criteria for classifying the information sources of Tax Administrations. The illustration below provides the following classification:

Illustration 30: Information Sources

Source	•Internal •External
Person Liable for Complying	•State-Owned (Public) •Private Individuals •Legal Entities (Companies)
Compilation Procedure	•Periodic Supply •Individual Character •Direct Compilation
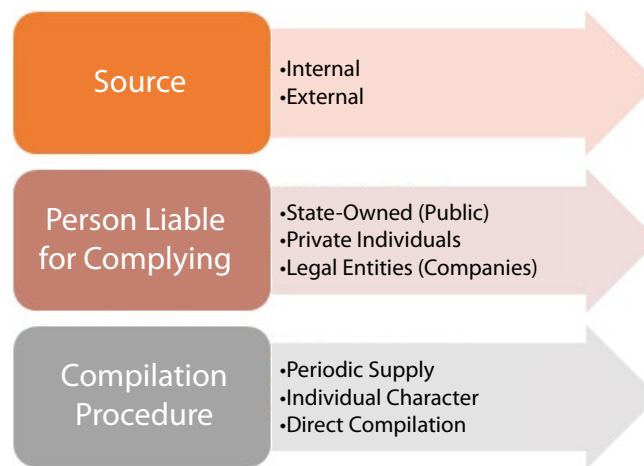
The source can be internal (information generated by the Tax Administration) or external (information that can be provided by public or private institutions). As for the access procedure, "periodic supply" is understood as the procedure by which structured information is received in a specific, predetermined format on a regular basis. The mechanism called "individual character" takes place when it is established as such by a tax obligation. The mechanism of "direct collection" implies compiling of information through a specific process of the Tax Administration, such as an audit.

The powers of the Tax Administration established by law to request information from taxpayers or institutions are very important. This is a key issue, as it determines the real feasibility of having such information. Within the institutions or bodies, whether national or international, there are usually special agreements or conventions to access or exchange information, which may be covered by a general power of the administration and/or by double taxation agreements.

Regarding types of data, we are faced with two groups, with the following characteristics:

• **Structured data:** files, such as databases, which have well-identified rows and columns. These data can be easily sorted and processed by all data use or data mining tools.

• **Unstructured data:** these are generally data that have no identifiable internal structure. It is a large and disorganized collection of various objects that have no value until they are identified and stored in an orderly fashion, e.g., in audio, images, or documents.

An Administration that intends to create a robust risk management system must enhance the structuring and interconnection of its information sources - both structured and unstructured - by means of calculation engines for tax postings and the creation of systematized forms for compiling external sources of information, standardizing and identifying data obtained

through open sources (web scraping), and creating strong connectors (TIN, NI, RUTC, cell phones, etc.), in order to cohesively organize all data in a single analytical risk management system.

Illustration 31: Types of Data

TYPES OF DATA

Structured — Tax forms, information, mandatory information returns

Unstructured — Statements made the form of texts, information captured from the web, photographs, videos

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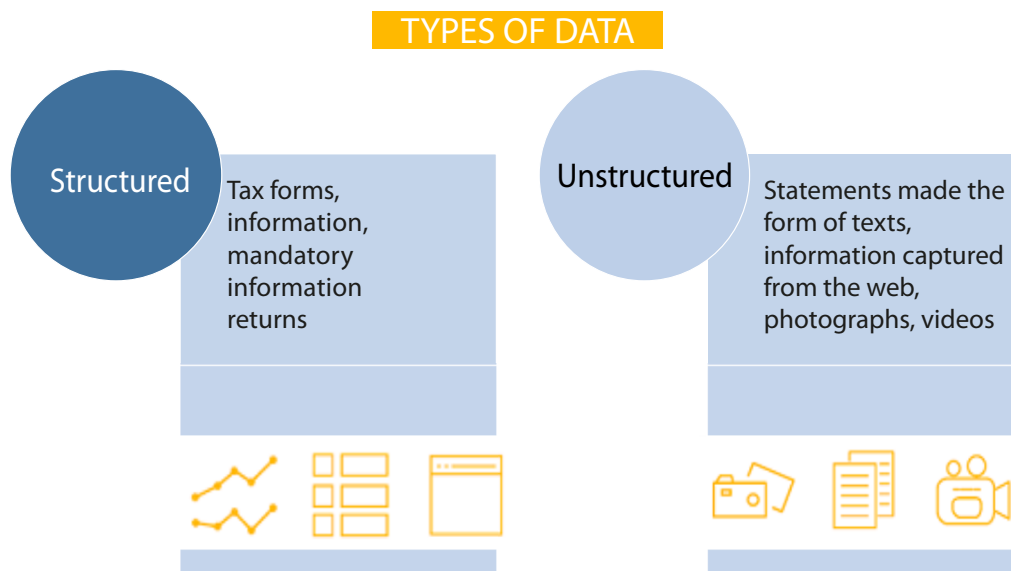
Mexico: Use of External Databases Used for Risk Analysis

To identify and assess the risks of Mexican entities that perform transactions with entities residing abroad, Mexico makes use of quantitative and qualitative information from companies that file their financial information with the Securities and Exchange Commission (SEC) in the United States of America. This information is organized for consultation by private providers specialized in the subject, which are used as reference to carry out research projects for specific audit areas, such as International and Transfer Pricing.

For its effective use, the publicly available information, as well as that located in databases within the tax administration, must have certain homogeneous characteristics that must be based on a methodology for standardizing the economic and financial information contained in the Income Return, the Balance Sheet, and the Cash Flow Return; with their proper organizational equivalences according to standard industry classifications (SIC or NAICS); this is with the intention of comparing similar entities and operations with other entities on an international level, which helps support the information analysis process.

As a result of the analysis of such information, one seeks to find, in addition to the presence of related-party and international transactions, information about corporate restructurings, trade credit allocations, information about options, dividends, shares, or future dividends.

The analysis of information should be directed to a particular unit or to specific economic sectors. The use of financial indicators allows the identification of conduct with possible tax risks that may erode the tax base, such as royalties, technical assistance, losses from derivative financial operations, pro rata expenses and services in general. Once the risk is identified, individual actions are identified, or, if the detected risk conducts correspond to a group of entities, group actions.

Barbados: Unstructured Information Gathering in the Age of Social Media

Compiling unstructured social media data can be accomplished with data mining techniques. Data mining is the use and analysis of large amounts of data to discover meaningful patterns and rules. This information can be used to detect existing fraud and noncompliance in an attempt to prevent future noncompliance.

Information about persons' habits can be obtained from various social media platforms, such as Facebook, Twitter, and Instagram. This information can also be obtained for companies that operate exclusively online or have established online stores to facilitate sales through this means. This can be useful for lifestyle audits.

Compiling data from the internet is called web scraping.

Web scraping (also known as web data extraction, screen scraping, or web harvesting) is a web data extraction technique that converts unstructured data into structured data that can be stored on a local computer or in a database.

There are three options available to facilitate data compiling from the web:

1. Web compilation tool that uses the following platforms: *Selenium IDE, Scrappy, Phantom JS*.

2. Visual tools for obtaining data from the web. These tools vary in cost; some involve payment commitments, while others are offered for free. Some of the tools available are: *Connotate, Outwit*, Import.io.

3. Data collection services provided by established companies.

Each of these options has its advantages and disadvantages, except for option 3, whereby it would be necessary to hire a developer to write and update the scripts. Before data analysis can begin, a period of development and data collection is required. In addition, a tool must be available to monitor the data, so as to ensure the quality of the process and to update the differences.

The programs offered to extract data from websites require the infrastructure to store a large volume of data and the ability to structure these data for easy processing and analysis.

Finally, there is an emerging issue involving the legality of web scraping as a method of data extraction. Although data is herein considered to be publicly available information, the action of web scraping can cause harm to the website concerned, as the volume of data and the number of times the information is to be collected can be interpreted as an attempt at denial of service. Therefore, precautions must be taken when collecting data.

It is worth highlighting the importance of adapting the current regulations, which are not prepared to handle many of the situations that arise in this scenario, characterized by greater capitalization and new ways of doing business.

4.2 Availability of Information

For information to be analyzed, it is necessary to rely on data warehouses (big data), through which the information can be read, understood, and processed by systems, actuaries, and analysts.

The following is an example of data warehouse architecture:

Illustration 32: Data Warehouse (DW) Architecture
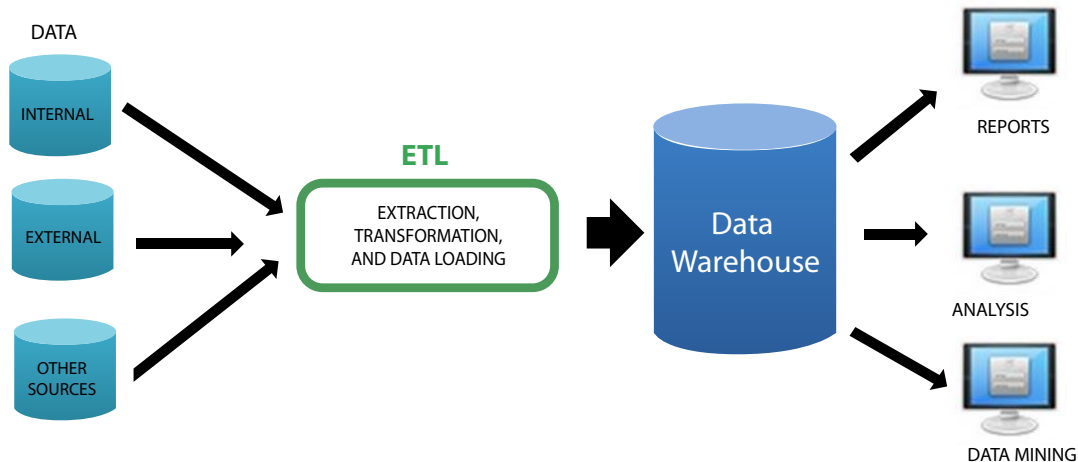
Given the volume of information managed by the Tax Administration (such as electronic tax documents), special storage and processing tools are required. For example, big data tools are used to manage an amount of data that exceeds the capacity of conventional software to compile, manage, and process in a reasonable time[26].

Undoubtedly, a relevant issue here is the definition of information security protocols, such as access and backup.

Likewise, it is necessary to generate control reports, which make it possible to know the available information, their volume, and the periods to which they belong, in order to perform analyses.

For example, annual income tax return involves a large process of receiving returns during a particular month. These are stored in a data warehouse, under a defined data structure, and are, in turn, available to analysts who have access profiles. Control reports account for their receipt and upload *to* the system. However, it is possible that late returns may be received at any time of year. Compilation and storage must be compatible with this. Likewise, it must be considered that during each period, new returns are received, which are stored for the purpose of analyzing behavior over time. The differences in quantity that occur from one year to the next are explained by new taxpayers, closure of activities, and noncompliance.

Spain: Direct Access to Databases of Some Organizations

To obtain immediate and up-to-date information with potential tax implications, agreements have been signed with various government agencies. These agreements allow for massive exchange of structured information and direct access to government agency databases by authorized AEAT employees.

For example, there are agreements with the Mercantile Registry, the Social Security Office, the Land Registry, the General Council of Notaries, the General Directorate of Traffic, the General Directorate of Registries, the Land Registry, and the General Police Directorate to verify the national identification document number, and, more recently, with the European Intellectual Property Office (EUIPO).

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26   http://mike2.openmethodology.org/wiki/Big_Data_Definition

4.3 Information Quality

To contextualize, the concept of quality will be defined as follows: "Comprises a set of activities aimed at obtaining data (in due time and form) on the behavior of the main quality indices of products, as well as the indicators that reflect their quality" (Gómez, 1985).

Data Integrity

The information in databases must be complete and reliable. These positive characteristics are inherent in the data themselves, not in where the data is stored.

Data integrity seeks to solve problems associated with the validity of the information being used. For example: Which data elements with the following values are real: 8; eight; ∞? What is the correct value?

In view of the above considerations, the proposed objectives are:

- Improving the quality of the information in the data declared in the STR.

- Avoiding registering persons without their consent or under false pretenses.

- Facilitating the search for taxpayers' domiciles, using the georeference declared by taxpayers themselves.

- Reducing the amount of erroneous data declared when registering or updating personal data.

Therefore, the implemented practice consisted in making it mandatory for taxpayers to validate or update their data declared in the STR at least once a year, as a condition for them to access the services or proceed with the management procedures available in the Tax Management System ("Marangatú"). Likewise, the SET, through the Tax Electronic Mailbox ("Marandú"), notifies each taxpayer, at the beginning of the corresponding month, of their obligation to proceed with the validation or updating of their data.

Data Redundancy

This phenomenon refers to storing the same data multiple times in different locations. This can cause problems such as:

- Increased work hours: for example, the same data is stored in two or more locations.

- Waste of storage space: this occurs when the same data is stored in several places, generating inefficiency in the process.

- Data inconsistency: this takes place when redundant data is different from each other. This can happen, for Instance, when a data set is updated in one place, but the duplicate data in another place is not updated.

Data Timeliness

Information must be provided in due time and form and stored in a space that allows them to be viewed and used.

In this context, some relevant situations should be considered, such as the data being up-to-date or the possibility that the data are dynamic and change as the life cycle of the informer progresses.

Accessibility

This is the principle that allows information resources to be available, regardless of where the data are located, what the operating programs have been, what language it is in, or how skilled the potential users are.

These answers should have as a central question: How can we access all the data that the organization needs?

As an outline of information quality, the following illustration has been constructed:

Illustration 33: Principles of Information Quality

Principles of Information Quality
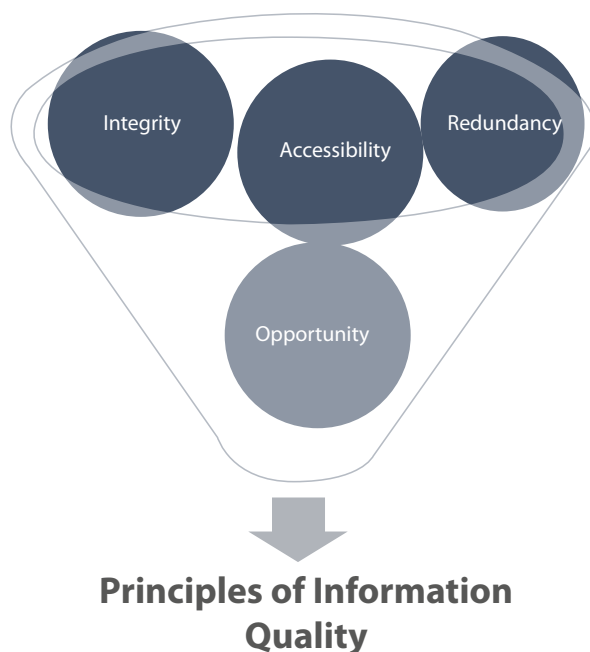
Information Governance

Proper information governance, along with the above requirements, should be based on the following variables:

Security. - in the scope of Tax Administrations, it is essential to obtain secure and traceable data, which makes it possible to monitor their collection, their processing and, if necessary, their modification through regulated administrative acts.

Completeness and semantic quality. - according to the RAE*, "to complete" means to add to a magnitude or quantity the parts that are missing. In the realm of data, the construction of a datapedia and the incorporation and dissemination of metadata that clarify, spread, and improve its understanding are essential activities to achieve an improvement in efficiency indices, for which various sources of information have been loaded into the system.

Integration. - an administration wishing to create a robust risk management system must improve the design and interconnection of its information sources (both structured and unstructured) through calculation engines for tax postings, the creation of systematized forms for compiling external information sources, the standardization and identification of data obtained through open sources (web scraping), and the creation of strong connectors (TIN, NI, RUTC, cell phones, etc.) that allow the cohesion of all data into a single analytical system for risk management.

Once the information is obtained, we must define what subset of this information will be available to the Tax Administration, where and how it will be stored, and under what security protocols its access will be governed. It is extremely important to establish procedures for this

information to be of high quality. At this point, compiling systems become relevant in terms of validations (both basic and specific) for the submission of information.

Example of general validations: type of fields (numeric or alphanumeric); structuring of forms; consistency of fields with others within the same form or other forms; validations of address or contact details; or minimum fields to be submitted.

Example of specific validations: these occur when the taxpayer is entitled to use a certain exemption or should be taxed under a special regime and, therefore, fill out specific fields of a form.

Ideally, validations should be performed *online*, at the time the information is submitted. To this end, there may be controls when the information is submitted. In this case, it is important to strengthen the means of communication with the taxpayer, so that they are aware of potential problems and can correct them. Fines are usually imposed for incorrect submission of information; however, the Administration's ultimate goal is to rely on the information, and not necessarily to obtain resources by issuing fines.

Honduras: Information Quality

The *Servicio de Administración de Rentas* (SAR) relied on various sources of information, among them returns filed by Tax Liable Subjects (TLS), institutional databases, reports, and a business intelligence platform, which have made it possible to improve decision-making and strengthen service and control actions. The first stage to be considered for an efficient risk management and control of TLS is to ensure data quality.

"Governance of SAR information" consists of generating ability to manage the existing knowledge about the information it manages (metadata), its origins, its attributes, its security, its types, its categories, etc. Governance involves the adoption of policies and rules that determine responsibilities, roles, and the multidimensional use of TLS data. In this field of action, it is necessary to implement the process of continuous knowledge of these rules to all those involved in the institution who participate in the information life cycle: planning, compiling, processing, and disclosure.

The SAR structures governance in different levels: strategic, tactical, and operational. This makes it possible to visualize the functioning of the entire administration, which reinforces the following criteria:

Completeness: certain data that do not exist are irrelevant; however, when they are necessary for an institutional process, they become critical.

Compliance: the compiled information must be in a standard, readable format.

Quality consistency: lies in knowing whether all the relevant information in a register is present, so that it can be used.

The implementation of these criteria was carried out in three stages, based on information rules and policies:

1. In the first stage, data is compiled at the time of registration and quickly validated with third-party information by performing quality tests. If the data do not meet the parameters, corresponding measures are taken.

2. The second stage is to update the information in the National Tax Registry's database, also known as the Tax Vector. In this database, the segmentation strategy was executed, from which several groups were constructed and prioritized for their impact on the TA. Among these, it is worth highlighting a segment called Manageable Active Liable Subjects (OTAG), which represents 15% of those registered in the TA, and which evaluates the conditions of the last five years. For example, whether a return has been filed; whether at least one management has been carried out for the AT; whether foreign trade transactions have taken place; whether there have been any non-filing liable subjects reported by third parties; and whether there have been any liable subjects registered in the invoicing regime.

   The process of updating OTAG is composed of several actions, among them: cross-referencing with the base register of deceased persons, dosed data cleaning by geographic region, monitoring mechanisms and follow-up by the TA's assistance offices at the national level, and validation of the LS' information with external sources. This strategy has generated positive results in the quality of the TA's information.

3. Identification and cleaning of inconsistencies in the information, improvement in the mass screening programs, greater knowledge about the taxpayer, and greater coverage of the TA's actions.

4.4 Exploitation Tools

Whatever the source of the data, it is important to rely on tools that allow their investigation, with the aim of transforming information into knowledge. This implies having tools that can compile information from operating systems or from a data warehouse or data mart. The following illustration shows a top-down repository structure.

Illustration 34: Data Warehouse and Data Mart Investigation Tools

'Database exploitation' refers mainly to the generation of "queries", which allow us to narrow down the information for analysis in order to have more precise information about the phenomenon under study.

A query is understood as a set of rules that makes it possible, based on the data source, to answer specific problems. For example, within the arena of Value-Added Tax taxpayers, how many taxpayers cover 80% of the amounts paid in a calendar year? With this information, it is possible to quickly manage actions on this group, which constitutes a relevant part of tax collection.

As we saw before, it is possible to rely on tools that allow the construction of taxpayer classification models (by segment, risk, probability, or consequence), using data-mining methodologies, such as predictive models, which, being based on certain patterns, provide information about behavior or clustering.

For example, a predictive model might show a pattern of behavior associated with taxpayers who are most likely to default on their tax returns. These are taxpayers in the business sector, with high debt indices, in initial stages of business, and partners with a history of noncompliance.

This provides very useful information for the Administration, as it allows the administration to study a phenomenon, draw conclusions from the results, and make prevention or control decisions based on them.

On the other hand, there are tools that allow the construction of structured or flexible/versatile reports in databases or spreadsheets for better analysis or understanding of the results.

Thus, according to the specific needs, several types of tools may be required to exploit the information, such as software that enables queries to the data warehouse (*Oracle Hyperion, SAS Guide*, among others).

Illustration 35: Sample Exploitation Software View

Data exploration or mining (software examples: *SPSS Modeler*, *SAS Miner*, *IBM Watson*); analysis and graphing (software examples: Microsoft Excel or Access); or viewing (software examples: *OBDEE*, *Visual Analytics*, Tableau, Qlickview).

Illustration 36: Magic Quadrant for Scientific Data Platforms

4.5 Analytical Competencies for Exploration

The potential of the technological tools that make it possible to explore information is necessarily catalogued alongside the abilities of the professionals or teams specialized in these tools, both to make better use of these tools and to add value to the analysis that can be carried out. In this sense, it is advisable to target efforts in incorporating or strengthening competencies in the software or applications available to the administration as well as in establishing and strengthening professionals' analytical competencies, with the aim of explaining tax, financial, economic, and business phenomena through the available data and tools.

The competencies of the various teams undoubtedly differ according to the technological tools used.

4.6 Importance of Information

For Tax Administrations, information has at least two related uses. Information is the raw material for the correct development of the tasks or areas assigned to them by law, as well as the basis for measuring performance in order to promote future improvements.

Decision makers, in relation to both business and management, must consider the Tax Administration in comprehensive terms, with the purpose of aligning it to the required objectives. This dual dimension of information must accompany the entire process, with a natural tendency for continuous improvement of processes and business performance.

The following figure summarizes the influence of information on the entire Administration and its activities.

Illustration 37: Influence of Information on the Organization
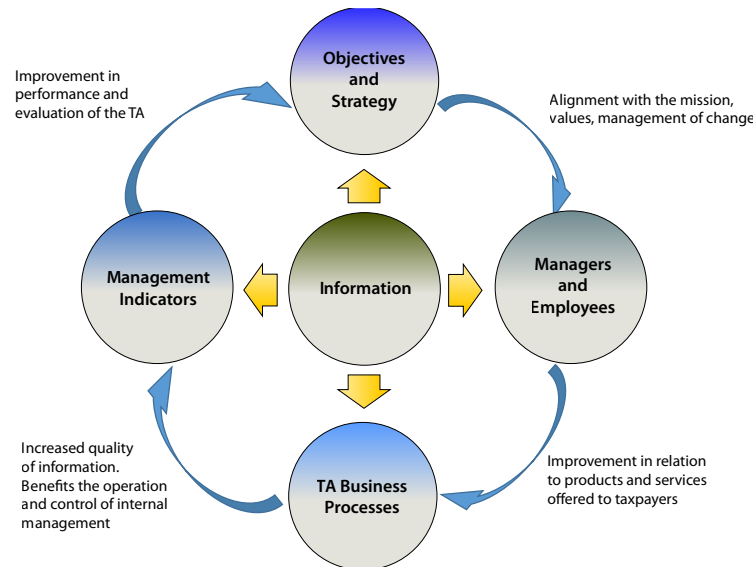
5 Systems

In this topic, we refer to the distinct types of systems available and needed for tax compliance management. At least three types of systems can be distinguished:

1. Governance, Risk and Compliance Systems (GRC): within this category, there are some systems on the market that allow us to manage compliance risk, which is the responsibility of Tax Administrations. These systems comprise a process that goes from the identification of risks to the planning of treatment actions to mitigate them. Furthermore, it makes it possible to manage the prioritization and risk assessment process.

2. Query systems: a similar, complementary category to the previous one, covering those query systems that allow a comprehensive view of a taxpayer, with respect to their behavioral history, their historical treatment actions applied, their main attributes, the segments to which they belong, their noncompliance risks, and their risk rating.

3. Case system: understood as those operating systems in which cases are executed or resolved, e.g., audit events. The characteristics of these systems depend on the distinct types of treatment actions that a Tax Administration may implement to ensure proper tax compliance. It is worth noting that, in general, Tax Administrations have case systems to address audits, refunds, or mass service processes, which, due to their importance or particularities, require that their design and implementation be carried out at separate

times. This implies the existence of multiple systems, which increase complexity at operational levels and need to be comprehensive for a better use of information. Ensuring the traceability of treatment actions being implemented at any given time and evaluating treatment actions constitutes a challenge.

Many of these systems have a focus on the taxpayer, which allows the taxpayer to have an overview of the information that the Tax Administration has on them, as well as the history of the actions taken.

This chapter does not address operational return, request, or internal management systems, nor those such as document or electronic procedure managers, which, though having an impact on risk management, would require an entire publication.

5.1 Tax Compliance Management System

A tax compliance management system consists of a computer platform that supports and integrates the different processes linked to compliance management.

The goals of implementing a tax compliance management system are:

1. Allowing the Tax Administration to prioritize resources in order to focus its actions on the most relevant risks in the tax system.

2. Documenting and automating the risk identification and analysis process so as to support the knowledge management process of the administration. By automating the process, there are production cost savings and detachment from human decisions.

3. Developing an automated decision-making process and allocating corrective, preventive, and structural treatments to mitigate the risks of tax noncompliance, considering in this process, in addition, taxpayer risk.

4. Identifying, standardizing, and monitoring the tax compliance of all taxpayers in a given segment, whether relevant or of interest.

5. Documenting and monitoring taxpayers' rates of compliance with their tax obligations at different levels, such as segments, operating units, regions of the country, sizes, legal classifications, time units, among other factors.

6. Managing and monitoring the different noncompliance risks and their assessment, considering the tax obligations, the causes, the consequences, the characteristics of the liable taxpayers, and the behavior patterns of the noncompliant taxpayers.

7. Having reports available to satisfy the information and control needs of the application users, in order to strengthen the process of informed decision-making.

The following is a recommended example of the tax compliance management process, with the basic system requirements in each stage and their respective modules.

Table 15: Basic System Requirements for the Risk Management Process

Stage	Description	Modules
Identification	Module that allows, from tax regulations and experts' knowledge, to register and quantify taxpayer segments, tax obligations, and compliance gaps.	Obligations Segments Gaps Risk
Analysis	Module that makes it possible to register aspects of the characterization and assess taxpayers' noncompliance risks, based on the attributes that must be managed and calculated by the system. In addition, the software must have the functionality to manage criteria that allow for measuring the impact that can be generated by a noncompliance risk, as well as the definition of possible types of treatments to be applied to a given risk.	Attributes Risk rating and assessment
Prioritization	Module that enables, based on the information generated by the identification and analysis stages, the prioritization of risks, so that efforts can be directed to the risks of specific taxpayers who represent a greater threat to the achievement of institutional objectives. This stage requires the implementation of a graphical interface that enables the user to navigate the various levels of detail.	Risk prioritization
Treatment	Module that makes it possible, based on an algorithm, to establish rules or decision criteria, as well as to propose and manage alternatives aimed at mitigating the different taxpayer risks.	Treatment Consolidation Allocation Dispatch
Evaluation	Module that enables the determination of the effectiveness of the treatment applied to each noncompliance risk. Specifically, it assesses whether the objective of avoiding, reducing, or transferring the risk was achieved in its various components: reduction of related gaps, correct identification of the target group or segment to be applied, correlation of the causes and their effects, adequate assessment and prioritization of the risk, and correct application of the treatment. This information will serve as feedback on the distinct phases of the process.	Treatment evaluation

Illustration 38: Flow of the Tax Compliance Management System
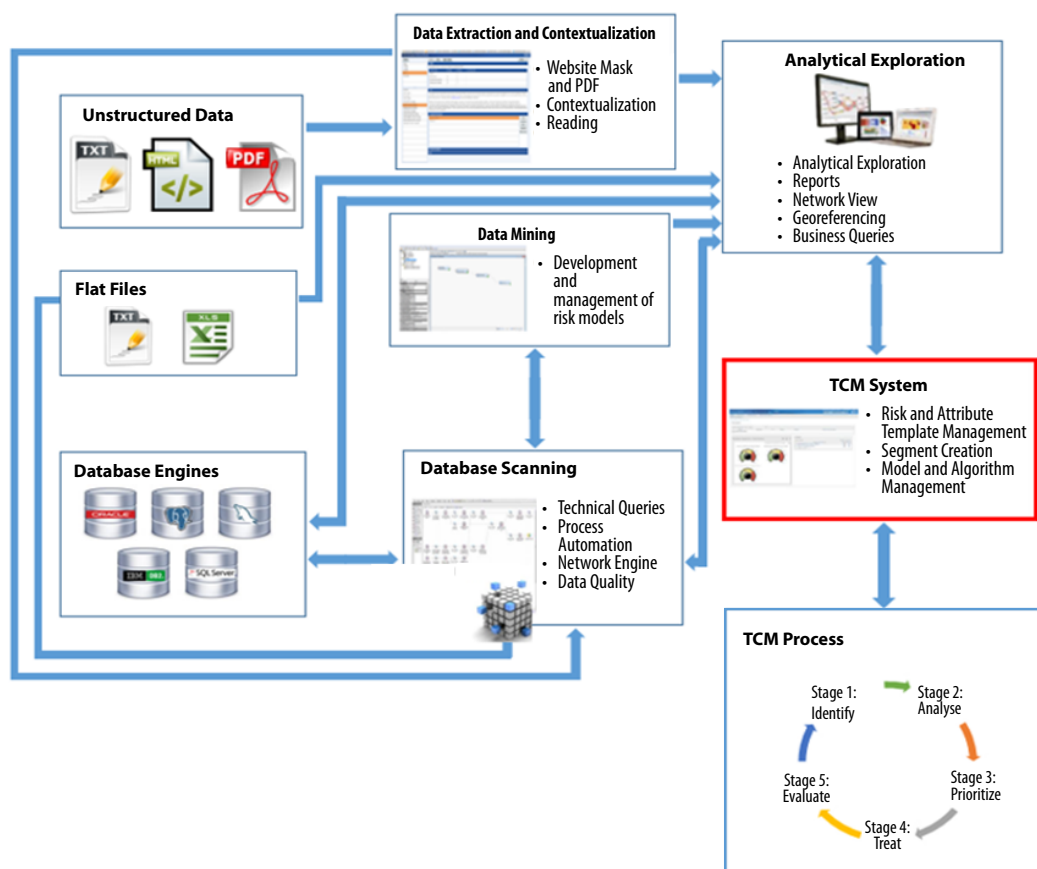
This system is a technological proposal designed to support the methodology for managing tax compliance, which makes it possible to centralize all the problems that taxpayers may have in a single system and define the best treatment strategy. The system is focused on the management, administration, control, analysis, and assessment of taxpayers' risks of noncompliance with tax obligations.

This comprehensive view of taxpayers makes it possible to know their obligations, their noncompliance, and their risks, which provides access to a system with a high potential for managing and analyzing the large volumes of information required by Tax Administrations today.

The system must be able to:

o Process structured and unstructured information comprehensively and deal with large volumes of data and "information intelligence".

o Integrate different structured and unstructured information from multiple data sources and in different formats, so that users can cross-reference these data in a comprehensive way.

o Allow the analysis, exploration, modeling, and discovery of patterns in order to generate useful knowledge for the Tax Administration. This knowledge can be used in auditing processes or serve as input for the tax compliance management process.

o Enable the process of querying, modeling, and analyzing data. The user performs a data exploration activity in which they usually look for patterns that do not necessarily follow a hierarchical criterion (grouping), as they may comply with rules of association of concepts and business knowledge.

In summary, the implemented software should facilitate the search in different data models, such as transactional schemes, stars, documents, relation networks, texts, among others. Given the existence of a high percentage of queries under an unrestricted scheme, the user does not define, a priori, the specific queries to be conducted - that is, they are not pre-established -, since these can be of an infinite variety. In other words, the available data modeling software will not always be a closed management block, but only a complement to the analysis.

Queries are conducted based on a series of interactions, so that the result of one query can serve as input for the next, and so on, until the desired goal is achieved. This interaction must be performed at the end-user level, without requiring structural modifications to the data sources.

- Information security.

  Information security constitutes a basic requirement for any system, especially for Tax Administrations.

- Differentiated roles and reports according to the needs of each profile.

An appropriate definition of roles and profiles is necessary to support the security of the process, with the goal of not generating alterations in the information, and to allow the delivery of the appropriate authorizations for each projected profile, as well as the execution of queries and the production of reports that fit the profile.

- Integration among systems.

  It is necessary to discover knowledge through sophisticated analysis software, which includes semantic and taxonomic analysis and associations of concepts through relation graphs, among other features offered by the market. We should consider as input the data available in the Tax Administration itself and in other platforms, such as big data, document managers, the web, local user files (Excel, texts), among others.

System components:

1. Functional workflow, which contains the logic of the compliance management methodology based on risk and profile differentiation

2. Profile and user manager

3. Catalog or Object Library Manager, which makes use of cross functionalities to create the structures to be used in the business modules

4. Identification Module

    a. Characterizing obligations, segments, and processes

        i.   Creating obligations, segments, and processes.

        ii. Defining and registering variables that are useful in characterization.

        iii. Creating, registering, and uploading a catalog of obligations, segments, and processes.

        iv. Allocating obligations, segments, and processes.

    b. Allocating relationships between entities (obligations, taxpayers, processes, segments, among others).

    c. Valuing specific compliance gaps, obligations, segments, and processes.

5. Analysis Module

    a. Managing different versions of risk templates.

    b. Managing different versions of attribute templates.

    c. Assessing and classifying risks.

6. Prioritization Module

    a. Registering selection of risks to be treated.

    b. Generating rules for the aggregation of risks to be treated.

    c. Generating rules for risk rating and ranking.

    d. Classifying and prioritizing risks.

        i. Prioritizing risks by different levels: national, regional, by segment, by process, by obligation.

        ii. Constructing risk matrices by different levels: national, regional, by segment, by process, by obligation.

7. Treatment Module

    a. Registering and/or uploading a treatment catalog.

    b. Creating a treatment allocation policy.

    c. Registering the proposed indicators for measuring treatment outcomes and impacts.

    d. Receiving information for treatment management systems or case systems.

8. Evaluation Module

    a. Registering proposed treatment evaluation rules.

    b. Validating and approving the treatment evaluation rule.

    c. Generating treatment evaluation rule.

    d. Evaluating the treatments (providing conclusions and recommendations).

9. Viewing Module

    a. Characterization reports by different entities (obligations, segments, processes).

    b. Executive reports on the status of the characterizations.

    c. Risk templates.

    d. Attribute templates.

    e. Treatment allocation policy.

    f. Risk matrices.

    g. Risk consolidation report.

    h. Treatment allocation report.

    i. Stock treatment report.

    j. Report with conclusions and recommendations on treatment evaluations.

Regarding the Enterprise, Governance, Risk and Compliance (EGRC) model used by some Tax Administrations, the following can be mentioned:

Colombia

Colombia uses an EGRC model called Single-Score Model (MOPU). This tool is of a managerial nature, which allows the entity to generate alerts about operations that imply a significant impact or a high risk of noncompliance with the formal obligations (registering, informing, declaring, and paying), and becomes an input for those responsible for the processes involved in establishing the relevant controls or facilitation services.

This tool qualifies the risks associated with formal taxpayer compliance and the consistency of income tax and VAT returns, identifies behaviors to be analyzed by control areas, and performs a segmentation that allows the administration to prioritize the targeting of controls.

It is a proprietary development implemented using market tools. The implementation of this system took approximately one year, during which time indicators were prepared, statistical tools implemented, necessary characterizations established, and the necessary information in terms of taxpayer registry, returns, and third-party information cleaned.

The primary user of the system is the tax refund area, but it is also available to other control areas, such as audit and case selection programs. Different personnel profiles are required, including statisticians to perform the necessary calculations, and analysts to manage the cleaning of the information and the incorporation of the sources to be used.

The main functionalities of the system are all those necessary for:

- The determination of the segment to which the taxpayer belongs per tax year, according to size, activity, and type of tax.

- The incorporation of information sources from the required forms or formats.

- The maintenance of the indicator formulation and the inclusion of new indices or necessary calculations.

- The single score checks obtained.

- The data outputs needed to identify blocks of indicators that are useful to the area that requires them or the local management that requests them at the central level.

- The risks obtained are the result of a segmentation by size, by economic activity, and by tax regime. They have categorical indicators of consistency and coherence in relation to the taxpayer's behavior over time and a standard of comparison by segment to which the taxpayer belongs. In this sense, it is possible to calculate behavioral indicators (noncompliance with formal duties) and direct indicators (Clinton List, fictitious suppliers, unfounded refunds, among others).

Spain

A system of tools is used for compliance management. Among these tools, the most modern and guided one in this sense is called HERMES, which makes use of the other tools in the system to accomplish its mission. This resource is implemented and in operation, though constantly evolving, as it is based on a circular knowledge management system, which allows for the correction of risks detected daily and obtains feedback in a systematized way, so as to make it increasingly more complete and powerful.

It is a system composed of a set of tools, based on rules that also allow the absorption of risks derived from predictive systems, which makes it possible to favor assistance, to define risks for their subsequent detection (when applied to available information), to establish their qualification or priority, to determine their score, etc.

The utmost comparative advantage of HERMES is the possibility that business teams (lawyers, auditors, etc.) can determine, under a previously established protocol, the risks of the functional unit, eliminating the traditional bottlenecks caused by the concentration of processes in the IT area and, even worse, the errors or miscommunication in risk programming.

These risks can thus be used during various activities carried out by the AEAT, such as:

- The processing of limited verification dossier. For example, when applying for VAT refunds and, generally speaking, filling out tax forms (personal and corporate income tax), as well as for *ex-post* tax control in the customs area.

- The selection of the dossiers to be checked in the Audit Plan.

- The detection of inconsistencies that could be potential indications of fraud by cross-checking and cross-referencing information from various sources, including those derived from predictive models.

This is the AEAT's own development. The implementation process has been carried out progressively over time, with continuous improvements in production. The first versions of some of the tools that compose it date back more than 10 years. Currently, when necessary, new versions are released in a timeframe that varies from 3 to 6 months, although the functional teams of the business areas daily update the risks. This period is also valid for the development of the first versions of new tools, as agile methodologies are used, such as SCRUM.

It is possible to define multiple user profiles by allocating licenses or corresponding control points.

However, in general, these could be classified as follows:

- Users that design business areas: define the risks to be controlled in each system and their priority or importance. Usually, in the AEAT's central services, this type of task is carried out by the auditing personnel at management level.

- Business area selection users: they can also define risks and, depending on the results obtained through their execution on the taxpayers' information, assess which taxpayers to choose for proof by audit or management actions.

  Generally, these are audit personnel specialized in selection, both in the AEAT's central and territorial services.

- Business area processing users: study the individual risks that have arisen in the dossier under their competence, to proceed accordingly. They usually belong to the audit personnel/technicians in charge of processing the dossier assigned to them, both in the central and regional offices of the AEAT.

The system functions allow the Administration of two fundamental areas on which they are based:

- Risk definition and maintenance:

  For each area or business system that requires it, it enables the user to autonomously and dynamically define risks based on contrasts with any type of information that appears in the AEAT's analytical information system.

  These risks can be quantified, for instance, by defining differences (amount registered in the system minus declared amount) or rates (undeclared volume / estimated total volume of operations) obtained by cross-checking the available information.

- Definition and maintenance of risk profiles:

  This tool allows the authorized user in the business area, in an autonomous, coordinated, and dynamic way, to establish risk profiles based on previously defined risks, i.e., the combination of certain risks that may characterize patterns of fraudulent behavior, such as false invoice issuers.

  It establishes the importance of the risk profile by processing dossiers according to the corresponding system. For example, it may be classified as a restricted verification or an audit procedure. This will influence the stages and procedures to be taken to manage the dossier.

Historically, there have been tools developed by Tax Administrations to solve, relatively *ad hoc*, the compliance management needs in each business area. Some examples are mentioned below:

- o Traffic lights: a system of conditions for the classification of goods for customs clearance, based on a color system: green (everything in order, go ahead); yellow (some risk detected, at least check the dossier); red (higher risks detected, check the cargo).

- o Filters: required prior definition - and was, therefore, neither autonomous nor dynamic - of risks and their classification for each system. In addition, it did not allow simulations of the impact of risks and established a clear functional gap by prioritizing the definition of gaps and risks over the availability and understanding of technology.

- o Access control: a system of several types of rules, defined *a priori*, that determine when a user's access to certain information in the system could be considered "risky". This would imply a subsequent procedure consisting of a review, which might request a justification from the user, to which the corresponding person in charge would give or decline to give consent.

Currently, HERMES uses the following analysis tools: Zújar/Prometeo (OLAP tools / data warehouse) and GENIO (*reporting* tool on the above aspects), to allow the user to define the conditions that determine risks and risk profiles, through queries stored in the various analytical information repositories (taxpayers, self-assessments, returns, and debts).

Italy

MOLECOLA is an operational tool whose main objective is to constitute a valid support for the work of the analyst-auditor in identifying subjects that can be profitably attacked in terms of the fight against tax evasion and the repression of other illicit economic-financial conducts.

In particular, the system allows the management and reprocessing of relevant masses of data through procedures capable of facilitating reading and comparison, highlighting, by means of an "alert" system, anomalies and inconsistencies between declared income and the real availability of economic and financial assets, as well as the production of reports standardized in format and content.

5.2 Data Exploitation and Viewing Systems

Regarding data exploitation and viewing tools, below is the scenario in some Tax Administrations:

Spain

Tool 1

Zújar, constitutes an OLAP tool for multidimensional analysis and data warehousing. It makes it possible to consult and study all the existing information in the analytical system, which will have been loaded through the operating system (taxpayers, self-assessments, returns, debts, real estate, among others).

This is an *in-house* development of the AEAT. It is composed of five elements:

- A **client application**, developed at the DIT, using net technology, which resides on the PC and interacts with the user to perform the functions of requesting and sending data.

- A **data access engine**, developed at the DIT and with AEAT-specific functions, such as those related to security, and which exempts Zújar clients from data storage.

- A query-driven **data warehous**e, supported by a commercial database. In addition, it is possible to use other database management systems on the market for data storage and access, as well as SQL tools and a Big Data environment.

- A **data loading process** that transfers data from the operating system, used for transactions, to the storage system, used for queries.

- And finally, a **metadata dictionary**, with information about the storage structure and presentation characteristics of the data.

Due to the multiple uses that can be given to the tool (individual information queries, mass queries, information contrasting/analysis, anomaly detection, search for signs of fraud, taxpayer selection, statistical studies, scorecards, among others), it can be said that any type of AEAT user has access to some version of Zújar, from management personnel to general users of the system.

The system enables the user to perform the typical functions of an information analysis system: viewing, listing, filtering, grouping, classifying, cross-referencing, statistical calculations, expressions among fields, graphic design, data export, and query saving.

For example, there is another tool, called Prometeo, which could be defined as a type of Zújar specialized in analyzing the information provided in an audit of a given taxpayer, such as journals and general ledgers, books of received/issued invoices, and bank regulations (account movements, transfers, direct debit of receipts, among others).

In Prometeo, we can perform bank reconciliation between the balance-sheet account information and the bank return provided by the financial institution.

In addition, there is the possibility of cross-referencing any information in the databases, such as the characteristics of one's suppliers or clients.

Tool 2

GENIO (standardized online reports), this comprises a reporting tool that enables the autonomous structuring and viewing in various formats (HTML web page, Excel XLS, RTF, or PDF document) of reports based on queries made in the multidimensional analysis tools Zújar and Prometeo. It constitutes an in-house development of the AEAT.

There are two main types of users of this system:

- Report constructers: implement the standardized reports to be displayed, based on a certain structure that contains both the necessary information from the analytical system and the processing and calculations to be performed with such information.

These users tend to be of two types:

  o Specialized personnel in the area in question, with advanced knowledge of analytical tools.

  o Technical IT staff, based on the requirements of experts in the specific field.

- Report users: view the reports they need among those that are available.

  Numerous report designs can be created depending on the needs we wish to cover, from detailed reports on a particular taxpayer to statistical tables. All of them can include alerts to situations that we want to highlight, as a result, for example, of discrepancies. Moreover, they allow the introduction of parameters to adapt to each specific case.

In general, its use is very simple and intuitive, since it comprises graphic panels, over which the elements are dragged and pasted onto the report sheet. However, it also allows complex treatments to be carried out using programming tools.

Tool 3

Teseo, this constitutes a tool for analyzing and viewing the relationships between elements in the form of graphs or tables. In other words, it enables the relationships between the elements of the AEAT analytical information system (taxpayers, bank accounts, real estate) to be analyzed, viewed, and edited in graphical form. This constitutes an in-house development of the AEAT.

Users are usually industry-specific experts and need to study and describe relationships during an investigation, usually with the intention of detecting fraud and clearly illustrating certain schemes that are particularly complex.

It offers analysis and graphical representation functions for both nodes and relations: searching, filtering, clustering, path detection, presentation in different layouts (hierarchical, orthogonal, circular, etc.), query storage, export, etc.

Tool 4

A set of business intelligence tools focused on data analysis and mining. Used mainly to detect anomalous behavior and fraud patterns, as an aid to decision-making in the processing of dossiers (predictive models with training).

It is a market tool with no modifications made by the Tax Administration itself, besides the customized configuration of its installation to adapt and integrate it to the corporate computer platform.

The user profile of this tool is that of computer technicians and mathematicians specialized in data mining, who meet the needs of the experts in the sector in question.

The results obtained from the dossiers are uploaded to the analytical platform to be made available to any AEAT user who needs them. Within this framework, certain predictive risks are uploaded to the global risk system (HERMES).

It offers data analysis and viewing functions using various data mining techniques and mathematical algorithms, such as descriptive and predictive models.

Colombia

Analytical tool that allows the analysis of information (data mining) in order to model behavior, looking for patterns or anomalies. It accesses information available in data warehouses and institutional data marts; therefore, in the implementation phase it is important to strengthen the information available in these repositories. The implementation of the tool takes less than 5 months, however, the generation of technical skills for its proper use takes a bit longer.

The user profile for this type of tool is data analysts with knowledge of statistics and the necessary information sources and indicators.

It uses features that "automate" the procedures of information sources, data cross-checking, necessary statistical calculations (such as mean, standard deviation), segment or cluster determination, ranking, and final score calculations.

Ecuador

Analytical reporting tool for internal and external information published in the administration; its goal is to allow the viewing of consolidated information, regardless of the source or the database of origin. Its implementation takes approximately one year and six months.

There are users with the following profiles:

- Administrators.

- Report creators.

- Report consultants.

Depending on the nature of the report or information, access is granted, as authorized by the immediate supervisor or managerial level, to users at the national level related to tax control proceedings.

It allows queries for analytical information, contains analysis functions such as calculation of the mean, percentage, maximum, and basic mathematical operations, and presents this information in table or graph form.

Desktop tool installed on each employee's computer. This tool allows the massive extraction of information from different sources and databases, transforming and storing it in text or Excel files. It also allows us to consolidate in a single process the extraction of information from various sources, working with objects from different databases, and obtaining massive information that is difficult to obtain with other end-user tools.

The tool is used by expert data mining users with knowledge of SQL returns and tax information.

Costa Rica

Tools for the analysis of information bases through the application of cross-referencing, which allows the identification of noncompliance and certain dubious behavior of groups of taxpayers, whose audit actions have been prioritized through the incorporation of previously defined criteria.

On the other hand, in relation to the Large Taxpayer Directorate, a tool called Analysis Model (MODA) was developed and implemented internally, which makes it possible, in a simple and fast way, to generate, download, and compare the information from income tax and general sales tax self-assessment returns. This system was made available to users in early 2017.

In addition, in early 2015, a tool called Multifunctional Programmed and Objective Analysis (AMPO) was implemented, which enabled the generation of a database with information relevant to taxes that, until then, were not within the Administration's competence.

This tool makes it easier for large national taxpayers to comply with their legal duty to provide quality information in a correct and timely manner, which allows for greater effectiveness in exercising the control powers of the Tax Administration.

Furthermore, it is important to highlight that the intelligence tools that will be developed as part of the Information System for Tax Management aim to identify, in a more precise and automatic way, the liable subjects who do not submit self-assessment and information returns, those who carry out their economic activities in a hidden way, and those who submit inaccurate data in their tax returns. Thus, for each of these groups of potential noncompliers, the corresponding lists are obtained automatically.

It will also be possible to conduct studies of sectors and taxpayers, with their associated risks, for which all the information stored in the database will be accessed and worked on, in such a way that it will be possible to make interrelationships or multiple cross-checks of information, perform multidimensional queries, and generate reports, through which the identification of noncompliance and risky tax behavior is projected.

These tools consider applications of predictive models for analyzing information through data mining, resulting in modeling behavior and identifying unknown anomalous patterns.

5.3 Case Management and Consultation Systems

Considering the volume of data that the Tax Administration must deal with, the automation of its management is paramount. Robust systems of data registration, exploration, transaction, and analysis are required to generate input that allow the structuring of appropriate and proportional treatments and that have a direct impact on the decision-making process of the senior management.

These computer systems must be available to members of the administration who, due to their functions, need to know the information. The systems receive information provided by taxpayers on their economic, tax, or financial situation or other information that may be useful for analysis, information provided by economic agents in relation to third parties, and information generated by the actions of the operational units, including data obtained through agreements (international, with other institutions at the domestic level, among others).

This section will explain the importance of having a system that allows the internal operational management of the treatment actions to be applied. These actions will be delegated to the different units or departments, which must implement them according to a previously established work agenda and associated deadlines. Likewise, the implementation efforts of any of these treatment actions will be guided according to changes in the context, organizational priorities, or other internal or external factors that affect operational management.

A Case Management System (CMS) provides an interface oriented mainly to the internal management of a given Tax Administration, according to the various case actions or treatments to be performed on different groups of taxpayers. This system is normally a computer development that includes tools that allow the input of information, the knowledge of the current situation of the audit actions, the modification of this situation according to new actions taken, the generation of tables and reports - whether static or dynamic - of data for statistical purposes, among other aspects.

There are multiple objectives of having a CMS:

- Managing workloads in certain operational units, resulting in a better allocation of the different audit actions.

- Knowing the different situations of the cases, such as the latest audit actions performed on a taxpayer or a group of taxpayers.

- Keeping track of the actions for management purposes, both at the central level and in units distributed in other geographical locations.

- Managing cases more specifically at the local, unit, or department level.

- Attaching documents by digitizing them, acting as a data repository.

- Allowing, depending on the existing profiles, access to graphical reports, reports, alerts, or others for management purposes.

Based on the considerations above, the main objective is, through the information created from the data provided in the operational management of the cases, to improve the decision-making process based on the results obtained and to know the possible challenges detected and systematized during the development of the cases, in order to evaluate the relevance or not of a specific treatment action applied in certain taxpayer segments, among other possible analyses.

Therefore, based on the objectives previously mentioned, the CMS contemplates the following minimum requirements:

- **High availability:** the system must allow not only the periodic updating of its functions, but also that these are available whenever an action needs to be taken, considering the relevance of data updates in a management system in general.

- **Profile creation:** the system is defined with certain requirements to perform specific actions. These actions must be dependent on those applicable to a specific type of user, such as information access levels, data registration, file extraction, graph viewing, among others, depending on the needs of the specific user, area, or organization. This classification is always made based on the maximum possible transparency and on adequate knowledge management.

- **Data extraction:** an important requirement is the extraction of data, reports, or other means to obtain the registers from the system, which are specified according to the processes that the Tax Administration controls and manages.

- **Security and access to information:** the system must not only establish restrictions according to profiles but must also have security tools or algorithms for the management of information that, by its nature, is highly sensitive, such as restricting the viewing and compiling of information to certain profiles, as well as restricting access and treatment of large volumes of information.

- **Flexibility:** the management system must allow for case management, as well as possible changes that improvement processes will enable in the future, including those related to interoperability or integration with other systems.

- **Traceability and comparability:** the system must allow the traceability of the data, from their origin to the modifications occurred in the different regulated administrative acts, allowing their relational and year-to-year comparability within the traditional risk analysis system, as shown in the following diagram:

Illustration 39: Traceability and Comparability
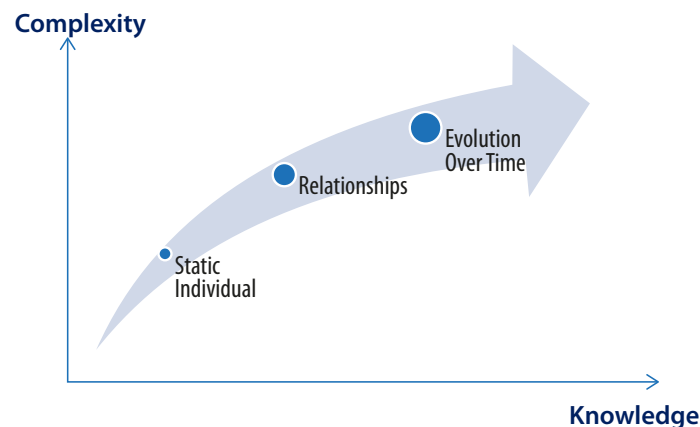
In Chile, the case management system that supports some of the actions described above is the Audit Management System (AMS), which provides an interface between the implementing units and those responsible for designing or generating actions, interceded by an operational management unit that uploads and maintains the cases in the system.

The system has the following interface:

Illustration 40: Interface of the Audit Management System (AMS)

On this page, you have access to all the options related to the New FMS   Go to

CASE MANAGEMENT

◘ Case Entry
◘ Case Management and Queries (0)
◘ Management Reports

ADMINISTRATION

◘ Mass Case Upload
◘ Mass Regional Request Upload
◘ Start Regional Request Analysis
◘ Mass Upload of Responses to Regional Requests
◘ Regional Request Administrator
◘ Program Registration / Audit Plan

Sgf.SgfInicioForm

(Updated version as of 20170720)

The illustration above corresponds to a profile with broad access to the system, like that of an administrator, where two groupings are observed: Case Management and Administration.

"Case Management" has three alternatives.

"Case Input": in which each unit or department of Chile's *Servicio de Impuestos Internos* (SII) can input their own cases, which will be labeled as "emerging cases", thus differentiating them from the cases sent in a central way.

"Case Management and Queries": enables us to view a series of cases on the screen after applying filters, as well as to perform specific actions on cases loaded into the system.

Finally, the **"Management Reports"** option allows us to apply filters and provide data for management and evaluation purposes[27].

Administration, on the other hand, offers options that allow management at the system administrator level.

"Mass Case Upload": allows us to include cases in a mass or batch process in a centralized way.

"Program Registration / Audit Plan": acts as a platform that allows the management of audit programs, distinguishing between its validity, its department or unit of origin, and its type of treatment action (audit, risk queries, etc.), among other alternatives.

"Regional Requests": correspond to intermediate situations and "borderline conditions" faced by those who implement the cases. For example, if, for various reasons, the cases have a delay in relation to the date scheduled for their completion or entail a duration different from that originally established, or if it is detected that the taxpayer does not comply with the requirements of risk, tax type, scheme, or other cases. In these situations, the implementing units or departments may submit requests for extension of the audit deadline, recognition of the additional period used in the development of the audit, or cancellation of a case, respectively, duly substantiating or arguing their request:

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27   The necessary caution with these reports is the effect of time, where it is noted that the data may change after they are extracted.

Illustration 41: Overview of Cases in AMS

	Fecha Ingreso	R.U.T	Regional Auditora	Departament Unidad	Grupo	Fiscalizador	Tipo de Proceso	Programa / Plan	Fecha Termino (Fiscalizador)	EE	Estado	▲ N° Caso
☐	06-07-2017	1-9	SUBDIREC DE FISCALIZ	DEPARTA DE SISTEMAS DE FISCALIZ	ÁREA DESARRO Y OPERACI OPERACI SISTEMAS TRANSVE		Auditoria (Plan Regional)	COMERCI EXTERIOR		S	En revisión	266684
☐	06-07-2017	1-9	SUBDIREC DE FISCALIZ	DEPARTA DE SISTEMAS DE FISCALIZ	ÁREA DESARRO Y OPERACI SISTEMAS TRANSVE		Auditoria (Plan Regional)	DENUNCI		N	Registrado	266683
☐	05-07-2017	1-9	SUBDIREC DE FISCALIZ	DEPARTA DE SISTEMAS DE FISCALIZ	ÁREA DESARRO Y OPERACI SISTEMAS TRANSVE		Auditoria (Plan Regional)	CAMBIO DE SUJETO	05-07-2017	S	Terminado	266654
☐	29-06-2017	1-9	SUBDIREC DE FISCALIZ	DEPARTA DE SISTEMAS DE FISCALIZ	ÁREA DESARRO Y OPERACI SISTEMAS TRANSVE		Auditoria (Plan Regional)	COMERCI EXTERIOR	19-06-2017	S	Terminado	260506
☐	27-06-2017	1-9	SUBDIREC DE FISCALIZ	DEPARTA DE SISTEMAS DE FISCALIZ	ÁREA DESARRO Y OPERACI SISTEMAS TRANSVE		Auditoria (Plan Regional)	DENUNCI	02-06-2017	S	Terminado	260451

1-5 de 22

The illustration above shows how a taxpayer's data is displayed, as well as the details of their treatment action, the current query status[28], and the case number (like an identification number). In addition, for completed cases, it provides the date on which the case was closed.

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28 The possible situations of a case in AMS, on a general level, are: "registered" (when a case is created in AMS); "allocated" (case that has already been allocated to a staff member); "under review" (case with intermediate actions or under development); "finished" (case that is already completed in AMS); "returned" (case that does not meet the characteristics defined in its respective working guidelines); and "annulled" (case deleted from AMS).

When we open a specific case, we can see the following information:

Illustration 42: View of a Case in AMS

This illustration is only available in spanish.

The illustration above shows a breakdown of the case in question, structured in four blocks:

- Summary of taxpayer information.
- Case details (type and name of treatment action, start and end dates, etc.).
- Case allocation (department or unit responsible for the case, allocation dates, case status, etc.).
- History or event log, which identifies what action was performed, who performed it, and when it was performed.

Similarly, regarding case management and queries, it is possible to perform searches by applying certain filters, as shown in the following illustration:

Illustration 43: View of a Case Search in AMS

This illustration is only available in spanish.

It is possible to incorporate filters based on the case or taxpayer identifier, the implementing unit or department, the type of treatment action, and the situation in AMS, among others. As a result, an image like the previous illustration called "Global View of Cases in AMS" is provided.

Additionally, management reports can be obtained by applying filters like those described above, the display of which is as follows:

Illustration 44: View of Management Reports in AMS

The possible reports to be extracted will depend on the computer developments or shortcuts required by the implementing units for their management. Thus, the reports in the illustration above correspond to customized views for a given process.

Illustration 45: AMS Case Report

As with the case management and query module, in this reporting module, we can obtain reports or tables of data in spreadsheet format by applying filters.

The system previously presented allows us to insert, compile, and obtain large volumes of information related to the operational management of cases in AMS. This facilitates the construction and updating of information for management purposes in the different units and levels of the Tax Administration.

It is important to consider that the case system must provide information to corroborate that the risks prioritized and planned by the administration under different types of audit actions are effectively clarified and mitigated during their development, to ensure that the situations with the greatest impact on the tax system are effectively treated by the teams that perform the actions. To this end, in addition to the enabling system, it is necessary to have processes and responsible parties to ensure consistency between the prioritized risks and the risks effectively treated.

The scenario in some Tax Administrations is detailed below.

Bolivia

The case management system called SIF allows the registration of the cases generated and their allocation to the personnel in charge of performing the audit or verification. It was developed by the institution's control and systems area. There are different user levels. It has report and indicator modules that make it possible to monitor the status of cases or generate executive reports, summarizing the amounts repaired, and identifying cases by type of audit or verification.

Spain

In the inspection area, the management framework is the National Inspection Plan (NIP). It encompasses a set of systems developed by the AEAT that allows the management of all the actions of the Department of Financial and Tax Inspection. This makes it possible to process them in different procedures, according to their nature, and offers comprehensive systems for calculating postings and preparing documents, such as minutes, sanctions, reports, and administrative orders. In addition, it is integrated with many other AEAT systems.

The users are the Inspection staff, who must carry out audit activities or intervene in them in some way. Therefore, those who hold the various positions of inspector, technician, and tax agent are considered users.

Among its main functions, the system makes it possible to close dossiers in the different audit procedures, to process them (going through the different possible situations), to calculate, when applicable, the posting value of minutes and sanctions, to formulate minutes, sanctions, reports, proceedings, and any other necessary document, and to interconnect with multiple systems in order to receive or send information, such as to generate debts or refunds, to store the documentation of the case, and to issue requests. Moreover, the operational information generated is uploaded to the analytical system to enable its study and its mass cross-referencing, becoming an important source of information and contrast, used even in the analysis of future risks, through the comprehensive connection with HERMES

El Salvador

The Case Selection and Management System (CSMS) is active and running. CSMS was developed internally with support from the U.S. Agency for International Development (USAID).

This system allows the selection, allocation, and management of audit cases, as well as the traceability of actions taken in scheduled cases, the registration of actions by various means (email, phone calls, comprehensive audit, and other compliance risk verification techniques).

There are three main types of users:

- Auditors: have an enforcing role, register activities performed on the cases and the documentation associated with each allocated case.

- Supervisors: oversee case development and authorize implementation stages.

- Administrators: upload cases into the system, allocate (as applicable), and manage contingencies that may occur.

The main functionalities of the system are as follows

- Plan creation, case selection using predefined rules, and upload into the system, at the central level, of cases selected for treatment and associated with an allocation process.

- Upload of activities and documentation associated with the different procedures and treatments applied, such as notifications, information requests, receipt of documentation, reviews, postings, tax payments (where applicable), and closings.

Ecuador

The National Tax Audit System (NTAS) is a computer system implemented and activated at the national level in April 2011, in which intensive control processes are loaded in order to accelerate the tax posting procedure, optimizing analysis and minimizing the time spent preparing working documents

It constitutes an internal development of the tax administration, a joint effort between the IT and Business areas.

The system has two main types of users: national administrators, who are responsible for authorizing, configuring, maintaining, monitoring, and ensuring the correct operation of NTAS; and zone administrators, who manage the contingencies that may arise at the zone level.

The profiles, in the commercial scope, are:

- Programmer: uploads intensive control processes.

- Auditor: carries out the tax posting process.

- Supervisor: distributes cases, oversees their development, and authorizes intermediate events during their execution.

- Head of Area, Head of Department and Zone Director: authorize intermediate events during the execution of the audit process.

The main functions of the system are:

- Systematization of the intensive control processes carried out by the National Directorate of Tax Control.

- Uploading, control, and monitoring of cases.

- Report generation through filters for analysis and statistics.

Brazil

The goal of web-based analysis is to register each case processed and to monitor the processing stages of each tax auditor in the monitoring team. This also makes it possible to report the results obtained as a consequence of the action taken or the expected results of the case monitoring to the audit teams or to the teams in charge of debt collection.

Among the system's functionalities are sending electronic messages (EMAC) to taxpayers, with the aim of requesting clarification on distortions, requests to regularize noncompliance, and requests to attend meetings.

Another system is Web-Prog, which aims to register all those cases selected for the execution of the tax audit; its user is the tax auditor of the selection team. The objective of the fiscal action is

- Registration of the formal audit document (auto de infração).

- The control and historical register of the audits performed, classified by taxpayer and tax auditor. This control makes it possible to register the dossiers of the selected cases.

- Issue the "Terms of Initiation of the Audit", identify the violations and taxes found in the *ex-officio* procedure, issue the Infraction Notice and management reports.

Both systems were developed by the Federal Data Processing Service (SERPRO).

6 Organizational Structure

Organizational structures are described for the purpose of tax compliance management. Three fundamental elements that condition organizational structures can be identified:

- **Separation of tax functions:** there are different forms of organization. Some have separate customs and domestic taxes, while in others, these two types of tax are combined under one coordinating agency. Some tax agencies also coordinate other taxes, such as those on real estate or on social security. In Chile, the collection function is not integrated with the agencies in charge of controlling tax compliance. In other countries, such as Brazil, only persuasive collection actions are carried out within the administration, leaving the audit process to another state agency, the Attorney-General's Office.

- **Professional profiles that exist in the Administration:** in particular, in the areas of assistance, control, and technology, as well as the relevant administrative functions.

- **Central level of the administration:** defines the strategies to address tax compliance, as well as several operational levels, generally distributed according to each country's geopolitical organization.

On the other hand, from the point of view of tax compliance management, some elements are also identified that influence decisions related to the definition of an organizational structure in the business areas at the central level:

- Areas where the stages of risk identification and analysis are fundamentally developed:

  Taxpayer segments that require special attention: large taxpayer departments that account for a high percentage of tax collection; high net worth individuals; economic sectors that are relevant for the country; mass filing cases (e.g., income tax, VAT, land tax, property tax, customs duty, or social security); and tax refund cases (e.g., exporters' exemption).

- Areas where certain treatment actions are structured and implemented:

  Treatment action structuring teams: audits and reviews; communication teams, which support the organizational strategy disclosure processes; preventive treatment actions; emails or alert messages; brochures; lectures; and website.

- Areas where planning and prioritization processes are developed:

  Compliance management support teams: planning, operational management, segment monitoring, taxpayer risk rating, prioritization process, programming and dispatching of treatment actions.

- Operational areas where treatment actions are developed or implemented:

  In general, these areas should adopt a structure consistent with the treatment actions that should be implemented, both by emphasis and type of treatment application. For example, corrective treatment areas, online treatment areas, and preventive areas that can contact taxpayers remotely.

In most Tax Administrations, the organizational structure has been subject to permanent changes associated with reforms and structural legal changes, with the aim of improving efficiency and effectiveness, both in the provision of services to taxpayers and in the continuous improvement of tax compliance. These reforms reflect a more general structural evolution in Tax Administrations, which have typically moved from a structure whose focus was on the type of tax to one centered on functions. In some cases, a structure focused on taxpayer segments has been maintained, while in others, this model has been expanded by providing specific ("tailored") services to specific taxpayer segments. More recently, structures based on matrix process management and the comprehensive risk models that motivate the present handbook have emerged.

Thus, we can group the different organizational structures into the following types:

- According to the type of tax: this is the first organizational model known and used by Tax Administrations. Under this structure, the departments of a given Tax Administration had a multifunctional character. The substructures varied according to the tax to be handled and were to a considerable extent self-sufficient and independent of each other. Although at the time this model was successfully adapted to the context of the Tax Administration, some drawbacks were revealed in the wake of technological advances and changes in context, such as tax and technological dynamism. Among these drawbacks are:

  - Duplication of functions, which reflects greater inefficiencies and operating costs.

  - Taxpayers subject to more than one tax interact with more than one department in the global tax compliance process.

  - Complexity in designing, coordinating, implementing, and managing the different compliance actions aimed at handling taxes on a global scale.

  - An increased likelihood of disproportionate and inconsistent treatment of taxpayers, which could be further aggravated by means of explicit collection targets, regardless of willingness on the part of taxpayers to comply. As described earlier, this arrangement prevented the flexible use of personnel whose skills were restricted to a particular tax.

  - Difficulty in managing the entire tax system, complicating organizational planning and coordination actions.

- According to function: the personnel tend to be organized by functional groups, such as information registration, data processing, on-site audit, and collection, among others, and usually perform their work with a focus on all taxes. This organization allows greater understanding and standardization of work processes among the different taxes, simplifying the information and mechanisms offered to taxpayers and improving operational efficiency. This is reflected, for Instance, in better service and response times, as well as allowing the centralization in a sing function of compliance management for more than one tax. In addition, greater coordination is achieved in relation to the different actions generated for groups of taxpayers. Thus, we achieve a more precise segmentation of taxpayers, such as "high net worth individual taxpayers".

  However, some Tax Administrations find this model complex to manage, given the multiple combinations of taxpayer characteristics and the diversity of attributes, behaviors, and

attitudes toward tax compliance that are presented to them. In this case, challenges akin to those mentioned for the previous approach also arise, such as relevant differences in performance between areas, when some functions receive greater value and resources over time within the Administration.

- According to taxpayer segment: this logic seeks to establish an organizational model that recognizes that each group of taxpayers has distinct compliance characteristics and attitudes, representing, in turn, different compliance risks. To manage these risks effectively, the Tax Administration needs to design and implement different strategies, according to the specific characteristics and compliance factors presented by each group of taxpayers. Like organization 'by function', organization 'by taxpayer segment' makes it possible to group the essential functional activities in a given segment to achieve unified and specific management, thus increasing the chances of overall improvement in compliance levels. Like the previous approaches, this also presents challenges that may be relevant to the achievement of the objectives. For example, certain gaps and risks may be overlooked simply because the risky taxpayer belongs to a segment that is outside the competence of the area responsible for them. This phenomenon highlights the importance of relying on processes that allow for the prioritization and consolidation of gaps and risks, regardless of the formal size attribute of the taxpayers.

- According to process management: in this approach, work structures are aligned around a sequence of functions and activities along a tax compliance value chain, from the central to the regional level, in which each of the intervening areas, whether related to business or support, works toward the achievement of the specific values, objectives, and goals of the entire process, including the level of user and taxpayer satisfaction. This conceptualization requires a matrix work approach, in which formal managers and supervisors are functionally and territorially distributed in separate locations, leaving aside the traditional approach of formal, hierarchical, territorial leadership. This approach certainly requires enormous efforts regarding systems and connectivity.

The organizational structures of three Tax Administrations are presented below:

Illustration 46: Organizational Structure of SAT Mexico's Parent Company
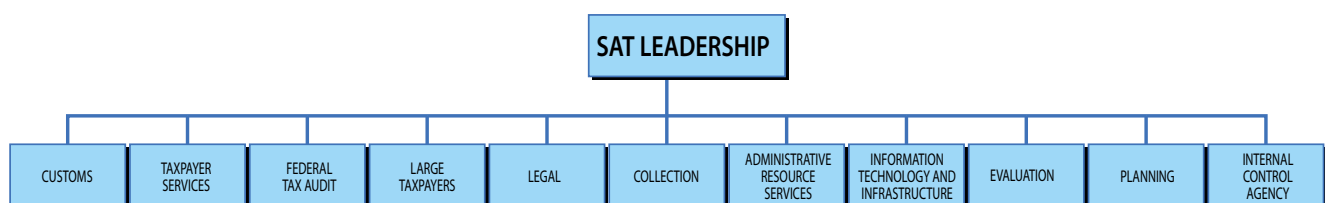
Illustration 47: Organizational Structure of AFIP Argentina[29]

```
                    ┌─────────────────────┐         ┌─────────────────────┐
                    │ AFIP ADMINISTRATION │ - - - - │  ADVISORY COUNCIL   │
                    └─────────────────────┘         └─────────────────────┘
          ┌──────────────────┬──────────────────────┐
┌──────────────────┐ ┌──────────────────┐ ┌──────────────────┐
│   DIRECTORATES   │ │  SUBDIRECTORATES │ │  SUBDIRECTORATES │
│     GENERAL      │ │     -GENERAL     │ │     -GENERAL     │
└──────────────────┘ └──────────────────┘ └──────────────────┘
```

DIRECTORATES GENERAL	SUBDIRECTORATES -GENERAL	SUBDIRECTORATES -GENERAL
TAXES	INSPECTION	LEGAL MATTERS
CUSTOMS	COLLECTION	SYSTEM AND TELECOMMUNICATIONS
SOCIAL SECURITY	HUMAN RESOURCES	INTERNAL AUDIT
	TAXPAYER SERVICES	FINANCE AND ADMINISTRATION
	TECHNICAL INSTITUTIONAL COORD.	
	PLANNING	

Illustration 48: Organizational Structure of Japan's Tax Administration (NTA)

```
                              ┌──────────────┐
                              │ COMMISSIONER │
                              └──────────────┘
        ┌─────────────────────────┴──────────────────────────┐
┌────────────────────┐                          ┌──────────────────────────┐
│  FUNCTIONS OF THE  │                          │ REGIONAL TAX DEPARTAMENTS│
│   CENTRAL OFFICE   │                          │ (11) AND REGIONAL TAX    │
└────────────────────┘                          │        OFFICES           │
                                                └──────────────────────────┘
```

Functions of the Central Office:
- SECRETARY TO THE COMMISSIONER
- TAXATION
- ER
- INSPECTION OF LARGE BUSINESS AND INVESTIGATION OF TAX FRAUD CRIMES
- NATIONAL TAX INSTITUTE
- COURT INSTITUTE
- NATIONAL TAX COUNCIL
- REGIONAL TAX COURTS (12) AND ITS SECTIONS (7)

Regional Tax Departments and Regional Tax Offices:
- MANAGEMENT AND COORDINATION
- TAXATION
- ER
- INTERNAL CONTROL
- CRIME INVESTIGATION
- TAX OFFICES (524)

The organizational structures of advanced Tax Administrations have a strong emphasis on the needs of taxpayers, with the aim of facilitating service provision, voluntary compliance, and, consequently, tax collection.

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29   This structure underwent a change in 2016, set forth in AFIP Provision No. 79/16.

1) **By Tax**	2) **By Function**	3) **By Type of Taxpayer**
Direct Taxes on Private Individuals	Taxpayer Registration	Large Businesses
Corporate Taxes	Information and Assistance	Other Entrepreneurs
Indirect Taxes	Voluntary Collection	Private Individuals
Customs Duties	Audit	Public Administrations
	Office	
	Field	
	Coercive Collection	
	Litigation	
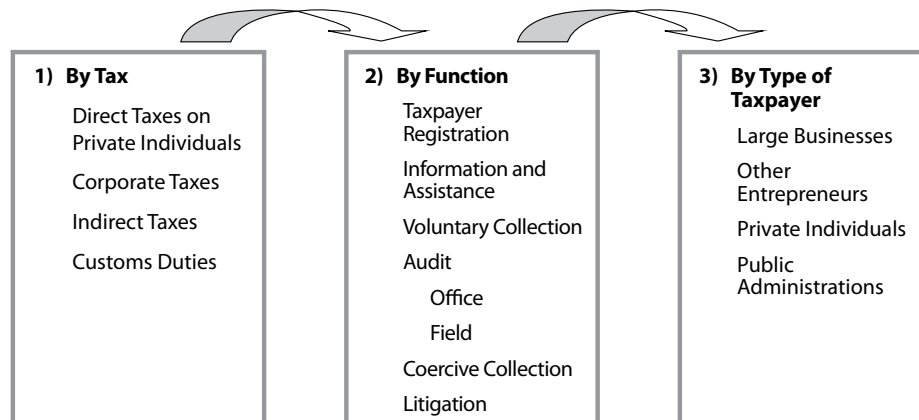
The adoption of a more comprehensive organizational structure, endowed with autonomy and with real representation in the governmental bodies of the different territorial levels, could be an effective and efficient solution, which would allow for working with high levels of independence and technical quality.

Spain: Segment of Companies with Large-Scale Presence Abroad

In an increasingly globalized world, in which individuals and companies, especially large businesses, operate under different Tax Administrations, the issue of international taxation is particularly relevant.

In 2013, the *Agencia Estatal de Administración Tributaria* (AEAT) chose to create the National Office of International Taxation, which is directly subordinated to the Director of the Department of Financial and Tax Inspection, whose functions are the programming, promotion, and coordination of inspection activities related to international taxation, particularly regarding transfer pricing and taxation of non-residents.

This implies:

    a) The coordination of:

- Actions of the specialized units in international taxation.

- Mutual agreement procedures and, where appropriate, their preliminary investigation. In addition, it is responsible for exercising the functions of the competent authority in mutual agreement procedures on direct taxation, especially when these concern the application of the articles of the double taxation agreements governing business profits with permanent establishments and associated businesses.

- Prior agreements on the assessment of operations between related persons or entities and agreements on related operations with other Tax Administrations. In addition, it is responsible for carrying out the preliminary investigation of these procedures and for reporting on them and establishing the relevant relations with other Administrations on them.

- Simultaneous controls with the Tax Administrations of other countries and, when applicable, participation in such controls.

b) The establishment of criteria and guidelines for action in international forums or meetings when these refer to matters related to financial and tax audit, as well as collaboration with the Tax Administrations of other countries and international mutual assistance, when this falls under the competence of financial and tax inspection.

c) Participation, in collaboration with other bodies of the *Agencia Tributaria*, in the preparation of:

- Drafts of international conventions, agreements, or treaties or community regulations, and participation in meetings that, within the scope of the Agencia's international relations, fall under its competence due to the nature of the matter at hand.

- Regulatory proposals and collaboration in the development of regulatory projects that affect its functional area.

- Reports on technical/tax matters that do not correspond to other functional areas, with general criteria directed to the audit bodies, so as to ensure the homogeneous and coordinated treatment of taxpayers.

- Compilations of regulations, jurisprudence, and administrative doctrine, as well as documents of interest for the performance of audit functions and their disclosure.

d) The coordination and establishment of guidelines for the selection of taxpayers and the actions to be taken within the scope of their functions.

e) The direction, promotion, and coordination of specific inspection plans in its functional area.

Canada: Risk Management

The Canada Revenue Agency (CRA) has historically successfully implemented sophisticated risk-management-based methodologies. In 2010, the Treasury Board of Canada Secretariat (TBS) introduced a Risk Management Framework, which provided guidance and guidelines to strengthen risk management ability across federal departments and agencies.

The Enterprise Risk Management (ERM) program was implemented to ensure that risks and opportunities are addressed from a strategic perspective. It is designed to achieve strategic results through risk management methodologies, including those risks that are beyond the reach of any one line of business and are best addressed horizontally.

Organizationally, in 2005, a Chief Risk Officer (CRO) position was created in the Finance and Administration Sub-department of the CRA. A separate ERM branch was created in 2010, with the position of CRO assigned to the head of the branch. Subsequently, the CRA's Audit and Corporate Evaluation Department and Enterprise Risk Management Department were merged. As a result, responsibilities under the Chief Audit Executive were included under the Assistant Commissioner of the Audit, Assessment, and Risk Sub-Directorate.

In addition, risk management tools, publications, and practices have matured as the program has evolved. For example, the ERM program now runs biannual assessments, issues risk alerts, conducts internal fraud risk assessments, issues risk warnings, and develops tools for self-service use throughout the organization.

The ERM program's crucial frameworks, guidelines, and policies are updated periodically and on an ad hoc basis, in order to reflect evolving standards and the best practices in organizations such as TBS, the International Organization for Standardization, the Committee of Sponsoring Organizations of the Treadway Commission, etc.

The goal of ERM at the CRA is to build and maintain risk management ability across the organization and to effectively manage enterprise risk information.

The CRA's ERM program consists of the Corporate Risk Management (CRM) and the Risk Management Center of Expertise (CoE) sectors, which constitute the ERM Division within the Audit, Assessment, and Risk Sub-Directorate.

The CRM sector facilitates the use of enterprise-level risk intelligence, specifically through the development of the CRA's Enterprise Risk Profile, and ensures that it informs the CRA's planning, decision-making, and reporting processes.

The CoE sector is responsible for providing consulting services, conducting research, and developing risk management tools and methodologies to support and assist clients in their risk management practices.

The ERM program is playing a key role in supporting the achievement of the organization's strategic objectives in an interconnected and changing environment. Indicators such as demand for CoE services, increased subscriptions/downloads of internal risk publications, and feedback (both ad hoc and from surveys) demonstrate the added value provided by the program. The increasing degree of integration of risk management information and processes into strategic planning, investment management, and decision-making at all levels of the CRA has been driven by the recognition of its necessity.

The Government of Canada has acknowledged the CRA's excellency in risk management, with high ratings in the TBS Management Accountability Framework on Comprehensive Risk Management, Planning and Performance. Some studies and advisories on topics such as risk interconnectivity and tolerance have won awards from professional bodies in the fields of audit and risk management. In addition, an autonomous third-party review of the CRA's ERM conducted by Ernst & Young has provided external assurance that the program is using its resources efficiently and effectively. The CRA is regularly invited to speak with foreign governments and is active in multilateral institutions such as the OECD Tax Administration Forum.

7 Strategic Leadership

7.1 Strategic Map

Below, we will provide an overview of the adoption of the Strategic Map and the Process Map[30] in Chile, within the context of risk-based tax compliance management, with the purpose of exemplifying what a similar tool offers in terms of institutional alignment and clear definition of the objectives, axes, and pillars of an institutional roadmap.

The Strategic Map is a graphic tool through which the strategic objectives are identified, as well as the cause/effect relationships between them, which enables the compliance of the general objective previously defined, which is to ensure tax compliance. The strategic objectives show what must be achieved; the cause/effect relationships are the explanation of the link between objectives corresponding to different perspectives or dimensions.

Thus, the objectives of the Institutional Strategic Map of the *Servicio de Impuestos Internos de Chile* (SII) are ordered according to four approaches:

- State.
- Taxpayers and citizens.
- Internal processes.
- Learning and growth.

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30   Strategic Plan Servicio de Impuestos Internos de Chile 2018-2022.

It is important to consider that the Strategic Map, like the Process Map, is a tool that necessarily evolves over time. In the case of Chile, the Strategic Plan is revised annually and is valid for four years.

The Strategic Map[31] is presented below, followed by a brief description of each of the approaches and strategic objectives (2018).

Illustration 50: SII Chile Institutional Strategic Map
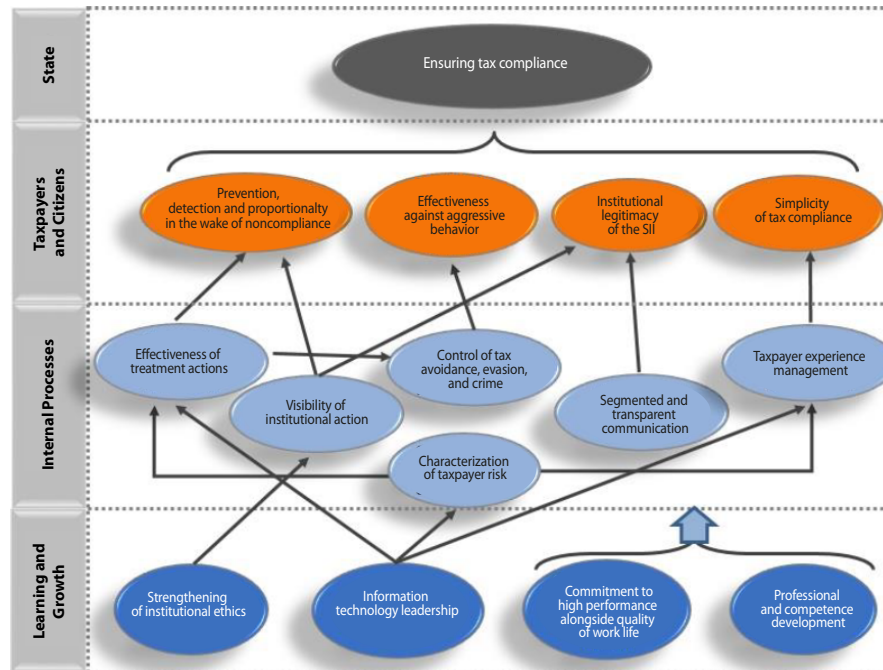
I. State perspective: summarizes the SII's essential role and purpose, in line with those stated in the mission, and guides the relevant management of the institution. It refers to what the state expects.

- Guarantee of tax compliance.

    The objective is to ensure compliance with tax obligations through the exercise of the Service's powers to apply and enforce tax laws in a context of fairness and equality. An increase in collection depends to a considerable extent on the level of economic activity; it is nonetheless a consequence of the stated strategic objective of reducing evasion and avoidance. Moreover, this objective refers to the behavior of taxpayers. That is, it also belongs to the taxpayer-citizen approach, in which it is hoped to minimize tax gaps originating from taxpayer behavior, where exemplary action on ethical issues by those who make up the Service provides legitimacy in demanding good behavior from citizens. For the sake of simplicity, this is represented in a single objective.

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31   Strategic Plan Servicio de Impuestos Internos de Chile 2018-2022.

II. Taxpayers and citizens perspective: refers to the perceptions of taxpayers, and of citizens in general, regarding the Service and its actions. The objectives included in this approach are:

Prevention, detection, and proportionality in the wake of noncompliance: refers to taxpayers' and citizens' adequate perception of the likelihood that the Service will detect noncompliance and act consistently and coherently regarding similar forms of noncompliance. In other words, that there is a perception that taxpayers pay what is fair under the current regulatory framework.

There are two objectives that can be differentiated:

- o Perception of the Service's ability to detect noncompliance: this implies that all taxpayers consider it highly likely that the Service will detect noncompliance, whether voluntary or involuntary.

- o Perception of the Service's treatment of noncompliance: this assumes that all taxpayers consider it highly likely that the Service will act in the full exercise of its legal powers and do so in a proportionate manner in the event of noncompliance, this treatment being in accordance with the nature of the noncompliance and the characteristics of the taxpayer.

- Effectiveness against aggressive behavior.

  This refers to the taxpayers' perception that the Service will severely punish those who fail to comply with the tax law and behave aggressively, and intentionally and repeatedly evade through abuse of rules or simulation.

- Institutional legitimacy of the SII.

  Proper compliance with tax obligations requires that citizens perceive the SII as a state institution, independent of political interests, serious, respected, solid in its technical actions, transparent in its actions, that promotes voluntary compliance, supported by strict adherence to ethical standards by its staff.

- Simplicity of tax compliance.

  Refers to the perception of the taxpayer, based on the facilitating actions performed by the Service. This implies that taxpayers perceive that complying with tax obligations is not bothersome and that the procedures to be carried out are simple and clear. In addition, the Service is continuously monitoring the implementation of best working practices that contribute to the above.

III. Internal processes perspective: identifies the critical results that the SII must generate through its internal processes, in order to produce the desired impact on taxpayers and citizens, detecting and improving the implementation of institutional best practices in the organization.

- Effectiveness of treatment actions.

  Refers to the ability to generate favorable results as a consequence of the application of the audit processes, such as actions to detect and correct tax noncompliance, using proportionate, focused, accurate, and timely treatment according to its risk characterization, and exercising the powers available to the Tax Administration in accordance with the law.

These audit processes generate visibility, so the actions must be effective in their results and perceived by taxpayers and citizens.

- Visibility of institutional action.

  Refers to the visibility of the Service's actions. This implies that the audit and facilitation activities of the Service have a positive impact on the perception of taxpayers in a direct and immediate way. For this, it is necessary to strengthen the Service's communication work, so that its messages are appropriately catered to an audience that it deems meaningful.

- Control of tax avoidance, evasion, and crime.

  Refers to the strengthening of the fight against tax avoidance, evasion, and crime, which seeks to improve the perception of an effective and equitable action by the SII in relation to this type of conduct by citizens. This, through timely and effective audit actions regarding tax avoidance and seeking the application of effective sanctions to taxpayers who have committed crimes and evasive acts, the results of which manifest themselves, for instance, in lawsuits with favorable outcomes for the SII. This control is carried out directly by the Service, or in conjunction with other institutions that also seek to eliminate this type of behavior.

- Segmented and transparent communication.

  Refers to strengthening all communications made by the Service to taxpayers and citizens (both in a general or personalized way) and monitoring its surroundings to detect threats that affect legitimacy. In addition, it seeks to enhance active transparency as an institutional value, strengthen tax awareness, and contribute to institutional legitimacy through appropriate institutional communication.

- Taxpayer experience management.

  Refers to the experience that the SII provides to taxpayers in terms of in-person services, remote services, and those services that are managed effectively and innovatively and are coordinated with other institutions in order to meet taxpayers' needs and increase their satisfaction.

- Characterization of taxpayer risk.

  It is related to the ability to identify and analyze the risks of noncompliance with tax obligations, to determine the causes (both internal and external) that favor their existence, and the taxpayers or segments of taxpayers in which such risks manifest themselves, by establishing treatment strategies in audit and facilitation, based on structural, preventive, and corrective actions.

IV. Learning and growth perspective: identifies the most relevant results, which allow the development of internal processes and the search for best practices, to enable the implementation of the strategy.

The objectives contemplated under this approach are related to human capital (skills, human resource development), information capital (systems), and organizational capital (culture, leadership, ethical behavior).

- Strengthening of institutional ethics.

  The SII requires that civil servants' actions meet the highest standards of behavior, maintaining a high level of motivation and commitment, and supporting institutional legitimacy. Likewise, their conduct must be exemplary in relation to taxpayers and consistent with the institutional mission. To this end, the SII must provide educational support and control mechanisms for their actions.

  Furthermore, it requires its staff to act in a fair, exemplary, and diligent manner, with strict observance of the legal norms that govern their conduct, in accordance with ethics, and to be proactive in the search, disclosure, and implementation of the best work practices that contribute to the achievement of the objectives and the compliance of the strategy.

- Information technology leadership.

  It is related to the SII's ability to manage its own information or that of third parties, establishing mechanisms to ensure its quality, so that it constitutes a solid and reliable basis to guarantee efficient action in the audit and assistance processes.

  Given that information technology plays a key role in this goal, the SII must maintain leadership in this area in order to sustain the effectiveness of its actions over time and contribute to the country's productivity while facilitating its relationship with taxpayers.

- Commitment to high performance alongside quality of work life.

  Refers to excellence in the achievement of institutional objectives by all personnel, regardless of their level of responsibility and their position in the hierarchical structure. To this end, a high-performance working relationship is promoted through the creation of healthy work environments, fostering the comprehensive development of personnel.

- Professional and competence development.

  Has to do with promoting leadership, technical development, and tax expertise. This is generated through the development of a career plan, internal mobility, and knowledge management, which enables the training of personnel to effectively support the development of internal processes.

  Leadership involves the development of high-performance teams, in which managers and supervisors take a leadership role and are responsible for the performance of their teams.

Based on the above considerations, it is clear that the objectives of the four approaches are interrelated. Starting from the top of the map, we can see that the overall objective can only be achieved if the taxpayers have a tax behavior that complies with the correct perceptions of the Tax Administration's actions. Likewise, the actions of the Service can be implemented to the extent that the defined internal processes function correctly. Finally, there must be the necessary persons and resources to support the internal processes.

7.2 Strategic Processes

The Strategic Map is accompanied by a Process Map[32], which graphically and broadly represents all the processes carried out in this institution, and which supports the different approaches of the Strategic Map. The Process Map shows the relationship between macroprocesses and, through its structure, illustrates how the needs of the related agents (external clients) and the services and products delivered to them are solved, grouping them into three types of macroprocesses:

- Leadership macroprocesses.
- Business macroprocesses.
- Support macroprocesses.

Illustration 51: SII Process Map

PROCESS MAP OF THE SERVICIO DE IMPUESTOS INTERNOS

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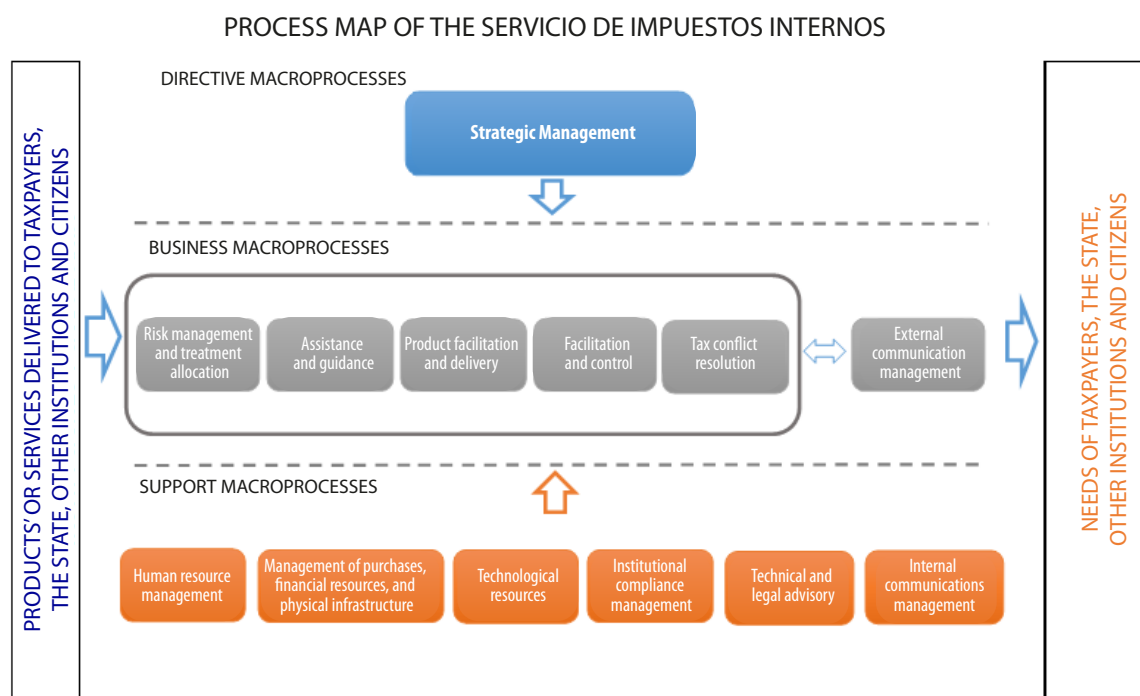
32   Plan Estratégico Servicio de Impuestos Internos de Chile 2018 – 2022.

Having such a map allows the systematic introduction of a taxpayer-centered management approach and is also a tool for making the Strategic Map operational in order to keep its day-to-day functioning dependent or on the strategy. The map helps generate meaning in the organization by identifying which work practices contribute most to the implementation strategy. This generates the results stated in the strategic objectives and promotes the development of new abilities within the organization. This makes it possible to reduce the gaps between the current situation and the strategic objectives pursued by detecting the lack of processes that support the strategic objectives stated in the Strategic Map. Below is a brief description of the main components of the Process Map:

Process: a set of logically related activities that use management resources to deliver defined results in order to achieve business objectives.

Macroprocess: a collection of interrelated processes that generate a well-defined result within the functioning of the institution.

- Leadership macroprocesses: these include processes designed to establish and control the organization's goals. They encompass those that provide guidelines for the other processes, that is, indicate how they should be carried out to achieve the institution's vision, and are led by top management.

- Business macroprocesses: a set of processes that combine and transform resources to obtain a product or service catered to the external client, with high aggregate value. They encompass those that sustain the business's raison d'être.

- Support macroprocesses: these are processes that are not directly linked to the organization's mission but are necessary for all the processes to comply with their objectives and, therefore, are cross-cutting processes for the entire organization.

7.3 Governance of a Risk Management Model

A governance or organizational structure at the strategic level (or even at the tactical level) becomes essential to ensure the correct alignment and implementation of the processes associated with risk management. In the case of Chile, there are three levels of committees in place: strategic, tactical, and operational. Their functions are as follows:

Strategic Committee

- Defining the institutional strategic framework related to tax compliance management.
- Establishing the relevant areas of action, with their respective objectives, indicators, and goals.
- Validating, on an annual basis, a Tax Compliance Management Plan.
- Evaluating the progress and results of the defined strategies and, if necessary, making the appropriate adjustments.
- Monitoring and requesting continuous updates of comprehensive treatment programs.

- Establishing guidelines to enable proper disclosure and understanding of the activities and scope of the Tax Compliance Management Model in the organization.

Tactical Committee

- Defining the lines of action, establishing, in coordination with the strategic lines, objectives and compliance levels that encourage and maximize voluntary compliance.

- Validating the Tax Compliance Management Plan (TCMP).

- Validating the provision of national technical and operational support for the implementation of structural, preventive, or corrective actions.

- Continuously evaluating the defined actions and proposing modifications according to the results.

- Establishing coordination actions with the operational levels.

Operational Committee

- Evaluating the compliance of taxpayers in general and of specific segments of interest within its jurisdiction and propose actions for its increase.

- Monitoring, analyzing, and evaluating progress in the implementation of treatment strategies and actions planned within its jurisdiction.

- Providing or coordinating the provision of regional technical and operational support for the implementation of structural, preventive, or corrective actions.

- Providing regular feedback to the Tactical Committee on the operational implementation of the TCMP.

- Internally disclosing the relevant topics of the TCMP in the regional arena and the main elements that compose it.

In general terms, the Strategic Committee (led by the Director) is conceptualized as the leading entity, while the Tactical Committee and the Regional Operational Committees (in different geographical units) are seen as operational entities. The latter are responsible for the implementation, execution, and feedback on the different treatment actions to manage taxpayer compliance.

To this end, there are various forms of interaction through which the committees should be coordinated. Among them are direct communication between the Executive Secretaries of the different committees, coordinated analysis of meeting minutes, or tools associated with the compliance management process, such as the definition of segments of interest, the definition of specific risks, and the risk matrix, which make it possible to prioritize the tasks entrusted to each team. In addition, there may be other activities that the committees themselves consider appropriate to develop, such as joint working schedules to address related topics.

Despite the formal mechanisms of communication and interaction mentioned here, communication among the Committees may occur whenever deemed necessary. Thus, the Regional Directors may raise issues of regional importance to be presented to the Tactical Committee and, following the same hierarchy, the relevant issues of this Committee will be delegated to the Strategic Committee, which, in turn, will make decisions and order their execution to the different Sub-Directorates, depending on their areas of competence. The latter will be carried out through the respective secretariats.

Chapter 3

The Risk Management Process

III   THE RISK MANAGEMENT PROCESS

1 Stage 1: Risk Identification

This is a process of searching, recognizing, and describing tax noncompliance risks, the which could affect, or even prevent, the achievement of the Administration's strategic and operational objectives. Tax noncompliance risks arise when tax obligations are not fully met.

Illustration 52: Risk Management Process
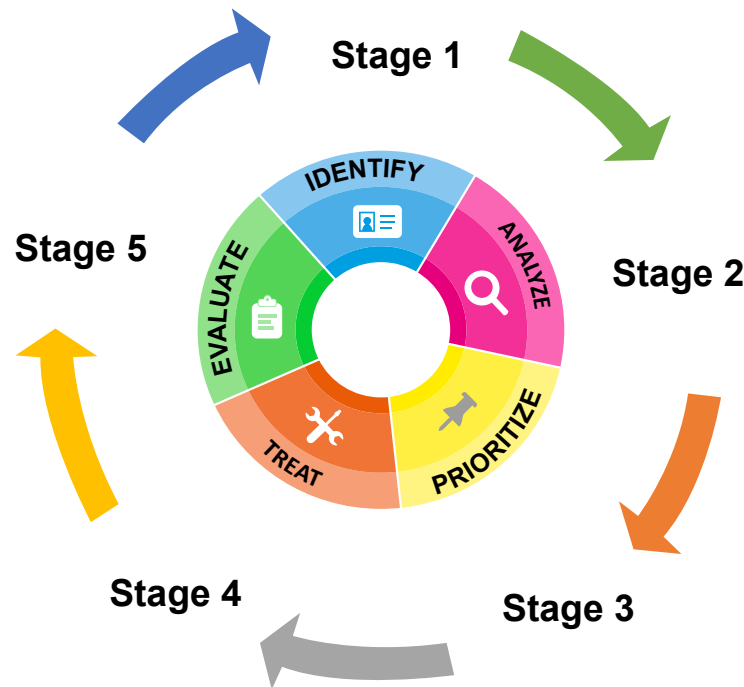
1.1 Process and Sources of Risk Identification

The tax obligation corresponds to the bond established by law between the treasury and the taxpayers (private individual or legal entity). In this context, tax obligations are classified as all those obligations defined in the tax laws and interpreted and regulated in notices, resolutions, and other administrative acts that command, prohibit, or allow a certain response on the part of taxpayers.

Tax obligations can be classified into four main areas: registration, submission of information, declaration, and payment.

Specific, or transactional, noncompliance risks are associated with particular forms of noncompliance and encompass a combination of the probability of these types of noncompliance occurring and the consequences that would be generated if they were to occur. It should be considered that noncompliance with an obligation can be classified into at least three types: not meeting it, meeting it late, and meeting it incorrectly, and, thus, there is a risk in each of these cases.

A relevant source of information for the risk identification stage is the tax obligation catalog.

Illustration 53: Noncompliance Risks with a Tax Obligation
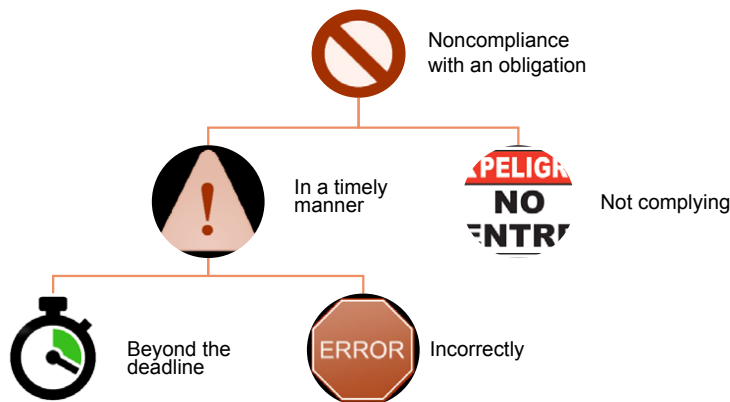
The objective of this stage is to identify the noncompliance risks that are relevant to the Tax Administration and that require further analysis, due to the impact that may be generated as a consequence of the risk.

A Tax Administration must be aware of the noncompliance risks it faces. Risk identification can be performed from the strategic to the operational levels. A more complete understanding of risk will emerge through the adoption of a multi-level approach to risk identification and evaluation.

As we increase the level at which risks are being managed, we must increase the level of knowledge, information sources, and verification of the relevance of the risks identified.

There are several indirect sources of information corresponding to "latent variables", which can show signs of risk and that, in turn, can be used individually or through a combination of these.

Support to Citizens

One source that allows the identification of risks in the process of occurrence is the work of supporting citizens, through organizations in the commercial sector, business associations, accountants, or auditors' associations, among others.

Examples:

- Reports by taxpayers regarding their competence: from this information, it is possible to analyze the attributes and verify whether other taxpayers use a certain mechanism to avoid or evade taxes.

- The establishment of new regulations may create some confusion at the time of their application. The opinions of accountants' or auditors' associations could be identified as possible risks.

Information from other Tax Administrations

The highly globalized markets are an increasing source of tax risks, so information from other Tax Administrations provides valuable insight into risks.

Third-Party Information

The various Tax Administrations' main tax returns usually encompass taxpayers' own information. Therefore, it is essential to compare the information provided by the taxpayer with information from third parties. This comparison can give rise to noncompliance risks.

Auditing Experience

A very important source for identifying risks are the auditors who are in contact with the taxpayer. For this reason, it is necessary to have channels that allow them to make known the risks they consider relevant in their daily work.

Trend Analysis: Macro-Level indicators

Macroeconomic analyses serve to assess compliance trends and to determine whether trends in economic data may indicate changes in compliance levels. They illustrate a relationship between an aspect of compliance and external statistics, which provides a similar reference point that can be used to monitor macro trends.

Illustration 54: Sources for Identifying Noncompliance Risks
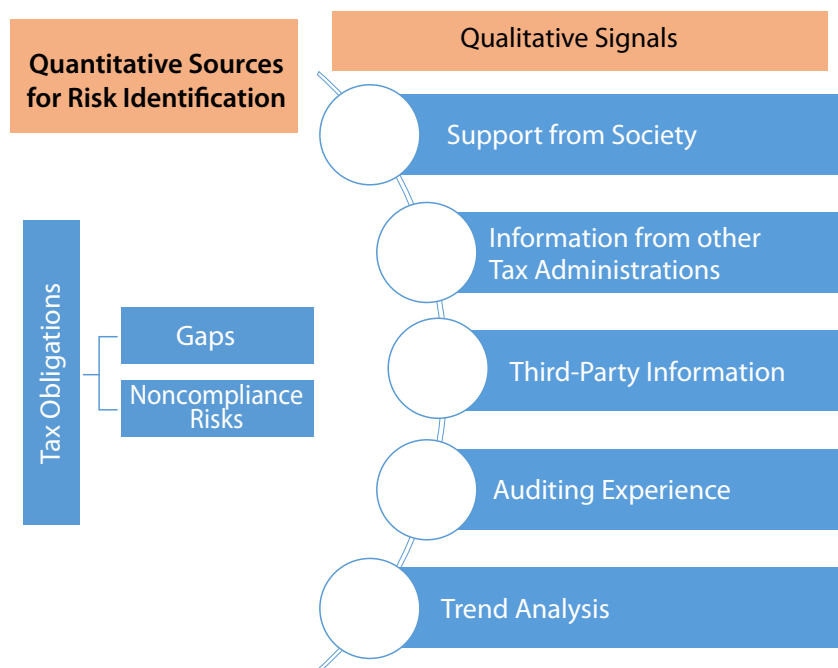
Other Sources

- Taxpayer information: tax returns and financial statements.
- Results of the audit program: the outcomes of audits can be an important source of information.
- Information gathering from taxpayers.
- Evasion reports.
- Media.

1.2 Result of Risk Identification

The result of the risk identification stage is a list of potential risks, which provides information on specific risks, on risky groups of taxpayers or economic sectors, and on how risk is presumed or has been proved to occur. This list is grouped together in a risk catalog, which serves as the basis for the risk analysis stage, in order to support decision-making.

All the risks that the Tax Administration is able to identify must necessarily be part of the catalog. Their mere identification does not explain the impact they generate in terms of exposure. It will be the analytical stages following the identification process that will allow the differentiation of their importance and, consequently, their incorporation in the risk matrix, a deeper analysis of them, and their assessment.

The risk catalog can have the following basic structure:

- Name of the associated tax obligation.
- Brief description of this tax obligation.
- Stage with which the obligation is associated: registration, information submission, declaration, or payment.
- Legal or administrative framework, with explicit reference to the law or administrative instruction related to the tax obligation.
- Existence of a quantitative measurement of the level of compliance with this obligation (compliance gap).
- Noncompliance identified, additionally determining whether it constitutes doing, late doing, or doing incorrectly.
- Description of the risk identified, i.e., the description of the form, tax type, or scheme that is developed or applied to not comply with the obligation under analysis.

  Additionally, it could be interesting to add other detailed information about the noncompliance risk identified in the catalog, for example:

  o Whether the risk affects revenues, costs, expenses, deductions, aggregate tax benefits, credits, or discounts.
  o Whether the risk is associated with a particular segment of taxpayers or could, on the contrary, be related to all taxpayers.

o Whether it is bound to a particular tax regime.

o Whether there are active controls for this risk, without delving deeper into their details or their efficacy, but only their existence.

o The way the noncompliance risk is detected, in the terms established in the previous points.

o Whether it has been detected to have effectively taken place or if it is just a theoretical identification.

The risk catalog is correlated to the obligation map. As mentioned in the previous chapter, the obligation map provides the general context of the obligations to be managed by the Tax Administration. The risk catalog is built on this obligation map, detailing, for each obligation, the risks that may occur, as well as other relevant information or characteristics that facilitate decision-making in a subsequent analysis of the identified risk.

Within this risk categorization methodology, it is necessary to create different risk models depending on the tax obligations analyzed, the control methods to be implemented, the characteristics, and the number of taxpayers to be treated, always under an interconnected structuring pattern that allows for variations and interactions between these different models.

Uruguay: Possible Issuers of Counterfeit Invoices in the New Taxpayers' Registry

In the type of fraud detected, shell companies were created to be registered with the Tax Administration and obtain authorization to issue VAT invoices. These companies were then used in three ways. In the first, documentation and power was given to a person who wanted to perform economic activity, but who did not want to appear in the DGI registries linked to this activity. Thus, a legal company and a "front" (formal holder of the company) were interposed between the taxable events and the actual person responsible for these tax obligations. The second type was to distribute part of the authorized invoice books to different individuals who needed to invoice activities they performed in the illicit market, in order to be able to sell to the taxpayers who required VAT invoices. The third, the most common type of invoice fraud, was simply selling the invoice to reduce the income tax and VAT payable by the acquiring company. In the latter case, there was no economic event to provide evidence to the document.

In all these situations, the invoice is considered fraudulent because in none of them does it correctly reflect the reality of the underlying economic event.

Since the companies existed formally and were authorized to issue invoices that generated VAT credit as evidence, the process of identifying the fraud scheme took several years. This began with specific selections for auditing taxpayers at noncompliance risk with the VAT return, complemented by the information generated by the auditors and the investigations linked to these audits.

The problem that arose when identifying the risk of registering shell companies or companies without economic substance is that the normal analysis processes linked to these risks are carried out a posteriori, after submitting the returns, which, in the case of the DGI, were mostly annual. Therefore, it can take one to two years before the taxpayers involved in the scheme are identified. In cases of fraud, this can make it impossible to recover the defrauded taxes.

In this context, the question was raised of how to identify the risk that a taxpayer was being created for a fraudulent VAT scheme at the time of its registration, which would allow the application of preventive treatments and minimize economic damage.

The practice consists of applying a taxpayer risk rating process for each added registration. The structure of the process sought to minimize the delay that was being added to the process of creating a company, by deciding on a process that occurs every hour in *batch* form and calculates the risk of all taxpayers registered in the previous hour.

The main obstacle to classifying a new taxpayer is the lack of information about them. For this reason, two groups of attributes were defined for risk estimation. The first group is linked to the variables that were in the Administration's power associated with the most relevant historical information in the registry, such as those related to the holders and intervening professionals. The second group is based on variables constructed from the analysis of the cases detected and verified earlier.

Thus, for the first group of attributes, we have variables of different categories associated with them. We use the contamination between the companies and their holders or vice-versa for cases linked to fraudulent maneuvers and the proven participation of professionals for other fraudulent schemes. Specific characteristics of the holders are also studied, such as their personal tax situation, their age, or whether they receive social security benefits that are incompatible with the business activity or that identify them as belonging to socially vulnerable segments.

For the second group, the variables are mainly continuous, calculated using their frequency in the previously tested cases. In this group, we find the type of activity, the domicile, the legal nature, and the state of incorporation of the company as the most important, among others. These are incorporated to others of a categorical nature, defined based on the experience of auditors investigating fraud cases, such as domicile returns by notarial deed, when they can be filed free of charge, with a service invoice.

These attributes are weighed according to experts' assessment of merit, so as to obtain the probability associated with the analyzed risk, classifying the new registrations as high, medium, low, or no significant risk.

The risk consequence was calculated as the mathematical expectation of evasion per fraudulent company created, based on data from all proven cases of evasion.

By combining the probability of occurrence associated with the risk and its expected consequence, it is possible to classify these taxpayers with the general risk rating, which allows the corresponding treatment to be implemented in each case.

2 Stage 2: Risk Analysis and Assessment

At this stage, the noncompliance risks that were identified in the previous stage are analyzed. During this stage, the risks are fully described, considering:

- The information that supports it: the violated tax obligation, the level of noncompliance, and the associated regulations, among others.

- The analysis of the external causes that favor noncompliance, especially those associated with the taxpayer's attitude, influenced by the conditioning factors of the activity they perform, the industry in which they operate, and the economic, psychological, and sociological variables.

- The analysis of internal causes associated with Tax Administration policies and definitions.

- The description of the direct consequences of noncompliance and their evaluation, based on the probability of their occurrence.

In addition, during this stage, we structure and implement treatment actions that aim to tackle such issues in a manner that is proportional to the severity of the forms of noncompliance detected.

To structure the noncompliance risk analysis, it is advisable to use a tool called a "risk template". The risk template allows us to document the noncompliance risk analysis process, serving at least two main purposes:

- Managing institutional knowledge: if the risk that is being analyzed is documented, different officials can use it.

- Promoting a higher level of collaborative work: by documenting the risk, it is possible for other officials to learn about it, provide feedback, and strengthen the analysis as part of a co-creation process.

The structure of the risk template is made up of a series of sections or modules, which ultimately accompany the methodology:

- Tax obligation: this section describes the tax obligation for which the risk being analyzed is identified.

- Target segment: This section identifies and defines the typical characteristics of the group of taxpayers on which the risk analysis is performed.

- Identification of the noncompliance risk: this section describes the specific risk that is being analyzed.

- Causes: this section lists the internal and external causes that would - or could - determine the existence of the risk.

- Consequences: this section describes the impacts associated with the occurrence of the risk and the methodology for their estimation or the attributes to be considered.

- Characteristics: this section describes the profile of the taxpayers whose behaviors represent risks related to those under analysis. This section identifies and details the attributes that were used to determine which taxpayers are considered risky.

- Behavior pattern: this section describes the notable characteristics of the behaviors to be considered in determining the probability of the taxpayers to manifest the risk under analysis. It also identifies and describes the required attributes.

- Attributes: this section lists the set of attributes needed to determine the consequences, characteristics, and patterns of noncompliance risk.

- Treatments: this section lists and describes the structural, preventive, or corrective treatments that may be associated with the noncompliance risk. In addition, a reference to the causes of the risk is considered, so that the analyst has sufficient information to define the treatments, since there must be a correlation between causes and treatments.

An example of a risk template is shown in Appendix III.

The analysis stage will be covered in three sections: declaration of the noncompliance risk, risk analysis and assessment, and, finally, the treatments with their respective allocation policy.

2.1 Risk Declaration

The risk declaration mainly involves detailing the tax obligation that has been violated and that gives rise to the noncompliance risk.

The following are some examples of risks contemplated in Chile's SII catalog that were analyzed:

- Analysis of the risk of not submitting the VAT form: the obligation is to declare the VAT form. Its category of noncompliance would be "Not Complying". The description of the risk is catalogued as *"Taxpayers liable for VAT who do not declare the VAT Form within any of the corresponding deadlines"*.

- Analysis of the risk of not submitting returns on time: the obligation to be considered consists in submitting the return in a timely manner or within the established deadlines. Its category of noncompliance would be "Untimely Compliance". The corresponding risk description is *"Taxpayers who have withheld income according to Article 42, No. 1 of the Chilean Income Law and who declare their tax return late"* (personal tax withheld by employers).

- Risk assessment for VAT tax credit return: the obligation is to correctly determine the VAT tax credit. Its noncompliance category would be "Erroneously Complying". The risk description would be *"Taxpayers using tax credits accrued or withheld on invoices that do not comply with legal or regulatory requirements"*.

At this declaration stage, the regulations associated with the tax obligation must also be determined. As an example, for the risk of not declaring the VAT form, Chilean regulations establish:

Article 64 Decree-Law (DL) No. 825/1974 (Law on Sales and Services Tax): taxpayers subject to the present law must pay, at the respective Communal Treasury or at the banking offices

authorized by the Treasury Service, by the 12th of each month, the taxes accrued in the previous month. In the same act, they must submit a return of the total value of the operations performed in the previous month, including tax-exempt operations.

Article 36 DL No. 830/1974 (Tax Code): the Director may extend the deadline for filing those returns that are made by technological systems and that do not involve the payment of a tax, respecting the deadline for taxpayers and entitling them to a tax refund.

Article 1 of Decree No. 1,001/2006: the deadlines for the declaration and payment of the taxes referred to in Article 64, Item 1, of the Sales and Services Tax Law (...) shall be extended until the 20th of each month with respect to taxpayers who file the corresponding tax returns via the Internet.

Exemption Resolution No. 21/2002: extends the deadline for submitting returns conducted through Form No. 29 ("Declaration and Simultaneous Monthly Payment"), for those declarations that do not involve the payment of taxes and that are submitted via the Internet, until the 28th of the respective month, regardless of whether it is a Saturday or holiday.

2.2 Risk Analysis

This section explains the main aspects of risk analysis, such as the causes that facilitate noncompliance risk (or specific risk), the consequences, and the characteristics and behavior patterns of the taxpayers most susceptible to risk. Based on this information, we can determine the attributes that allow for the assessment of noncompliance risk.

Understanding the triggering factors for specific behaviors is essential to guide the selection of appropriate treatment strategies. More time to analyze compliance behavior allows the tax authority to address the causes of noncompliance rather than treating its symptoms. In this way, long-term compliance is achieved.

Below, the main elements of risk analysis will be differentiated

2.2.1 External Causes

The external causes aim to recognize which factors, situations, or moments favor the occurrence of risk and are linked to taxpayers.

Examples of external causes:

- Lack of knowledge of the regulations and instructions in force for their proper use by taxpayers and tax advisors or intermediaries.
- Taxpayers who are not fully confident about the requirements and conditions for applying exemptions.
- Complexity of the regulations and calculation methodology. The complexity varies according to the type of income to be determined and its origin, e.g., whether or not it comes from a country with which a double taxation agreement is in force. This situation leads to errors, as taxpayers are often confused in the calculation of income and, consequently, in the application of the rules.

- Use of aggressive tax planning, which contemplates the abusive use of agreements on the avoidance of international double taxation (treaty shopping). This situation arises when a resident of a third state interposes an entity in one of the contracting states, with the aim that this entity benefits from reduced rates or exemptions at source that originate in the tax treaties. Rule shopping, on the other hand, is aimed at violating the provisions of the treaty itself, not at obtaining its application. It is a problem of income rating.

- Low perception of control by the taxpayer regarding the coverage of the audit carried out by the tax authority.

- Taxpayers who delegate their passwords and emails to their accountant, intermediaries, or third parties, due to difficulty in understanding the form, unfamiliarity with the tax system, or lack of time, without considering the outcome of this on their return.

- Low level of awareness of social responsibility on the part of the company regarding the contribution it should make to the treasury and the importance and use of taxes.

- Taxpayers who consider the VAT paid by their clients as part of their business cash flows and use it to conceal other expenses or obligations.

- Denial of the usefulness of the tax system due to distrust of the efficiency of public spending, ignoring the benefits it presents.

2.2.2 Internal Causes

These are the activities, processes, policies, practices, definitions, or other factors adopted within the Tax Administration that favor the occurrence of a risk. For example:

- Lack of clarity in communications between the Tax Administration and the taxpayer, e.g., ambiguous or open to misinterpretation, whatever the means or purpose of the communication, among them letters, emails, messages on online platforms, brochures, manuals, rulings or administrative jurisprudence, and any administrative act that generates obligations or instructs procedures.

- Notifications of administrative acts arising from review processes carried out within the period of the statute of limitations. The principle of timeliness must be considered when generating administrative acts.

- Delay in processing information received from third parties.

- Absence of programs designed to review relevant issues.

- Lack of clarity in legal norms and administrative instructions.

- Lack of completeness and timeliness of information from external sources.

- Poor efficacy of communication to taxpayers, e.g., letters to encourage compliance by VAT filers sent to non-filers of the respective form.

- Poor disclosure of how the technological tools provided by the Tax Administration work.

- The rules in force do not establish barriers to entry for taxpayers who have had poor tax behavior when they restart activities or set up new companies.

The Effect of Legislation on the Causes of Noncompliance[33]

One of the causes that favor risk opportunities is the complexity and ambiguity of norms. If the population perceives that the norms are unfair or inappropriate according to the customs of the community, the trend towards noncompliance inevitably increases.

If taxpayers do not understand what their obligations are, any intervention to get them to comply will be perceived as unfair. Therefore, a first stage to consider when dealing with noncompliance is to review whether stages have been taken to make the obligations clear, easy to understand, and simple. If the law is not easy to understand, instructions or tools can be generated to facilitate compliance. For example, the adoption of pre-filled VAT or income tax returns, where the taxpayer must only confirm their content (relying on the tax return provided by the Tax Administration with the available information) or correct it if there are other transactions or income.

It should be noted that, in certain cases, the most sophisticated taxpayers evaluate the rules in detail in order to identify gaps that can be used to apply criteria that result in tax savings, arising from interpretations that may go against the essence of the rule or that are justified in business structures or operations that lack substance, consistency, or transparency. This gives rise to avoidance schemes that attempt to mitigate the general anti-avoidance rules (GAAR) or the specific anti-avoidance rules (SAAR).

2.2.3 Characteristics of the Taxpayers

Encompass the most important distinctive attributes associated with taxpayers who manifest a certain risk, by identifying a group of taxpayers who, given these characteristics in common, manifest the risk more frequently. Such characteristics may occur because of their economic sector, geographical location, tax regime, type of business, type of exemption to which they are entitled or use, number of employees, number of branches, or other attributes that distinguish them and allow them to be grouped with other similar taxpayers.

For example, for taxpayers belonging to the category "Forestry, Logging, and Related Services", given the risk of including in a return expenses not related to revenues, the description of the characteristics of the taxpayers who manifest the risk could be: "taxpayers who register economic activity of forest exploitation, forestry services, or logging services, that are limited liability companies or close corporations that are present - directly or through branches - in regions where such activity can be developed".

2.2.4 Behavior Pattern

Refers to the activities or conduct of the taxpayers in incurring, preparing, committing and/or concealing the noncompliance.

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33   OECD, GUIDANCE NOTE; Compliance Risk Management: Managing and Improving Tax Compliance, October 2004, p. 43.

Examples of behavior patterns:

- Risk of incorporating false invoices to unduly increase the VAT tax credit: this pattern of behavior can occur with "taxpayers who present a much lower debit-credit ratio than the average of their segment and who register in their purchase ledger invoices for amounts much higher than the average value of the invoices that support their credits. This registering is done at the end of the purchase ledger and on the last days of the month. They tend to be low-capital, short-lived companies, with anomalous invoicing levels".

- Risk of underreporting tax debt: this pattern of behavior may occur with taxpayers who:
  - Have annual VAT debit below the lower limit of the average of similar taxpayers.
  - Show significant credit note amounts in relation to the total debit reported.
  - Declare no movement after declaring a month with a certain high VAT code on the VAT form.
  - Stamp or request document sheets associated with sales and declare the VAT form with no movement or a small number of documents issued.

- For the risk of not declaring the VAT form:
  - Taxpayers who previously failed to file a VAT form return in one or more periods within a tax year.
  - Taxpayers who stamp documents subject to VAT and then fail to declare them.
  - Taxpayers with no debt who declare themselves with no movement and later abruptly stop declaring.
  - Taxpayers who have debt but do not report it on their annual income tax form.
  - Taxpayers who share a legal representative or partner and have poor tax behavior.
  - Taxpayers who request an adjustment to the payment of taxes in previous periods and do not register the payment.

2.2.5 Consequences of Noncompliance

This section refers to the effects that can be caused by the occurrence of noncompliance or risk. These consequences can affect three areas: tax collection, the taxpayer's environment, and the image of the Tax Administration.

In general terms, consequences are the effect on the national treasury of the occurrence of a noncompliance risk.

Examples of consequences of noncompliance risks:

- Risk of underreporting tax debts: to quantify or estimate this risk, data declared in previous periods and obtained from electronic tax documents can be used, and then contrasted with third-party information needed to determine tax differences. In this case,

by not relying on third-party information, it can be assumed that taxpayers with a higher monetary volume of transactions could affect tax collection more severely.

- Risk of underreporting of fees (remuneration of self-employed individuals): the consequence variable can be determined as follows: groups by profession, age, and gender. Based on age, four categories were generated: less than or equal to 30 years old, between 30 and 40, between 40 and 50, and over 50 years old. For gender, two categories were identified, and for profession, 18. For each of the possible combinations, an average income is generated from the sum of the income received and declared by independent professional taxpayers with the number of taxpayers who make up the category.

  This average is compared to the individual information for each taxpayer in order to calculate the discrepancy between the amount declared by the taxpayer and the target group average. This discrepancy is allocated as a consequence of the risk, whose values range from negative to positive, depending on its level of severity.

- Risk of underreporting of income tax on individuals (in Chile called Global Complementary Tax): this tax applies exclusively to private individuals, to the extent that they have received income from different sources (interest, dividends, profits from the sale of shares or mutual funds, salaries, among others). For the calculation of the consequences, information from electronic tax documents, information provided by third parties, purchases of real estate, remittances of foreign currency, investments, purchases of new and used vehicles, among others, can be used in view of the acknowledgement of revenues in the income tax return.

- For the risk of underreporting of first-category income in the Income Tax Form, the consequence is a lower tax base, which affects the tax calculation. This difference is estimated with the taxpayer's electronic tax documents, third-party information, and Form 29 information alongside what is declared on the income form. In this way, it is possible to produce a general, basic, semiformal estimate of the underreporting.

2.2.6 Assessment of the Noncompliance Risk

The assessment depends largely on the knowledge and judgment of the personnel in charge of this task, who must understand the potential events and the context.

For the assessment of noncompliance risk, access to sufficient information and data is required in order to determine the attributes, on which the quality and tax intelligence applied to the analysis will depend. Some examples of available information are taxpayer returns, information declared by third parties, electronic invoices, balance sheets, public data, personnel experience, audit feedback, newspaper alerts, information from courts of justice, among others. More details on the existence, availability, and quality of information are provided in the previous chapter.

On certain occasions, it is necessary to obtain more information for the analysis of noncompliance. To this end, actions called risk reviews are conducted, e.g., pilot studies on random sampling, which aim to analyze and deepen the knowledge of specific risks, whether new or previously characterized, by investigating the causes that promote their occurrence, as well as the profile and behavior of the related taxpayers, the business developed, the processes, the environment, among other factors. Usually, these reviews use channels similar to preventive or corrective

treatments, and their objective is focused on two aspects: investigating the risks that have not been addressed and strengthening the process of risks that have already been detected and studied.

To adequately address the assessment of specific risks, it is necessary to define attributes that make it possible to establish the probability that a tax noncompliance will occur and the consequences that this would have, both variables being determinant in the risk value.

An attribute is defined as any behavior, quality, or distinguishing characteristic of the taxpayer, whose properties may fluctuate and are capable of taking on different values. Attributes must be measurable. With the aim of structuring the attributes, a tool called the "attribute template"[34] was designed, which concentrates the necessary information for their construction.

For each noncompliance risk, an "input variable" must be considered. This involves determining which taxpayers will be subject to the calculation of the attribute. In general, this corresponds to the liable taxpayers whose noncompliance risk must be scaled.

Once the attributes and their respective weights have been determined, the distinct levels of probability and consequence for each taxpayer under analysis must be established. It is important to note that the noncompliance risk will be calculated or assessed by associating probability and consequence components for each of the liable taxpayers susceptible to the noncompliance risk to be assessed.

2.2.6.1 Probability

The objective of this activity is to determine or estimate the probability that the analyzed noncompliance risk will occur for each taxpayer. The quality of the estimate will depend on the estimation method/technique used. Section II outlines various methods through practical examples that could be used.

The probability of a given risk occurring is calculated using general acceptance techniques, which can be divided into five levels. This is undoubtedly a criterion that can vary for each Tax Administration and is ultimately part of its risk management policy. However, the following levels are listed by way of example:

- Rare: the probability that a risk will occur is highly unlikely. Probability less than 5%, for instance.

- Unlikely: the probability that a risk will occur is low. Between 5% and 20%, for instance.

- Moderate: The probability that a risk will occur is similar to the probability that the risk will not occur. Between 20% and 80% probability, for instance.

- Likely: it is estimated that, in the vast majority of cases, the underlying risk will occur. Between 80% and 95% probability, for instance.

- Very likely: there is almost certainty that the risk will occur. A minimum probability of 95%, for instance.

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34   See "Appendix II: Attribute Template".

To assess taxpayer-specific risks, various methodologies can be used, ranging from the use of frequencies in risk attributes to more complex techniques based on data mining and statistics, such as those described in Section II. Probability attributes arise from the analysis of the causes, characteristics, and patterns of behavior that constitute the noncompliance risk.

Illustration 55: Risk Assessment Techniques
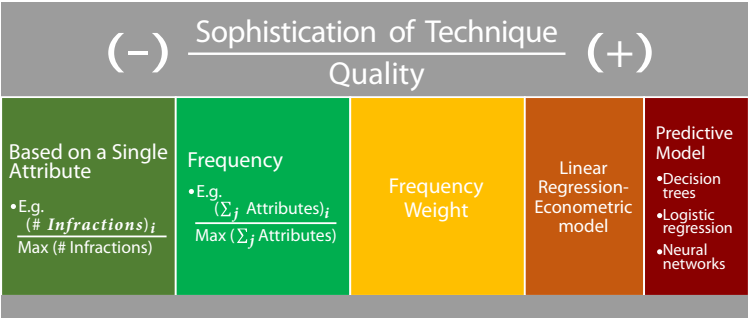
Estimating the probability of a specific risk uses techniques similar to those developed to measure taxpayer risk. The difference lies not in the methodology, but in a specific phenomenon that may have specific attributes.

2.2.6.2 Consequences

To measure the consequences of a noncompliance risk, it is important to define which variable best estimates the damage that such a violation produces in the tax system. For example, if we are evaluating the underreporting of tax debts, one option to measure its consequences would be to use the difference between what is declared and an average declaration value of similar taxpayers.

The consequence of any noncompliance risk can be classified into five levels, which are defined as:

- Low: the effect of noncompliance does not represent a relevant threat to the objectives of the Tax Administration.

- Medium: the occurrence of the underlying risk hinders the achievement of the Tax Administration's objectives, making it difficult for them to be met.

- High: the possibility that the underlying risk will occur makes the achievement of organizational objectives severely hampered.

- Very high: its occurrence significantly impairs or seriously influences the achievement of the Tax Administration's objectives, ultimately preventing them from being met.

- Extreme: has a widespread effect on the objectives of the Tax Administration, sustaining itself over the long term.

One of the most important challenges in risk management concerns the assessment of consequences. When we talk about differences in tax calculation, whether certain or estimated, there will be, in the vast majority of cases, an algorithm and a mathematical error to determine a result. However, when we talk about reputation or image, the estimation of consequences becomes much more complex. Nevertheless, it is always important to determine the consequences that can be monetized, even if they are purely managerial in nature.

It is also important that the consequences are standardized, so that all noncompliance risks are classified in similar ranges so that they are comparable. This is vital when it becomes necessary to prioritize risks. Therefore, it is important to compare and scale similar units of measurement. In this case, a methodology that has been shown to be relatively effective consists in determining the consequences of all available noncompliance risks over a period of time, verifying their consistency with tax collection or other indicators, and based on this procedure, defining quintiles or analyzing other forms of distribution.

A similar situation occurs when determining probability, where, for instance, explicit probability ranges are used to facilitate management decisions on comparable problems.

Based on the rating of the consequences and the determination of their probability of occurrence, the assessment levels of specific risks are configured in terms of the following illustration, which is called the 5x5 Matrix, and which graphically shows the outcome of the assessment of noncompliance risks:

Illustration 56: 5x5 Matrix: Assessment Levels of Noncompliance Risk

PROBABILITY OF OCCURRENCE

CONSEQUENCES	RARE	UNLIKELY	MODERATE	LIKELY	VERY LIKELY
EXTREME	HIGH	HIGH	SEVERE	SEVERE	SEVERE
VERY HIGH	HIGH	HIGH	HIGH	SEVERE	SEVERE
HIGH	SIGNIFICANT	HIGH	HIGH	HIGH	HIGH
AVERAGES	MODERATE	MODERATE	SIGNIFICANT	SIGNIFICANT	SIGNIFICANT
LOW	LOW	LOW	MODERATE	MODERATE	SIGNIFICANT

This configuration of the various levels of noncompliance risk established in the 5x5 matrix must be determined for each taxpayer under study, in order to subsequently establish the corresponding treatment actions. In this sense, for each taxpayer for which a specific risk has been determined, the assessment process allocates a probability and a consequence, which implies that each taxpayer will be located in one of the quadrants of the 5x5 matrix.

2.2.6.3 Examples of Noncompliance Risk Assessment

The following is an example of a noncompliance risk assessment that uses the frequency method to calculate probability. Of course, more sophisticated techniques can be applied, based on the same information. However, the goal is to demonstrate that simple solutions can be applied to complex problems. In addition, the level of complexity of the assessment is directly and proportionally related to the tools and data analysis skills of the professional SII teams in Chile.

The risk to be assessed is the *"inheritance tax underreporting risk of the high-net-worth segment"*.

In Chile, inheritance tax is established by Law No. 16,271, on Inheritance, Allocation, and Gift Tax, and must be analyzed in conjunction with the provisions of Book Three of the Civil Code ("On Inheritance upon Death and on Inter Vivos Gifts" (Art. 951 et seq.). Unlike other taxes that are declared "directly", right after the event that generates the tax obligation has occurred, in this case, prior to filing the tax return, it is necessary to define who the heirs of the deceased will be through a procedure known in Chile as "effective possession", * which is performed in other state institutions, depending on whether it is an inheritance is testated or not.

Only after this procedure has been validated are the taxpayer(s) (heirs or successors) in a position to file the corresponding inheritance tax return.

The following table shows the probability attributes for the risks:

Table 16: Attributes for Risk Assessment

Attribute	Name
1	Estate of the deceased.
2	Taxpayers who have tax advisors regarding inheritance issues.
3	F22 non-declaration gap.
4	Purchase of shareholdings by family members with value freely determined by the parties.
5	Global Complementary Income Tax* reduction prior to death.
6	Annuity contracts.
7	Establishment of foundations.
8	Taking out guaranteed monthly income insurance, leaving anyone as an heir.
9	Disposal of shares in publicly traded corporations.
10	Creating business partnerships with children or grandchildren.
11	Sale of goods for less than market value.
12	Sale of "bare ownership" of real estate (sale of the ownership, while maintaining usufruct (use and enjoyment).
13	Assets located abroad.
14	Asset transfer.
15	Use of atypical foreign tools.
16	Disposal of assets by inter vivos acts that diminish the assets of the inherited estate.

For each attribute, a "weight" or value can be defined, which make it possible to differentiate taxpayers. For example: Attribute 1: estate of the deceased.

Table 17: Weights of each Attribute, with Ranges expressed in Currency Units (Chilean Pesos)

Level	Range Start	Range End	Attribute Value
1	0	72.193.948	1
2	72.193.949	137.149.473	1
3	137.149.474	300.000.000	2
4	300.000.001	600.000.000	3
5	600.000.001	1.500.000.000	3
6	1.500.000.001	3.500.000.000	4
7	3.500.000.000		6

According to distribution graphs, histograms, or other tools, risks can be distributed according to the number of attributes in the five probability levels: rare, unlikely, moderate, likely, very likely.

For this example, the calculation of the total number of attributes for each taxpayer was used and the calculation of the five levels was performed based on the following attribute histogram.

Illustration 57: Sample Frequency Graph
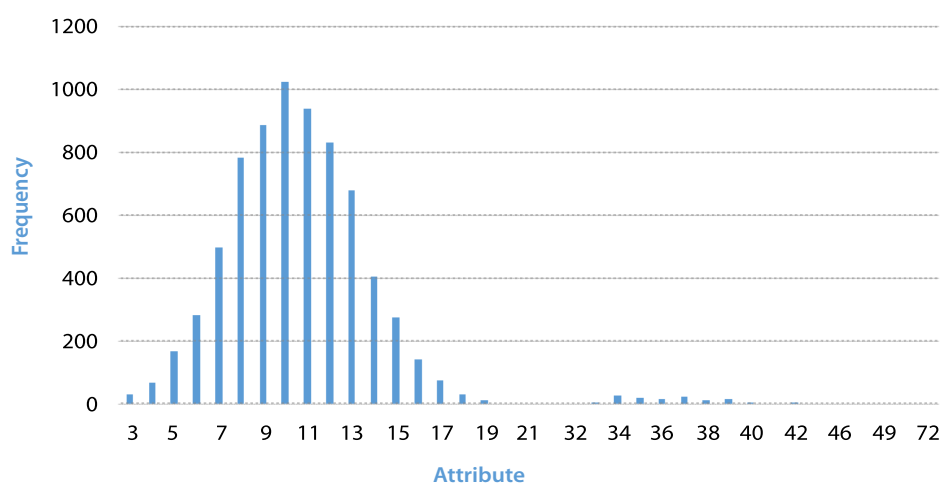
The horizontal axis shows the number of attributes (measured as the sum of their values or weights) and the vertical axis represents the number of taxpayers associated with each number of attributes. As will be described in the next section, with this distribution, it is possible to establish "cuts" on the horizontal axis, which make it possible to establish severity categories.

Probability:

Having analyzed the histogram, the probability was allocated according to each level.

Table 18: Categories Associated with Attribute Aggregation

Level	Start	End	Probability
Level 1	0	7	Rare
Level 2	8	9	Unlikely
Level3	10	12	Moderate
Level 4	13	14	Likely
Level 5	15		Very likely

Consequences:

The definition of a variable makes it possible to measure the impact on tax collection of noncompliance with the specific risk under analysis. In this case, the variable used is the payment of inheritance tax as determined by the SII, and the distribution is as follows, according to the analysis of information on the five levels of consequences (low, medium, high, very high, extreme).

The consequences were distributed as follows:

Table 19: Distribution of Consequences (Currency Units)

Level	Range Start	Range End	Attribute Value
Low	0	10.000.000	0
Moderate	10.000.000	30.000.000	1
High	30.000.000	100.000.000	2
Very high	100.000.000	500.000.000	3
Extreme	500.000.000		5

Note: the table shows the value that the attribute assumes (between 0 and 5) depending on the value of the consequences (inheritance tax payment). Therefore, if the payment of inheritance tax is between 30 million and 100 million, the attribute will have a value of 2.

Finally, by calculating the probability and the consequence, we obtain the noncompliance risk matrix for 7,318 taxpayers.

Table 20: Noncompliance Risk Matrix. 5x5 Matrix

Consequences	Rare	Unlikely	Moderate	Likely	Very Likely	Grand total
Extreme		12	81	53	201	347
Very high	77	326	542	238	176	1.359
High	370	610	865	308	109	2.262
Moderate	357	441	815	297	101	2.011
Low	249	282	493	191	124	1.339
Grand total	1.053	1.671	2.796	1.087	711	7.318

The following table shows the rating of the noncompliance risk for each severity level:

Table 21: Noncompliance Risk Rating

Rating	No. Taxpayers
Severe	749
High	2.849
Significant	1.707
Moderate	1.482
Low	531
Grand total	**7.318**

Example using a Decision Tree:

The following example is of the risk called: "Incorrect Determination of the Income Tax Base". A specific case concerns a set of taxpayers using a particular exemption. The method used is the decision tree. The illustration below shows the process used to define this model.

Illustration 58: Example of "Incorrect Determination of the Income Tax Base" Risk

Information Compilation	Formulation of Analysis Elements	Analysis Based on Expert Perspective	Cleaning of Attributes and Objective Vector	Frequency and Predictive Modeling	Evaluation of Results and Final Report
• History RLI F22 TA 2011-2014 • N+1 • N+2 Events	• Tax base RLI • Selective and massive • Income per RLI and/or loss	• OFR Case Analysis • OFR Report • Proposal of new attributes	• Creation of new attributes • Formulation objective vector • Good/bad case identification	• Formulation of attribute table • Frequency model • Predictive model	• Analysis of results among models • Weighting • Probability/Impact

The decision tree is a predictive rating technique consisting of a hierarchical, sequential division of a problem, where each such division or node graphically describes the possible alternatives and hence the outcomes of different combinations of decisions and events. Each event is allocated probabilities, and each branch is allocated an outcome.

Table 22: Business Rules Used to Construct a Decision Tree

N°	Attribute Description
1	Expenses not related to revenues that generate taxable net income
2	Reorganizations (mergers, divisions, etc.)
3	Loss due to price-level restatement (inflation adjustment)
4	Very high adjustments to net income (criterion of "very high" to be defined)
5	Adjustments to NFSI (net foreign-source income) for foreign tax credit limit
6	Variation of high adjustments
7	Loss due to low consumption
8	Taxpayer leaving Large Taxpayer Jurisdiction in last two years
9	Taxpayers who increased in size in last two years
10	Accountant has at least four other taxpayers

The business rules used to construct the tree graphically:

Illustration 59: Decision Tree Obtained for the Case Under Analysis
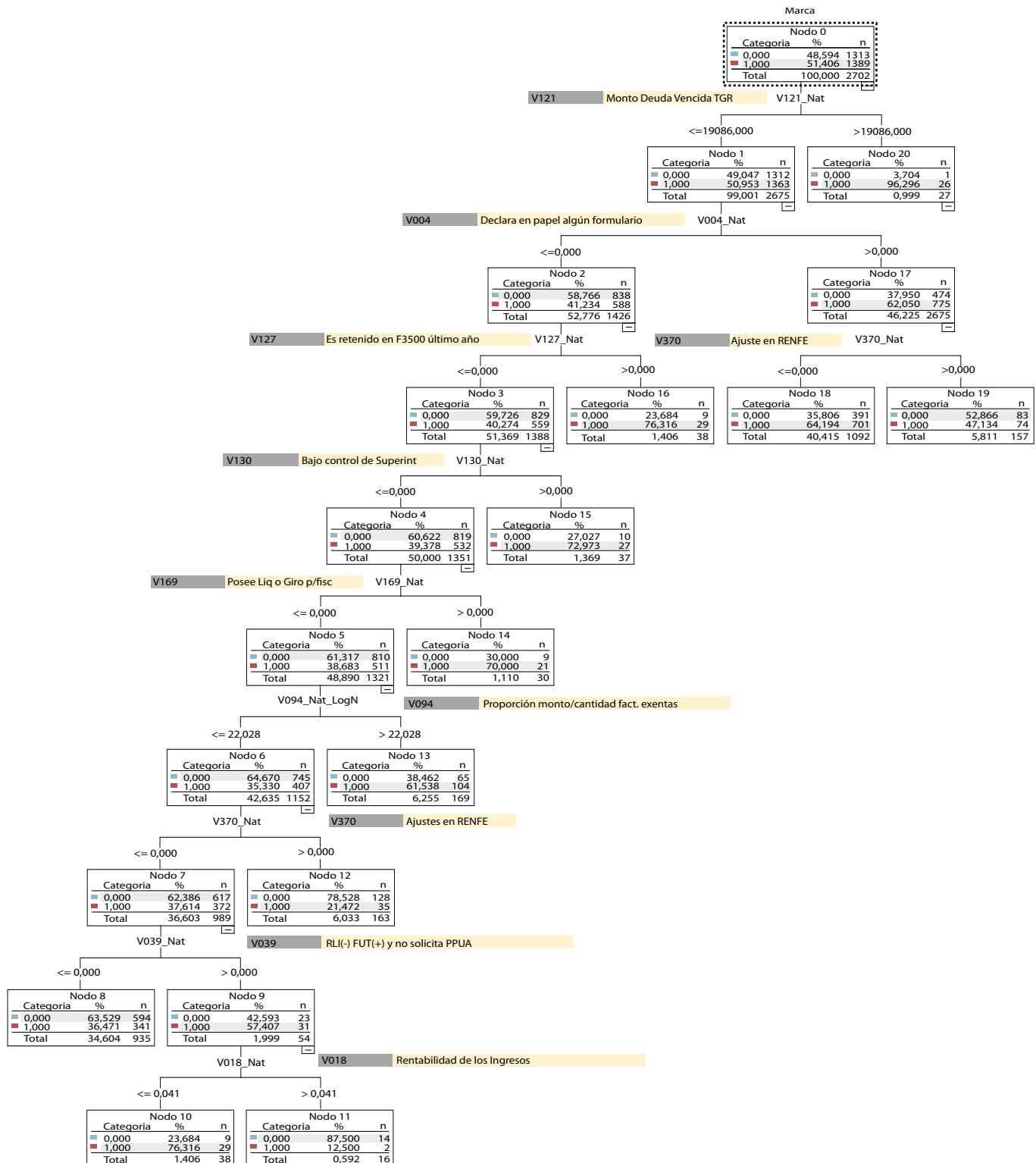
This illustration is only available in spanish.

The noncompliance risk assessment matrix is presented below:

Illustration 60: A Different View of the 5x5 Matrix (Currency Units)

	Square 8	3	Square 10	1	Square 121	4	Square 123	6	Square 25	15
Very High	22.98%	$22,984,899,305	42.71%	$20,734,079,454	72.33%	$99,682,392,521	87.78%	$26,407,914,593	100.00%	$44,012,342,500
	Square 7	1	Square 9	11	Square 18	18	Square 22	22	Square 24	21
Very High	26.28%	$ 2,227,978,984	50.43%	$ 4,015,489,237	72.76%	$ 4,027,613,578	86.88%	$ 3,908,324,820	100.00%	$ 4,763,782,690
	Square 5	4	Square 6	13	Square 17	16	Square 19	23	Square 20	19
High	24.75%	$ 571,086,392	44.87%	$ 917,092,276	72.71%	$ 877,470,493	86.80%	$ 845,764,341	100.00%	$ 995,363,525
	Square 2	6	Square 4	7	Square 12	11	Square 14	19	Square 16	9
Medium	11.60%	$ 239,586,589	49.02%	$ 215,447,150	72.90%	$ 217,503,168	86.68%	$ 209,257,323	100.00%	$ 231,584,402
	Square 1	13	Square 3	11	Square 11	8	Square 13	9	Square 15	4
Low	18.24%	$ 38,469,230	54.66%	$ 22,695,408	73.21%	$ 54,204,958	87.36%	$ 42,581,285	100.00%	$ 38,002,076
	Rare		**Unlikely**		**Moderate**		**Likely**		**Very Likely**	

Consequences (vertical axis) — **Probability** (horizontal axis)

Colombia: Scenario in the Gold Mining Sector Using Network Technique

It is of great interest to the *Dirección de Impuestos y Aduanas Nacionales (DIAN)* of Colombia to recognize patterns and decipher atypical behavior based on information that allows it to recognize those companies or individuals that do not comply with legal obligations. However, it is observed that fraud schemes are often repeated, but with minor modifications. In other words, the patterns of evasive behavior continue, and fraud-generating agents use other types of companies, since those detected have been gone bankrupt or have disappeared. This becomes particularly severe when it involves tax refunds or schemes that border on illegality.

In Colombia, it is not feasible to analyze the dynamics of the informal economic sectors using traditional methods. This is due to the way they operate, which are often associated with organized crime and money-laundering structures.

This gave rise to the need for a more emphatic approach to dealing with risk, in order to better focus control actions in this area.

Network theory essentially examines the relationships between nodes (points or vertices) and links (connections or edges). Two types of links are shown: legal and transactional ones. The former is related to accountants, legal representatives, tax auditors, property owners, among others. The second is related to purchase and sale transactions or to revenues and expenses.

In 2016, the surveillance of risk nodes in the gold mining sector began to be carried out predominantly by means of network theory. This methodology is still being used today. Its goal is to determine the nodes (individuals or entities) that are highly risky within a structure, such as advisors, "contamination agents", or agents strongly linked to other risky nodes in a structure.

To address the methodology of network theory applied to a specific sector, the analysis of suppliers detected as fictitious. In Colombia, the *Subdirectorate of Tax Audit of the Dirección de Impuestos y Aduanas Nacionales* (DIAN) publishes a list of taxpayers in mass media to announce the rejection of costs and expenses for those who conduct transactions with fictitious suppliers. Within this group, those with operations in the gold mining sector are examined. First, the legal representational links to expand the group of companies determined in the initial phase are investigated. In other words, it is understood that the underlying evasion emerges as the pattern of behavior of the companies initially published is expanded to include others - and contaminates them - through legal links, replicating the fraudulent behavior and integrating in that process business partners who carry out simulated purchase.

2.2.7 Treatments

The identification, analysis, and assessment of noncompliance risks are aligned with what is established by tax compliance management in terms of deepening the knowledge of taxpayers and the causes that explain noncompliance with tax obligations. In turn, these elements are the necessary input for an adequate allocation of treatment actions in order to mitigate such noncompliance risks.

For this reason, treatment actions comprise different activities related to facilitation, simplification, assistance, and audit, in order to improve compliance levels and taxpayer behavior.

To categorize the different treatment actions according to their scope and purpose, the following rating of treatments is considered, for simplicity and convention: structural, preventive, and corrective.

2.2.7.1 Structural Treatment Actions

Encompass those actions aimed at resolving tax behavior situations in a general and cross-cutting manner, with the aim of transferring, eliminating, or significantly reducing the probability that a noncompliance risk will arise. Usually, this type of treatment action contemplates changes in legislation, the adjustment or creation of computer platform systems that eliminate an obligation or significantly simplify it, the simplification or restructuring of administrative procedures, the creation of new teams and roles, among others.

Peru: Implementation of Payment Systems to Improve VAT Collection

The implementation of such a system was motivated by the following observations:

- Low levels of VAT collection that are not proportional to the growth or participation of some sectors of the economy.

- Limited resources, which makes it impossible to control a large number of taxpayers who do not declare all their sales.

- The existence of strategically located taxpayers in the production or distribution chain.

- A concentration of purchasers or suppliers in some specific economic activities.

- The existence of control points for the transfer of goods, which are used to guarantee part of the tax payment.

Thus, the following regimes and systems were implemented or updated between 2002 and 2003:

- Withholding and Collection Regime: 2002

- Tax Obligations Payment System (TOPS): 2003

The main objective of the Withholding and Collection Regimes, as well as of the TOPS, is to seek an improvement in the levels of VAT collection in a more efficient way, by identifying the taxpayers called third parties, which, strategically, could be better controlled either by their location in the production or distribution chain, by the degree of concentration of the economic activity they conduct, by the degree of reliability of the third parties to be controlled, among others, and to count on information that allows the construction of risk variables and the identification of taxpayers who would be underreporting their sales.

- Withholding Regime: applicable to operations of acquisition of goods, services, or construction contracts and the initial sale of real estate taxed with VAT. It is applied when one intends to control and ensure the payment of VAT to the suppliers of large purchasers. These large purchasers are designated by the *Superintendencia Nacional de Aduanas y de Administración Tributaria (SUNAT)* of Peru as Withholding Agents. Therefore, at the time of purchase, they are obliged to withhold and pay to the treasury the part of the VAT transferred to them by some of their suppliers. On the other hand, the withholding taxpayers (suppliers) can apply this withholding as a credit for the VAT they must pay on sales for the period.

- Collection Regime: applicable to the operations of acquisition of liquid petroleum-based fuels taxed with VAT, as well as to the final importation and internal sale of movable goods. It is used when it is necessary to control and ensure the payment of VAT by those taxpayers who, in general, sell goods to final consumers and acquire such goods from large suppliers or are importers. These large suppliers are designated by the SUNAT as Collection Agents. In the case of importation, it is the SUNAT that acts as the Collection Agent at Customs. Consequently, at the time of sale, the Collection Agents are obliged to charge their clients an additional amount, which would correspond to the VAT that will be generated by their clients in future operations. This amount is subsequently handed over to the treasury by the Collection Agent. Likewise, this additional amount (called collection) can be applied by the liable taxpayers as a credit for the VAT that they must pay on their future sales.

- Tax Obligation Payment System (TOPS) of the Central Government (also known as the Withholding System): this system is applicable to the sale of goods and the provision of services. How it works is that the purchaser of the good or user of the service subject to the system must subtract (decrease) a percentage of the sales price and deposit it in a special account, authorized by the Banco de la Nación, in the name of the supplier of the good or provider of the service. The supplier exclusively uses this payment to pay the taxes owed by them.

2.2.7.2 Preventive Treatment Actions

These actions aim to promote higher levels of compliance and to prevent noncompliance with a tax obligation from occurring. They can consist of simplification, facilitation, training, education, and compliance promotion actions, both remote and in-person. Examples of these actions are informative lectures, preventive messages, and graphical materials. Furthermore, dissuasive actions are considered to be aimed at taxpayers whose operations or transactions are considered of high risk and tax impact, such as the use of information from electronic tax documents to generate monthly tax return drafts for taxpayers.

Ecuador: Risk Reduction Measures through Preventive Actions

Beginning in 2010 and prior to the units' handling of risks, a greater focus was given to the importance of taking risk reduction measures, which are intended to reduce the number of taxpayers to be controlled as the risk occurs.

This is a strategy that involves gaps, segments, and risks. It is evaluated together with the treatment of each specific risk.

Activity Regulation Strategy

Changes

Reform drafts

Laws

Resolutions

Regulations

Amendments to Forms, Attachments, and Other Taxpayer Information

Creation of

New forms

New fields in existing forms

New attachments

New fields in existing attachments

Modification of the taxpayer's registration information

Computerization of services (available on the Web)

Public Relations

Scheduling of media interviews

Television

Radio

Newspapers and other printed media

Press conferences

Press releases

Advertising

Advertising Campaigns

TV commercials

Radio commercials

Print media advertising

Broadcast advertising material

Assistance to Taxpayers

Training on the specific themes

Instructions and tutorials

Leaflets to be delivered to the taxpayer

Digital materials for publication on the web

Videos for publication on the website and YouTube

Delivery of information to the taxpayer for the compliance of obligations

Data delivery in tax information

Draft declaration

Counting the time to fully complete of the obligations

Other Strategies

Partnerships with other public institutions

Disclosure of information in the media of other institutions

Use of public institution spaces

Partnerships with private companies on specific themes

Activation of social networks

Activities with citizens

School Events

Taxpayer-Specific Information (Pre-Existence of Risk)

Sending notices

Physical Documents

Electronic documents

Emails

Sending text messages to cell phones

Calls to taxpayers

Automatic

Custom

Visits and follow-up with taxpayers

2.2.7.3 Corrective Treatment Actions

These actions are carried out on taxpayers with detected noncompliance or on those with risk levels that exceed the criteria established in the strategy and planning of a treatment program. These actions can be carried out either in person or remotely and will depend on the risk rating of a given taxpayer. Some examples are the following: inviting the taxpayer to correct differences in compliance; conducting on-site reviews - either in the taxpayer's office or field reviews-; and those that start as compliance reviews, that are short in scope in terms of extent and depth, and that, depending on the impact on the detected risk, may go so far as to require audits.

The treatment actions described above encompass a wide range of possibilities available to manage and improve the levels of tax behavior, which would result in greater advantages for the interests of the treasury.

The proportionality of the application of treatment actions according to the risk level of the taxpayer's conduct promotes greater justice and equity in the auditing work.

Panama: Risk Management Based on VAT Withholding Information

An estimated 40% evasion rate in potential VAT collection prompted the expansion of the withholding mechanism. Originally, only government entities were designated as withholding agents. Under this extension, companies with purchases of more than B/.10,000,000.00 per year and credit and debit card administrators. This mechanism consists in withholding and paying to the treasury 50% of VAT and reporting the respective operations of their suppliers.

By analyzing taxpayer behavior using cumulative data on VAT withholding debits and credits for the months of February through December 2016, applying the OECD tax compliance risk management methodology, the following points were identified:

(i) Taxpayers with withholding surplus.

(ii) Taxpayers at high risk of tax evasion.

Consequently, a risk model was designed based on this information, which fueled a mass surveillance program and selective field audits with the aim of reducing the risks of withholding credit accumulation and VAT evasion impacting tax collection.

The information used was from 2016, and the selection of cases and their programming was carried out during the 2017 tax year. In addition, the regulation was expanded to structure withholding agents whose annual purchases exceed B/.5,000,000.00 and, therefore, have greater scope in controlling those who have been withheld.

To reduce tax evasion with the aim of facilitating, speeding up accelerating, and ensuring the collection of VAT, withholding is practiced at the time of payment or credit of the purchase to the supplier of goods and services, depending on which occurs first.

What does the practice consist of and how does it work?

Condition 1

(Tax Debit - Tax Credit < 0) + VAT Withholdings < 0

Identifies taxpayers who show higher tax credits than tax debits and determines a withholding surplus.

Condition 2

VAT Withholding - (Tax Debit × 50%) > 0

Identifies the taxpayers who show withholding tax credits higher than those established in the legislation.

Condition 3

(Tax Debit - Tax Credit > 0) - VAT Withholdings < 0

Identifies taxpayers with withholding surplus with or without posted tax.

Thus, the outcomes of the program for omitted and inaccurate production amounts for October 2017 are:

2017	Production
January	2,827,384
February	1,229,532
March	1,196,173
April	2,189,303
May	2,753,338
June	4,391,261
July	20,253,125
August	4,420,771
September	10,444,948
October	11,243,341
TOTAL	**60,949,176**

Approximately 12,000 omissions and a monthly average of 3,000,000 in undeclared withheld amounts have been identified.

Taxpayers	Inconsistency detected
1,393	Withholdings > 50% tax liability
2,425	Declares excess withholding
973	Declares tax credits > liabilities
1,446	Liabilities > Credits and excess withholdings
8,747	Declares payable taxes

2.2.8 Treatment Allocation Policy

For each calculated noncompliance risk, a program is defined that includes a set of treatment actions determined according to the combination of the different categories of noncompliance risks and the taxpayer's risk categories, safeguarding the proportionality of the noncompliance.

There are some treatments, usually of a structural nature or arising from internal causes, that affect all taxpayers. For this reason, it is not necessary to distinguish the level of noncompliance or the taxpayer's risk level. We will call this type of treatment "unidentified treatment". These types of treatment are not necessary to incorporate into treatment allocation policy, as they do not identify a particular taxpayer, but can potentially affect all taxpayers equally. Examples are the creation of a regulation and the deletion of registrations for a particular tax return form.

The following is an example of a treatment allocation policy. Each Tax Administration can incorporate more information about the treatment, such as the frequency, the automation level of the treatment, the channel, the evaluation methodology, the ideal period of implementation, or the area responsible for the implementation.

The first part describes the treatment to be applied:

- Risk coding.
- Name or description.
- Type (corrective, preventive).
- Nominative (i.e., if applicable to an identifiable taxpayer).
- Frequency of treatment.
- Automation level.
- Service channel: web, office, field, message, phone, etc.
- Type: self service, in person, or remote.
- Unit of measurement and deadline for the implementation of the treatment.

In the second stage, the treatment is associated with a quadrant of the combination of the specific noncompliance risk and the taxpayer's risk rating. This is exemplified by the graphical matrix shown in the illustration below.

Illustration 61: Treatment Allocation Policy

Treatment Allocation Policy (TAP)											

The risk treatments are:

RC	Cod	Treatment	Type	Nominative	Send for Consolidation?	Frequency	Automation	Service Channel	Mode of Application	Unit of Measurement	Runtime

Treatment Allocation

As an example, a treatment allocation policy would take the following form when it is required to have a display classified by level of noncompliance risk (severe, high, significant, moderate, low):

Illustration 62: Treatment Allocation Policy

			SPECIFIC RISK				
		LOW	MODERATE	SIGNIFICANT	HIGH	SEVERE	
	HIGH			T_COMPLIANCE REVIEW	AUDIT	AUDIT	
GLOBAL RISK	MEDIUM				O_COMPLIANCE REVIEW	O_COMPLIANCE REVIEW	
	KEY				E_COMPLIANCE REVIEW	E_COMPLIANCE REVIEW	
	LOW						

Another example considers a subset of treatments and allows the decision to be made based on the specific risk quadrant in which the assessed taxpayers may be associated:

Table 23: Treatment Allocation Policy

Code	Treatment	Type	Nominative	Automation	Service Channel	Mode of Application	Runtime
CT1	Audit	Corrective	Yes	Yes	Office	In-person	160 hours
CT2	Review	Corrective	Yes	Yes	Telephone	Remote	40 hours
PT1	Review	Preventive	Yes	No	Field	In-person	5 hours
PT2	Review	Preventive	Yes	No	Telephone	Remote	5 hours

A treatment allocation policy seeks to define in which combinations of specific risks and taxpayer risks the treatments will be placed. In other words, to which taxpayer profile the

treatments will be directed. Thus, the treatment allocation policy could have the following structure (simply for the purposes of organizing its use or application in graph form):

Illustration 63: Example of Application of the Treatment Allocation Policy

Probability						Probability				
Rare	Unlikely	Moderate	Likely	Very Likely		Rare	Unlikely	Moderate	Likely	Very Likely

Taxpayer Risk: KEY

Consequences	Rare	Unlikely	Moderate	Likely	Very Likely
Extremes			PT2	PT2	PT2
Very High				PT2	PT2
Averages					PT2
Low					
Very Low					

Taxpayer Risk: HIGH

Consequences	Rare	Unlikely	Moderate	Likely	Very Likely
Extremes		PT2	PT1	PT1	PT1
Very High				PT1	PT1
Averages					PT1
Low					PT2
Very Low					

Taxpayer Risk: LOW

Consequences	Rare	Unlikely	Moderate	Likely	Very Likely
Extremes				PT2	PT2
Very High				PT2	PT2
Averages					
Low					
Very Low					

Taxpayer Risk: MEDIUM

Consequences	Rare	Unlikely	Moderate	Likely	Very Likely
Extremes			PT1	PT2	PT2
Very High				PT2	PT2
Averages					PT1
Low					
Very Low					

According to the treatment allocation policy, the following will be defined:

- Audits (CT1) for all cases of likely or very likely noncompliance risk, with extreme or very high consequences and whose risk rating is high.

- 30-hour reviews (CT2) of low intensity, but with the possibility of increasing as the risk under review is confirmed for all taxpayers with high, key, or low risk, with likely or very likely noncompliance risk, and with extreme or very high consequence.

- 5-hour in-person field reviews (PT1) to validate the occurrence of risk for medium and high-risk cases.

- 5-hour remote telephone reviews (TP2) to validate risk occurrence for key risk cases.

It is worth highlighting that this is merely an example to illustrate the use of this policy in graphical form. Undoubtedly, institutional debate and policy become very relevant when deciding how to fill this treatment allocation matrix.

It is important to consider that the risk must be assessed in order to then distribute the taxpayers within the 5x5 matrix. That is, it is necessary to know how many taxpayers can be assigned to each quadrant. When considering the reasonability of such a distribution, we must keep in mind the ability to implement, even as this variable becomes important in the prioritization and consolidation process.

Risk management is a long-term process. Except in cases where it is possible to definitively eliminate a noncompliance risk, the risks remain. This permanence of risks depends on factors such as the taxpayer's perception of the control exercised by the Tax Administration, the proportionality of sanctions, and guidance and assistance to the taxpayer. All of this determines whether the probability of occurrence of such noncompliance risk will be maintained, intensified, or decreased.

A reduction in a noncompliance risk is generated as a consequence of changes in taxpayer behavior and, therefore, needs to be evaluated over a time spectrum that is longer than one fiscal year. Estimating the trend of a given noncompliance risk - indicating whether its occurrence leads to gradually increased consequences, or whether its probability increases - is an important element of analysis for determining the level of severity of the risk.

The updating of risks is continuous, depending on the assessment of whether the information collected was sufficient to increase the probability of the noncompliance, whether the causes analyzed are those that facilitate the risk, or whether the attributes used in the assessment were the most adequate in comparison with the real world. All these reasons may modify the noncompliance risk analysis, so it is necessary to periodically update the risk template, the attribute templates, and the assessment matrix, as appropriate.

3 Stage 3: Risk Prioritization

This stage involves four subprocesses.

Prioritization and ranking of noncompliance risks identified and analyzed in Stages 1 and 2: in this subprocess, all noncompliance risks designed, the number of taxpayers, the quantity per risk level, the existing treatments and their evaluation in terms of efficiency and efficacy, the exposure to risk, the consequences for the organization, among other aspects, are analyzed and evaluated. The result of this subprocess must do with selecting the risks on which actions will be implemented and establishing an order of priority among them.

Consolidation: the outcome of this stage is the identification of all levels of risks and potential treatments to be applied to each taxpayer. In this subprocess, the treatment(s) to be applied to a given taxpayer is defined. For example, a taxpayer could be included in three different noncompliance risks, in which an audit is proposed for two risks at high levels and a monthly preventive email is sent regarding the obligation to submit information from third parties. This stage also involves aggregation of taxpayers with gaps, to whom corrective treatments should be applied.

Allocation: based on the treatment allocation policy defined, the treatments to be applied to each taxpayer are designated. These treatments will be the most efficient and effective according to the Tax Administration's possibilities. It is also possible to allocate treatments based on the outcome of a combination of taxpayer noncompliance risks. This represents an important challenge, as it requires, to some extent, exploring the correlation between the risks and the underlying problem that a taxpayer who "scores" different risks, at different levels, may have.

The allocation of treatments may imply the need to implement treatment actions among those responsible for different units of the Tax Administration. The effective implementation of these actions, as well as their subsequent evaluation, requires significant coordination efforts, which must necessarily be based on the operational, tactical, and strategic committees described in section 7 of this manual.

Dispatch and management of stocks: this is a subprocess in which the treatments allocated to each taxpayer are received and scheduled to be sent to the respective operational systems.

For example, audit-type reviews could be uploaded or made available for implementation in a system that manages only this type of treatment action.

The risk prioritization stage allows us to rank the noncompliance risks to be addressed based on predefined criteria, in order to structure and implement corrective, preventive, or structural treatments and to identify the respective taxpayers who will be subject to these treatments.

Illustration 64: Risk Prioritization Subprocesses

Prioritization	**Consolidation**	**Allocation**	**Dispatch**
• Prioritization and ranking of risk through the risk matrix	• Nº of risk per taxpayer	• Treatment to be applied to a particular taxpayer	• Dispatch and stock management
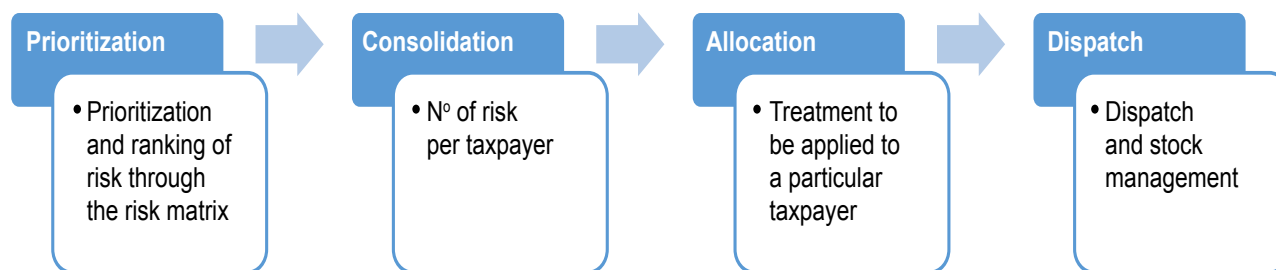
3.1 Risk Prioritization

The goal of this stage is to separate major risks (which need to be treated in a specific way) from those that are minor, secondary, or less of a priority. At the same time, we should be aware of all the available treatments that can be applied to taxpayers. For the purposes of defining which treatments to apply, several factors must be considered in order to accept or reject the application of a specific treatment, whether due to strategic, tactical, or operational decisions.

The prioritization stage occurs at a given point in time, so the risks, as well as the treatments that are defined in the prioritization stage, are those that are available when this process is performed. There are two ways to view the exposure of a risk in the context of a risk matrix: the first is with the existing treatments, ideally measured by their efficacy, and the second is the projected exposure from the implementation of the proposed treatments. Thus, it will be at the discretion of the Tax Administration how it constructs the risk matrix and compares the exposure it faces with the available treatments, whether implemented or not.

With both inputs (noncompliance risks identified and treatment actions available), it is possible to generate a ranking of risks based on definitions established by senior management, which may be focused on criteria such as the level of efficacy of associated treatments, the exposure to the given risk, or technical definitions to be implemented. **The risk matrix** is the tool that allows a graphical view of all specific risks, their level of severity, the treatments to be applied, and the level of exposure, among other indicators that guide the decision-making process.

3.1.1 Risk Matrix

The risk matrix is a management, control, and planning tool that allows us to evaluate:

The **type and levels of noncompliance risk** with tax obligations by taxpayers. The structure of this matrix is not focused on the organization's internal processes, but at taxpayer behavior and how this can generate risks for the organization, which, in turn, should be aware of, administer, and manage such risks.

The risk matrix also facilitates the evaluation of the **treatments** established to minimize the occurrence of risks. These treatments encompass control and prevention measures directed to the taxpayer. Additionally, the matrix makes it possible to evaluate the **efficacy of the management and administration of risks** that may have an impact on the expected results and on the achievement of the Tax Administration's objectives.

The risk matrix is a tool that allows us to quantify the risks, reducing the level of bias at the time of evaluation. For this, the establishment of parameters and the allocation of values to indicators must be properly grounded.

Moreover, it is a tool that can support decision-making by implementing, reformulating, or eliminating treatments. In addition, it allows us to determine the impact of the occurrence of a risk and, therefore, the strategy to adopt (reducing the risk, transferring it, or simply assuming its existence, but taking the necessary measures to monitor it).

The risks that are part of the risk matrix must necessarily be assessed, ideally in a quantitative way, and the different treatments to mitigate them must be identified, in order to estimate the levels of exposure they generate for the Tax Administration and, consequently, carry out the prioritization processes.

However, it is important to stress that the assessment and identification of the treatments are analytical processes that require time and effort, which is why, prior to this stage, it may be necessary to estimate the impact of the risk, so as to establish its importance and justify the effort to be undertaken.

Therefore, this stage prior to the construction of the risk matrix corresponds to an overview of the taxpayer's environment, relevance for tax collection, compliance history, potential effects on the administration's image, and other background information that can boost the decision to deepen their analysis.

This tool can be considered a "compass" for the Tax Administration because it makes it possible to guide and determine the course or direction it wishes to take.

The risk matrix should be **flexible**, simple to develop, and easy to consult, and allow for an **objective diagnosis to be made**.

The prioritization of risks should consider the outcome of the risk exposure level. It is possible to view and prioritize risks, making it easier to make decisions regarding the risks that need to be treated urgently and those that, because they are tolerable, can be treated later.

The structure of the matrix should contain at least three components: one that allows the identification of the noncompliance risk or the specific risk, another that makes it possible to determine the treatments to be applied, and a third to facilitate the assessment of the

value and the rating of the risk exposure. These are only the main components, and other elements can be incorporated as needed, in order to adapt the matrix to the context of each Tax Administration.

3.1.1.1 Identification of the Noncompliance Risk

This section details, for each noncompliance risk identified and assessed, its probability and consequence and, therefore, its severity level.

Table 24: Risk Identification Section in the Risk Matrix

				Identified Risks					
SI	Tax Obligation Stage	Tax Obligation	Risk Description Noncompliance	Probability		Consequences		Risk Severity Level	
				Rating	Value	Rating	Value	Rating	Value

- **SI:** corresponds to the specific code given to the noncompliance risk.

- **Tax obligation stage:** determines the scope to which the tax obligation belongs (registering, informing, declaring, or paying).

- **Tax obligation:** corresponds to the obligation established by law or by administrative instruction to which the noncompliance risk is associated.

- **Description of noncompliance risk:** corresponds to the noncompliance risk that has been analyzed.

- **Probability:** the estimate of the probability of occurrence of the noncompliance risk.

- **Rating and value:** both of these data correspond to the same definition of probability of noncompliance risk.

Table 25: Description of the Probabilities in the Risk Matrix

Probability		Description
Rating	Value	
1 - Rare	1	The probability that a risk will occur is highly unlikely.
2 - Unlikely	2	The probability that a risk will occur is scanty.
3 - Moderate	3	The probability that a risk will occur is similar to the probability that it will not occur.
4 - Likely	4	The underlying risk is expected to occur in the vast majority of cases.
5 - Very likely	5	It is almost certain that the risk will occur.

- **Consequences:** corresponds to the estimate of damages that can be caused by the occurrence of the noncompliance risk.

- **Rating:** corresponds to the same definition of the consequence for the taxpayer's risk.

- **Value:** calculated based on the ranges determined for the values obtained.

Table 26: Description of the Consequences in the Risk Matrix

| Consequence | | Description |
Rating	Value	
1 – Low	1	The effect of noncompliance does not imply a major threat to the objectives of the Service.
2 - Medium	2	The occurrence of the underlying risk hinders the achievement of the Tax Administration's objectives.
3 – High	3	Should the underlying risk occur, the achievement of organizational objectives is severely hampered.
4 - Very high	4	Its occurrence significantly impairs the achievement of the Tax Administration's objectives, ultimately preventing them from being achieved in the usual manner.
5 - Extreme	5	It has a widespread impact on the Service's objectives and is sustained over the long term.

- **Risk severity level:** corresponds to the estimated severity of the risk, based on the probability and the estimated consequences.

- **Rating:** corresponds to the same assessment levels for specific risks.

- **Value:** corresponds to the product of the probability values by the consequence values.

Table 27: Rating and Value

Rating						Value
	PROBABILITY OF OCCURRENCE					RISK LEVEL
	1-Rare	2-Improvable	3-Moderate	4-Likely	5-Very Likely	
5- Extreme						SEVERE
4-Very High						HIGH
3-High						SIGNIFICANT
2-Medium						MODERATE
1-Low						LOW

CONSEQUENCES

3.1.1.2 Identification of Active Treatments

This section details the active treatments for each specific risk. In order to control the traceability of treatments, separate registries should be kept for treatments previously applied and those projected to be applied in the future.

Table 28: Section of Treatments Conducted in the Risk Matrix

	Subsection: Conducted Active Treatments										
Situation	Description		Level of Efficacy			Efficacy Indicator	Efficacy Indicator Value	Rating	Value	No. Taxpayers	Treatment Cost
	Name	Channel	Frequency	Type	Automation						

Table 29: Section of Treatments Proposed in the Risk Matrix

	Subsection: Proposed Active Treatments										
Situation	Description		Level of Efficacy			Efficacy Indicator	Efficacy Indicator Value	Rating	Value	No. Taxpayers	Treatment Cost
	Name	Channel	Frequency	Type	Automation						

In any case, we must consider the following fields for this purpose:

- **Situation:** depending on the subsection in question, this corresponds to the rating of the treatment according to its state of implementation: current, implemented, proposed, or new.

- **Description:**

  - **Name**: refers to the name of the treatment to be applied.

  - **Channel**: corresponds to the means by which the treatment is applied, among which are office, telephone, or field.

- **Level of efficacy:** refers to the effect that is expected to be achieved by applying the treatment. It is measured based on three characteristics:

  - **Frequency** of application

  - **Type (or timeliness) of application**

  - Level of **automation**

Each of these fields can take on the following values:

Table 30: Efficacy Level Values in the Risk Matrix

Frequency	
Permanent	Pe
Periodic	Pd
Occasional	Oc
Not determined	ND

Type	
Preventive	Pv
Corrective	Cr
Risk Reviews	RR
Structural	Est
Not determined	ND

Automation	
Computerized	At
Semicomputerized	Sa
Manual	Ma
Not determined	ND

Based on the combination of these categories, an estimated value for efficacy is generated, which is shown in Appendix VI.

- **Indicator of efficacy** and its respective numerical value: corresponds to a variable that reflects the level of efficacy obtained from the application of the treatment, according to experts' assessment or the measurement of results obtained previously when applying the treatments.

Table 31: Efficacy Values in the Risk Matrix

Efficacy Indicator	Efficacy Indicator Value
High	1
Medium	0
Low	-1
Not available	0

- **Rating** and its respective numerical value: correspond to the value that the treatment has in order to approach noncompliance risk, which is calculated based on the combination of the efficacy level and the value of the previous efficacy. The categories into which a treatment can be classified are:

Table 32: Risk Matrix Rating Values

Rating	Value
EXCELLENT	5
GOOD	4
ABOVE-AVERAGE	3
AVERAGE	2
POOR	1
NONEXISTENT (*)	1

(*) Belongs to this category when it does not have a defined efficiency level characteristic.

- **Nº. taxpayers:** corresponds to the number of taxpayers who can potentially be addressed by the treatment. It can be used as a variable for prioritization.

- **Treatment cost:** the cost of performing the treatment can be used as a variable for prioritization.

3.1.1.3 Value and Risk Exposure Rating Section

This section outlines procedures to perform the assessment and rating of the exposure presented by each noncompliance risk, which allows an overview of these risks and the prioritization of their implementation.

This rating can be performed at a detailed level for each treatment and at an aggregate level by noncompliance risk, by tax obligation, or by size, which provides a wide range of alternatives for risk analysis and prioritization.

Table 33: Value and Risk Exposure Section of the Risk Matrix

Risk Exposure (RE) Value and Rating							
By Treatment		By Risk		By Tax Obligation		By Tax Obligation Stage	
RE Level	RE Value	RE Level	RE Value	RE Level	RE Value	RE Level	RE Value

At the treatment level, the level of risk exposure (RE) is calculated as the ratio of the level of risk severity to the level of treatment efficacy:

Formula 11: Risk Exposure Level per Treatment

$$= \frac{\text{Risk severity level}}{\text{Level of treatment efficacy}}$$

The aggregate risk exposure level is calculated as the average of the RE level of all treatments that are part of each aggregation, i.e., grouped by risk, by obligation, or by stage:

Formula 12: Aggregate Risk Exposure Level

$$\textit{Risk Exposure Level} = \textit{Average (Risk Exposure Level-treatment)}i$$

Where i = risk, obligation, or stage

At the aggregation level, the level of risk exposure is classified as follows, depending on the value obtained by the respective RE calculation:

Table 34: Assessment of Risk Exposure

RE Level	RE Value	
	(from)	(to)
LOW	0	2,99
MEDIUM	3	3,99
HIGH	4	7,99
NOT ACCEPTABLE	8	25

With this risk exposure level result, it is possible to view and prioritize risks, making it easier to make decisions about those that must be treated urgently and those that present acceptable levels and could be treated at a later stage.

3.1.2 Examples of Uses the Risk Matrix

3.1.2.1 Example 1

A Tax Administration has identified and analyzed four specific risks.

The following matrix contains the different tax obligations and the description of the risk underlying them, as well as the global assessment of such risks (severity levels = *Low, Moderate, Significant, High, or Severe*), along with the treatment actions designed to address them. Depending on the type of action (*structural, preventive, corrective, or risk review*), the frequency of application (*permanent, periodic, or occasional*) and its level of automation (*automatic, semiautomatic, or manual*), the treatment actions are classified as excellent, good, above-average, average, poor, or nonexistent. Once the assessment of the risks is obtained and the treatment actions to address them are classified, we define the level of exposure to these risks, which is categorized as *low, medium, high,* and *not acceptable*. All this information can be used to determine the exposure of the Tax Administration to existing risks, prioritize actions for those risks with the highest level of exposure, and restructure treatment actions in order to improve their rating. It is worth pointing out that the construction of this risk matrix is part of a continuous process, since, by its very nature, each of its components must be updated or incorporated as it changes.

Table 35: Sample Noncompliance Risk Matrix

Stage of fulfillment	Tax obligation	Description	Probability Rating	Probability Value	Consequences Rating	Consequences Value	Risk severity Rating	Risk severity Value	AT Description	Channel	Frequency	Type	Automation	Efficacy	Value Efficacy	Rating	Value	By Treatment ER Level	By Treatment ER Value	By Risk ER Level	By Risk ER Value
Statement	To present annually, in the month of April, a statement of their income subject to first class tax in relation to the income earned in the preceding business calendar year	Non declaration of Form 22 by taxpayers subject to first category tax	4-Likely	4	3-High	3	HIGH	12	Email	Remote	Pd	Pv	Sa	Average	0	GOOD	4	AVERAGE	3,00	MAJOR	4,03
			4-Likely	4	3-High	3	HIGH	12	Disclosure in the mass media	Remote	Pd	Pv	Ma	Average	0	GOOD	4	AVERAGE	3,00	MAJOR	4,03
			4-Likely	4	3-High	3	HIGH	12	Pop-up message	Remote	Fr	Cr	At	Average	0	GREAT	5	LOWER	2,40	MAJOR	4,03
			4-Likely	4	3-High	3	HIGH	12	Compliance Review	In-person	Pd	Cr	Sa	Average	0	MORE THAN AVERAGE	3	MAJOR	4,00	MAJOR	4,03
Payment	Pay the value-added tax on goods and services accrued in the previous month at the respective Communal Treasury or at the bank branches authorized by the Treasury Service, within the time limits established for each type of taxpayer	Non-payment of F29 in relation to VAT resulting from untimely notification at the office	4-Likely	4	1-Low	1	MODERATE	4	Pop-up message	Remote	Fr	Cr	At	Average	0	GREAT	5	LOWER	0,80	LOWER	1,12
			4-Likely	4	1-Low	1	MODERATE	4	Administrative Changes	Not applicable	Fr	Est	Sa	Average	0	GREAT	5	LOWER	0,80	LOWER	1,12
			4-Likely	4	1-Low	1	MODERATE	4	Email	Remote	Pd	Cr	Sa	Average	0	MORE THAN AVERAGE	3	LOWER	1,33	LOWER	1,12
			4-Likely	4	1-Low	1	MODERATE	4	Email	Remote	Pd	Pv	Sa	Average	0	GOOD	4	LOWER	1,00	LOWER	1,12
			4-Likely	4	1-Low	1	MODERATE	4	Changes in computer systems	Not applicable	Fr	Est	At	Average	0	OTIMO	5	LOWER	0,80	LOWER	1,12
Register	Register and/or update branches	Merchants with stock who do not register stores in service	2-Improvable	2	1-Low	1	LOW	2	Email	Remote	Or	Pv	Sa	Average	0	REGULAR	2	LOWER	1,00	LOWER	0,70
			2-Improvable	2	1-Low	1	LOW	2	On-site tax compliance	In-person	Or	Cr	Ma	Average	0	REGULAR	2	LOWER	1,00	LOWER	0,70
			2-Improvable	2	1-Low	1	LOW	2	On-site tax compliance	In-person	Or	Cr	Ma	Average	0	REGULAR	2	LOWER	1,00	LOWER	0,70
			2-Improvable	2	1-Low	1	LOW	2	Administrative changes	Not applicable	Fr	Est	Ma	Average	0	GREAT	5	LOWER	0,40	LOWER	0,70
			2-Improvable	2	1-Low	1	LOW	2	Pop-up message	Remote	Fr	Est	At	Average	0	GREAT	5	LOWER	0,40	LOWER	0,70
			2-Improvable	2	1-Low	1	LOW	2	On-site tax compliance (fixed point, focused)	In-person	Or	Cr	Ma	Average	0	REGULAR	2	LOWER	1,00	LOWER	0,70
Statement	Determining the VAT tax credit correctly	VAT tax credit overstatement	1-Rare	1	3-High	3	SIGNIFICANT	3	Email	Remote	Pd	Pv	Sa	Average	0	GOOD	4	LOWER	0,75	LOWER	0,76
			1-Rare	1	3-High	3	SIGNIFICANT	3	Pop-up message	Remote	Fr	Cr	At	Average	0	GREAT	5	LOWER	0,60	LOWER	0,76
			1-Rare	1	3-High	3	SIGNIFICANT	3	On-site tax compliance (fixed point, focused)	In-person	Pd	Cr	Ma	Average	0	MORE THAN AVERAGE	3	LOWER	1,00	LOWER	0,76
			1-Rare	1	3-High	3	SIGNIFICANT	3	Compliance Review	Workshop	Pd	Cr	Ma	Average	0	MORE THAN AVERAGE	3	LOWER	1,00	LOWER	0,76
			1-Rare	1	3-High	3	SIGNIFICANT	3	Audit	Workshop	Pd	Cr	Ma	Average	0	MORE THAN AVERAGE	3	LOWER	1,00	LOWER	0,76
			1-Rare	1	3-High	3	SIGNIFICANT	3	Changes in computer systems	Not applicable	Fr	Est	At	Average	0	GREAT	5	LOWER	0,60	LOWER	0,76

3.1.2.2 Example 2

If additional elements are added to the above matrix - which contributes to the decision-making process -, it is very likely that the risk ranking will change.

Table 36: Other Decision-Making Support Elements in the Risk Matrix

Efficacy		Information for Decision-Making					
Treatment evaluation	Unit cost of treatment	Relevance of treatment application	Consequences for collection by treatment	Number of taxpayers per treatment	Taxpayers at severe levels	Volume of taxpayers	% taxpayers with gaps

Information for decision-making					
Gap trend	Specific risk movement				Previously applied treatment
	Low	Moderate	Significant	High	

Although the risk matrix above (Illustration 59) presents a ranking of risks, this ranking can be modified with additional information. Some cases of such modifications are shown below:

- **Treatment evaluation:** the outcome of the evaluation process (see chapter on treatment evaluation). In case there are 'no' historical data that allows us to evaluate treatments, we can use comparable treatments that have the same characteristics.

Table 37: Treatment Evaluation

Evaluation	Yes	Good
		Average
		Bad
Considering historical data	No	Good
		Average
		Bad

- **Unit cost of treatment:** we can establish the unit cost per unit of time and per value of associated direct costs, which may include, for instance, the average value of direct labor, the aggregation of logistical costs, or other costs related to design, material, etc.

Table 38: Estimated Costs for Treatment Actions

	Channel	HRS	US$
Risk review	Field	8	$177
	Office	7	$154
	Remote	6	$132
Compliance review	Field	24	$601
	Office	22	$551
	Remote	20	$501
Audit		100	$2.819

- **Relevance of treatment application:** determining the ideal timeframe for treatment application.

- **Consequence for tax collection:** associated with the estimated profitability of the tax collection that results from the treatment to be applied.

- **Number of taxpayers per treatment:** refers to the number of taxpayers belonging to the quadrant of noncompliance risk to be applied to the treatment.

- **Severe level taxpayers:** the number of taxpayers who have a severe level of noncompliance risk.

- **% Volume of taxpayers:** corresponds to the ratio between the number of taxpayers per treatment and the total number of taxpayers showing the risk.

- **% Taxpayers with gaps:** refers to the ratio between the taxpayers who have a gap in the same tax obligation and the total number of taxpayers who show the risk.

- **Gap trend:** refers to the behavior of the gap over time. For this purpose, we must decide the time unit for comparison.

- **% Specific risk movement:** refers to the percentage of taxpayers who show an increase in their risk category, e.g., taxpayers who in the previous period were in the "significant" category, but in the analysis period change to "severe", "high", or any other combination that implies an increase in the risk level.

- **Previously applied treatment:** two-way response (yes/no).

Understanding that this is a multidimensional problem, the decision may involve a combination of the elements mentioned above, that is, what is indicated in the matrix. It will be up to each Tax Administration to weigh or include other variables that are of strategic interest.

3.2 Risk Consolidation

In this stage, the specific risks presented by a taxpayer and their respective assessment are consolidated. We must consider that it is perfectly possible for a taxpayer to have more than one noncompliance risk, one being severe in nature and the other low, for instance. This undoubtedly has an impact on treatment allocation decisions.

By consolidating all prioritized and ranked risks, the following results can be obtained:

- Identification of the **non-nominative treatments**, which are those treatments that are not applied to a specific taxpayer. Among these, we can highlight the proposed structural and preventive treatments. An example of a non-nominative preventive treatment would be television advertising to encourage compliance with tax obligations, emphasizing the importance of paying taxes for the welfare and development of the country. In this type of initiative, it is not possible to determine in a nominative way the taxpayer whose behavior will be influenced by this type of initiative. It is rather targeted at segments of taxpayers or at all taxpayers.

The set of all treatment actions is usually controlled as a project. Therefore, a previous stage of technical and economic feasibility analysis should be considered, which, if applicable, leads to the project control process carried out by project control offices.

- Identifying **nominative treatments** on taxpayers: nominative treatments include proposed corrective and preventive treatments (not included in the previous group). An example would be a warning message provided during a certain time period.

The risks associated with treatments should be prioritized based on different variables, whether they are unique to the specific risk or the taxpayer showing that risk, or according to strategic guidelines or expert judgment.

Next, for each taxpayer, the specific risks must be ranked, so as to define the best strategy to improve their conduct in face of the tax system. In this case, some of the variables to consider for this ranking are:

- Complexity of the treatments associated with the specific risks shown by the taxpayer.
- Level of each noncompliance risk shown by the taxpayer.

As a result of this process, we obtain the ranking of risks to be treated for each taxpayer. This serves as input for the next process, which corresponds to the allocation of treatments to be applied to each taxpayer.

3.3 Treatment Allocation

In this case, the way to allocate the treatments to be applied to each taxpayer is proposed in the Treatment Allocation Policy (TAP) for each of the noncompliance risks. Therefore, what should be selected are those taxpayers who have the greatest impact on improving compliance with the tax system, either by reducing gaps or by mitigating the specific risks analyzed.

To select the taxpayers who can be treated, we must consider the taxpayer's risks. However, another important variable is the availability of resources to perform the treatment actions. This availability is, in turn, conditioned by the organizational structure, in terms of the design of the treatment actions, the legal and regulatory validations, the technological construction and implementation, the analysis, implementation, and service in the offices, the abilities of the audit teams, among other aspects.

To achieve this, at least the following variables associated with each taxpayer must be considered:

- Taxpayer risk rating.

- Rating and values of all noncompliance risks the taxpayer shows.

- Tax gaps.

As a result of this process, a ranking of the taxpayers to be treated is obtained, on which the detail and ordering of the specific risks to be treated is already in place.

3.4 Dispatch and Management of Stocks

This is a subprocess in which the resulting treatment allocations are received per taxpayer and their dispatch is scheduled. On the other hand, it should be considered that, despite the contingencies that may occur, it is highly likely that the product resulting from the treatment allocation process will produce a different number of cases (usually greater) than the respective implementation ability and, therefore, a stock management is generated, with the objective of managing the existing deficits and surpluses in specific implementation units.

A necessary result that arises from the prioritization process is related to operational planning. This type of planning has elements such as:

- Each treatment action requires the structuring of guidelines, checklists, or scripts for emails, telephone calls, brochures, or lectures, whether they are corrective or preventive treatment actions. Similarly, structural treatment actions require planning for their specification and implementation.

- On the other hand, their implementation is also driven by resources from the operational units.

- Stock management may require some planning, e.g., which preventive actions need to be dispatched with deadlines, so that they do not lose their efficacy.

- Furthermore, there are actions, such as sending emails, whose results need to be monitored. An example of these results would be the reaction they generate in the taxpayer. In some cases, it is intended that the informative email allows the taxpayer to act autonomously. Nonetheless, if the taxpayer's level of office presence increases, it is possible that an adverse effect to the expected one may be provoked. Emphasis is placed on the clarity and simplicity of the messages delivered to the taxpayer, as well as the channels supporting communication. For example, when sending an informative email, it is important that the *help desk is* aware of this, so that if the taxpayer decides to consult the help desk as a result of the email, it is possible to guide them effectively.

The joint process of dispatch and stock management of the treatment actions available to the different territorial units of a Tax Administration considers at least the following stages:

1. Identification of abilities.

2. Projection and programming.

3. Workload.

4. Follow-up.

3.4.1 Identification of Abilities

This stage is related to the identification of the resources available for the implementation of the different treatment actions in the Tax Administration, with a specific focus on the human resources available and distributed in different geographical units. The definition of ability will subsequently allow a more effective and efficient identification of the Tax Administration's resources for tax compliance. It is necessary that this activity is carried out periodically, as it will make it possible to cover the different treatment actions over time.

Chile's *Servicio de Impuestos Internos* carries out a process of updating the roster of personnel with functions related to the development or implementation of treatment actions, thus considering the functions they perform (auditing), as well as possible changes or special considerations that each territorial unit has. For example, a special focus on mining companies in the North could be relevant, while in the South the focus could be the fishing industry, with more emphasis on VAT refund processes or complex audits.

In addition, several factors are considered, such as legal changes (changes in laws that imply, for example, greater powers for the Tax Administration, which could result in an increase in staffing, etc.), organizational and functional changes (new territorial units, roles, and functions, among others). Once this update is concluded, it will be possible to establish the abilities of each regional unit, which will allow a more effective and efficient identification of audit resources, and whose impact will be specifically given in the "projection" process that is developed below.

3.4.2 Projection and Programming

In this stage, it is important to estimate the workload based on the allocations obtained in the previous stage. In this way, it will be possible to estimate the implementation abilities of the nominative treatment actions to manage tax compliance in the Tax Administration, which will subsequently be converted - in an operational way - into the supply of the different treatment actions to the various work units, ensuring the fulfillment of the objective of the implementation plan for the tax compliance actions. Therefore, two specific objectives are ensured in this process:

- o Making a projection of the need for treatment actions per implementation unit, per treatment action type, and per time unit. This subprocess considers, for its decision, that, at a given time, the service units have available actions, completion rates, and contingency returns.

o Formulate a treatment schedule, establishing specific times when treatment action dispatches will be performed, as well as downloads, communication dispatches, or other tasks associated with treatment management.

Similarly, to the process of identifying abilities, projection and programming activities require periodic updates associated with the importance and urgency considered by the Tax Administration itself, both for the provision of treatment actions to the regional units and for the fulfillment of the periodic audit plans considered by the Tax Administration itself.

In the framework of Chile's *Servicio de Impuestos Internos* (SII), projection is linked to the workload requirements associated with the audit resources in the various territorial units of the Service and the availability of the different treatment actions arising from the risk prioritization and treatment consolidation process and the stock of treatment actions available, among other considerations. Programming must do with the fulfillment of the work program agreed upon by the Tax Administration, which considers the different focuses of the tax compliance actions that the administration itself deems necessary for its development. Specifically, the SII considers, in the Tax Compliance Operational Plan (TCMP), the specific actions (with a purely operational focus) to be implemented during that period, and in the Tax Compliance Management Plan (TCMP), the audit actions and focuses during a given period at a more strategic level, the latter being published annually on the SII's own website to inform citizens and taxpayers.

From the same perspective, in the case of operational contingencies related to the implementation of treatment actions (difficulties in approaching taxpayers, extension of reviews, relocation to other territorial units and work teams, problems in the quality of compliance with the risks detected, among other cases), the SII may rely on replacement treatment actions available from previously selected actions, but not dispatched depending on the availability of ability in the different implementation units stored or available for specially managed dispatch, which serve as stock and follow the same rules of updating due to the contingencies mentioned above. Thus, as far as possible, replacement treatment actions will be available to ensure operational continuity, as well as efficacy and efficiency in the implementation of treatment actions.

3.4.3 Workload

Workload refers to the availability to the different implementing units of different actions that arise from the consolidation process of treatment actions, considering their abilities, projection, and programming. Usually, this workload is organized through the use of audit management support tools, collaborative platforms, and case systems. In addition to the identification of the treatment actions themselves, any complementary material that is appropriate for the implementation of the case is made available.

The workload already selected for implementation is available in different computer systems to support management, and the audit itself, depending on their nature. Systems such as Advanced Electronic Signature (sending emails or certified letters to taxpayers), Audit Management System (system of registration and operational monitoring of treatment actions downloaded for implementation), Integrated System of Tax Compliance (comprehensive information system for the taxpayer), and Electronic Dossier (electronic repository of documents provided by both the SII and the taxpayer), among others. These systems make it possible to systematize the audit

actions by inserting data, consulting information, incorporating complementary data (supplied or not by the taxpayer), and sending information to the taxpayer (messages, emails, registered letters, among others).

The activities related to this process can be performed in varying timeframes. For example, the scheduled loading of treatment actions is conducted on a monthly basis. Depending on the audit needs or the contact with the taxpayer, the schedule may be affected, which may lead to dispatches on other specific dates, such as when there is a specific audit focus that the SII itself highlights, an uncertain issue, or a detected fraud situation.

3.4.4 Follow-up

This stage refers to the periodic monitoring of the efficacy and efficiency of the various treatment actions programmed or implemented by each of the territorial units by means of operational management indicators. Therefore, these management indicators seek to periodically measure compliance with the planning established by the Tax Administration.

At this stage, it is essential to rely on all the sources of data and information that make it possible to structure, construct, implement, and update the different indicators. In this way, the Tax Administration itself will be able to know the level of compliance with the actions programmed or made available to the implementing units and make timely decisions on possible changes or specific focuses, in search of efficiency and efficacy in the implementation of such actions.

Chile's *Servicio de Impuestos Internos* (SII) formulates several operational management reports and process statistics to facilitate decision-making. Among these reports and statistics are progress reports for the implementing units, which contain disaggregated information and executive reports. The indicators are constructed by making use of different data sources, provided by the registration systems available in the SII. The updating of these reports will depend on the recipient. For example, if it is an operational counterpart, it may be daily or weekly; if it is a tactical counterpart, it may be monthly; if it is strategic, the frequency may be monthly, quarterly, biannually, or annually, providing different levels of detail in each of the reports.

4 Stage 4: Treatment

Corresponds to the implementation of the treatment actions defined in the previous stage, which must be validated and supervised before their effective implementation in the operational areas or in those responsible for implementing the treatment actions.

In the analysis stage, for each noncompliance risk, the feasible treatment actions to be implemented were analyzed. In Stage 2 of the Treatment section, related to risk analysis, we addressed the types of treatment in general terms: corrective, preventive, and structural. In the current section, the considerations to be taken into account in the implementation of these treatments will be further elaborated, in particular the types, channels, scopes, available resources, and necessary support.

Additionally, this section reinforces the idea that the actions contained in treatment programs should promote the principle of proportionality, by detailing criteria to define their scope and the different types of treatment actions that can be implemented. The stages of risk analysis, as well as prioritization and consolidation, as pointed out above, determine that:

- The specific risk analysis stage determines the identification of different levels of risk severity. Similarly, nominative treatments are allocated according to the severity of the measured specific risk and taxpayer risk. It is necessary to ensure that the most intensive actions are allocated to the taxpayers who have the most deteriorated specific risk and taxpayer risk.

- The prioritization stage allows for a rating of specific risks in such a way that the most relevant risks are prioritized according to the degree of exposure that such noncompliance generates for the treasury.

- The nominative treatment allocation stage, in turn, is conditioned by rules in which the most intensive treatment actions will have priority in their application.

At this stage, depending on how each Tax Administration is organized, we can determine the timeliest moment to implement the action in each operational area. For example, at the micro level, each operational area must apply management elements and decide which treatment maximizes profitability from a resource management standpoint, taking into account that cases have an expiration date.

To ensure the success of the process, rigor is required at each stage. However, at this stage, we establish contact with the taxpayer; this is a relevant factor that affects their behavior.

Effective implementation of any noncompliance treatment strategy depends on compliance in three key areas: resources, design, and implementation.

4.1 Resources

The Tax Administration is accountable to the government and the community for the cost-effective use of resources. Compliance management is essentially about optimizing the use of the resources allocated to a Tax Administration to maximize the overall level of tax compliance. Under this scenario, it must ensure that the implementation of its treatment strategies is well-planned, managed and communicated, demonstrating a high level of professionalism in the process. These correspond to the human resources and administrative expenses and costs that are used in the implementation of a treatment. This should include the effective allocation of resources, both centrally and at the level of the operating unit.

4.2 Design

The design of the treatment action contributes to the success of its implementation. The OECD[35] argues that collaborative design can contribute significantly to its ultimate goal. Potential participants in the designing process may include representatives of the target industry, market segments, or subgroup, professionals, representatives of other government agencies, pressure groups, and community associations.

There are three main benefits of adopting a codesign approach.

Firstly, securing the support and cooperation of key agents can be crucial for achieving the desired influence on taxpayer behavior.

Secondly, the more stakeholders that are involved, the greater the participation in the discussion on specific issues and the greater the potential of the strategies devised, helping to make them innovative and feasible.

Thirdly, if the authority is seen as genuine in its desire to establish partnerships with the community, the potential byproduct is an improvement in the authority's credibility and integrity. Dialogue provides information to the revenue authority, which influences its performance and helps maintain the perception of fairness and trust.

The design also includes the working guidelines, which should focus on the comprehensive process, the use of accurate information, and the answers to the following questions: What is being reviewed?, What is the risk?, What are the contrasting elements for accepting or rejecting the risk?, What is the scope and focus? among others. It is recommended to include information about the business concerned, macroeconomic data, and information related to the environment, which makes it possible to become familiarized with the taxpayer and inquire about the causes or improvements in the process. In addition, ancillary tax information can be included, e.g., the taxpayer's gaps, in order to understand and address them properly.

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35   OCDE, GUIDANCE NOTE; Compliance Risk Management: Managing and Improving Tax Compliance, October 2004, p 58-60.

The view of the auditing or implementing levels is essential for the design stage, as they evaluate and codesign the guidelines, scopes, baseline risks, focuses, or intentions to be generated. In this way, by strengthening the collaborative design stage, a significantly higher standard of design can be achieved. It is always important to consider the implementation of sample-based pilot studies to validate situations where there is no history of previous implementation of certain treatment actions.

4.3 Implementation

The implementation of any specific treatment strategy must be fair, impartial, and consistent.

The personnel are key to the success of the implementation, as they must not only have extensive tax knowledge about the issues they are auditing, but must also have integrity and put into practice institutional values such as probity, fairness, and respect. Not least, the actions of each official represent the image of the institution and influence taxpayer compliance.

It is necessary to consider disclosure stages prior to implementing treatment actions, in order to effectively communicate their scope. Full understanding of these stages by those who will implement the treatment actions is synonymous with success. On the other hand, it is useful to keep open channels during implementation to answer questions, conduct consultations, or provide support during implementation.

Chile's Tax Administration has implemented a procedure for monitoring and supporting the implementation of treatment actions, with greater application in audits. This procedure is composed, in general terms, of two main phases:

- Monitoring of relevant operations: both the central and regional levels are required to register an entry in the system when the case to be implemented is considered "relevant". An internal instruction defines the category of "relevant". For example, the amount of the operation is an important criterion to be considered.

- Application of special norms: for example, during the implementation of a treatment action, situations may arise that justify the application of the general antiavoidance norm. In this case, a support team is called in at the central level, which may determine the escalation of the situation according to its complexity, and the case may be analyzed and resolved with the participation of the institutional management team. The goal is to support the audit team and ensure a proper and consistent handling of the case.

4.4 Criteria for Defining the Scope of Actions

The actions contained in treatment programs should promote the principle of proportionality, so that they are proportional to the taxpayer's level of tax compliance.

In this context, we must specify criteria to define the scope of treatment actions in the realm of audit, the treatment programs, and the channels and modes of addressing the actions.

Treatment actions comprise different activities that the Tax Administration can perform in the exercise of its powers, such as facilitating or simplifying compliance with tax obligations and assisting or supervising taxpayers in complying with their obligations. At the same time, these actions can be directed to the entire tax system, to a certain segment of taxpayers, or to

specific taxpayers, which entails a wide range of actions available to address various behaviors. Consequently, it is necessary to define the scope of each tax action and then measure its efficiency and efficacy.

To maximize the impact of the actions and with the aim of addressing noncompliance risks and tax gaps, the business areas generating the actions must design, specify, establish, or request in the corresponding documentation, in a clear manner, as appropriate, the focus of the action, the timeframe of the noncompliance risk addressed by the action, and the minimum elements to be verified during the action, all according to the following guidelines:

Type of action: indicates whether the action is preventive or corrective.

Focus of the action: specification of the subject to whom the action is to be performed and the situation to which it is designed:

- Causes that give rise to noncompliance;
- Process or development, or
- Target, purpose, or result.

As an example, if we detect:

- A start-up risk by a person who has no intention of carrying out taxable activities and seeks to obtain tax-related or other undue advantages through simulated or untrustworthy operations, it is necessary to indicate whether action should be taken in the process of receiving the start-up notice (preventive action) or after the respective notice (corrective action).

- A risk of underassessment of the transfer value of real estate, it must be indicated whether the action is to be taken against notaries, curators, brokers, or fiscal intermediaries in general (preventive action) or against the contracting parties or the beneficiaries of the use or enjoyment of such property (preventive or corrective, as the case may be).

- A risk of cigarette tax noncompliance should be defined if the greatest impact of audit action is achieved through preventive control of producers, distributors, transporters, retailers, or persons selling them to the final consumer.

Timeframe of the consequences associated with the risk to be addressed: it should be specified whether the actions to address the noncompliance risk in question indicate temporary or permanent differences that adversely affect the tax system.

As an example, in investment projects that give rise to tax depreciation expenses, a clear distinction must be made as to whether the noncompliance risk lies primarily in the value of the investment (which may lead to permanent differences affecting the tax base) or in the depreciation of the investment (which lead to temporary differences in the tax base).

Documentation to be consulted: it must be specified in which cases the following elements must be corroborated, which can affect the tax base:

i. Calculation of the operations or transactions (transactional approach): refers to the comparison of the documentation with the relevant accounting, contractual, and tax registries, in order to verify whether the determination of the tax base is correct. For

example, it must be checked whether the general ledgers or sub ledgers, or contracts or deeds, as the case may be, show costs, expenses, or amounts that differ from those used or declared upon determining the tax base of the respective tax.

ii. Relevance (personal approach): corresponds to the verification of the operations performed by the taxpayer, that is, whether the activities declared are attributable to the taxpayer who reports them, or whether the taxpayer performs the activities and generates the income declared. For example, it must be verified if the company registers as its own expense general services that are, in fact, partially used by other companies or persons, or if the company declares income that, in fact, corresponds to other taxpayers who produce the same income.

iii. Tax regime (tax approach): refers to the fact whether, once the calculation of the transactions and their relevance is established, it is verified whether the relevant tax regime has been applied to them. For example, it should be checked whether losses incurred under a certain tax regime are deducted from the computable results under a different tax regime.

iv. Efficacy (substantive approach): corresponds to the ratification of the existence or efficacy of the goods or services offered by the taxpayer or the very existence of the taxpayer, according to the general instructions on the matter.

v.   Assessment (substantive approach): corresponds to the verification, through specific tests, if the contracted or allocated value is in accordance with the business model performed by the taxpayer or in the segment, sector, or market in which it participates. In this case, taxation can be considered with reference to current market values, those effectively negotiated in a reference market, or generally accepted techniques for the assessment of assets, such as rights, shares, and financial instruments.

In order to safeguard the principle of proportionality of treatment actions and respect its operational limitations, the areas generating the Tax Administration's treatment actions, in their compliance reviews of low or key risk taxpayers, should specify whether it will be enough to consider the first three elements, regardless of whether the action is carried out remotely or with a designated official, either in the field in their office. For high or medium risk taxpayers, it is likely that acknowledgement or assessment of material efficacy will be requested, which should be instructed in the respective work agenda.

Mode of implementation of the action: the generating areas must specify if the respective treatment action is to be carried out in one of the following modes:

a. Remote: for example, an official can contact the taxpayer by telephone and handle the case by this same means, with the aid of an electronic file.

b. In-person: an official establishes direct, in-person contact with the taxpayer.

c. Self-service: it is the taxpayer themself, without the intervention of Tax Administration staff, who resolves (through the virtual office, for instance) or takes notice of any communication.

Action resolution channel: the generating areas must specify whether the action to be taken should be via virtual office or website, in the field, in the office, via telephone, or via message (email or letter).

4.5 Treatment Programs

A treatment program is a group of structural, preventive, and/or corrective actions that aim to address, in the context of current regulations, the levels of tax compliance related to a tax obligation, whether a gap or a noncompliance risk, associated with a process or segment of taxpayers, so that the combinations of such actions have the greatest possible impact.

A treatment program is the outcome of the interaction of the different business areas (generating, risk managing, and process owning areas) of the Tax Administration.

Based on this interaction and risk processes, treatment programs will have, among others, the following focuses: processes, tax gaps, and taxpayer segments. Preventive and corrective actions must be explicitly indicated.

4.6 Modes of Application

Considering that there are different ways of enforcing taxpayer treatment actions, it is necessary to define which ones make it possible to influence the causes of noncompliance, prevent and detect tax differences, achieve greater certainty about the risk to be faced, increase taxpayer knowledge, and encourage compliance in a more appropriate way.

The mode of application will vary depending on the objective of the action, the assessment of the noncompliance risk to be managed, the severity of the noncompliance, the elements or attributes to be corroborated, and the compliance profile of the taxpayers under analysis. The modes of application are self-service, remote, and in-person.

Preventive and corrective actions should, as a general rule, promote and encourage voluntary compliance with all tax obligations concerning taxpayers and, within the scope of this imperative, aim at resolving the review procedures and processes related to them, using the available modes and channels.

By way of example, the following treatment action implementation modes can be implemented, according to the taxpayer's risk rating (TRR):

- If a taxpayer has a "Low" TRR with corrective actions, self-service is favored, by using the institutional website or mobile apps to resolve reported differences.

- If a taxpayer has a "Key" TRR with preventive actions, we can use in-person service, through channels such as meetings, or remote service, by sending personalized messages, with permanent and personalized monitoring of their compliance levels.

- If a taxpayer has a "Medium" TRR with preventive actions, remote service is favored, through the use of mass channels (pop-up messages, letters, emails), with permanent online monitoring of compliance levels.

- If a taxpayer has a "High" TRR with corrective actions, the focus is on in-person service in the office, through ongoing risk reviews and/or audits.

The definition of the mode of application and the service channel to be used in each case must be established by the party responsible for the treatment actions and the respective risk manager, considering the predefined treatment allocation policy.

Below is a description of the different modes of implementing preventive or corrective actions and the various service channels that can be used in each mode:

a) Self-correction

- Description: corresponds to the actions that make it possible to inform taxpayers about their noncompliance gaps or previously determined tax differences, requiring that they be resolved remotely, through the website or mobile devices, and may, depending on the case, require the support or assistance of the help desk.
- Use: used for risk reviews (pilots) or compliance reviews.
- Service channels: web page enabled for correction or reply, mobile device, or self-service functionalities on defined networks.
- Scope: as a general rule, this type of action is intended for taxpayers whose taxpayer risk rating is "low". They can also be used for taxpayers with other ratings who show precise differences and in spite of simultaneous or subsequent specific actions that proceed in these cases.

b) Remote review

- Description: corresponds to those actions that allow the designated official to request information from the taxpayer or their representative, and/or communicate, in a simple and agile manner, the noncompliance, difference, gap, or request for information, without necessarily having to initiate an audit in the absence of a response.
- Use: used for risk reviews (pilots) or compliance reviews.
- Service channels: telephone or online contact can be used.
- Scope: actions of this type, since they are brief, are generally directed at low or key risk taxpayers, or at situations that indicate tax differences susceptible to being corrected remotely. The scope of the review should be limited to the risk, noncompliance, or difference to be reviewed or audited. The process ends when the condition established in the respective instruction ordering the review is met, regardless of whether or not the taxpayer corrects what was requested. If, based on the information received from the taxpayer, other situations of evident or relevant noncompliance are detected, they may be treated according to the corresponding review process.

c) Field review

- Description: corresponds to the verification of the taxpayer's tax behavior, making it possible to verify, among other things, the correct issuance and transfer of goods and tax documents by the shippers, the correct issuance of documents, registrations, and inventories of the established businesses, the comparison of values, and the communication of infractions or noncompliance.

- Use: used for risk reviews (pilots) and compliance reviews.

- Service channels: these actions are carried out in the field, either at the taxpayer's business address, in their own offices or those of third parties, in public spaces or on roads, or, in general, wherever it is necessary to corroborate their behavior.

- Scope: these actions can be performed after verifying, in a reliable and direct way, the taxpayer's tax compliance in relation to a certain noncompliance risk. In addition, as support for an audit, it is possible to know the internal processes of the taxpayer, verifying in the field the magnitude of their operations, e.g., by inquiring about the size and volume of stocks, the number of employees, recurring expenses, the existence of assets, and, in general, the criteria and internal control procedures used by the taxpayer that have an impact on tax compliance.

d) Office reviews

- Description: corresponds to the review of any inconsistencies that taxpayers may manifest in their tax returns. It also controls and corrects anomalous occurrences or transactions in specific situations, including the verification of complex cases and random reviews ordered by the central level.

- Use: used for risk reviews (pilots) that involve investigating and gathering more information about risks, compliance reviews, and audits.

- Service channels: these actions are performed in offices.

- Scope: the use of these actions is favored for taxpayers with high or medium risk, or in the case of complex operations or random reviews. The depth and extent of these actions are determined by the proportionality of the type of review to be performed, with audits requiring the most activity.

5 Stage 5: Evaluation

This stage is essential and can be segmented into at least three levels:

1. The first deals with macro measures, such as VAT or income tax evasion, informal trade, or fraud.

2. The second level covers general indicators of tax compliance, such as the evolution of gaps (e.g. they have decreased for all regions or segments, or only for some of them and in certain cases), the evolution of specific risk levels (e.g. there are fewer taxpayers in the severe levels for certain specific risks), and the evolution of taxpayer risk rating (e.g. high risk taxpayers have decreased, all segments and regions, or only some of them).

3. At the third level, the treatment actions are analyzed, i.e., whether the planned design was accomplished, whether quantitative or qualitative objectives were met, whether revenue was sought, whether there were payments associated with the business, whether the taxpayer's learning was catered to, or whether the level of unfamiliarity decreased. Various methodologies can be used for this, such as treatment and control groups, random audits, and surveys.

This stage has certain advantages: it allows for knowledge management, assists in organizational learning - as it provides feedback regarding the entire previous cycle -, and answers questions such as: was the risk well identified and analyzed?; was the prioritization performed properly?; was the implementation correct?; and are the treatment actions effective?

This stage has a high opportunity cost associated with it. If there is no direct contact with the taxpayer to adequately evaluate the efficacy of treatments (e.g., alert letters), the existence of other measurement tools, such an institutional performance agreement that measures hours will be an incentive to measure outputs rather than outcomes, i.e., 100% implementation of all VAT control actions could be met, and evasion could increase. In this circumstance, it is evasion that ultimately should be measured since the strategy implemented was aimed at reducing VAT evasion.

Evaluating the impact of treatment actions carried out by Tax Administrations at the strategic level aims to assess whether these actions meet their objectives. This is done, for example, by measuring the change in tax gaps for taxpayer segments in a given jurisdiction or at the national aggregate level.

It is also possible to evaluate the efficacy and efficiency of the tax noncompliance risk management process in each of its stages, from the identification of risks to the implementation of treatments, and even the evaluation process itself. In this case, the evaluation seeks to measure the relationship between outcomes and inputs of the process, the number of risks addressed, and the number of treatments applied, among other possible indicators.

Under the traditional model, the focus is on determining the number of treatment actions taken and the associated yield. Under the focus of tax noncompliance risk management, the approach of the traditional model is still incorporated, but the focus is on evaluating the impact on achieving change in taxpayer behavior, where the main measure is to determine the efficacy of treatment actions carried out in reducing tax gaps or mitigating noncompliance risks. The

evaluation of this tax compliance management process measures both the efficacy and the efficiency of the measures taken, considering the process as a whole.

In this stage, the monitoring and follow-up of the outcomes of the treatment actions is carried out, in order to evaluate the quality of the implemented processes, the treatment actions carried out, the evolution of tax gaps, and the implementation of institutional projects.

In this way, it is relevant for the institution to maintain consistency and traceability of the process. For example, if the treatment of a certain noncompliance risk is defined, this risk must be treated effectively in the respective operational areas, in order to control the deviations between the risk to be treated and the risks effectively treated.

In each instance, we must consider goals and performance indicators monitored at the local and central levels, as well as qualitative evaluations of each of the stages of the methodology and the elements that comprise it.

All this information is transformed into a flow that gives feedback to the work cycle and motivates the necessary adjustments to generate a continuous improvement process.

In summary, as part of the risk management process, risks and controls should be monitored and reviewed regularly, in order to verify that:

- The suppositions made with the risks remain valid.
- The suppositions on which the risk evaluation was based, including the external and internal context, remain valid.
- The expected results were achieved.
- The results of the risk evaluation are in line with the real-world scenario.
- The risk evaluation techniques have been properly applied.
- The risk treatments are effective.

Responsible persons should be designated to carry out monitoring actions and activities related to risk management[36].

Monitoring and review should be planned within the risk treatment process and be subject to regular verification or surveillance. This verification may be periodic or occasional, and the evaluation responsibilities must be clearly defined.

The evaluation should cover all risk management processes, with the aim of:

- Ensuring that controls are effective and efficient, both in their planning and operation.
- Obtaining additional information to improve risk evaluation.
- Analyzing and drawing conclusions from events, changes, trends, successes, and failures.

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36   ISO 31010:2013, Gestión del Riesgo - Técnicas de evaluación del Riesgo.

- Identifying changes in the internal and external context, including changes in risk criteria and in the risk itself that may require review of treatment actions and priorities.

- Identifying emerging risks[37].

5.1 Evaluation of the Risk Management Process

Managing noncompliance risks is a cyclical process, in which the evaluation must be carried out systematically at each stage and, therefore, be constantly improved. For this reason, it is necessary to know only the outcomes, but to register the aspects that can be improved in the process and, thus, improve the efficiency and efficacy of the Tax Administration.

Illustration 65: Noncompliance Risk Management Process

IDENTIFY
- New risk resulting from the evaluation

ANALYZE
- Identification of new causes
- New behavior patterns

PRIORITIZE
- Changes in treatment allocation policy

TREATING
- Changes in treatment assignment policy

EVALUATE
- Incorporation of new evaluation methodologies

For example, in the analysis stage, it is necessary to generate a request to compile information from personnel who are in contact with taxpayers or to gather the knowledge and experience of specialized staff who can contribute on issues such as identifying new causes of noncompliance included in the taxpayer review or suggesting the elimination of causes that are not considered relevant. New attributes can also be included in the model based on the outcome of the review, which can potentially be incorporated into the treatment action feedback reports or through meetings that encourage improved risk analysis.

Through information analysis and the fiscal intelligence applied to the data, models can be generated that incorporate new attributes or patterns of behavior that have emerged from the evaluation stage.

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37   ISO 31000:2012.

The risk identification stage considers feedback from the evaluation process, from which new risks may emerge that were not initially considered. For example, as a result of the gap and macro indicator evaluation, it was found that VAT refunds on exports have increased in contrast to the reports from Chile's National Statistics Institute (INE), which did not register significant variations in this area. On the other hand, in the previous period, no VAT control actions on export were registered. Based on the above considerations and the tax burden of the operation, an additional risk is identified, which is the "undue VAT refund on export".

As a result of evaluating the efficiency and efficacy of treatments, changes in the treatment allocation policy can be suggested, including new treatments or modification of the type of taxpayer analyzed, in order to achieve greater efficiency. The evaluation of a treatment can be conducted through preliminary monitoring of the outcomes. This would allow adjustments to be made during its implementation or after the final evaluation, so as to modify the strategy by including or eliminating treatments.

Furthermore, the outcome of the evaluation is the raw material for the risk identification and analysis process. Therefore, the conclusions reached in the evaluation are fundamental to the process.

5.2 Taxpayer Risk Evaluation

All efforts of the Tax Administration aim to achieve some positive impact on taxpayer behavior. The expected result is that taxpayers comply with their tax obligations.

Under this premise, Tax Administrations should evaluate the taxpayer's risk in different aspects, such as the application of a specific treatment, at a macro level, on certain taxpayer segments, economic sectors, etc.

Illustration 66: Taxpayer Risk Rating Evaluation
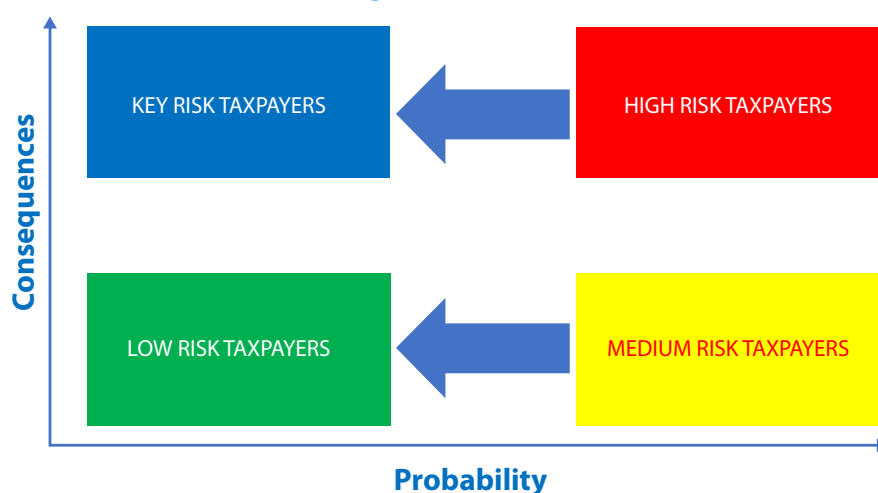
In practice, for instance, we represent the evolution of the risk of legal entity taxpayers and compare their rating between two time periods, seeking to identify whether there have been changes and to determine the characteristics of the taxpayers who have had their rating changed.

Illustration 67 shows the movement of risk from taxpayers who belonged to a risk rating in time period T1 (blue sphere) to the rating categories in period T2 (orange sphere) where the volume of the sphere represents the number of taxpayers per category (4=High; 3=Medium; 2=Key; 1=Low) associated with the taxpayer's risk level. That is, taxpayers who in during 2016/06 were in Blue moved to different ratings during 2016/12.

The first graph presents the taxpayers who were classified as Key Risk at T1 and shows how their rating is maintained or changed at T2. In this case, a considerable number retain the rating of Key (2), and those taxpayers who changed to High Risk (4) at T2 should be analyzed.

In addition, it is necessary to verify that treatments are applied to this group of taxpayers and to constantly monitor their behavior. This makes it possible to detect the attributes that allow changing their category to a riskier one. It is also necessary to consider the taxpayers with Key Risk (2) at T1 who changed to Low Risk (1) at T2 and, thus, verify which are the events that enabled lowering the taxpayer's risk level. This is under the supposition that the calculation methodology does not change between T1 and T2, or its changes are not significant enough to compare these characteristics.

Illustration 67: Movements in Taxpayer Risk Rating
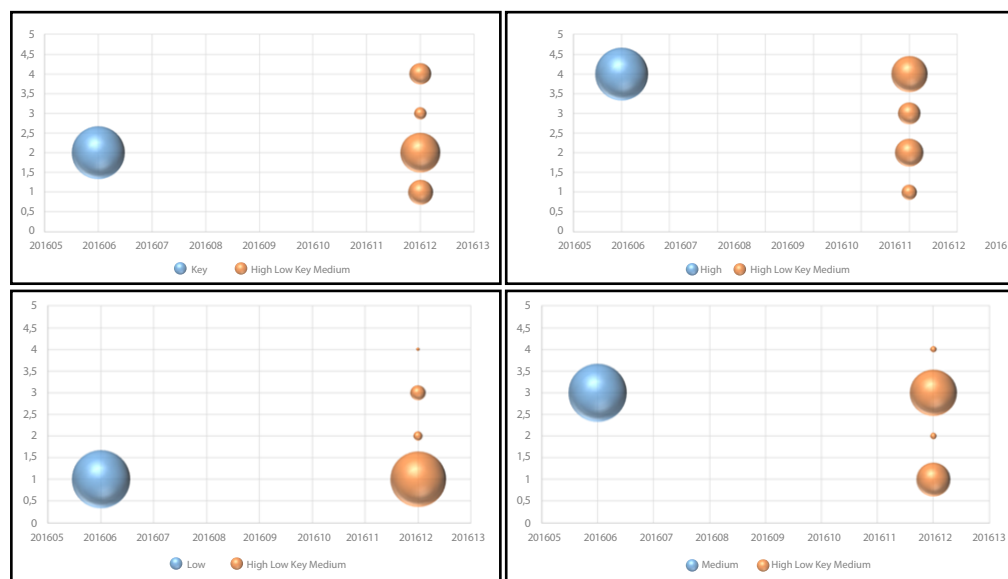
Finally, the number of taxpayers who had a probability decrease in the taxpayer risk rating at T2 compared to the previous period (T1) is shown below. This corresponds to the final effect of the decrease in probability on legal entity taxpayers. This analysis can be carried out in several aspects, such as: which treatments were applied to these taxpayers? which attributes enabled their decrease? which segments were affected by the decrease in the taxpayer's risk probability? did any operational unit register an increase in their probabilities?

The analysis of all these questions allows the improved strategies to be applied in the following periods and the incorporation of new risks in the identification stage.

Category Changes in Companies

Illustration 68: Probability Decrease
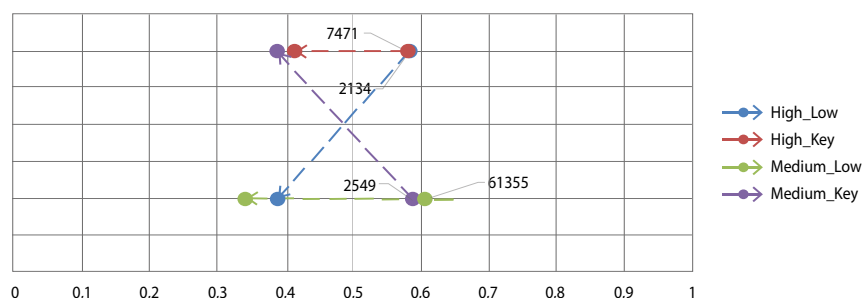
Another way to assess taxpayer risk is to analyze the movement in terms of weight, starting from a base period of comparison, that is, from T0 to T1. This movement can have at least three different combinations, one for each quadrant previously selected, taking into account that the possibility of no change of quadrant is not included in these combinations. For example, if at T0 the taxpayer changes situation and is originally in the High quadrant, at T1 they can be in Key, Medium, or Low. The number of theoretical combinations is 12, from which valuable information of taxpayer shifts can be obtained, which provides insight into the methodological consistency applied.

In concrete terms and for the purposes of the graph above, the segment of companies and the movements from T0 to T1 in the High Risk to Low Risk and High Risk to Key Risk scenarios were considered. The number above the arrows represents the total amount of taxpayers who shifted. The same logic is followed for the information in the Medium Risk to Low Risk and Medium Risk to Key Risk pair. One of the lines of analysis that is suggested in theoretical terms consists firstly of identifying the extreme changes of situation, e.g., when we go from Low Risk to High Risk or vice versa. It is worth noting the importance of analyzing changes in probability (keeping consequences constant). This means that taxpayers may have improved or worsened (depending on the direction of the analysis), going from Medium Risk to Low Risk or from Low Risk to Medium Risk. This information is valuable when making decisions or proposing treatment strategies. In general, other analyses can be applied under this technique to enrich the process.

Moreover, it is important to:

- Determine which probability attributes had the greatest impact on taxpayer category changes.

- Consider that within risk rating, complexity attributes can be addressed. For example, a large taxpayer with a large, international corporate network may represent a higher risk. Similarly, an individual taxpayer, who is a partner in one or more companies, with self-employed income and using exemptions, could represent a higher risk than a dependent employee. For evaluation purposes, this may be a no-change risk, but this does not mean that the treatments are poorly designed, but

that the risk rating is still determined by attributes of this nature (complexity). Therefore, it is important to evaluate which attributes determine the probability.

5.3 Noncompliance Risk Evaluation

Illustration 69: Noncompliance Risk Rating

PROBABILITY OF OCCURRENCE

CONSEQUENCES	RARE	UNLIKELY	MODERATE	LIKELY	VERY LIKELY
EXTREME	HIGH	HIGH	SEVERE	SEVERE	SEVERE
VERY HIGH	HIGH	HIGH	HIGH	SEVERE	SEVERE
HIGH	SIGNIFICANT	HIGH	HIGH	HIGH	HIGH
AVERAGES	MODERATE	MODERATE	SIGNIFICANT	SIGNIFICANT	SIGNIFICANT
LOW	LOW	LOW	MODERATE	MODERATE	SIGNIFICANT

Evaluating the evolution of a noncompliance risk enables us to perform the analysis globally and establish whether the probability of noncompliance or its consequences have increased or decreased. From the outcomes, we can conclude whether it is feasible to continue or discontinue efforts to try to reduce the specific risks identified or to cause a change in strategy.

If specific treatment actions have been applied, the same treated taxpayers can be evaluated to see how they have evolved and to consider the attributes they still retain after this evaluation. We can also identify which is the most efficient treatment to apply, that is, which has the greatest effect on their behavior. Other analyses to be applied aim to evaluate whether the methodology has changed or not, what are the movements generated from one analysis period to another (similar to the analysis performed for taxpayer risk), and the composition and possible changes between the different quadrants (for example, to analyze in greater depth the risks classified as "severe" and the quadrants that encompass them).

As an example of the application of a treatment analyzed under said technique, the following table is shown, in which the total number of taxpayers who manifest the risk of "not filling out the monthly VAT form" is 1,251,864. This risk is determined as the probability that, at a later period, said taxpayer fails to comply with this obligation, which generates monetary consequences. Of these taxpayers, 54,189 were subjected to a study designed to determine the decrease in probability following an audit action using the same model. The result of this indicates that 34,424 taxpayers reduced the probability of the noncompliance risk occurring after an audit. Moreover, the taxpayers who reduced the probability, most of whom were treated with a compliance review, fared better than those who performed self-service via email.

In order to enrich the analysis, it is suggested, in general terms, to incorporate other elements, such as costs, time, and resources used. Furthermore, it is important to determine changes in taxpayer behavior over the long term. Therefore, permanent monitoring is necessary to detect changes over time.

Table 39: Sample Noncompliance Risk Reduction Probability Table

Cat. Score	Total CR Taxpayers	No. Taxpayers			
		With Treatment	Probability before Treatment	Probability after Treatment	Probability Decrease
1-Rare	438,152	0	0	863	863
2-Unlikely	325.485	3.438	3.438	2.647	618
3-Moderate	250.373	5.009	5.009	3.075	1.636
4-Likely	162.742	8.315	8.315	5.318	2.633
5-Very likely	75.112	37.427	37.427	7.862	28.674
	1.251.864	54.189	54.189	54.189	34.424

In summary, when talking about evaluation, the following can be considered:

- As far as the analysis methodology is concerned, changes can be made, or more sophisticated techniques can be used.

- Attributes can be "added", "deleted", or "modified".

- Evaluating category movements from one period to another.

- Measuring the impact of a treatment according to its risk category.

- Analyzing segments to discover the most relevant ones, defining specific strategies for them.

Each of these considerations can be further analyzed according to the scenario of each Tax Administration.

5.4 Compliance Gap Evaluation

In the evaluation stage, the Gap Map can be analyzed from different points of view. On a general level, it is interesting to find out which gaps have grown the most over a period of time. This allows us to evaluate possible risks to be used as feedback for the risk identification stage. It is also useful to analyze the main decreases in the gap indicator at different stages, in order to find out if any treatment actions had an impact on the outcome or if it was due to the impact of variables.

The gap is a ratio in which the denominator is the total number of those liable to a particular tax and the numerator is the number of noncompliers. Thus, a decrease in the gap may be the outcome of a decrease in the number of noncompliers or an increase in the number of liable subjects. This result may determine a different strategy depending on its origin. In addition, it is advisable that the gap analysis is accompanied by the number of taxpayers it affects. For example, it is possible to have a 100% gap - everyone is noncompliant - for an insignificant sample of taxpayers, who do not have a large impact on the Tax Administration. Therefore, this gap, although high, may not be significant or relevant for the purposes of the actions to be taken.

It is advisable to know the main variations of the gap indicator, always considering the number of taxpayers it affects, in order to determine its importance. For example, the following graph shows the main variations of gaps for each stage of the tax obligation (registration, information submission, declaration, and payment).

Illustration 70: Gap Reduction
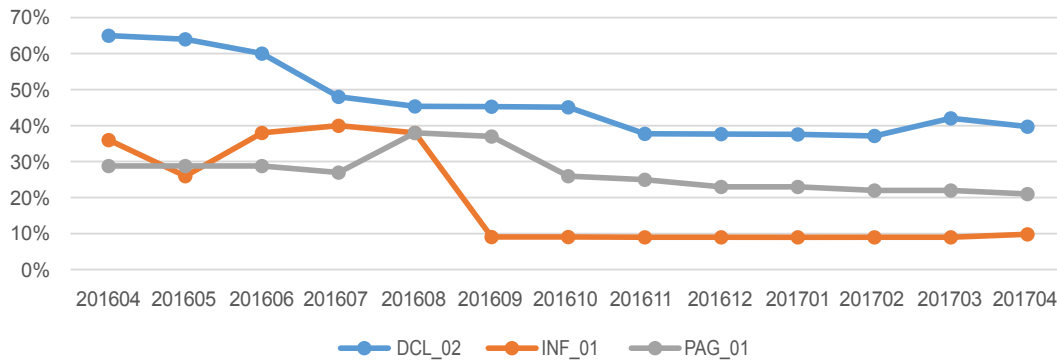
Gap analysis can be performed from different perspectives, such as size, segment of interest, scope in which it carries out its activities (national or local), treatments applied, and economic sector.

As an example, it was decided to carry out an audit program to reduce the gap in individuals' income tax returns. According to the outcomes obtained, all categories showed a reduction in the gap, with the exception of fishing, which maintains a rate of 14.17% of noncompliance. The same treatment was applied to all taxpayers. In the evaluation stage, in general terms, the treatment was well assessed. However, for the following process, within the fishing category, taxpayers will not be called to the respective unit, but will work directly with fishers' associations. The focus of the work is preventive, providing lectures and bilateral meetings to establish closer contact with the taxpayer, and, subsequently, in cases that deserve it and considering the level of information collected, a field audit will be carried out.

Illustration 71: Sample Gap Analysis

EVOLUTION OF GAPS LAST 12 MONTHS
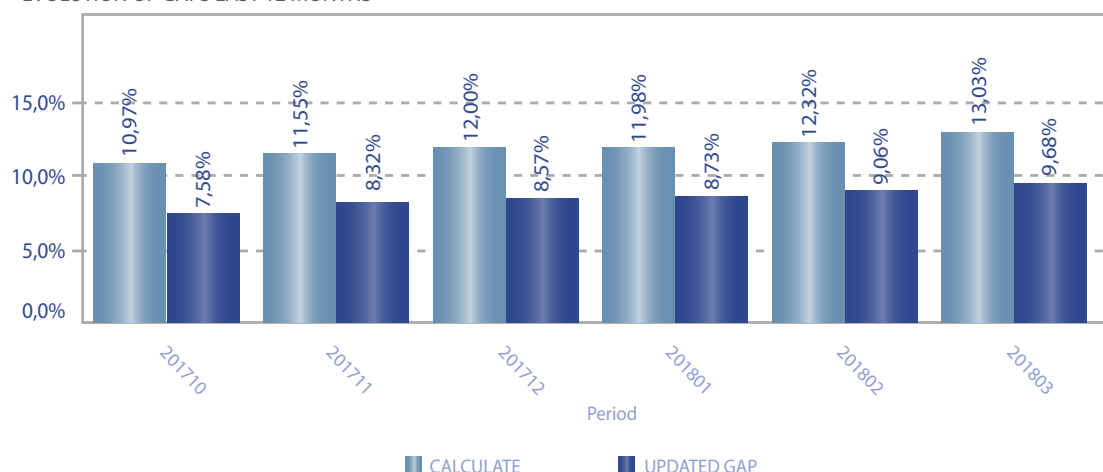
As in the previous example, the evolution of the gap can be analyzed at the national level or segmented by operating unit or region of the country. If there is a trend in most units of the country and very few differ from them, an evaluation of the causes of this type of behavior on the part of the taxpayer should be established. At the local level, the main gaps to be evaluated may also differ, since the geopolitical scenario allows certain taxes or tax benefits to be applied in some regions to segments that have greater relevance, and this may mean that a gap is more important in certain regions. For this reason, operating units may follow separate or complementary strategies, depending on the case. In particular, Chile's Tax Administration has encouraged collaboration agreements with taxpayer associations at the regional level. This collaboration has been conceived as a preventive treatment action, precisely with the aim of establishing closer ties with the community. Likewise, local differences are also recognized, as well as the relevance of the expertise of regional teams, which can maintain a closer and more technical relationship catered to the needs and characteristics of taxpayers.

In summary, when talking about evaluating gaps and their evolution over time - in which the Gap Map undoubtedly plays a very relevant role -, the following can be considered:

- The evolution of gaps, verifying the main variations (increases and decreases).
- New information for gap construction.
- The need to perform different analyses about variations of the gaps, e.g., by segment, economic sector, tax, jurisdiction, among others.
- The need to provide treatments that have a greater impact on tax compliance.

Each of these considerations can be further analyzed according to the scenario of each Tax Administration. Additionally, it is important to determine changes in taxpayer noncompliance in the long term. Therefore, a periodic review of possible changes in the Gap Map is necessary.

Illustration 72: Examples of Gaps and Global Risk

RIESGO SOCIAL

IDENTIFICACIÓN BRECHA	Brecha ALTO	Brecha BAJO	Brecha CLAVE	Brecha MEDIO	TOTAL...
Declarar Rentas Integramente Obser....	0,09%	0,60%	0,14%	0,59%	1,41%
Retener Impuesto Único de 2° Categ...	0,16%	1,10%	0,00%	0,79%	2,05%
Declarar F-22 dentro del plazo Contri....	0,07%	1,89%	0,02%	0,69%	2,68%
Declarar F-29 Dentro del Plazo	0,03%	4,44%	0,03%	1,32%	5,81%
Declarar F-22 dentro del plazo Contri...	0,00%	6,59%	0,00%	1,10%	7,69%
Declarar Impuesto a la Renta en F-22	0,00%	11,66%	0,00%	2,74%	14,40%
Declarar F-29 Afectos a IVA	0,05%	11,09%	0,01%	4,36%	15,50%
Declarar PPM de Primera Categoría	0,05%	17,75%	0,02%	5,54%	23,36%
Declarar en otro régimen siendo 14 Ter.	0,15%	62,92%	0,30%	7,82%	71,19%
Declarar rentas pasivas	0,00%	61,54%	0,00%	38,46%	100,...

This illustration is only available in spanish.

5.5 Treatment Evaluation

The efficacy of the applied treatment actions corresponds to the outcome of each of the previous stages contained in the methodology. Given this, two specific focuses of evaluation can be distinguished:

o The one linked to the implementation of the methodology and the aspects corresponding to concrete changes in the taxpayer's conduct, such as their knowledge and the strengthening of their perception of the compliance, at a social level, of a certain obligation linked to long-term efficacy.

o The one that is of a strictly quantitative nature, linked to the reduction of tax gaps or the mitigation of the risks of noncompliance with a specific treatment associated with short-term efficiency.

According to the classification outlined in the previous paragraph, the central objective of impact evaluation in this respect is to provide an objective measurement on how the functional areas involved in structuring or generating treatment actions, and, more generally, in managing one or more tax obligations, use resources in order to achieve efficiency and efficacy in their activities.

As an example, a preventive email will be evaluated in order to avoid noncompliance, such as not declaring the monthly VAT form. It is worth noting the advantage of relying on a "secure mailbox" or email address for all taxpayers, where the creation of email accounts or other interactions with them can be verified:

- Identifying the taxpayers who received the message. That is, those taxpayers who actually received the email, since some taxpayers do not receive the email correctly, due to email identification problems, mailboxes with full storage capacity, emails that get marked as spam, etc. Among the taxpayers who received the message, those who comply with their obligation to declare the VAT form in the following period will be evaluated in relative terms. Taxpayers who do not comply will be subject to further treatment at a later stage.

- Lectures for taxpayers: these have a preventive purpose. The treatment can be evaluated from two different points of view. A short questionnaire on the lecture can be applied to the target audience, concerning the content addressed, the speaker, or the knowledge provided by the lecture for the achievement of good tax behavior. Another perspective is to evaluate whether the knowledge provided in the lecture is reflected in compliance. For example, if the goal of the lecture is the correct use of a tax exemption, taxpayers who attend the lectures are expected to comply correctly on subsequent returns.

It should be considered that the goal of corrective treatment actions is to correct noncompliance. Therefore, different elements can be evaluated, including:

- Cost of applying the treatment.
- Number of person-hours used in the treatment.
- Direct yield.
- Implementation evaluation.
- Evaluation of taxpayer selection.
- Evaluation of the perception of tax compliance.

For each treatment action, one or more elements can be chosen, but the evaluation will depend on the objective of the action. For example, if direct yield is used, ideally this should be complemented by evaluation of the implementation and selection of the taxpayer. It can happen that an action has no yield because the selection was not correct. It is therefore advisable to perform the evaluation of several elements. To evaluate the implementation, select the taxpayers, or evaluate the perception of tax compliance, short questionnaires can be used to collect the necessary information.

In order to explain different evaluation methods, we used the results of the study "Data Mining Models Associated with Fraud. The Chilean Experience"[38]. This work is focused on the risk of "VAT declaration with potential credit allocation from false invoices". In general, this model shows a change in the behavior of treated taxpayers, reflecting an increase in the average monthly VAT payment and an improvement in compliance levels.

A pilot program was implemented and three ways of measuring the outcomes were used: gross direct yield, compared direct yield, and indirect yield.

Direct yield: obtained as a result of the direct application of an audit program. This type of yield is composed of the amounts collected from tax differences detected in the scope of an audit process, according to the results shown in the following table:

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38   To access the quoted magazine, click here: https://www.ciat.org/Biblioteca/Revista/Revista_32/Espanol/e-book-revista_32.pdf

Table 40: Direct Yield

Direct yield	Amount (CL$)
Total	$636.502.491
By unit per notification	$46.774
By unit per competitor	$73.161
By unit per production case	$460.900

Compared direct yield: consists in comparing an audit process with another of similar characteristics that is applied in a similar period. It is important to highlight that the selection mechanism for each of the auditing processes must be of a different nature. For example, according to the following table, the comparable auditing process used as a selection tool an indicator of variation in the taxpayer's monthly tax payment, and the taxpayers who showed variations lower than the average of taxpayers with similar characteristics were selected.

Table 41: Compared Direct Yield

		Group Treatment	Group Audited Comparable	Difference
Number of Taxpayers	Total	13.608	603	
	Competitors	8.700	342	
	With Income	1.381	296	
Yield	Total	$636.502.491	$16.957.821	
	For notified	$46.774	$28.122	$18.652
	By Competitor	$73.161	$49.584	$23.577
	By productive case	$460.900	$57.290	$403.610
Rates	Competitors Total Reported	63,93%	56,72%	7,22%
	Productive Cases Total Reported	10,15%	49,09%	-38,94%
	Productive Cases Total Competitors	15,87%	86,55%	-70,68%

Indirect yield: is associated with the taxpayer's subsequent tax conduct, which has been influenced by the audit process. For this reason, three methods were applied:

5.5.1 Simple Difference Method

This method consists of comparing the behavior of a group that has been subject to audit with another that has not been audited. The objective of using this method is to estimate what would have happened to the group under observation (treatment group) if these control actions had not been implemented. In this case, a similar group (control group) was selected, which did not have the intervention of other treatments during the study period. In this way, it is possible to nullify the effect that contact with the tax authority could produce.

The following graph represents the average monthly amount of taxes paid by taxpayers in the treatment group and the average monthly amount of taxes paid by taxpayers in the control group. In addition, the graph shows, on a secondary axis, the difference between the two curves.

Illustration 73: Sample Treatment Group vs. Control Group

Average VAT
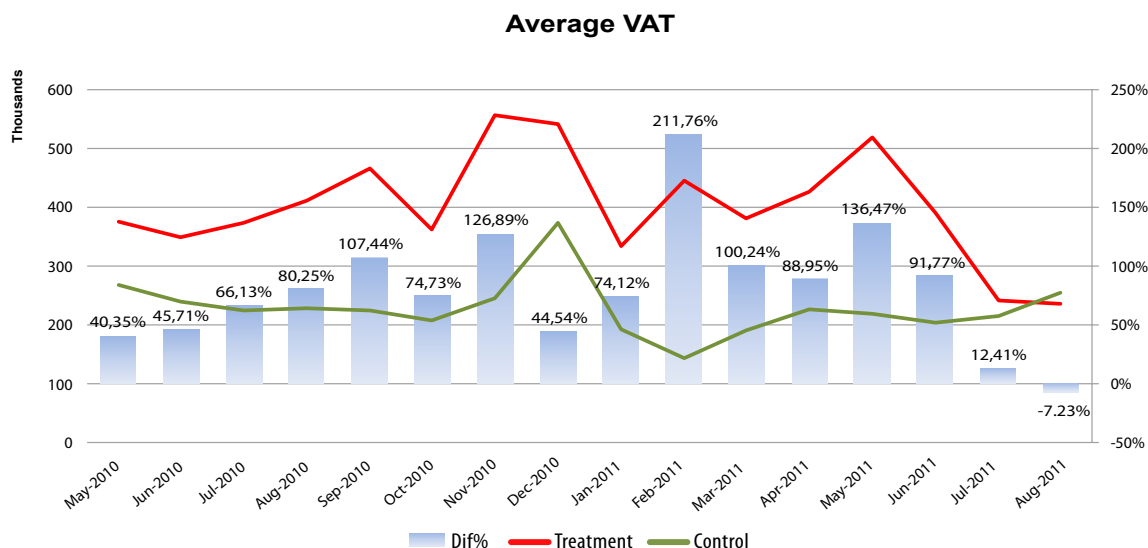
From the analysis of the graph, it can be seen that for the period between May 2010 and August 2011, the average tax payment is higher for the treatment group than for the control group. However, the situation is reversed in the last period. It is very likely that if the control group had not been audited, it would not have manifested the same behavior as the treatment group.

5.5.2 Pre-post Method

This is a specific kind of simple difference evaluation where instead of using another group of persons as a control group, we use the same group before the program starts.

This method does not use another group to make a comparison; it consists of contrasting the level of monthly tax payments for similar periods, before and after the Tax Administration has informed the taxpayer that they will be audited.

Illustration 74: Sample Treatment Group

Avg. VAT Treatment Group (Before and After Audit), own elaboration

Avg. VAT Treatment Group (Before and After the Audit Date)
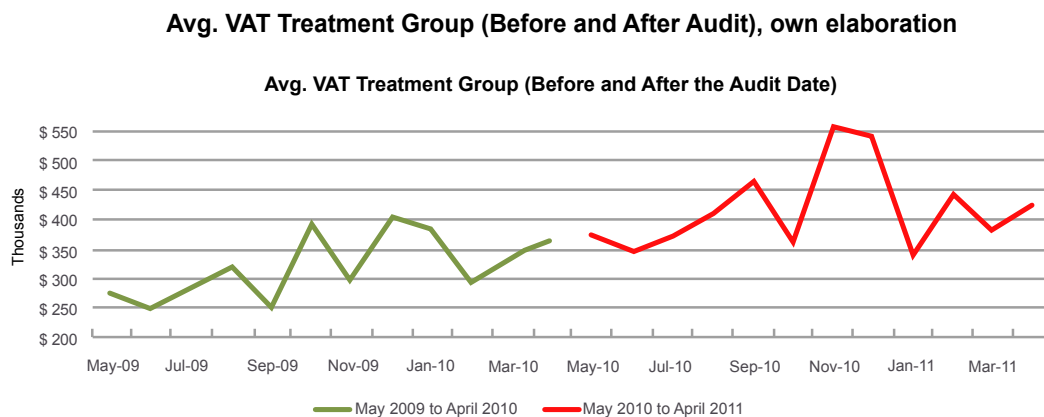
Looking at the illustration above, we can see an improvement in payment after April 2010. However, looking at the curve, we can state that this "improvement" is due to a trend. This is shown in the graph below, which represents the conduct of the control group before and after the cut-off date. Through the graph, it can be seen that there is no upward trend in the average monthly tax payment for the control group.

Illustration 75: Sample Control Group

Avg. VAT Control Group (Before and After Audit Date), own elaboration

Avg. VAT Control Group (Before and After the Audit Date)
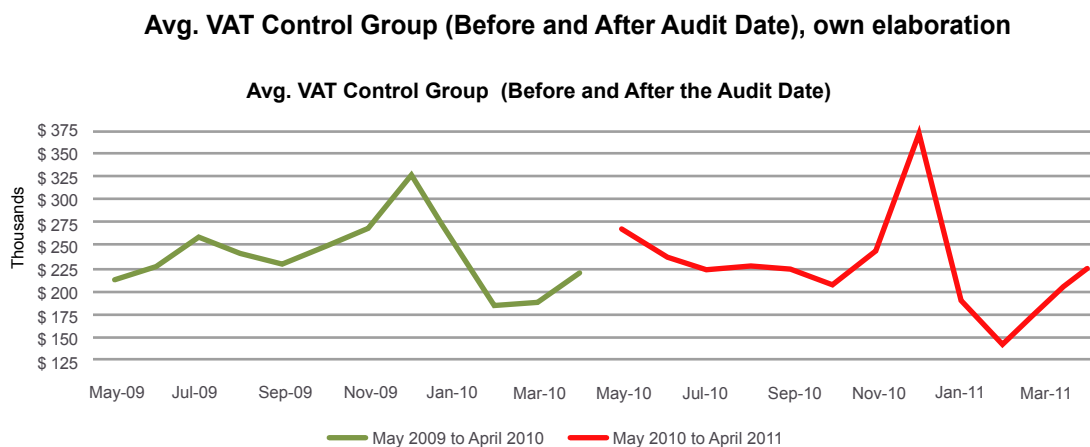
5.5.3 Difference-in-Differences Method

Combines the two previous methods to consider the differences between the two groups and the former trends. It therefore consists of two parts:

- o First stage: calculating the differences month by month for each group. For example, we could calculate the difference in the average monthly taxes paid by the treatment group from May 2009 to May 2010. Next, the respective difference in the treatment group for the month of May is determined.

- o Stage 2: calculating the difference for all months and repeating the procedure for the control group.

- o Stage 3: the differences for the treatment group are plotted in red, while the differences for the control group are plotted in green. The difference in differences, which is the treatment group difference minus the control group difference, is plotted in bars.

Looking at the following illustration, we can see that the differences in the treatment group are greater than those in the control group. On the other hand, the former increased their average monthly tax payment more than the latter.

Illustration 76: Difference between Treatment and Control Groups

Average VAT Difference - Treatment Group vs Control Group (Before and After Audit)
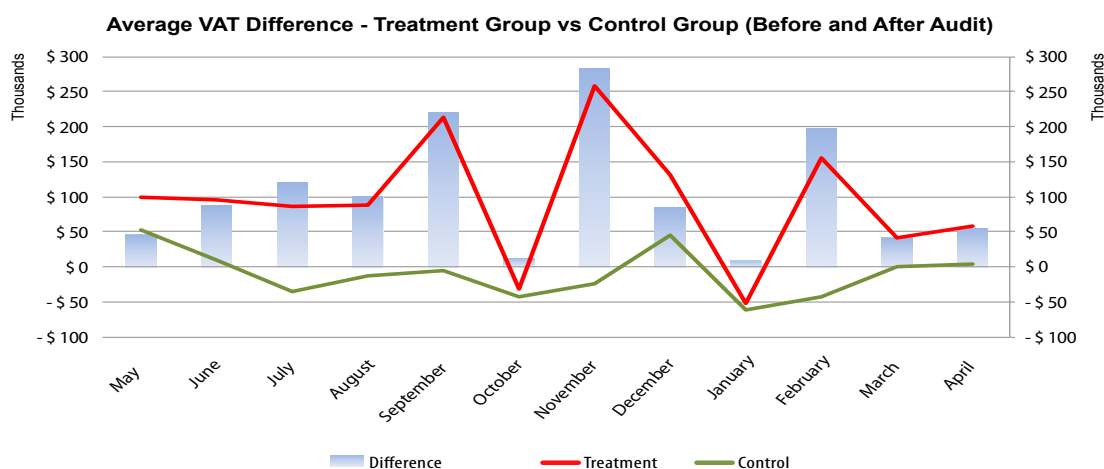
Dominican Republic: Evaluation of the Comprehensive Control Policy

The implementation of a control system based on risk management requires systematic monitoring of both the planning and implementation of the plans resulting from risk management. Hence the importance of having a unit in charge of evaluating the impact and results of the implemented plans. To this end, a study was conducted in 2016 to verify the results of tax control plans, stemming from intensive control actions implemented by the *Dirección General de Impuestos Internos* (DGII).

The results of this study were classified into quantitative and qualitative aspects:

Quantitative: the External Audits to Large Taxpayers conducted during 2015 generated an increase in the Effective Tax Rate (ETR) of the Income Tax (ITR) and in the Value-Added Ratio of the Tax on Transfer of Industrialized Goods and Services (VAT/GST). These audits resulted in a 0.3% increase in ITR and a 0.5% increase in the declared VAT/GST ratio.

As a result of the external audits carried out on medium-sized taxpayers, there was a 3.9% increase in the Value-Added Ratio of the declared VAT/GST. Nevertheless, there are no significant changes between ETR and ITR for the same period.

Qualitative: this measurement highlights the efficacy of intensive controls with regard to tax behavior after the control.

Finally, the controls of the taxpayers in the sample linked to external audits are significant and positive. This reinforces the idea that both large and medium taxpayers are receptive to this type of control.

There are other methods that can be used to analyze the efficacy and efficiency of treatments:

Champion/Challenger

This method compares the results of the treatments in three groups with different weights. The first group is a control group, containing 80% of the observed sample and subjected to a standard (champion) treatment. The other two groups, known as challengers, each contain 10% of the observed sample and are subjected to different treatments. The results are evaluated to determine which treatment group was most effective, and if this was one of the challengers, it becomes the champion, and then the method is repeated with other challengers.

Trend Analysis

Trend analysis provides comparisons over time. However, by itself, this method cannot reliably attribute observed changes over time to a specific cause. This analysis must be complemented by other types of evidence.

Efficiency Analysis[39]

Efficiency describes the relationship between two variables: the physical outputs of a product and the inputs or resources (human, physical, and monetary) that were used to achieve that level of output. On the other hand, it refers to whether the activities of a program were implemented, managed, and organized in such a way that as little expense as possible was incurred to generate the expected outputs and/or components (optimal allocation and use of resources so as to maximize the delivery of outputs and/or components). To measure efficiency, indicators that relate inputs to outputs/outcomes are typically used. Efficiency measures can be grouped into three categories:

- o Those related to physical productivity and average productivity of the different types of factors (especially human resources) and that relate the level of activity, expressed as the number of actions, with the level of resources used, e.g., the average number of audits per auditor.

- o Those related to expenses, such as average expense per operating unit and average expense per treatment action.

- o Those related to the structure of expenses, for example, the percentage of administrative expenses in relation to total program expenses.

Ideally, these measures should be compared with a technically valid benchmark to evaluate the efficiency of the program.

Another alternative is to generate internal efficiency standards for the most important processes. This approach starts from the premise that there is a production function for the whole or for each of the components and, therefore, there is a set of technically efficient alternatives to generate them. The idea is to identify the stages followed in the production of each component, the inputs used, and any other aspect considered relevant, e.g., the identification of the production function, to then measure and/or estimate the cost that these processes would have if they were implemented in an optimized way. The result of this work is the standard unit cost for each treatment action, which can be compared with the accumulated expenses arising from the analysis. Considering the restrictions on the availability of information, it is also possible to evaluate the program in relation to itself, analyzing the historical behavior of the different efficiency measures developed and incorporating further historical information that make it possible to evaluate the observed trend.

5.6 Evaluation of Macro Indicators

Macro indicators correspond to a reference point, e.g., gross domestic product (GDP) reports, tax evasion level reports, tax collection development reports, and public opinion indicators. All these indicators provide a general perception on the efficacy of the compliance approach.

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39 Gobierno de Chile, Ministerio de Hacienda, Dirección de Presupuesto, Metodología evaluación de impacto, mayo 2009.

Analysis and evaluation of potential macro indicators: tax evasion in income tax and value-added tax, informal trade, fraud (false invoices), change in conduct or attitude on the part of taxpayers in terms of their relationship with the Tax Administration, indicators of citizen perception, image of the institution, level of tax knowledge of citizens (types of inquiries received and handled by the *help desk*), among others.

With the aforementioned examples of macro indicators in mind, the Tax Administration could, for instance, implement a treatment program to address taxpayers who would be required to fill out the VAT form, but have not done so. If the evaluation is geared towards the implementation of the treatment program, e.g., sending emails, contacting the taxpayer, and conducting audits, and the evasion report reveals an increase in VAT evasion, we are facing a problem. In these cases, the Tax Administration should undoubtedly adjust its strategies in terms of defining the treatment, the types of risk it is analyzing, and the implementation of the treatment actions, and possibly incorporate new noncompliance risks into the identification stage. An example of such risks would be "taxpayers who have not carried out any activity since their registration", which is a registration risk. This risk may affect VAT collection in terms of the size of informal trade.

Recommendations

An easy way to identify a change is to use a line graph to explore patterns and changes. This requires:

- Plot compliance data on a line graph, preferably with one that allows us to plot more than one data series. This will make it easier to compare our data, for instance, by means of a reference point to identify when strategies were implemented.

- Examine historical observations before implementing strategies and identify obvious trends.

- Draw a line that represents this trend and extend this line into the future.

- Examine any observations made after the strategies have been implemented and compare them to the previous trend. If there is a difference, we can conclude that there is a change.

However, when historical data show considerable fluctuations, it can be difficult to identify in the short term whether a change has occurred. It may be necessary to continue monitoring over a longer period to determine if differences exist.

Did the strategies generate the desired change?[40]

Once we have identified the change, in order to see if it can be attributed to our strategies or if it reflects changes in the environment, we need to compare our data with a particular method. For example, a reference point or control group will help isolate the effects of our strategies and general fluctuations caused by other changes in the environment.

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40 Australian Taxation Office, Guide for risk managers and evaluators: Measuring compliance effectiveness, 2012, p. 20-22.

To do this, it is necessary to:

- o Examine the comparison method identified earlier.
- o Plot the comparison data on the graph.
- o Compare the pattern of movements in the comparison data and our own compliance data to evaluate whether there is any difference.

If the data show a difference in the pattern of movement after the strategies have been implemented, we can say with some confidence that our strategies had an effect on compliance behavior or trust on the part of the community. However, if our compliance data show the same pattern as the comparison statistics, we can conclude that the observed changes in behavior were caused by environmental factors.

A sustained change is one that endures over the long term. Identifying whether a behavior change has been sustained needs to be done with recurrent measures.

The illustration below shows a change in the relationship between compliance behavior and the statistical comparison that corresponds to the treatment period. The data for 2008-09 indicate that the new relationship is sustained.

Illustration 77: Identification of Sustained Behavior Changes
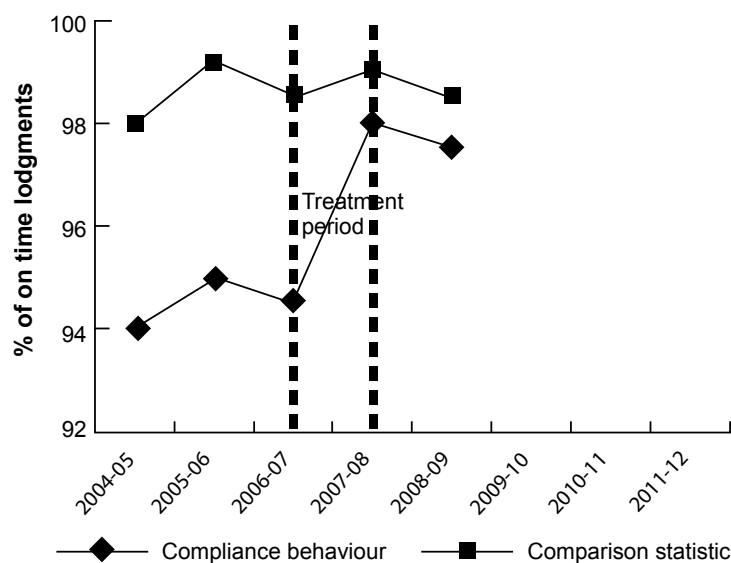
In the illustration above, we can identify a sustained change in behavior. If the behavior change is sustained, the path taken by the two continuous groups can be monitored in order to track them in parallel over a long time period, as shown in the following illustration.

Illustration 78: Sustained Behavior Change
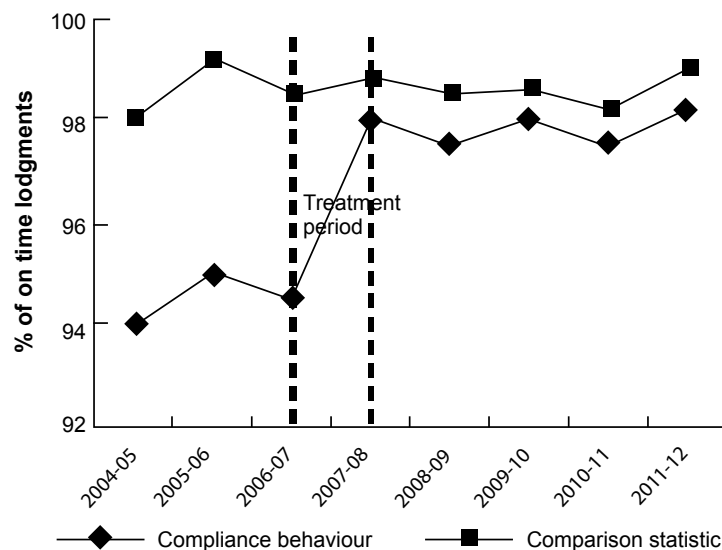
Monitoring the behavior for a brief period after the intervention will not always give a reliable indication if the effect is sustainable over time. As the following illustration shows, during the 2008-09 tax years, the slight decline in compliance continued. The declining behavior was originally concealed by changes in the environment. As for the pattern of observations over a longer period, it clearly shows that the effect of the strategies was short-lived and not sustained.

It is not possible to define a period from which to track data in order to identify whether a change is sustainable. However, we will need to track behavior over several years to really understand if our strategies have had a lasting impact.

Illustration 79: Unsustained Behavior Change
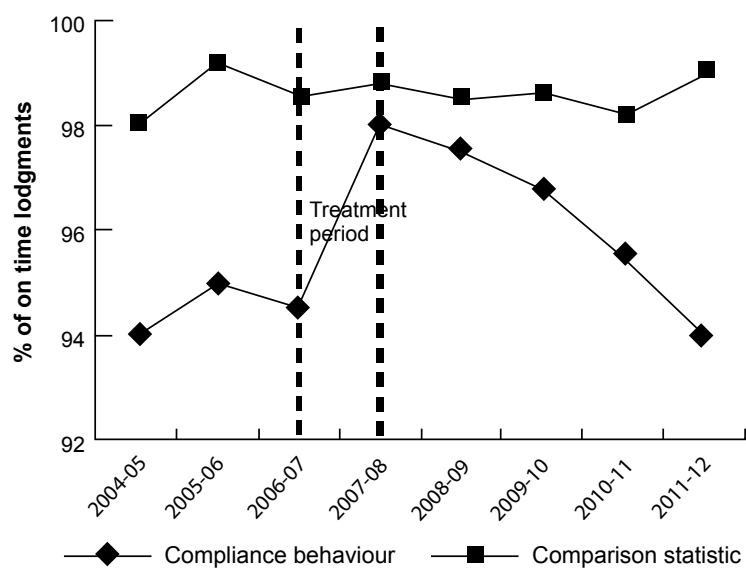
Chapter 4

Specific Aspects

IV   SPECIFIC ASPECTS

1 Managing Noncompliance Risks in the Massive Taxpayer Sector

Taxpayers in the so-called "massive sector" (composed of segments of small and medium taxpayers), as opposed to the so-called "selective sector" (composed mostly of large taxpayers[41]), have less room for action in terms of their tax planning, defined as "the various considerations on the tax aspects of their operations, as well as the incidence of taxes on the expected result during the exercise of their economic activities". This is due to the small size of their operations and the low level of individual capital invested in their business. However, they tend to "plan" through the legal form chosen (depending on the options available to a particular Tax Administration) and the geographical location of their operations, among other aspects.

Thus, the way to approach these taxpayers will depend on the context of each Tax Administration, which is reflected in the following examples:

Argentina:

The segment in question includes local entrepreneurs, high-income and high-wealth individuals, and small taxpayers. These represent the majority of taxpayers to be controlled, but with a potentially smaller specific weight in the country's total tax collection. Thus, for this segment, the following tools for tax compliance risk management purposes apply:

- Inducing voluntary compliance by cross-referencing information that allows future obligations for taxpayers to be inferred, such as real estate and vehicle registrations.

- Cross-referencing information from the regimes attributed by the taxpayers in this sector, which make it possible to identify inconsistencies in their returns, such as bank and financial movements that are not justified with declared revenues, detection of incorrect evaluations, and transactions in foreign currency.

- Campaigns for public disclosure of tax obligations before the due dates of the main tax returns, such as by email, text message, among other means of communication.

In addition to the above, the so-called electronic auditing deserves special relevance, because it has enabled the cross-checking of mass information, allowing the optimization of information exploitation in a quick and agile way. Therefore, electronic auditing is a powerful tool for managing tax noncompliance risks, considering its advantages:

- It allows the development of research hypotheses and case resolution, applying a methodology based on knowledge of the taxpayer and its operations.

- It increases the perception of compliance by taxpayers, who realize that an electronic inspection can be triggered in case of noncompliance.

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41   49° Asamblea General del CIAT, Lima, Perú 2015, Ponencia Tema n° 2: Herramientas basadas en el tipo de contribuyentes: multinacionales, empresarios locales, individuos de altos ingresos y pequeños contribuyentes, p. 97-98, 105-106

- Electronic auditing involves lower costs compared to other non-automated means of auditing (e.g., an *on-site* audit action), as long as the systems operate in accordance with the objectives set by the tax administration, established rules, laws, and/or regulations.

Australia:

It is important to mention that the segment in question also considers taxpayers classified by the Australian Taxation Office (ATO) as "high wealth", who have an annual turnover between AU\$2 million and AU\$250 million, with various private groups, multinational companies, and partnerships, among other structures[42]. On the other hand, taxpayers classified as small businesses and individuals, who have an annual turnover of less than AU\$2 million, employ one in five Australian workers and account for more than a quarter of the tax revenue collected.

The ATO uses a primary evaluation tool based on "expert business rules", which is basically a consistency between the tax return and third-party data, in order to detect potential risks. Consequently, this segment of taxpayers is treated proportionally according to the number of risks detected: in an extreme case, the taxpayers selected for an audit will depend on the number of such risks, with the ATO advised to examine the main risk identified and which triggered such a review. The scope is given by the remaining unresolved and/or current risks.

Notwithstanding the above, in the massive segment - in which individual taxpayers and small and medium-sized companies are located -, the automation of the processes related to risk management has generated significant advantages, such as the reduction of compliance costs for low risk taxpayers by minimizing the possible intrusion of tax compliance control activities into the lives of these taxpayers, and the assurance that resources are directed to controlling the higher-risk sectors and, therefore, to facilitating for the lower-risk sectors.

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42 Review into Aspects of the Australian Taxation Office's Use of Compliance Risk Assessment Tools, a Report to the Assistant Treasurer, Inspector-General of Taxation, October 2013, p. 103 - 121

Chile:

The *Servicio de Impuestos Internos* (SII) has developed, for the massive taxpayer sector, a function called "pop-up messages", which taxpayers see when accessing their personal page at www.sii.cl after logging in with their respective credentials. In particular, in 2014, a pilot project of messages related to Value-Added Tax (VAT) was generated, which sought to provoke a sense of control over taxpayers and, therefore, measure tax compliance compared to a control group. These messages were constructed based on actual tax noncompliance, with the goal of reminding a certain segment of taxpayers of a particular tax aspect with which it should comply.

We worked with four categories of messages, the results of which were as follows:

Taxpayers who received a message increased their declared profit for the month by 7.9% versus 1.7% for those who did not receive a message.

The advantages of this treatment action include its low cost (due to the use of an existing computer tool), the flexibility and readiness in its design and implementation, and the impact of the measure. The message validation stage could be systematized, using pre-validated messages. What is also interesting is the reaction of taxpayers, who, upon noticing a greater control over the correct compliance of their tax obligations, tended to increase their compliance.

"Calculators" are tools developed by the *Servicio de Impuestos Internos*, which are available to taxpayers. These tools are applications that allow the calculation of certain taxes in a more agile and simple manner. Below is an example of a "calculator" associated with the payment of taxes on the Taxable Profit Fund (FUT)[43].

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43   The tax in question and its current regulations are contained in Transitional Article 3 of Law No. 20,780, on Tax Reform. More information: https://www.sii.cl/pagina/actualizada/noticias/2015/160915noti01jv.htm)

Illustration 80: Application for Determining the FUT (SII – Chile)

DETERMINACIÓN DEL IMPUESTO SUSTITUTITO (IS), SOBRE EL SALDO DE FUT, (*CONTRIBUYENTES RÉGIMEN GENERAL*)

Debe señalar si aplicará tasa fija o variable		**Tasa Fija 32%**

Volver a página de Inicio

Asistente Cálculo Tasa Variable

Fecha de Iniciación de Actividades (*esta debe ser anterior al 01-12-2015*)		dd-mm-aaaa	

(+)	Saldo de FUT (Neto) determinado al	dd-mm-aaaa	$	-
(=)	**Monto máximo susceptible de acogerse a la opción**		$	-

	Monto de saldo de FUT a acoger a la opción		
(+)	Incremento por crédito por IDPC (Art 54 y 62 LIR)	$	-
	Reajuste FUT e Incremento a la fecha de pago del Impuesto Sustitutivo.	$	-
(=)	**Base imponible afecta al impuesto sustitutivo, reajustada a la fecha de pago del impuesto sustitutivo**	$	-
	Tasa del Impuesto Sustitutivo		32%
	Monto del Impuesto Sustitutivo	$	-
(-)	Crédito por Impuesto de 1° Categoría (IDPC), reajustada a la fecha de pago del Impuesto Sustitutivo.	$	-
(=)	**Impuesto Sustitutivo a declarar y pagar (*NO procede la devolución de Créditos*)**	$	-

AYUDA PARA REGISTRO EN F50 **Limpiar Formulario**

This illustration is only available in spanish.
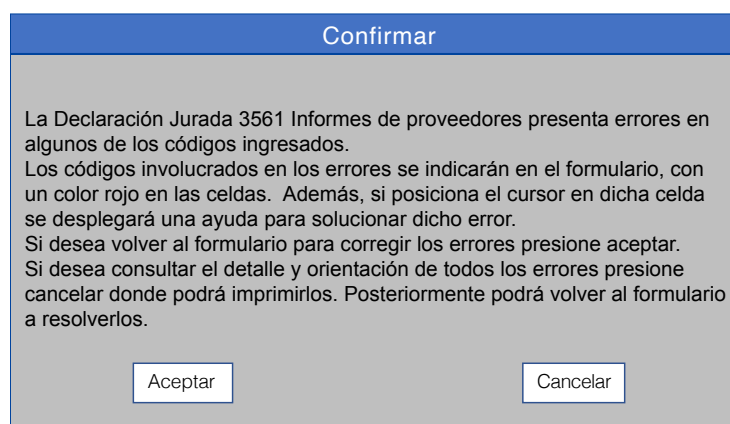
Other available calculators are focused on determining the amount of VAT for the leasing of furnished property (an activity that increases significantly during the summer, which is why this measure has two objectives: to facilitate and increase knowledge and awareness of the obligation); determining the credit for the purchase of solar thermal systems (green exemption); and determining the amount payable for the Additional Tax on New Vehicles (related to pollutant emissions), among others[44].

Another tool available, focused on the massive segment, consists of the online validations performed by the SII's systems, with the data entered by taxpayers and the analysis of their consistency in the systems provided for self-service on the internet. In these, the system acts by generating online notices to taxpayers about errors or observations on erroneous, incomplete, or inconsistent data.

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44   More information, https://www4.sii.cl/calcImpVehiculoNuevoInternet/internet.html

Below is a warning screen on the supplier report return (Return No. 3561):

Illustration 81: Error Messages when Loading Data Return No. 3,561 (SII – Chile)

This illustration is only available in spanish.

On the other hand, and in order to promote tax compliance, an important element of this management is related to the so-called "collaborative strategies". These consider the gradual use of various measures aimed at working in collaboration with taxpayers in the specification of rules and the application of tax criteria, thus aiming to reduce both disagreement over the interpretations of the *Servicio de Impuestos Internos* (SII) and the amount of errors and noncompliance due to lack of knowledge of the tax law. Through collaborative strategies, we can promote a greater acceptance of the tax system as a whole and the principles on which it is based. For the application of this type of strategy to be well guided, it is necessary to identify beforehand the taxpayer segments that share common tax attributes and the factors that favor or hinder their tax compliance, which has already been explained in earlier chapters.

In line with the strategy of collaboration with taxpayers, emphasis was also placed on strengthening collaboration with tax intermediaries in this business segment, creating work groups, important spaces for discaussion and feedback, as well as profiles in virtual offices to facilitate the work of those who have more than one taxpayer as a client.

The creation of simplified tax regimes has been, in turn, a way to mitigate noncompliance by small and medium taxpayers. These are measures that simplify taxation and management of tax registries, which, on the one hand, reduces compliance cost and, on the other, encourages compliance, given the greater simplicity in meeting tax obligations. An example of this in Chile is the simplified taxation regime called 14 Ter, which, among other things:

- Provides exemption from rendering full bookkeeping, from making balance sheets and inventories, from performing monetary correction, and from depreciation of assets.

- Is taxed on the positive difference between revenues received and expenses paid.

- It is possible to opt to be exempt from corporate tax, with the partners being taxed (provided that they are exclusively private individuals subject to the global complementary personal income tax).

The institutional website has a robust virtual office, which allows taxpayers to perform many of the procedures and, thus, comply with their tax obligations without having to travel be at the offices in person. Additionally, on the website, we can find guidelines, frequently asked questions, assistants, and the possibility of *chatting* with an official to clarify doubts or make inquiries. In the same website, we can find the specific portal for small and medium-sized companies, where it is possible to issue electronic invoices and maintain accounting records. The application also allows the issuance of reports for the adequate control of the company's management.

Acknowledging that one of the causes of noncompliance in this business segment is working capital or liquidity at certain times, legislative changes were encouraged, in order to mitigate the impact of these causes, such as the possibility of replacing fines with training and deferring the payment of VAT.

Finally, it is worth noting the advances made thanks to the proposed income tax return, VAT, and the sales and purchase ledger. The former was implemented several years ago, based on information from third-party informative returns. This form allows the taxpayer to accept such a return, verify the information available, or make adjustments. The latter was constructed from electronic tax documents (invoices, credit, and debit notes), which was a very significant change for taxpayers and has been available since mid-2018. These proposals undoubtedly represent a huge step in simplifying the tax obligations of this segment of taxpayers and, consequently, mitigating risks.

The advances in simplification and assistance to the massive segment of taxpayers do not eliminate noncompliance risks. However, these developments affect the perception and willingness to comply, reduce compliance costs, and generate a different analysis scenario for the Tax Administration, creating a challenge in terms of management, exploitation, and analysis of information.

In Spain, private individuals who carry out economic activities under the module regime are verified by units located within the Tax Management area, which are in charge of verifying that the number of modules declared by taxpayers coincides with the real world. This analysis is applied to individuals who carry out business activities with a low volume of operations and who have risks whose verification does not require bookkeeping or bank account analysis. The verifications are conducted by persons from the Tax Management area, but if a more in-depth analysis is required, an inspection verification procedure must be initiated by specific staff from the Inspection area.

On the other hand, in Ecuador, this segment is composed of private individuals not required to render accounts or subject to the simplified tax regime. In terms of entities, it encompasses civil commercial companies, not regulated by the Superintendence of Companies and with low levels of assets and revenues, with a small number of personnel.

In the case of Spain, the noncompliance risks characteristic of this segment are as follows:

o General risks: for example, lack of filing, late filing, formal noncompliance in general. These risks are more frequent for small and medium taxpayers than for large taxpayers.

o Setting up companies that issue false invoices or shell companies, as well as false working relations.

o Deduction of non-deductible personal expenses on the family business tax return.

The main factors associated with these risks may be related to the taxpayer's lack of tax education and the difficulty of the system. These companies generally have more difficulty accessing credit and with liquidity.

In the case of Ecuador, the main causes associated with the above risks are informality, lack of access to advisory (e.g., accountants or tax intermediaries), lack of knowledge of tax and accounting regulations, and some others, and civil societies. The lack of a regulatory entity, such as the Superintendence of Companies, also plays a role.

The treatment strategies in Spain are implemented through various channels:

- **Portal**

  The online portal allows most actions to be performed via the web, in a quite simple manner. For example:

  - Consulting dossiers, census data, and pending notifications.
  - Declaring and paying taxes.
  - Answering requests.
  - Sending any kind of documentation, whether from open procedures or not.
  - Applying for certifications.
  - Accessing information.
  - Filing complaints.

- **Collaborators**

  It is also possible to file returns through the Virtual Headquarters by accessing it as a collaborator. A collaborator is a professional who, by meeting certain requirements, can provide this service to taxpayers.

- **Other Forms of Assistance**

  For personal income tax, we can get the information available from the AEAT and the draft return with this information incorporated into it.

  It also incorporates other information that cannot be included directly in the return, but that may give rise to taxable events, such as income obtained from abroad available through information provided by other administrations, or online rentals obtained directly by the AEAT from real estate portals.

  Moreover, for the Individual Income Tax, which is the tax that can cause the most problems, due to the taxpayer's characteristics and the difficulty involved, there is a free system for filling out the return through AEAT's offices, by appointment, which can be requested on the online portal itself or by phone.

  Confirmation of drafts can be done by phone and internet.

  In the confirmation that the return was correctly submitted, a chart is attached with information about how the taxes are used in the areas of health care, education, infrastructure, culture, among others.

  In VAT, when the Immediate Exchange System (SII) is fully implemented, a draft will also be made.

■ **Virtual Assistant**

A virtual assistant has been in operation for a few months now, which has led to a drastic reduction in personalized telephone service.

■ **Payments**

Payments have also been simplified, moving from a model in which everything was done in person at the AEAT offices or collaborating financial institutions to the use of electronic payment systems through a bank domicile or direct debit.

In addition, Tax Administrations use special conditions for requesting deferments and installments, which can be helpful.

■ **Voluntary Gaps**

Gaps produced voluntarily can be corrected only through extensive control plans and audits, as well as awareness campaigns and citizen training.

In Ecuador, the prevention strategies that have been designed are:

o Alerts via email and cell phone messages, specifying the due dates of the obligations.

o In-person training courses in the different provinces.

o The Assistance Departments have trained personnel, who continuously point out the processes and assist in the compliance of the obligations.

o On Ecuador's SRI's website, taxpayers can see what is reported by third parties and, from there, draft their suggested returns.

o Online update of RUC information.

Based on the different scenarios described above, which show various treatment actions in different channels and moments of the tax process (prevention, correction), it is possible to point out some specific "general" and "special" risks that should be part of the set of risk situations that the Tax Administration should take into account in its risk analysis and treatment processes:

Situations that denote specific "general" risks, i.e., that can manifest themselves regardless of the segment or sector of taxpayers:

- Persons who exercise a relevant economic activity and who evade or avoid formalizing them or registering them in the tax system. For example: importers of consumable goods who have carried out such activities monthly over the last 24 months and who are not registered in the Administration.

- Persons or entities who register in the system to issue false or fraudulent tax documents that are used by third parties, whether taxpayers or non-taxpayers, which usually occurs during the first months after registration. For example: creation of a company that has no significant or inherent purchases, but issues high-value invoices in the construction sector.

- Taxpayers who invoke a preferential tax regime for small businesses or a preferential national territory, and who do not meet the requirements to be in it due to error or ignorance, or who have disguised their true economic ability and relevance to abuse the benefits due to poor use or bad tax advisory practices. For example: a large business group creates a shell company and registers it in a small taxpayer regime, in which the risk arises for an emerging profit that will not be taxed in the abusive regime.

- The omission or underreporting of revenues, usually affecting VAT, corporate income tax, and personal taxes of the owners of these businesses. For example: a clothing store sells to retailers and final consumers but does not register these sales.

- Over reporting of costs and expenses, affecting VAT, corporate income tax, and the personal taxes of the owners of these companies. For example: an engineering company registers personal expenses of the directing manager (housing, gifts, parties, etc.), with the risk of reducing VAT, profit tax, and dividends payable to the owner.

- The omission or underreporting of taxes, i.e., the revenues, costs, and expenses are correct, but the VAT, corporate income tax, or personal taxes of the owners of these businesses are changed. For example: a telephone sales company determines a final VAT liability of 10,000 currency units. The risk model makes it possible to infer that such a company usually declares and pays a and lower-than-expected amount, possibly adjusted for its liquidity and/or in consideration of what is thought to be a reasonable contribution to the state.

- Over reporting of credits and discounts, i.e., revenues, costs, expenses, and gross taxes are correct, but deductions, credits, and discounts are changed in VAT, corporate income tax, or personal tax on the owners of these companies. For example: the company above declares a tax liability of 10,000 currency units in VAT, but deducts nonexistent credits, based on forged documents or resulting from an incorrect application of the VAT proportionality rules.

- The omission or underreporting of revenue from any source or origin that finances individuals' personal investments and expenses. For example: an individual and their family have several homes, vehicles, financial investments, and trips abroad,

but neither they nor their family have the revenue or debt to justify these investments and expenses.

Situations that denote specific "special" risks, i.e., that may occur for a particular segment or sector of taxpayers. In general, these are subcategories of the general risks above, but they have an important role in the system and require specific databases, e.g., citizens expect concrete controls to be in place. Therefore, it is preferable to rely on special specific risk models, such as:

- Omission or underreporting of revenues by the misuse of free trade zones in the tourism sector. For example: the analysis model attributes a higher risk to business groups that have activities in the financial and construction sector and that show low tax indicators, as well as companies in free trade zones with tax indicators outside the expected standards.

- Omission or underreporting of gains from the sale of shares, rights, and real estate in the segments of medium and high net worth individuals. For example: the analysis model attributes higher risk to those who own five or more of these assets without declaring income or gains to justify them.

- Overreporting of expenses for stock reduction and loss of raw materials or products in the forestry and agricultural sector. For example: in the coffee industry, the average rate of loss of raw beans in the warehouse is 4% per year, while for the small taxpayer segment it is 10% per year. The analysis model stratifies and reports cases that exceed this value by 50%.

- Omission or underreporting of revenues from the activities of lawyers and physicians. For example, the model under study recognizes profiles of lawyers specializing in commercial litigation, bankruptcy, and human rights cases who either do not declare their fees from favorable cases or underreport the estimated amount. In the case of physicians, the model analyzes specialists in cosmetic surgery and prosthetics and estimates the risk of omission or underestimation of fees.

2 Management of Noncompliance Risks in the Selective Taxpayer Sector

Unlike the massive sector, composed of small and medium-sized taxpayers, the selective sector differs significantly in that it considers those taxpayers who pose a higher risk of noncompliance. The consequences of misconduct are very significant. To this end, strategies and criteria have been developed to address their risks, in order to improve the efficacy and efficiency indicators of tax compliance.

According to the available literature[45], the selective sector - composed of large taxpayers - has the following characteristics:

o Concentration of most of the tax revenue: a small number of large taxpayers play a key role in tax compliance and, consequently, in tax collection.

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45   OCDE, Foro sobre la Administración Tributaria, "La Administración Tributaria en los países de la OCDE y en determinados países no miembros: serie "información comparada" [2010], 03 de marzo del 2011, p. 69

o Various complexities, given the activity and the economic sectors: there are numerous entities that supervise or intervene in their activities. These entities carry out a large volume of operations in the sector in which they develop their daily activities (including cross-border operations), have a large number of staff and subsidiaries, and use complex financing and tax planning mechanisms.

o Consider the main tax compliance risks: their activities abroad and strategies to minimize their tax obligations, where sometimes a very important part of their taxes come from ongoing audit actions.

o Use of advisory related to tax compliance: given the nature of their business, they have their own complexities. For this reason, they hire advisors to optimize their tax compliance.

o Economic position: in this segment, they are generally listed on the stock exchange and are managed through groups (*holding* and/or related companies).

The criteria applied to identify the selective sector vary from country to country, given the context in which each one is immersed. This is how specialized units emerge within the Tax Administration itself, responsible for tax compliance, in which the following main competencies and services stand out:

o In general, service and law enforcement activities are carried out. For example: there is a welfare-related contact between the companies of the sector and the Tax Administration itself, with the aim of clarifying tax distinctions, normative updates, among other aspects.

o The figure of the "account manager" was created, who is a valid and concrete intermediary provided by the Tax Administration for taxpayers in this sector.

o The specialized units continuously seek to optimize knowledge and understanding of the key sectors for each country's economy (economic activities, international taxation, transfer pricing, and use of advanced computer systems, among others).

Thus, depending on the context of each Tax Administration, the approach to these taxpayers will be different. Some examples are given below:

Australia:

There are specialized units for international affairs, case management, tax intelligence, relations with the incumbent government, and sector strategies. Related to the previous point, some prominent sectors in which compliance strategies are centered include manufacturing, financial services, energy, and sale of intangibles, thereby ensuring Income Tax compliance[46].

The group under analysis includes, in addition, private individual taxpayers with high income or wealth, precisely because they present difficulties regarding the amount and access to information, due to the complexity of their operations. For example, this segment could operate in sectors with different levels of mandatory financial reporting. As a starting point, as of 2012, the large business segment was composed of 1,850 economic groups and entities, which comprised more than 32,000 companies. In this context, the Australian Taxation Office (ATO) incorporates detailed qualitative information - in addition to its risk evaluation -, which considers cross-checking of information based on data from other government departments, financial institutions, banks, among others.

The ATO recognizes that there is an amount of risk related to those taxpayers who have control and/or make relevant decisions about a conglomerate of companies that may consist of multiple entities. Thus, the risk evaluation is considered either for the conglomerate as a whole, for a single taxpayer, or for a specific number of taxpayers. An advantage of this is that limited "points of contact" are generated between the ATO and the taxpayer, generating efficiency in communication, resolving differences, and improving tax compliance.

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46   Review into Aspects of the Australian Taxation Office's Use of Compliance Risk Assessment Tools, a Report to the Assistant Treasurer, Inspector-General of Taxation, October 2013, p. 103 - 121

Ireland:

There are specialized units in different economic sectors. These are permanently monitored by departments of real estate, automatic information verification, service, and treatment, as well as a central office, which supervises all operations performed. The segments identified are the following:

1) Construction, real estate, and the mining industry.

2) Alcoholic beverages, tobacco, and media.

3) Financial banking services.

4) Financial services of insurance companies.

5) Financial services of pension fund managers.

6) Food industry.

7) Health care services and manufacturing.

8) Information technology.

9) High-net-worth individuals.

10) Transportation and energy.

Netherlands:

There are specialized units in the following sectors:

1) Financial (banks, insurance, and pension funds).

2) Communication, energy, and technology.

3) Natural resources, petroleum, and gas.

Given the nature of these sectors, as well as their relevance for tax compliance, the segment is supervised by delegations in Amsterdam and Rotterdam and coordinated by a body called the "Coordination Group".

Spain:

In Spain, large and very large businesses are considered separately. In the case of large businesses, there are Large Business Units, all linked to the inspection area. These areas are in charge of providing services to taxpayers, receiving the various returns, and correcting any disparities that may occur, without the need to carry out inspection actions.

If any audit action is necessary, due to a global risk or a specific risk that requires verifying bookkeeping or bank accounts, an inspection is conducted.

Very large businesses are linked to the Central Large Taxpayer Delegation, which is at the national level. The distribution of competencies is similar, although in this case the Central Delegation is directly linked to the AEAT's Directorate.

When it comes to the noncompliance risks characteristic of this segment, in Spain, control is complex, although it has the advantage that the reputational risk is important for these taxpayers. This results in a higher risk of avoidance than of evasion. In this segment, formal noncompliance may occur more sporadically and in the sense that it is more frequent that data is incomplete, rather than that a return is missing or submitted beyond the deadline.

In this segment, the risks are generally associated with international operations involving companies based outside the territory, groups of companies, or companies/subjects that are part of complex entanglements that, in addition, make use of tax havens.

These companies use aggressive tax planning, which involves loopholes in both national and international regulations (tax agreements) and/or opacity, which may exist due to lack of availability, access, or exchange of information, among other aspects. For example, it is common for companies with no real operations to interpose themselves in territories under more favorable agreements. They exploit all possibilities regarding the treatment of trademarks, patents, or *royalties*. Moreover, they tend to have cash pooling, i.e., a common fund, in a territory with more favorable treatment, where they centralize their financial resources. There is a greater ability to change the prices of both commercial operations, goods, or services in production processes, and financial products, with tax deferrals being more important.

Large companies usually wish to offer dividends, which is why profit accounting is more difficult to artificially reduce. Therefore, tax adjustments, both to the base and to the rate, are riskier than in smaller businesses.

For the Spanish experience, the main causes associated with these risks are as follows:

o   Tax strategy planning taking advantage of the weaknesses of the tax system.

o   Highly diversified activities, which can make proper tax compliance difficult.

o   Increase in the number of persons involved in decisions that may have tax consequences.

o   Global economy with presence in many different territories.

Ecuador:

In the Ecuadorian experience, the Cadastre of Large Taxpayers, which accounts for just under 40% of tax collections, is composed of the following members:

LARGE TAXPAYER REGISTRY								
Sector	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017
Agriculture, livestock, forestry, and fishing	38	42	50	55	47	46	8	14
Automobiles	25	24	30	26	27	27	14	12
Wholesale and retail trade of goods	23	25	27	29	28	27	25	28
Construction	16	18	27	29	31	31	19	21
Mass consumption	1	1	1	1	1	1	3	
Manufacturing industries	12	13	14	16	16	16	16	20
Information and communication	6	6	9	9	11	11	16	16
Financial institutions and insurance	26	26	32	28	28	28	25	22
Multisector	13	13	25	33	34	33		
Non-renewable resources petroleum	32	24	33	29	32	32	27	28
Non-renewable resources mines			3	4	4	4	4	5
Health care	5	5	6	6	6	6	4	6
Services	3	4	5	5	5	5	14	13
Total members	200	201	262	270	270	267	175	185

It should be noted that, traditionally, taxpayers included in the Large Taxpayers Register have been subject to intensive control processes (tax audit) almost in their entirety.

The main risks detected in the large taxpayer segment by the Ecuadorian Tax Administration are shown below. These risks are linked to behaviors of a more general or cross-cutting nature, rather than risks inherent to specific sectors:

- Transfer price management.
- Uncollectible accounts (deterioration of financial assets).
- Excessive depreciation expense on tangible fixed assets.
- Undeclared exports.
- Financial expenses for capital contributions recorded as loans or for nonexistent loans (thin capitalization).
- Unjustified expenses allocated by the headquarters.
- Expenses not necessary to obtain, maintain, and improve taxable revenues.
- Expenses without valid supporting documentation or economic justification.
- Inadequate application of accounting standards with impact on taxation.
- Exempt revenues that are unjustified or due to inadequate application of tax regulations.
- Taxable revenues declared as exempt.
- Taxable revenues not declared (in whole or in part).
- Assessment and amortization of intangible goods.
- Interest originating from abroad.
- Interest on external loans granted between related parties.
- Foreign payments (unsubstantiated, overstated, no withholdings, abuse of double taxation agreements).
- Reinvestment of profits.
- Salaries not paid to social security.

The main causes associated with the above risks include the following:

- Decisions made by top taxpayer management.
- Improper application of transfer pricing techniques.
- Abuse of double taxation agreements.
- Inadequate application of withholding percentages for domestic and foreign payments.
- Use of schemes for tax base erosion.
- Inadequate application of accounting standards.
- High complexity of its operations.
- Inadequate internal control systems.
- Inadequate interpretation of the tax, accounting, and sectorial norms, among others.

The strategies implemented by Ecuador's SRI for this taxpayer segment consist of:

- Strengthening the processes of investigation and detection of general and specific risks.
- Implementing technical forums.
- Conducting training workshops.
- Issuing technical support brochures.
- Issuing complementary regulations to cover the identified risks.
- Establishing strategic alliances with control bodies other than the Tax Administration.
- Strengthening the exchange of information at the international and national levels.
- Providing further information to be submitted by this taxpayer segment (detailed financial information).
- Creating tools for real-time monitoring.
- Implementing controls in almost 100% of the registry. Intensive and extensive control strategies.
- Working with cooperative compliance strategies for this segment.

Australia: Top 1,000 Program

This program was part of the Tax Prevention Working Group announced by the Australian government as part of the 2016-2017 Federal Budget. The goal was to achieve justified trust based on optimized reviews, by interacting individually with most of the 1,000 largest multinational and public companies over the four-year duration of the Working Group.

Traditionally, the Australian Taxation Office (ATO) has focused its resources on the top 100 taxpayers, primarily through ongoing engagement guided by large market segmentation using the Risk Differentiation Framework (RDF).

For the remainder of the large market - the Top 1,000 -, interactions were historically with specific taxpayers selected by industry-focused risk tools, which allowed for the elimination of schemes, the provision of assistance or guidance to taxpayers, and the compliance of resolution requests.

The Top 1,000 Program, implemented in 2016, was designed to shift this focus away from compliance and audit results. This helped to achieve justified trust (as defined by the OECD) and to demonstrate the Tax Administration's trust in compliance across the large market. In addition, the goal of the Top 1,000 Program is to provide taxpayers with greater certainty about matters relating to their income tax and to support community trust in the tax system by the ATO, providing assurance that large businesses pay what is fair.

The program consists of simplified reviews of approximately four months' duration for each of the top 1,000 multinational and public companies. These reviews apply the "justified trust" methodology. The team uses this as the basis for reaching a conclusion on whether the taxpayer is paying the correct amount of income tax, or it identifies specific risks to be addressed. The reviews are tailored to the business concerned and the issues are relevant to each taxpayer.

The following concrete results were achieved:

Quantitative: a set of measurements focused on coverage, taxes, and effects on collection.

Qualitative: provides taxpayers with greater certainty about their tax affairs, supporting the community's confidence in the tax system.

> Australia says that, with its experience and the security of the program, it will help provide greater certainty to the community that the big market tax gap algorithms are backed by the "justified trust" methodology.
>
> This work is supported by our evolution of RDF into an Action Differentiation Framework (ADF). This would distinguish the large market (Top 100 plus Top 1,000) more granularly divided into six groups from the current four quadrants and will place more emphasis on how the ATO's interactions with each group will be guided by their risk rating and level of involvement with the ATO.

The situations described above also denote different treatment actions in various channels and moments of the tax process (prevention, correction).

According to the considerations above, in order to manage their tax burden, large businesses tend to use different mechanisms than those employed by small businesses. Another relevant aspect to consider is the source of the data. Usually, the risk analysis model will be based on data from transfer pricing returns, customs databases, international exchange of information, and, in general, unstructured databases or databases that do not belong directly to the Tax Administration.

The following is a summary of examples of risk situations that the Tax Administration should consider in its risk analysis and treatment processes:

Situations denoting "general" selective specific risks, i.e., which can manifest themselves regardless of the segment or sector of taxpayers:

- In general, the risks discussed in the previous section, on massive taxpayers, are applied, although the probability of occurrence may be lower. Examples:
  - A large business shows unusual amounts of credit notes in the high-sales season of the year, which the risk model classifies as a high risk of underreporting taxed revenues.
  - Another company shows credit or expense ratios based on proportionality indicators that are outside the range stipulated for similar companies or those of the same category.
  - A business group in the hotel sector does not declare performance bonuses to its top executives, despite having the highest level of revenue in the industry, with the highest invoicing rates in the market, which represents a risk of tax omission on the payment of these executives. The specific risk is increased when these executives are directly or indirectly involved in companies that invoice the hotel group companies (financial and commercial consulting, etc.).
  - Large consumer businesses, such as retail and telephone companies, occasionally or continuously incur unchargeable debt penalty expenses for their consumer clients that exceed normal industry ranges.

- Risks of under and overassessment due to transfer pricing practices. Examples:

  o Underreporting of income by disguised transfer of the *marketing* or transportation roles to shift a portion of the profits of the value chain to another tax jurisdiction, usually with low or no tax levels.

  o Allocation of intellectual property to entities located in other jurisdictions, which do not have a major impact on the development of intangibles and value creation, but which receive remuneration or benefit from formal registration of such intellectual property.

  o Overpricing of imported raw materials and inputs due to conditions of delivery, transportation, storage, private contractual penalty, or price, which are not customary in the respective industry.

  o Underreporting of export prices due to adjustments in physical and commercial conditions that generate deductions outside the expected level for the industry.

- Risk of omission, underreporting, or overreporting due to concealment of taxing power by manipulation of permanent establishments and double taxation agreements.

  o Services provided by a technology company in State A, with its own professionals and executives resident in State B, to different clients around the world, but which are invoiced by a related company located in a different or foreign tax regime in State C. The costs of such professionals and executives are borne by the technology company. The *know-how* and management of the business model is also held by the technology company. B could be considered a permanent establishment of A.

  o An electronics distributor that develops marketing strategies, manages client portfolios, and operates and bears the costs of import logistics, local deliveries, payments, returns, rejections, insurance, and compensation, does not invoice sales revenues. Sales are invoiced to end clients in a foreign territory who export these goods.

- Risk of omission, underreporting, or overreporting due to concealment of taxing powers by manipulation of debt and capital flows and returns. Examples:

  o A company with positive cash flow and acceptable tax profitability does not distribute dividends to its owners within the corporate group but sends money in *cash pooling* schemes and the like without receiving a proportional return.

  o The above company receives loans from the corporate group at interest rates that exceed the expected market range, although it does not require external financing.

  o The company constantly performs derivative contract transactions with both profit and loss results. Nonetheless, after one year, the net effect is an overall loss, which has been the case for the past three years.

- Risk of omission, underreporting, or overreporting that disguise revenues or costs in emerging high-value transactions. Examples:

  o A forestry corporate group receives an offer to purchase its operations in State A from a corporate group based in State B. To avoid the taxable event occurring in State A, the transaction is disguised by means of a contribution of the entire project to a company incorporated under a no or low tax regime, which is treated as a subsidiary in a chain of several *holding* companies. Next, in a different country, the effective sale of the business to the purchaser in State B takes place.

  o A non-metallic mining group based in State A receives an offer to purchase its mining project in southern State B. In order to take advantage of the special tax regime of full exemption for gains on the sale of shares listed on the stock exchange in State C, the group transfers ownership of the mining project to a twin parent company in State C, which, with the help of financial intermediaries, conducts successive small stock exchange transactions until the tax benefit of stock exchange listing is achieved. Subsequently, the relevant sale occurs to the interested purchaser of the mining project, free of sales tax.

  o In the above cases, cascading contribution schemes are used when adding expenses for intragroup services to increase the cost of the respective investment (step-up schemes).

Situations denoting specific 'special' risks'. Like the massive approach, these are risks that may occur in a particular segment or sector of taxpayers. These are usually subcategories of the general risks mentioned earlier, whose risk analysis requires specific databases:

o In the mining sector, risk of abuse of streaming contracts, or the assignment of project flows. The mining company allocates flows from future mineral sales in exchange for financing in the present at costs or rates that exceed the usual range of financing costs.

o In banking, risk of arbitrage of currencies and positions in favor of one of the entities in a group, to the detriment of the national banking agency.

It can be noted that many of the general or special risk situations described are covered and described in the BEPS Action Plan. The challenge for the Tax Administration is to be able to establish risk models and treatment actions for these behaviors or situations, which, as mentioned above, usually require quite specific sources of information.

We must keep in mind that the treatment actions to be implemented on these risks can be structural, preventive, or corrective, which must be correlated with the causes that encourage noncompliance.

3 Managing Noncompliance Risks in Specific Economic Sectors

Depending on the specific characteristics inherent to each economic sector (contribution, complexity, size, overall level of importance, etc.), each Tax Administration may develop different strategies for the various economic sectors. Below are some examples of how Tax Administrations approach specific economic sectors:

3.1 Construction Sector

The construction sector, in general terms, is characterized by its high sensitivity to changes in the economy, its high impact in contributing to a nation's GDP, and its significant employment creation.

This sector is composed of different types of taxpayers: private individuals, micro, small, medium, and large businesses, which, in turn, can establish distinct types of business structures. In the case of Chile, these can be limited liability companies, private individuals, close companies, individual limited liability companies, joint stock companies, etc.

The greatest sources of risk of tax noncompliance in this segment reside precisely in the complexity and specificity of the sector, based both on its corporate structures and the multiple operations (including those with suppliers and related companies), among others. In the case of Chile, this complexity is given by the following aspects:

1. Multiple companies involved (input suppliers, service providers, and/or related companies).

2. Special laws and/or taxes (application of Value-Added Tax (VAT) since 2016, among others).

3. Variation in sales levels, as well as revenues, cost structures, and contribution margins.

4. High concentration of the sector (mergers, acquisitions, and internationalization of its operations are observed).

5. Distribution of its operations in different geographic locations (including operations that may be carried out by companies under a single *holding* company).

6. Different types of corporate structures and complexity in tracking their operations. Vertical integration between construction companies and real estate companies.

Some of the detected or assumed tax noncompliance risks in this economic sector are related to:

- Formal noncompliance, such as submitting tax payment forms (income tax and VAT) late or with errors in framing third-party information.

- Informality in the supply chain, with the consequent impact on the credits of the purchaser of goods or services, which generates incentives for the use of irregular invoices.

- Manipulation of construction costs, reducing the income tax base. Given the size of projects in terms of input, labor, and specialized services, it is complex to accurately value real estate projects. Audits are often directed at determining reasonable ranges for the value of a project.

- Similarly, given the low level of expertise of a significant percentage of construction workers, there is the possibility of generating formal salary/wage adjustment reports, intended for the Tax Administration and social security, which do not portray the actual payments made to workers. This has the impact of artificially increasing the direct cost.

- Incorrect use of exemptions: in Chile, the construction sector encompasses a series of exemptions, which work as a credit against the VAT that must be paid by the construction company or that the existence of a project may grant to its future owner (interest deduction, solar panels, exemption of generated yields).

- Assessment of property, with the aim of taking better advantage of the associated credits or exemptions. In addition, this assessment affects the owner's future transfer costs. Disposal is affected by a certain profit on the transaction, which can be associated with an incentive not to use a correct value.

The actions taken by Tax Administrations on taxpayers depend on the level of noncompliance of the taxpayer and the impact generated as a consequence of their behavior. In this sense, the actions will be proportional to the behavior and may consist of preventive *pop-up* messages or comprehensive audits that address all noncompliance risks detected for these taxpayers.

3.2 Mining Sector

This sector can become a pillar of a country's economy, as is the case of Chile, where copper extraction represents 31% of world copper production and the number of reserves is significant for the future of its economy. In this sense, the tax contribution provided by this activity is very significant, not only due to the payment of the taxes it generates, but also due to the impact on export VAT refunds and the economic *cluster* it generates (suppliers of goods and services), which undoubtedly widens its impact on the economy.

This segment is classified into "large-scale mining" and "medium- and small-scale mining", where the difference is in the volume of mining operations. Similarly, "large-scale mining" concentrates a large number of facilities (mining operations) and their complexity and operates in more complex corporate structures. In Chile, there are company mergers and acquisitions of companies and facilities by large international mining corporations. In the case of Chile,

"small- and medium-scale mining" has an institutional representation - the National Mining Company (ENAMI) -, which precisely fosters the development of small- and medium-scale mining. This includes financing for reserve reconnaissance, advice on project preparation and evaluation, training, and allocation of resources for the operation and maintenance of a mining project, including support for equipment, development of its work, working capital, and emergencies.

The main characteristics of this segment, regardless of taxpayer size, are as follows:

1. It is a finite duration business since the resources extracted are not renewable. In addition, there is a high latent risk that varies according to the extraction site and the possible "grade" or purity of the ore.

2. It is geographically static. It has operations in a field. However, the headquarters may be located in another region, usually the capital of the country.

3. There are permanent expenses associated with investments, exploration, maintenance, prospecting, etc.

4. Given the specificity and complexity of its processes, it requires large sums of money, both in its maintenance and operation, including those related to the operational safety of its processes.

5. It requires highly qualified personnel. In general, salaries are above the national average, in the case of Chile.

6. In general, large-scale mining belongs to large national or international business groups, with operations in different parts of the continent, vertically integrated according to processes. In the case of Chile, the extractive part of the value chain is located in national territory, and mainly copper concentrate is shipped abroad.

The noncompliance risks that can be detected in this sector, given its characteristics, are usually related to:

- Noncompliance related mainly to not communicating changes in their corporate structures and reorganizations, which usually have a considerable tax impact.

- Formal noncompliance in the submission of informative returns, either own or third-party. It should be noted that, in general, this sector is subject to several returns, some of which are complex, such as that of transfer pricing, the one associated with the Country-by-Country Report (CBC), balance sheet details, and accounting plans.

- Posting higher value or profit on disposal of mining properties.

- Posting transfer prices among related parties. Given the characteristics of the industry and its structure, there are often many commercial or financial transactions among related parties, which is why there is a significant risk of setting transaction prices without properly applying the *arm's length* principle.

- Financing: the relevance of the investments and the size of the operations that the mining industry generally undertakes have leveraged financing as a strong incentive to incorporate a financing company within the economic group (or related parties). In addition, the size of the amounts makes financing attractive to independent parties. In addition to the risk of setting interest at non-market rates, an issue that falls under the scope of transfer pricing, incentives to violate thin capitalization or tax withholding rules by non-residents can be generated. Likewise, there is a risk of masking the return of capital, such as interest.

- Insurance: under a similar logic, when significant volumes of a particular ore are shipped abroad, insurance is required to reduce the risk of loss in the event of an accident. There may be incentives to simulate these insurance transactions, increasing the associated costs. It is possible that the insurers are related parties.

- Entry and exit prices: in Chile, there is a regulation on the maximum limit for the difference between the exit price of the ore and the entry price in the destination country, in the case of an export. The content of a concentrate, in the case of copper, is mainly and obviously copper, but it can also contain gold, silver, and molybdenum, among other ores. The content is defined by the input and output of laboratory samples. The risk of handling chemical samples can affect the assessment of the shipment, which, in turn, has an impact on taxes.

- Shared costs: given the different parties involved in the operations, costs are generally shared among directly or indirectly related parties. It is necessary to check, for instance, whether management costs are distributed according to the functions involved, without artificially eroding tax bases.

- Exemptions: in the case of Chile, copper mining companies must pay an additional tax called the Mining Royalty, which is intended to safeguard investment in research and development, given the exploitation of a non-renewable natural resource. There is a risk of incorrectly determining the *royalty* base to reduce the tax burden.

- VAT refunds: mining is a very significant sector in terms of exports, which, in turn, is very relevant in terms of requests for VAT refunds on purchases. It should be remembered that exports do not generate a VAT debit, which is why exporters are entitled to claim VAT refunds on purchases associated with exports.

3.3 Banking Sector

Ecuador: Financial Sector/Banks

Comprises the set of institutions whose objective is financial brokerage in the country.

The Monetary and Financial Policy and Regulation Board is responsible for public policy formation, regulation, and monetary, credit, foreign exchange, financial, insurance, and securities supervision. The supervisory and control body is the Superintendence of Banks of Ecuador.

In accordance with the provisions of the Organic Monetary and Financial Code, the national financial system (public and private sector) currently comprises 27 taxpayers, including national private banks, foreign banks, and public financial institutions. Of these, 12 institutions are currently included in the large taxpayer registry (about 7% of the total registry).

This segment is subordinated and controlled by the Superintendence of Banks of Ecuador, which reflects a lower risk of noncompliance by these entities, since they have their own norms and procedures issued and supervised by this body. However, according to the tax posting processes carried out on the taxpayers of this sector, a repeated occurrence of risks specific to the sector was detected. These are:

- Surpluses in the provisions for the coverage of risk assets, in accordance with the limits established by law, mainly for the credit portfolio.

- Payments abroad for the use of credit card trademarks, without the corresponding income tax withholding.

- Income tax exemption registration for yields from fixed income securities issued by the same financial institutions (income from securities acquired from the securitization of their own portfolio).

- Transfer pricing adjustment for financial tool purchase and sale transactions carried out by financial institutions for related parties abroad.

Regarding the main causes associated with the noncompliance risks characteristic of this segment, the scenario in Ecuador on the sectors described above shows the following:

- The application of tax norms by financial sector institutions is not fully linked to the technical aspects detailed in the technical regulations issued by the Monetary Policy and Regulation Board and the Superintendence of Banks of Ecuador, which leads to different interpretations at the time of their application.

- The technical norm issued by the Monetary Policy and Regulation Board and the Superintendence of Banks of Ecuador is constantly updated, which requires supervision and monitoring.

- The rapid development of the financial market requires timely control processes for institutions, in order to detect tax risks early and take corrective action.

Regarding to treatment strategies implemented or under construction, the following are identified:

- Specialized work teams in the financial sector.

- Development and implementation of information exchange conventions with the control body.

- Joint workshops for the analysis and supervision of financial institutions with the Superintendence of Banks of Ecuador.

- Tools for optimizing tax compliance for the industry.

- The necessary tools are currently being developed to provide real-time online access to the accounting, bookkeeping, correspondence, files, or documents that justify their operations and to information from the institutions in the national financial system.

3.4 Oil Sector

Ecuador: Petroleum Sector

According to the Oils Reform Law of the Hydrocarbon Law July 2010, oil exploration and drilling contracts signed under different contractual forms had to be amended to adopt the reformed model of the Hydrocarbon Exploration and Drilling Services Contract.

Ecuador has two types of oil contracts in place, which have generated significant economic revenue for the country. On the one hand, the nation has Contracts for the Provision of Services, which stipulate the payment of fees, with 14 private operators.

The contracts that amend the Contract for the Provision of Services for Exploration and Drilling of Hydrocarbons have the objective of providing services, with own resources and at the expense and risk of the contractor (crude oil extraction companies), for the drilling and exploration of oils, including crude oil, in the contract region. These contracts came into effect as of January 1st, 2011, establish the payment of a fee for the services provided by the contractors, and are administered by the Secretariat of Hydrocarbons.

On the other hand, in October 2014, the country, through the state-owned company Petroamazonas EP, signed Specific Service Contracts with nine companies grouped into three private consortia, which currently conduct recovery and production optimization activities in fields operated by this company. These contracts stipulate an unprecedented form of hiring and investment, since these companies provide an investment with risk capital.

Taxpayers in the petroleum sector are subject to the following taxes, which are administered by the *Servicio de Rentas Internas*:

- Corporate Income Tax: 22% to 25% rate.

- VAT: 12% rate.

- Foreign Exchange Exit Tax: 5% rate.

- Income Tax Withholding: the state entity in charge of administering oil service contracts applies a 5% withholding on the value of sales before VAT.

- Workers' participation in accounting profit: workers are entitled to receive 15% as labor participation. In the case of oil workers, they will receive a 3% profit rate, and the remaining 12% will be paid to the State.

Currently, the Large Taxpayer Registry identifies 28 taxpayers in the oil sector (representing approximately 15% of the total registry), which are classified in the following subsectors: *Upstream* (10 taxpayers), *Downstream* (17 taxpayers), and *Midstream* (1 taxpayer).

The companies in the oil sector are under the control, among other entities, of the Hydrocarbon Regulation and Control Agency (ARCH), which reflects a lower risk of noncompliance by these taxpayers, since there are specific norms and procedures issued and supervised by its control agency. However, in tax terms, the companies show risks that were identified with the implementation of the tax posting processes. The main risks are detailed below:

- Reference price: prior to 2011, participation agreements was in force, through which companies received a percentage of the extracted barrels. The risk is generated by the applicable regulations and the contracts themselves, which established that the contractor's revenues would be settled taking as a reference the price of external sales of crude oil made in the month prior to the shipment by the public entity that markets Ecuadorian oil (Petroecuador). Contrary to what the regulation establishes, the contractors settled their revenues considering the price of the month in which the sale was carried out. Due to this risk, there are legal disputes between the companies and the Tax Administration. However, the National Court of Justice, the highest judicial body in Ecuador, has ratified the *Servicio de Rentas Internas'* actions in four favorable decisions.

- Thin capitalization: this risk is present in most companies in the oil sector. The scheme used consists of parent companies granting credits to their subsidiaries with a financial cost, which is considered deductible by the subsidiaries in Ecuador. However, from the analysis carried out by the Tax Administration, it was concluded that the objective of this scheme is tax avoidance. The risk was generated as a consequence of the behavior of the main crude oil extraction companies, which jointly set up a company for the construction and operation of a heavy crude oil pipeline, whose purpose was to transport oil from the wells to the shipping port. These companies granted credits to themselves (using various related legal entities) at interest rates that exceeded the rates in effect in Ecuador. The companies should have made capital contributions rather than loans, and the Tax Administration is not aware of the declared financial cost. Regarding this risk, there are eleven sentences from the National Court of Justice, which ratify the actions of the Tax Administration.

- "Ship or pay": in this case, the extractive companies have signed transportation contracts with the company that operates the Heavy Crude Oil Pipeline. It should be noted that the extractive companies and the Heavy Crude Oil Pipeline are related parties, since the extractive companies are shareholders of the company that operates the pipeline. The oil companies, in their contracts, have committed to paying transportation fees for a limited barrel capacity, regardless of whether or not they transport barrels of crude oil. Nevertheless, from the analysis performed, the Tax Administration considered the crude oil barrels effectively transported as being deductible from the income tax and disregarded the difference, since it was identified that one company made the deduction without transporting any barrels of oil.

When it comes to the main causes associated with the noncompliance risks characteristic of this segment, the scenario in Ecuador regarding the sectors described above indicates the following:

- Oil companies' enforcement of tax rules is inadequate and is caused by the use of tax avoidance schemes to erode the tax base.

- In the same sense, the sector-specific risks are related to a different interpretation of the regulation applicable to companies in the oil sector, which has generated major differences and amounts to be paid by this segment of taxpayers.

Regarding treatment strategies implemented or in development, the scenario in Ecuador on the sectors described above indicates the following:

- The National Directorate, in the Large Taxpayer Team, has staff to deal with the tax aspects of the petroleum sector.

- Work teams specialized in petroleum sector issues: in this regard, there are teams of auditors for the upstream and downstream subsectors.

- Continuous and joint support and follow-up between control bodies and entities related to the petroleum sector.

- Joint workshops for the analysis and control of taxpayers in the petroleum sector, especially from companies in the upstream subsector, with the ARCH and the Secretariat of Hydrocarbons.

4 Risk Management in the Digital Economy

Spain: Digital Economy

According to ECLAC[47], "The digital economy consists of the telecommunications infrastructure, information technology industries (software, hardware, and IT services), and the network of economic and social activities facilitated by the Internet, cloud computing, and mobile, social, and remote sensor networks".

For this reason, actions as common nowadays as the purchase and payment of products and services and the use of multimedia services, such as video streaming, become relevant when identifying and defining who is subject to the collection and/or payment of taxes, under which characteristics, and where and how the defined tax obligations are taxed. Precisely, the evolution of the digital economy has made it more complex to address this reality. Aspects such as how companies adapt their businesses and platforms on the web, the expansion of information and communication technologies, and new and/or adjusted business models aimed at more intensive uses of the internet represent an opportunity to tackle this increasingly complex reality. For example, business-to-consumer (B2C) or business-to-business (B2B) transactions involve payment flows that do not necessarily involve the purchase of goods or services or the purchase from wholesalers for possible resale of goods or services.

The OECD has differentiated multiple categories of electronic commerce (e-commerce), which could be classified into indirect and direct e-commerce. The former consists of the acquisition of tangible goods that subsequently need to be physically moved through regular distribution channels, while the latter corresponds to intangible goods and/or services that are carried out online.

This implies identifying the problems generated by this type of operation, considering the possible risks of tax noncompliance:

1. Multinationals operating via the Internet, with related transfer pricing (TP) considerations and other associated taxes.

2. The possible tax avoidance or abuse schemes through aggressive tax planning and treaty shopping. The latter is an avoidance mechanism usually related to international double taxation agreements, and can be defined as the misuse or abuse of international double taxation agreements that occurs when residents of a third state create a legal entity in one of the two contracting countries to benefit from reduced withholding rates or other tax benefits to which they would not be entitled if they had acted directly.

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47   ECLAC. La economía digital para el cambio estructural y la igualdad. March 2013.

3. The source or origin of the income and the aggregate value of the transactions against the habitual residence of the provider of the transaction (geolocation).

4. Auditing of the operations: how they are performed, where they are taxed, who audits them, how to access information about them, under which norms and/or laws they are subject to, among other aspects.

5. Possible customs control of goods that enter a country, such as digital multimedia content (music, videos, digital documents, and 3D printing).

6. The different criteria and/or definitions of the Tax Administrations with regard to transactions of goods and services over the internet.

7. The challenges in obtaining cooperation from third parties located outside the jurisdiction (whether to report, withhold, or pay).

8. The challenges in locating the activities that should be taxed, considering where the service is provided or the good is supplied, the residence of the supplier of the good or service, and where the final consumer is located.

Considering the above, it is necessary to establish common criteria to address and develop tax compliance for taxpayers who are actively involved in this context. The Base Erosion and Profit Shifting (BEPS) project, developed by the OECD and G20, aims to improve the efficacy of tax compliance in these areas.

BEPS has identified a number of work areas in which technical recommendations have been made that define how to approach certain situations:

1. Bit tax: consists in calculating the tax through the physical flow of the data that transit in a certain point through the internet, whose objective is to identify the volume of use of internet use.

2. PE: Virtual Permanent Establishment make it possible to identify the residence of a provider on the internet (for example, the country where the physical server is located or the country where the good or service is used).

3. When it comes to VAT, the OECD has produced and approved a document called *VAT Guidelines*, which advocate taxation according to where the good or service is used.

4. Member States should coordinate their various treatment actions (messaging, audits, etc.) with the aim of avoiding the accumulation of excessive burdens on certain taxpayers.

In Spain, the digital economy employs 386,009 workers (2.10% of the total private sector) and involves 24,371 companies (1.61% of the total), which generate between 2% and 6% of GDP. This calculation was made on the basis of sectorial studies, such as the Digital Economy Study, prepared by the Multisectoral Association of Information Technology,

Communications, and Electronics Companies (AEMETIC), which, in this case, is limited to digital content, such as that used in the film industry or in cell phone applications. These studies estimate the impact of the digital economy, which, limited to the aforementioned content, is around 1.87% of GDP.

4.1 E-commerce

Part of the digital economy consists of e-commerce. Everything that is done through e-commerce is part of the digital economy, but the opposite is not true.

The White Paper on e-commerce defines the term "electronic commerce" in Spain as the sale and purchase of products and services through electronic systems, primarily the Internet. Law No. 34/2002, of July 11, 2002, on services in the information society and electronic commerce, transposed into Spanish law Directive 2000/31/EC of the European Parliament and of the Council, of June 8, 2000, on certain aspects of services in the information society, in particular electronic commerce in the internal market (Directive on Electronic Commerce).

B2C E-Commerce Volume

The National Observatory of Telecommunications and of the Information Society (ONTSI), an observatory under the Ministry of Industry, periodically publishes a report on e-commerce in Spain, from which the following graphs and underlying data are extracted. The most relevant aspect to note is that its growth is continuous, over 13%, even in trimesters when the economy was in recession. Currently, its growth rate is 30% per year. Commerce volume has exceeded 29 billion euros, not taking into account business-to-business commerce, which in other countries is between 1.5 and 2 times B2C.

Illustration 82: Evolution of B2C e-commerce (Spain)

Increments
13.4 in 2013 to 29.2 in 2015

FIGURE 1. B2C E-COMMERCE VOLUME
(IN MILLIONS OF EUROS)

B2C E-COMMERCE VOLUME

14.610

Millions € in 2013

In millions of euros. Quarterly

In 5 years, the turnovers has increased 179%

quarter III 1.901,4

quarter III 5.302,6

ONTSI

INTERANNUAL VARIATION
As a percentage

34,8

29,2

quarter III **29,2**

10,6

29.600 (EST 2016)
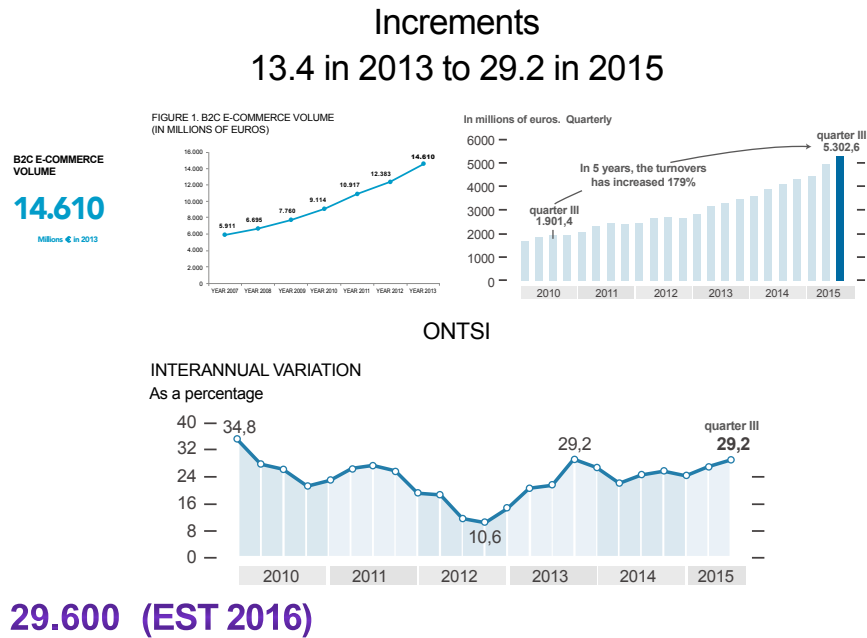
With regard to the annual expense per purchaser, about half occurs in countries where e-commerce is more developed, such as the UK, where it reaches about 900 euros per purchaser per year.

Illustration 83: Payment Methods (Spain)

Figure 8. Preferred Payment Methods by Internet Users who Purchase Online (%)

Cell phone 0,2% Other 1,6%

Cash on delivery/ direct debit 17,1%

Payment Service Provider 28,4%

Credit/ Debit Card 52,8%
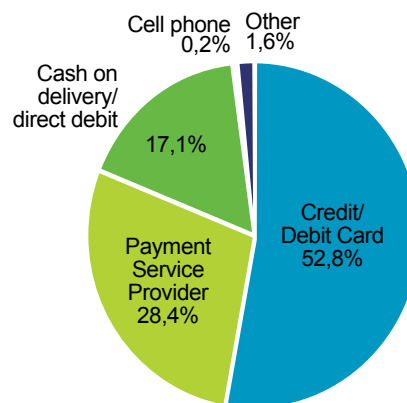
From a tax perspective, it is relevant to know that more than half of the transactions are paid by credit card, and if direct debits for television and magazine subscriptions are eliminated, two-thirds use this payment tool, which facilitates control. Alternative options include PayPal. Cash on delivery is often penalized by merchants due to the difficulty of home delivery.

The above data includes both purchases by final consumers from Spanish companies and those made abroad, such as from airlines in other countries, and those carried out by final consumers in Spain, such as hotel reservations.

The distinction between these components is shown in the following graphs:

Illustration 84: Internal and External Commerce (Spain)

14. ELECTRONIC COMMERCE VOLUME IN SPAIN GEOGRAPHICALLY SEGMENTED (1-13, PERCENT)

Within Spain 40,4%

From Spain to abroad 43,2%

From abroad to Spain 16,4%
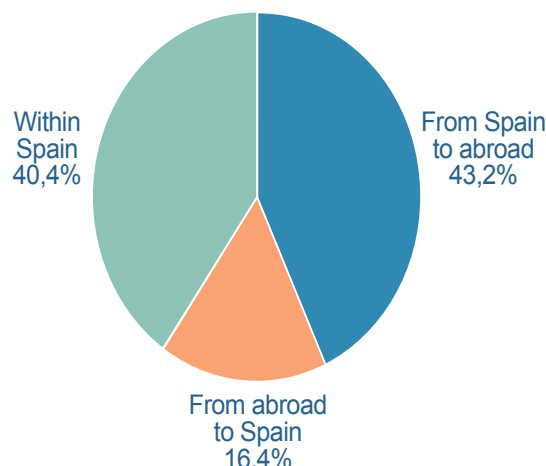
Illustration 85: European Union (EU) Compared to the Rest of the World

EUROPEAN UNION 89,0%

UNITED STATES 4,9%

LATIN AMERICA 0,4%

ASIA-PACIFIC 1,7%

C.E.M.E.A. 3,6%

REST 0,5%
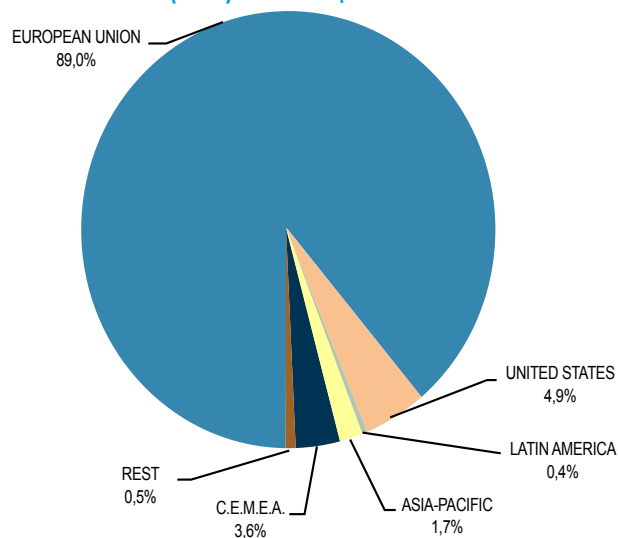
It should be noted that 43% of e-commerce in Spain is carried out on websites located abroad. Some of this is due to payments made abroad by Spanish tourists, but fashion purchases on *websites* in EU countries (basically in Germany and the UK) are also relevant. Retail trade is increasingly moving abroad, with the tax consequences that this entails.

Relative Importance of E-Commerce

61% of purchases are travel tickets, hotel reservations, newspapers, and performing arts tickets, which implies that e-commerce of consumer goods delivered by means of physical transport (offline) actually represents 2.752 trillion euros. On the other hand, given that the aforementioned sectors (transport and hotels) are traditionally subject to tax control, the novelty from a fiscal point of view is that it reaches 1% of retail trade. However, the movement is unstoppable and, in the UK, is expected to reach 25%.

Number of Companies Involved in E-Commerce

Techniques have been developed to access through the internet all those pages with Spanish domains that include the terms "cart" or "purchase", so as to verify their characteristics. To date, there are 67,000 Spanish companies that conduct e-commerce, without prejudice to the fact that Spanish purchasers acquire products through websites located in other countries.

4.2 Collaborative Economy

Its most relevant types belong to two major subsectors: i) those who rent out rooms, accommodations, or vacation homes, e.g., through Airbnb; or ii) the transportation sector, such as Uber or Cabify.

In Spain, collaborative commerce is concentrated in the following sectors:

    a. Hosting (represents 31.9% of revenue),

    b. Transportation (27.3%),

    c. Professional services (12.7%),

    d. Crowdfunding (6.5%).

GIG Economy

The third subsector described above is an emerging trend. It constitutes what has been called the "gig economy". It is made up of professionals who offer their services via the internet and who perform work for an initially indeterminable period of time, such as web programmers, sports trainers, and animal trainers. It can be estimated at 4% of the labor force, although it has begun to grow rapidly.

Illustration 86: Number of Americans Working in the Gig Economy (Spain)
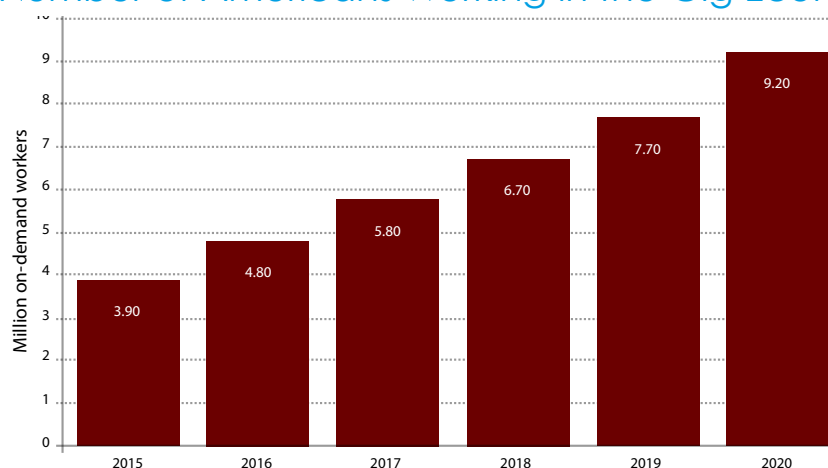
The problem is threefold:

- Not declaring revenues.
- The future problem stems from the fact that workers perform their activities outside the common economy, without paying social security contributions, which is a breeding ground for future problems of lack of protection.
- An imbalance in the economy resulting from the fact that taxation favors this type of employment relationship over the classic one. The UK's 2016 Autumn Statement Speech highlighted the need for corrective measures.

From the description of past experience, the noncompliance risks characteristic of this segment are more difficult to locate and identify than in traditional companies.

Verification can become more difficult because it is easier to operate in constitutionally protected domiciles that can be accessed only by court order.

- Sales at below market prices through dropshippers or warehouses located in other EU countries, established by merchants who import at below market prices.
- Failure to declare profits made through new forms of advertising, such as affiliate systems.
- The existence of undeclared revenues associated with online activities, such as that of influencers, who obtain undeclared earnings for the recommendations they make on the internet.
- Displacement by creating marketplaces on domains located outside one's own jurisdiction. In other words, the simulation that the sale is conducted from abroad.

- Using websites on more than one domain, channeling part of the payments to offshore accounts, or alternatively spreading the sales of an entrepreneur across different virtual terminals, some of them associated with companies that disappear without being taxed.

- Sales via auction platforms or where there is direct, undeclared contact between purchaser and seller.

- Sales in the informal economy. This does not constitute a very big risk because, except in niche sectors, it is necessary to achieve a high volume of sales to compete with the platforms.

- The use of platforms based in third countries that do not provide information.

- In the gig economy, the interested parties, since they are not employed by a company that withholds and submits information, do not file any return, which adds to the taxation problem that of the future lack of protection for workers, since they have not paid Social Security contributions.

From the point of view of public opinion, the constant publication of news about low taxation on platforms has received backlash. In October 2013, Google moved 8.8 billion euros (a 25% increase) through a company in Bermuda. European clients pay for SEO to Google Ireland Ltd., which is owned by Google Ireland Holdings, which is based in Bermuda. The latter, in turn, is owned by another Bermudian company, Google Bermuda Unlimited. Revenues are received through a "Dutch sandwich" from Google Netherlands Holdings B.V., which pays 99.8% of the revenues to a Bermudian entity.

News of such operations also reach non-repatriated profits and are constantly spread at international meetings, in IOTA documents, and in the press, to the point where the Irish government announces changes to be implemented progressively.

In the U.S., successive returns filed by company leader before a Senate Subcommittee anticipate changes to existing legislation on profit repatriation.

The goal is to emphasize that the pillars of Internet commerce control are currently based on:

- The success of the BEPS negotiations.

- The proper adjustment of the design of international taxation.

- Cooperation.

The main causes associated with the above risks must be differentiated into two areas - platforms and merchants.

Platforms

- The risk lies in the fact that they are located in a third country and have devised aggressive tax engineering schemes, so that the profits declared in the jurisdictions where their clients are located are minimal.

Merchants

- The creation of e-commerce companies is easier, leading to high segmentation and volatility, which results in the frequent creation and disappearance of companies operating on the internet.

- The main problems arise from the definition of the segment, since these comprise activities that are difficult to locate and in which it is more complex to identify the holders.

- In traditional business, the entrepreneur had to open a location subject to an opening license and whose activity could be controlled, in the most extreme cases, in person. Nowadays, the business can be move offshore (a "marketplace" located in a domain in another country), and many activities can be carried out on the blurred borderline between what is a business activity and what is not. For example, we can ask the following questions: How many nights must a third party occupy a room to constitute a business activity? To what extent is the revenue from the banners of those promoting a marathon a business activity? Are there countries with exemptions and others without? Are some of these exemptions only in indirect taxation while others are in direct taxation?

- In the traditional business, the in-person activity was traceable, so that the arrival of the goods could be detected, and even guarded, by customs officials at border crossings. Today, many stores ("marketplaces") do not perform their warehousing and delivery activities, but are handled by dropshippers, or resellers of stores, who label and deliver the goods on their behalf.

- In the traditional business, suppliers and clients were required to submit information, while today platforms located in other countries deny information for privacy reasons.

- In the traditional business, import operations were carried out under the commercial regime, and customs returns contained extensive details. Nowadays, they are made under the small remittance regime, in simplified returns, in many cases benefiting from exemptions from customs tariffs and VAT, which are different in each country. The customs assessment rules have become more flexible, so that it is very difficult for the Tax Administration to know the real value of the goods offered.

- Unlike traditional, bilateral commerce (purchaser and seller), e-commerce has many facets, such as *marketplace* (e.g., Amazon), search engine (e.g., Google), affiliate tool (e.g., Zanox), dropshipper, customs warehouse, importer, and foreign supplier. Knowing the prices and relationships in the chain is more complex.

The treatment strategies implemented or under development for this segment seek to mitigate the aforementioned noncompliance risks and can be grouped into the following blocks:

Conceptualization and Segmentation

E-commerce has become widespread as a way of doing business. Today, airlines, hotels, department stores, clothing stores, etc. sell their products through this means. The strategy for controlling the economy must take into account that a growing part of it is digital, just as it is assumed that one no longer pays by exchanging goods or in cash.

In many cases, verification can be done in the traditional way, especially in medium and large businesses. However, the challenge is that inspectors need to be up to date and gain knowledge about e-commerce. This requires the development of specialized roadmaps.

Technical Aspects

We must acquire the tools necessary to obtain information over the internet, clean it, identify it, and insert it into databases. In addition, a group of technicians specialized in information systems must be formed to carry out this task. Basically, it is necessary to have:

- A **Crawler**, a tool that browses the *web* for information.

- A **Scrapper**, a tool that reads content found on *web* pages, such as phone numbers or prices, recognizes it, and uploads it.

- A **programming layer**: *software* must be developed to complement the above tasks. Certain information may be in formats that make it difficult to read, such as optical images, or that pages provide only a small amount of information with each search, unless it is properly checked. On the other hand, there may be information other than a reference phone number.

- **A consolidation system in the repositories**: the information downloaded from the internet must be loaded into the databases associated with the rest of the information on the taxpayers in question, in order to perform the risk analysis. In the case of the AEAT, there is a warehousing system called ZUJAR.

- **Viewing systems**: analyzing information in such interconnected business models requires network viewing tools. In the case of the AEAT, a tool called TESEO was developed.

Information Requests

Information should be available to supplement that which is traditionally required. For example:

- Information provided by banks about the operations performed in virtual terminals (in the case of the AEAT, it is Form No. 172).

- Information obtained through periodic requests to the transport company franchisees.

- Information from existing online advertisements, such as rentals, obtained through proprietary tools on the internet.

- Information from other Tax Administrations obtained by request or by international data exchange.

- Information about transfers, sorted by payment channels, obtained from the banking system.

Disclosure

Tax Administrations must:

- Inform on their web pages about the requirements and conditions for agents of the collaborative economy and e-commerce.
- Use both social and traditional media to show the types of fraud detected and the results obtained, in order to avoid a false sense of impunity.
- Promote internationally harmonized regulatory changes, which, among other aspects, define:
  - The line to be drawn between the collaborative economy and economic activity.
  - The requirements that platforms must meet in order to work in a given territory.
  - Information to be provided by the platform to prove the activity performed.
  - In Spain, it has been established that exchanges between private individuals must be taxed at a rate of 4% in the asset transfer tax. The challenge is to detect the transactions.
  - As of 2018, an obligation to file an information return has been established for rental property platforms, in which information about the lessors, the operation, and the property must be provided.

Chapter 5

*Comprehensive
Risk Management in
Customs Administrations*

V COMPREHENSIVE RISK MANAGEMENT IN CUSTOMS ADMINISTRATIONS

Strategic planning, risk management, and result evaluation are central elements of customs and Tax Administrations' governance framework, and its correct implementation is fundamental to the fulfillment of its institutional commitment.

An integration of these three elements as part of the management of these administrations allows the involvement of all personnel in their implementation, a better provision of services to users, and the application of a more effective control of their compliance. In the case of customs, this means facilitating legal trade without losing control.

In the previous chapters, we addressed several concepts and best practices related to risk management, which, by their very nature, apply in both the customs and tax arenas and are key to promoting greater voluntary compliance by taxpayers with tax and Customs Administrations.

In this regard, institutions such as the International Monetary Fund (IMF), the World Customs Organization (WCO), and the Organization for Economic Cooperation and Development (OECD) encourage cooperation and coordination between customs and Tax Administrations as a mechanism to improve compliance, and risk management is one of the best means both administrations have to fight tax evasion and smuggling.

However, the customs business has particularities in its management that generate differences in the application of risk management. Among these, we can mention: (i) handling real-time operations at the borders that require immediate decision-making; (ii) the application of processes in coordination with other border control agencies and with authorities in other countries; (iii) the control of both goods and means of transport and passengers; and (iv) the distinct roles that a customs administration must play besides collection, these being its contribution to national security, social protection, and facilitation of trade.

We hope that the strategic and comprehensive approach outlined in this section will serve as a reference for customs managers - and, where appropriate, tax agency leaders - in a way that will allow them to assess how they have conceptualized and implemented risk management to date and, if necessary, to make the necessary adjustments.

Regarding its specific content, it should be noted that it encompasses both practical elements for the definition and implementation of a comprehensive risk management strategy, considering both institutional risks - which are addressed more broadly - and compliance risks - which are discussed in more detail in this chapter. Despite the different functions of customs, given the focus of this handbook, only compliance risks related to tax collection will be addressed in this chapter. However, the proposed strategic scheme and the various practices outlined are applicable to both security and social protection issues. Its development is based on the provisions of international tools that address both trade facilitation and customs control, such as the World Trade Organization (WTO) Trade Facilitation Agreement (TFA), the Revised Kyoto Convention, the SAFE Framework of Standards to Secure and Facilitate Global Trade, and the Risk Management Compendium, the latter three issued by the WCO. It also considers several documents developed by the IMF that aim to strengthen the technical and management

abilities of Customs Administrations and highlight the importance of comprehensive risk management.

In addition, the preparation of this chapter takes into account the lessons learned by various customs experts of different nationalities who have participated in IMF missions, as well as the exchange of experiences with customs officials from around the world.

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<center>**Main Messages of this Chapter**</center>

- Comprehensive risk management should be considered a fundamental pillar of the strategic management of a modern customs office.

- Comprehensive risk management must include a strategic, a tactical, and an operational approach.

- Applying comprehensive risk management requires the involvement of the entire institution and effective coordination with other agencies, other customs offices, and the private sector, especially with the internal Tax Administration, with which it has significant potential in terms of information management.

- The enactment of a comprehensive risk management policy that defines its scope, application, and responsibilities facilitates its institutionalization.

- The challenges faced by Customs Administrations, which are specific to their environment, highlight that implementing comprehensive risk management requires Customs to substantially improve the following aspects: (i) the regulatory framework; (ii) the processes; (iii) the information; (iv) the infrastructure; (v) the computer systems and telecommunications; and (vi) the human capital.

- As a result of an effective risk management, customs must identify the agents and operations that can provide further facilitation and implement actions to this end. Additionally, it is essential to generate a clear perception among users that noncompliance carries consequences, in order to dissuade irregular behavior and, thus, improve compliance.

- It is necessary to understand that the control measures before, during, and after dispatch must complement each other in a comprehensive approach.

- It is important to promote greater use of data to underpin the definition of facilitation and control policies.

> The current context in which Customs operates requires, in some cases, changes in the risk management approach that has been followed. Among others, there should be a greater institutional involvement in its implementation, as well as strengthening of cooperation with the internal Tax Administration.

</div>

1 General Context of Risk Management in Customs

1.1 Challenges Faced by Customs

The complex environment in which Customs Administrations operate is conditioned by a series of challenges to achieve effective control and facilitation of internal and external trade. Among these, the following should be highlighted:

- Budgetary, technological, infrastructure, and human resource limitations to improve its management.

- It is necessary to improve the capabilities of its human resources.

- High turnover of civil servants, both as a result of changes in government and the absence of policies that allow for adequate retention of talent.

- Corruption.

- Inadequate management of information, both internal and third-party.

- Constant growth in the volume and complexity of business transactions.

- Outdated regulatory framework or lack of legal powers to provide greater control powers.

- Legislative changes regarding tax incentives that must be administered at the same time as meeting government requirements to achieve tax collection targets.

- Processes that are ambiguous, outdated, or allow a high level of employee discretion.

- New and complex fraud and smuggling schemes that threaten collection, security, and social protection.

These are some of the challenges faced by Customs in light of the high demands they receive to facilitate trade in various sectors, as well as to provide transparent, agile, and predictable services that contribute to their country's trade competitiveness. This forces Customs Administrations to re-evaluate their approach and organization, and to continuously seek new and innovative ways to meet their strategic objectives, and comprehensive risk management is a fundamental pillar to achieve this institutional mission.

> **Corporate responsibility for risk management**
>
> To the extent that Customs Administrations develop and properly implement a comprehensive risk management strategy, they will achieve, among other things:
>
> - Improve communication and coordination internally and with other foreign trade agents.
> - Optimize information management and actions to follow an institutional plan aligned with strategic objectives.
> - Avoid duplication of functions and inefficient results.
> - Increase the risk perception of foreign trade agents.
> - Increase voluntary compliance and confidence of customs users.
> - Achieve better levels of credibility in society.

The challenges described above highlight that comprehensive risk management requires the customs administration to address both compliance and institutional risks linked to the following elements: (i) regulatory framework; (ii) processes; (iii) information; (iv) infrastructure; (v) computer systems and telecommunications; and (vi) human capital.

1.2 Agents who must Intervene in Risk Management

There are two distinct groups of agents to be considered in comprehensive risk management. On the one hand, it is essential to involve the whole institution - an element common to all Tax Administrations. However, this remains a challenge that has not been possible to overcome, mainly because many Customs Administrations still consider that the implementation of comprehensive risk management is the sole responsibility of an administrative unit. This limits the benefits that could be obtained, both from the point of view of internal efficiency and of combating evasion and facilitating legal trade.

On the other hand, Customs, by the nature of its function, must incorporate external agents involved in commercial operations, such as: (i) the other government agencies, including the internal Tax Administration; (ii) other customs administration; and (iii) the private sector. Good coordination with these agents enhances the ability to improve the quantity, timeliness, and quality of information for risk identification, as well as for the effective implementation of control and facilitation measures to be put in place before, during, and after dispatch in order to improve compliance.

1.3 Scope

One of the main challenges in terms of scope is the integration between the definition of the institution's strategies and its customs processes, especially during the three phases when Customs exercises control (intervention): before, during, and after dispatch.

This is evidenced by the fact that there are customs offices that choose to limit risk management to a single control phase, most of them focusing on the analysis and implementation of mitigation actions at the time of dispatch, using selectivity computer systems and, in many cases, maintaining high inspection rates, which do not necessarily correspond to their results in terms of control efficacy and better compliance by foreign trade operators.

As an example, the following illustration shows the average distribution of selectivity channels by economic groups[48] according to the results of the International Survey on Revenue Administration (ISORA)[49].

Illustration 87: Distribution of Selectivity Channels by Economic Groups
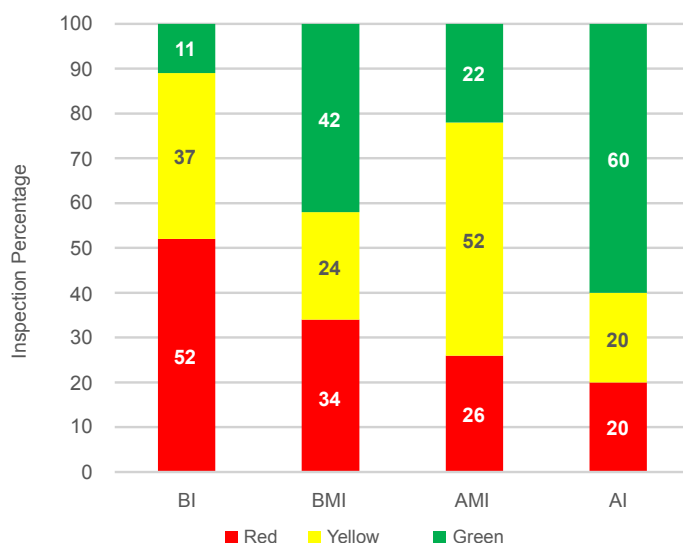
A common feature of some low-income countries has been to maintain high inspection rates, but this has not helped improve operator compliance. Maintaining this policy also generates:
- Increased discretion, creating spaces that promote inappropriate behavior.
- Poor quality of physical and documentary analysis of the assets.
- Increased costs and shipping times with an impact on competitiveness.
- Inadequacy of the institution's resources to provide good service, reduce evasion and secure the borders.

Source: International Survey on Revenue Administration (ISORA).

We observe another group of customs offices that perform risk analysis in several control points, in an uncoordinated manner and without following a systematic procedure. In other words, different areas of the administration perform information analysis - often without access to all the institution's information - when implementing actions without a common institutional strategy.

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48 LR: low revenue; MLR: medium-low revenue; MHR: medium-high revenue; and HR: high revenue.
49 "Understanding Revenue Administration, An Initial Data Analysis Using the Revenue Administration Fiscal Information Tool" 2015, A. Lemgruber, A. Masters, and Duncan Cleary.

This short scope of risk management does not allow the definition of control actions that exert a real sense of risk on taxpayers and/or do not generate the perception of the real benefits of facilitation measures, which, therefore, limits Customs' ability to meet its strategic objectives. Moreover, this generates the consequence that Customs does not realize the importance of investing more in its human capital, in the quality and use of information, through the increased adoption of technology, as well as in the continuous improvement of its processes, as part of its strategy to improve risk management.

2 Strategic Approach for Comprehensive Risk Management

The current customs scenario requires risk management to be inherent to the work of the customs authority, in order to achieve greater agility in foreign trade operations without losing control, by prioritizing the legitimate movement of goods and persons and predicting, before the arrival or departure of a country, the actions to be taken on anything that implies a threat to security, health, or the fulfillment of customs obligations whose control is under the responsibility of Customs Administrations, either directly or in coordination with other institutions.

These demands that 21st-century Customs Administrations face force them to adopt more comprehensive approaches in their management, and, thus, avoid that they become obstacles to trade, while fulfilling the functions that governments demand from such an important institution. Therefore, it is necessary to establish a strategic approach for risk management that integrates its control and trade facilitation efforts.

To this end, it is suggested that Customs Administrations consider the following strategic guidelines related to risk management:

Strategic Guidelines Related to Risk Management

- Risk management must be considered a fundamental pillar of strategic management, to be expressed through an institutional policy.
- All areas must be harmonized and coordinated for the application of comprehensive risk management, directing efforts to achieve strategic objectives.
- The legal framework must be aligned with strategic priorities and provide the necessary powers to facilitate and control management.
- The organizational structure must be defined according to the strategic management that the administration intends to achieve.
- Risk management should focus on risk prevention and mitigation, both to facilitate legal trade and to improve the efficacy of control.
- Implementing risk management requires knowledge of the customs and trade environment of the agents, the goods, and the customs regimes with which they interact.
- The necessary institutional arrangements must be put in place to adequately manage institutional risks.
- Risk management should be carried out under a coordinated framework with other relevant government authorities, the private sector, and other Customs Administrations.
- Strategic and operational indicators should be established to monitor the outcome of control actions and overall management performance, including those that analyze the improvement of voluntary compliance.
- Risk management must be applied across all customs processes, applying cutting-edge technology, and promoting transparency and integrity.

The definition and subsequent application of a comprehensive risk management that considers the strategic guidelines defined above will allow Customs to: (i) improve the coverage and focus of customs control; (ii) provide greater levels of facilitation of legal trade; (iii) involve all levels of the institution, as well as other external agents; (iv) improve the efficacy of risk prevention and mitigation actions; and, above all, (v) increase the ability to achieve the institution's strategic objectives.

Consequently, based on what has been described, the strategic approach proposed for institutionalizing comprehensive risk management in a customs administration is composed of different organizational arrangements grouped into three approaches, which must be considered in a harmonized and complementary manner, being these: (i) strategic; (ii) tactical; and (iii) operational. The following diagram outlines the suggested components of each of these approaches for the adoption of comprehensive risk management.

Illustration 88: Strategic Approach for Comprehensive Risk Management
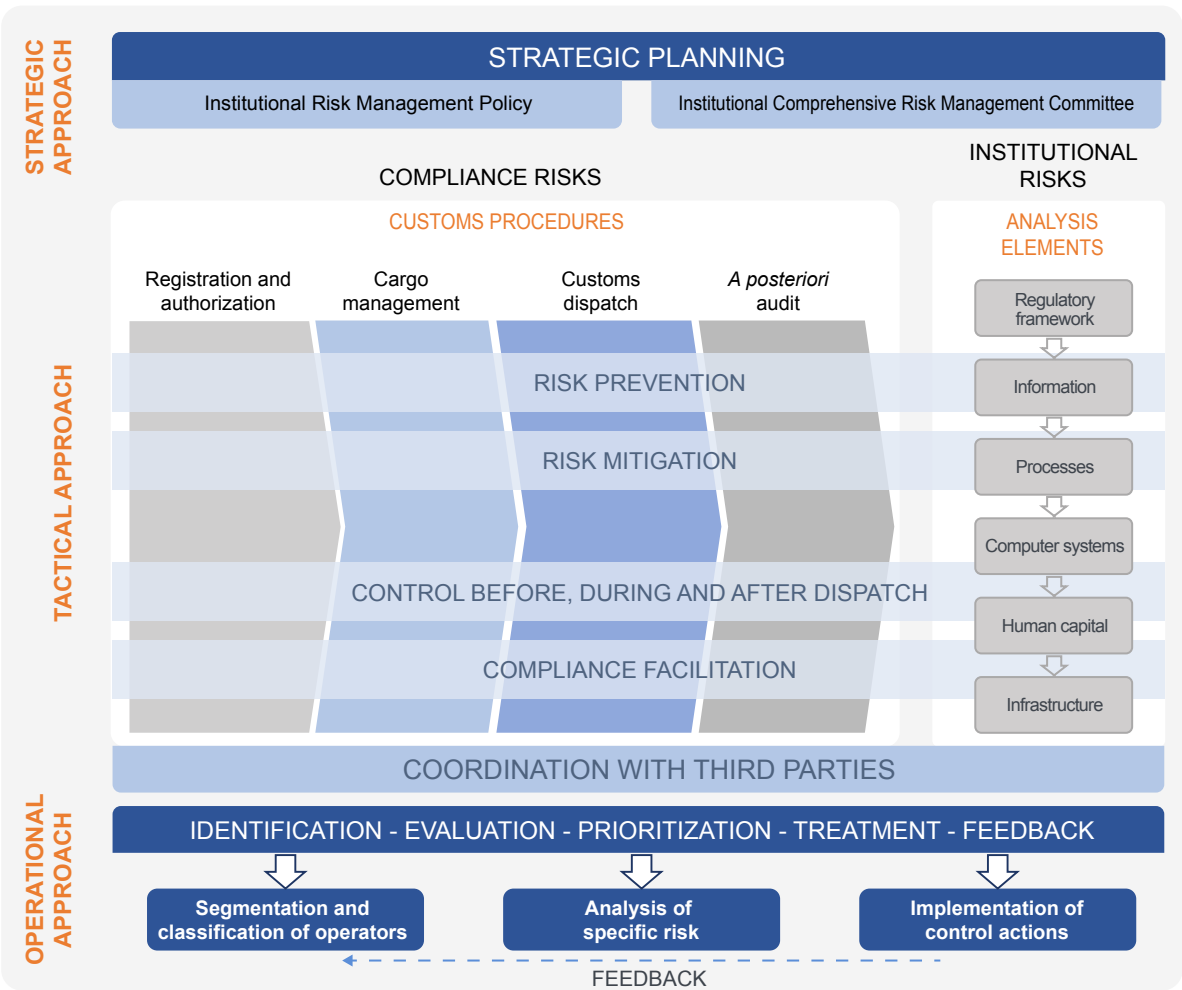
Source: prepared by the authors.

To facilitate understanding of the proposed diagram, its main components are presented below, with the aim of helping Customs Administrations to identify and analyze possible variations between their current risk management approach and the one outlined here, which may contribute to its improvement.

2.1 Strategic Approach

2.1.1 Strategic Planning

Strategic and operational planning and the measurement of management results are basic elements of the governance framework of any tax or customs administration and should consider comprehensive risk management as the mechanism to increase the opportunities to fulfill its mission and strategic objectives. These three elements cannot be handled in isolation, but should be harmonized, as part of the strategic definition for the management of such administrations, so that all personnel are committed to its implementation.

2.1.2 Institutional Policy for Comprehensive Risk Management

For the institutionalization of comprehensive risk management, it is necessary for the customs administration's highest authority to enact a broad compliance policy, which provides the necessary guidelines for its adoption and must include at least the following elements:

1. Objective.
2. Principles to be observed.
3. Strategic approach to be adopted.
4. Scope.
5. Specific guidelines for its entry into force, its adoption, and its monitoring (including the risk management committee).

2.1.3 Comprehensive Risk Management Committee

This committee must be chaired by the highest authority of the customs administration and be composed of a management team that includes the area directly delegated to handle risk management. This team will be responsible for evaluating, prioritizing, approving, and monitoring the control and facilitation strategies and actions necessary to achieve the strategic objectives. Its work must be assisted by a technical committee, which formulates the corresponding proposals for the institutional committee, which, in turn, becomes a decision-making body.

2.2 Tactical Approach

2.2.1 Compliance Risks

Compliance risks are directly related to the customs administration's mission or business processes and can be linked to loss of revenue (collection), competitiveness, impact or harm to national security, or protection of citizens.

2.2.1.1 Traceability

One of the most important aspects that must be taken into account in the implementation of customs processes is the end-to-end traceability of goods. This can be defined as the set of procedures that allow a timely follow-up of the movements and localization of goods that enter and leave the country subject to customs control, from the point of view of both computerized and physical records. Some examples of best traceability practices are mentioned below.

Table 42: Examples of Best Practices for Traceability of Goods in Customs

To achieve complete traceability, it is necessary to adopt a broader approach to of the processes of entry and exit of goods, by incorporating, among other things, the following elements:	• Obtaining complete and timely electronic information on manifests, bills of lading, air waybills, etc.
	• Defining and requiring that the different operators have a standardized stock control predefined by the authority.
	• Strengthening control over the movement of cargo at transits.
	• Becoming familiar with the balances of goods under special regimes or in free zones (entries, transfers, local sales) and the registration of the return of goods with the closure of the regime.
Main conditions for a proper implementation of this control:	• Completing and sending the fields of the manifests, bills of lading (BL's) and/or air waybills in a timely manner.
	• Ensuring interoperability between systems to safeguard cargo traceability.
	• Maintaining close coordination between Customs and other agents, whether they are related to logistics, security, or both.
	• Implementing an international data standard - such as the WCO data model - that facilitates its online validation, exploitation, and mass analysis.
	• Requiring that all goods entering, exiting, or remaining in a warehouse be properly registered online.
	• Conducting field audits to verify the consistency between computer records and physical inventories.
	• Exercising effective control over abandoned or confiscated goods.

Source: Prepared by the authors.

2.2.1.2 Risk Prevention

Within the strategic guidelines, it is worth highlighting the importance of adopting a preventive approach. To address the main risks, it is necessary to define, implement, and assemble a series of initiatives that contribute to deterring illicit practices and, consequently, promote greater compliance. Therefore, the strategy should not be limited to the implementation of measures or projects focused only on reacting to the entry or exit of goods from the country. The following table provides several examples of projects or measures to be considered in order to develop and implement a preventive approach.

Preventive Measures: Examples of best practices to be considered

• Review of rules and procedures to avoid discretionary practices and to allow for the exercise of proper oversight.
• Development and/or updating of electronic documents and data indexing.
• Reinforcement of online validations to generate greater certainty about the information declared.
• Automation of the process of registering and cleaning operator data.
• Implementation of an advanced electronic signature for mandatory use in foreign trade operations.
• Gradual automation of the process of entry and exit of goods.
• Implementation of a Single Window for Foreign Trade.
• Adoption of an Authorized Economic Operator (AEO) program.

Source: Prepared by the authors.

2.2.1.3 Risk Mitigation

Comprises all control and facilitation actions that Customs establishes as a result of the operational risk management process and that are complemented by preventive measures. It differs from risk prevention in that it involves actions that are implemented to counteract a risk when it occurs and does not necessarily include measures to prevent it. Typically, this is the type of action on which Customs focuses, with less attention given to risk prevention measures.

In each control stage that will be mentioned below, we will present examples of best practices, among which mitigating actions can be identified that can be used as a reference by Customs Administrations.

Control Prior to, During and After Dispatch

2.2.1.4 Control Prior to Dispatch (Registration of Operators and Analysis of Prior Information)

Prior control is the control that Customs can exercise during the processes of both registration and authorization of commercial operators and cargo management at land borders, ports, and airports based on prior electronic information about the goods and prior to the submission of a customs declaration.

In the registration process, the goal is to perform a risk analysis that makes it possible not only to verify compliance with the formal requirements established by law, but also to analyze the profile of the operator and their representatives, so that as this process becomes the gateway for operators to the customs administration, there is a prevention against any circumstance that could introduce some risk to the operations of entry, exit, or transit of goods in which these operators intervene. To this end, Customs must make use of effective information exchange with third parties to ensure the maximum level of operator reliability. More details on this issue will be discussed below.

In the case of the prior control exercised during the customs process, since it is an information analysis performed before the arrival of the goods in their means of transport, the risks identified at this point correspond mainly to those related to security, safeguarding, and intellectual property.

It is important to mention that, although several Administrations have started to reinforce control during the registration and authorization process of operators, such as importers, transporters, or customs brokers (also called customs agents or customs dispatcher in some countries), most of them do not carry out a real risk analysis that would allow them to identify irregularities, such as false addresses, registration of operators with pending cases in the internal Tax Administration, and registration of risky legal representatives.

With regard to pre-arrival analysis of goods, several Customs Administrations have created specialized units for this type of control. However, most continue to have problems receiving prior electronic information in a timely manner, as well as exploiting and analyzing this information. In many cases, enforcement ability remains limited, and no systematic process exists.

Table 43: Best Practices Related to Pre-Dispatch Control

As far as operator management is concerned, this control should contribute to:	• Identify risk operators during customs registration.
	• Verify that the information submitted during registration is reliable and corroborated with third-party information.
	• Analyze whether the operators' registrations as taxpayers with the internal Tax Administration are consistent and coherent with their customs profile.
	• Verify that the operators are solvent in complying with their tax and customs obligations.
Regarding the analysis for the identification of risky operations from prior information, this control should contribute to:	• Identify the cargo to be inspected in primary zones, subject to physical screening or by non-intrusive equipment.
	• Detect operations with a history of alerts.
	• Start the process of controlling stocks of goods and their subsequent allocations.
	• Detect elements that can serve as a starting point for risk analysis during or after dispatch.

Main conditions for a proper implementation of this control:	• It is desirable that the Tax Administration's taxpayer registration number be used in the main customs processes, such as registration of operators and submission of customs declarations and/or forms.
	• The information provided at the time of registration must be validated with Customs' own information, as well as with external sources, in order to verify its veracity as far as possible.
	• The fields on the manifests, bills of lading (BL's), and/or air waybills must be correctly filled out and submitted in advance.
	• The regulatory framework must specify the deadlines for submission, the way each field is to be filled out, as well as the applicable violations and sanctions in case of noncompliance.
	• Limit as much as possible the use of general descriptions of goods, such as "general cargo" and/or "miscellaneous items"; it is advisable to establish a field in which the customs subcategory is entered according to the harmonized system.
	• Implement an international data standard, such as the WCO data model, which allows its electronic validation, exploitation, and mass analysis to take place.
It is desirable that the computer system has at least the following functional features:	• Establishing the highest possible level of interoperability with third parties to increase control and coordination.
	• Performing electronic validation, exploitation, and mass analysis of data.
	• Sorting unstructured mass information from manifests, bills of lading, and/or air waybills.
	• Enabling the application of filters and character approximation searches on each of the fields and apply rules that link them.
	• Creating profiles and sending alerts.
	• Tracking the status of each alert generated.
	• *Obtaining feedback* through preestablished formats.
	• Generating a database on the profile of each alert, following an exploitable structure for later analysis.

Source: Prepared by the authors.

Within the prior analysis during the cargo management process, it is of particular importance to take into account the main fields of manifests and bills of lading. This requires the development of a methodology to answer questions about the consistency and reliability of the operations. The computer system used for this analysis must contemplate the creation of rules and tables to guide the decisions made by those analyzing the information.

The following is a basic example of some variables and questions that can guide this type of analysis.

Table 44: Initial Steps for Pre-Dispatch Risk Analysis

Variable: Port Operator	Is there any background information on the operator?
	Are there registrations from previous operations available?
	Have the consignee and the operator had any prior relationship?
	Has the operator ever been detected as being involved in an illicit operation?
	Is the geographical zone of the operator's domicile recognized by the production or by the type of product being shipped?
Variable: Port of Shipment	Is the port where the goods are loaded considered risky?
	Is there any historical information available to confirm that this type of goods was loaded at this port?
Variable: Description of Goods	Was the description of the goods supplied correctly?
	Does the field contain a generic description, such as "miscellaneous items" or "general cargo"?
	Does the description of the goods contain any passage or word that denotes a risk?
	Is the declared weight consistent with the operation (relationship between container type, declared goods, and weight)?
	Do the goods tend to have fair weights?
Variable: Consignee	Are the goods consigned in a timely manner?
	Has the consignee previously worked for this customs administration?
	Has the consignee ever had any relationship with the operator?
	Is the consignee linked to any historical irregular operation?
	Has the consignee ever been an importer?
	Is the consignee-importer a company or an individual?
	Is the consignee-importer up to date with their tax obligations?
	Are the volume and type of goods consistent with the taxpayer's classification (small, medium, or large, type of activity, etc.)?
	Is the consignee's domicile located in an area identified as a risk area or one that does not correspond to the type and volume of goods being imported?

Source: Prepared by the authors.

2.2.1.5 Control during Customs Dispatch (Import, Export and Transit)

This type of control begins with the submission of a customs declaration and consists in verifying the correct payment of tariffs and taxes or the completion of formalities related to export, transit, or special regimes. In addition, it involves verifying compliance with non-customs measures by checking that the declaration is correct, complete, and accurate.

For its implementation, it is necessary to rely on the information contained in cargo manifests, shipping documents, commercial invoices, certificates, authorizations, and any other document that provides guidelines for the customs declaration, observing mainly the customs classification, unit of measurement, quantity, origin, value, and non-customs measures to which the goods are subject, as well as the registration of the operators involved, among other aspects of a more administrative nature. The risks involved in this stage are linked to the correct payment of

taxes or the effective exit of the goods from the country, in the case of exports, special regimes, and transits, notwithstanding the presence of intellectual property, protection, and security risks.

Table 45: Best Practices during Customs Dispatch

Main conditions for the proper implementation of this control in the import for consumption/definitive importation	Automation of the return, payment, selectivity, gauging, and goods exit processes.
	Properly defined processes communicated to operators, and uniform criteria for their application.
	Relying on a methodology to segment and identify the risk level of importers/exporters, based on their operations (profile) and their statistical characteristics.
	Maintaining a data repository enriched with external information, such as that generated by Tax Administrations, other government institutions (health care, agriculture, fisheries, security, etc.), by chambers of commerce and by customs in other countries. -chambers of commerce, and Customs Administrations in other countries.
	Relying on adequately trained personnel to carry out controls and, when possible, to create specialized groups, according to the main sensitive chapters of the tariff nomenclature.
	Maintain close supervision over the implementation of inspections and the quality of the information incorporated in the feedback.
Characteristics to be covered in the system and order of precedence in the application of the selectivity rules or criteria	Relying on a high level of interoperability with third parties and using as much technological equipment as possible to eliminate discretion, increase the use of electronic registrations, and facilitate trade.
	Possible order of precedence of rules or criteria: Normative rules. Exception criteria for low-risk importers and/or AEOs. Deterministic rules, which consist of defining combinations of variables for identifying certain profiles (also known as expert rules). Predictive models. Random algorithms, which can be applied for different levels of operator risk to the set of customs declarations that were not selected by the previously defined criteria.
	Periodically evaluating the impact of each type of rule/criterion and achieving continuous refinement of the selectivity module.
	Modeling rules autonomously, that is, without the need for direct involvement of the systems area in the process.
	Developing a value database on sensitive products to support the definition of selectivity criteria.
	Using a feedback template, under which coded response options (type of irregularity, adjustments) predominate, thereby limiting the use of text.

Source: Prepared by the authors.

To achieve agile and reliable processes during cargo traceability and customs dispatch, it is particularly relevant to include technological tools aligned to both processes, so as to reduce the probability of occurrence of some risks, as well as to increase transparency and simplify the entry and exit of goods. Some examples are as follows:

Table 46: Best IT Practices that Can Be Adopted during Customs Dispatch

The inclusion and alignment of technological tools in the processes makes it possible to prevent and deter the occurrence of various risks.	Among other examples, the following technological tools can help reduce the use of easily changed signatures and seals and employee discretion:
	• The incorporation of a code in the return to know the status of the cargo.
	• The use of radio frequency devices (RFID).
	• The inclusion of license plate and/or container number readers.
	• The use of non-intrusive equipment.
	• The insertion of scales in the computer system.
	• The application of electronic locks.
	• The implementation of electronic gateways linked to the customs management system.
	• The application of closed-circuit television (CCTV).

Source: Prepared by the authors.

2.2.1.6 Post-Dispatch Control (A Posteriori Audit)

There are certain elements, particularly in relation to customs value, which cannot be correctly assessed at the time of dispatch, and which need to be checked alongside the accounting and other commercial documents of the importing and exporting companies, such as royalties and license rights, commissions, and nonexistent discounts. This control is carried out through post-dispatch audits.

Post-dispatch audits consist of a comprehensive study of the operators' history in order to identify and implement representative and corrective control actions, which contribute to improve voluntary compliance.

Several tools and agreements, such as the Revised Kyoto Convention of the WCO and the Trade Facilitation Agreement of the WTO, among others, establish measures to speed up the movement of goods across borders and determines that countries should implement post-dispatch audits as a mechanism to unburden goods entry points and facilitate legal trade.

This creates the need for Customs Administrations to change the focus of their control mechanisms, with the aim of intensifying a *posteriori* control and reducing interventions when goods enter or leave the country.

However, in practice, few Administrations have managed to implement policies aimed at decisively increasing their post-dispatch control abilities. For this reason, they continue to focus their control efforts during dispatch, although many of them have gradually decreased their level of physical and document-related inspections during this moment of control, which only weakens Customs' ability to tackle fraud and smuggling.

Table 47: Best Practices during *A Posteriori* Audit

To achieve its objective, it is necessary to start from the comprehensive study of the operators, considering, among other aspects:	• The characteristics of their historical operations.
	• The compliance history with Customs and other government institutions.
	• Information provided by related third parties.
	• The consistency between customs and internal tax returns.
Audit planning should be based on, among other elements, studies based on tariff levels or customs regimes, which should ideally help guide strategic decision-making.	
These studies should cover:	• An understanding of business models through demand and supply analysis.
	• The supply chain.
	• The identification of risks in current processes and procedures, including regulatory flaws.
	• The structure and analysis of prices and their evolution.
The result of this work should contribute to:	• Having a broad perspective on the behavior of the different sectors of importers.
	• Generating greater expertise for identifying atypical risk patterns.
	• Identifying the operators that pose a higher risk based on their relative importance as a function of different variables.
	• Establishing benchmarks or baseline indicators for further studies.
The audit monitoring and evaluation system must comply with at least the following aspects:	• The register of orders to be implemented and the name(s) of the person(s) involved.
	• The date of notification/start of the proceedings.
	• The registration of the administrative acts performed on the occasion of each intervention.
	• The sequence/computation of the deadlines and the status of the steps of each procedure.
	• The result of each action, listing the linked returns for future profile construction.
	• The conventions and payments.
	• The contestations or the administrative status of trials.
	• Details about the awarding of goods.
	• The performance indicators.

Source: Prepared by the authors.

Facilitation of Legal Trade

Most Customs Administrations focus risk management on identifying noncompliance, leaving aside importers who represent a low level of risk and to whom they may grant compliance-oriented measures.

One of the initiatives that best demonstrates the relationship between risk management and facilitation of legal trade are the Authorized Economic Operator (AEO) programs, whose standards are defined in Pillar II (Customs-Business Relations) of the WCO Regulatory Framework and have also been included in the WTO Trade Facilitation Agreement and are already widely implemented around the world. Through these programs, Customs grants a

series of benefits to the companies that use them, such as reducing border selectivity channels, as long as they comply with a set of customs, tax, and security requirements that allow them to obtain AEO certification, i.e., that make them reliable companies for Customs. This does not mean eliminating control on these companies, but reducing its intensity and, consequently, reducing the types of controls under the powers of Customs.

Table 48: Best Practices for Facilitating Legal Trade

In the registration process:	• Registration as an AEO.
	• Subsequent domicile verification.
	• Virtual management.
In the customs dispatch processes	• Reduction of physical inspection channels at the border through *a posteriori* verification of their operations.
	• Allowance for advance shipment.
	• Customs dispatch of the goods at the importer's premises.
	• Release of the goods before the final tax posting or immediately upon arrival in the country.
	• Submission of pre-dispatch returns.
	• Deferred payment of taxes.
	• Account operators to assist and guide in compliance with obligations.

Source: Prepared by the authors.

Relationship with Third Parties (Especially Internal Tax Administration)

In order to increase sources of information and improve institutional capabilities to implement effective control measures, coordination with third parties is crucial for effective risk management. As indicated above, the agents with whom Customs must be coordinated are: (i) other government agencies; (ii) other Customs Administrations; and (iii) the private sector. Some examples of actions that should frame the relationship with these agents are provided below:

In this sense, from the point of view of risks linked mainly to tax collection, Customs should prioritize its coordination with the internal Tax Administration, due to the potential mutual benefit that this implies. The level of risk that a taxpayer represents for both institutions is directly related when said taxpayer engages in foreign trade operations.

> An operator's behavior with regard to foreign trade and internal taxes impact each other. The inability to analyze them holistically leads to a limited view of their level of risk and compliance.

There are several commonly applicable elements of risk management that have already been developed in previous chapters, among them: (i) the general risk management cycle; (ii) the techniques for classifying taxpayers; (iii) the principles of information management; (iv) the use of analytical tools for the mass exploitation of information; and (v) the use

of data analysis models. Both the IMF[50] and the WCO[51] have issued documents that address the different areas that these administrations should coordinate and the benefits that this would have in terms of risk analysis, information management, and auditing.

Effective tax control requires a comprehensive knowledge of taxpayers, which is only possible through close and permanent coordination. To this end, the following actions, among others, must be observed:

- A single, updated, and reliable tax registry.
- The permanent maintenance of mechanisms of cross validation on the behavior of foreign trade taxpayers/operators.
- A segmentation of taxpayers to achieve a comprehensive analysis of their compliance.
- A comprehensive strategy for controlling exemptions, exonerations, and special regimes.
- A comprehensive sales tax compliance program (credit notes, assessment of goods, and simulated exports).
- Complementary initiatives for fuel control.
- Transfer pricing prevention under close supervision and customs value analysis.

The following table provides a more detailed overview of the areas in which Customs should interact with the three agents listed in this section.

Table 49: Scopes of Customs Coordination/Cooperation with Third Parties

SCOPE OF COORDINATION/COOPERATION	INTERNAL TAX ADMINISTRATION	OTHER GOVERNMENT AGENCIES/OTHER CUSTOMS ADMINISTRATIONS	PRIVATE SECTOR
Information exchange	√	√	√
Risk management	√	√	√
Trade facilitation measures	√	√	√
Training	√	√	√
Border procedures	√	√	
Facilitation and control of non-tariff requirements	√	√	
Control of exemptions, exonerations, and special regimes	√	√	
Control of excise duties on distribution/consumption	√	√	
Fraud and smuggling control	√	√	
Post-dispatch audit	√	√	
Single Taxpayer Registry	√		
Control of international taxation	√		

Source: Prepared by the authors.

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50 Report of the Seminar "Coordinación Aduanas - Impuestos Internos: Una necesidad para mejorar la recaudación tributaria", March 2015. CAPTAC-DR, FAD, IDB, CIAT. https://www.captac-dr.org/content/dam/CAPTACDR/docs/Publicaciones/Seminario_Coordinacion_Aduanas_Impuestos_Internos-2015.pdf

51 "Guidelines for Strengthening Cooperation and the Exchanging of Information between Custom and Tax Authorities at the National Level". October 2016. WCO. http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/key-issues/revenue-package/customs-tax-guidelines.pdf?la=en

2.2.2 Institutional Risks

Institutional risks consist of challenges faced in achieving the stated strategic objectives due to internal structural deficiencies.

2.2.2.1 Case Study on Central America, Panama, and the Dominican Republic

As pointed out earlier, the implementation of comprehensive risk management should include the identification, analysis, and treatment of key institutional risks, which have a direct or indirect impact on Customs' ability to manage compliance risks.

To raise awareness and encourage Customs Administrations to take action to overcome their main flaws, the following is a case study related to the results of a diagnostic study[52] conducted by the IMF's Central America-Panama-Dominican Republic Regional Technical Assistance Center (CAPTAC-DR), under which the main institutional risks were evaluated and whose results may reflect the situation of many other Customs Administrations.

The objective of this diagnostic was to analyze the control processes before, during, and after dispatch under the following six key elements: (i) the regulatory framework; (ii) the processes; (iii) the information; (iv) the infrastructure; (v) the computer and telecommunications systems; and (vi) human capital. To facilitate understanding of the scope of each of these elements with respect to comprehensive risk management, a brief description is provided in the table below.

Table 50: Scope of Each Element Related to Institutional Risk Management

Element	Description
Legal framework	It is necessary to have a regulatory framework that is adequate, updated, and aligned with the current operational scenario. This framework must provide Customs with powers to act in the three phases of control, as well as to request and use electronic information, review documentation, and establish procedures and sanctions applicable in case of violations and crimes.
Processes	Processes must be the backbone of Customs Administrations to ensure uniform operation in line with systems and standards and are, therefore, a key element in risk management. There must be simple and transparent procedures that are easily understood and accessible to internal and external users. At the same time, they must be aligned with facilitation and control policies and allow for end-to-end traceability of business operations.
Information	Information is a vital element for risk management and, in general, for the effective and timely management of a Customs Administration. However, it is not enough to simply have data; it is essential that these data are used appropriately in order for them to be converted into information, and that this information is timely and accurate and comes from a variety of internal and external sources. In addition, and as far as possible, this information must be validated, so that the results obtained from its analysis are reliable, that is, their quality must be constantly checked.
Infrastructure	Any effort to mitigate risks must consider, in parallel, an infrastructure program that includes both the initial installation of additional facilities for its adaptation and mechanisms for maintenance and conservation, so that the actions to be implemented are properly substantiated.

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52 CAPTAC-DR: "Nivel de madurez en la aplicación de una gestión integral de riesgos en las aduanas de Centroamérica, Panamá y República Dominicana". 2016. A. Pérez, S. Lemus, P. Castro. https://www.captac-dr.org/content/dam/CAPTACDR/docs/Publicaciones/Gestion_Integral_de_Riesgos_en_Aduanas-2016.pdf

Element	Description
Computer systems and telecommunications	There would be little point in having quality information if the appropriate computer tools and equipment were not available to enable its automation, exploitation, and analysis on a large scale for the application of criteria that give rise to the identification of risk profiles during the distinct phases of control. Additionally, computer systems must facilitate the traceability of goods and the follow-up of audits, as well as provide a compliance history for each operator and ensure maximum stability in communications.
Human capital	Human resources are indispensable for driving change to improve management efficiency and efficacy, as well as integrity, and therefore play a key role in a comprehensive risk management strategy. This requires the establishment of clear criteria and profiles for recruitment, selection, and promotion, as well as incentive programs that stimulate, dignify, and create a sense of belonging among personnel. Effective training programs are also necessary to strengthen the technical and management skills required by Customs. In addition, there must be mechanisms for constant supervision of their performance, both to better support their work and prevent corruption, as well as a clear and properly enforced sanction framework.

Source: CAPTAC-DR

Methodology used for the Diagnostic Study

A questionnaire grouped according to the seven elements mentioned above was used, which was answered by the Customs Administrations of Central America, Panama, and the Dominican Republic, under the supervision of CAPTAC-DR experts, as well as the administrations of Chile, Spain, Mexico, and Uruguay, which participated voluntarily. Therefore, a sample of Ibero-American countries was considered. The answers to this questionnaire were weighted on a scale of 1 to 100, where 1 is the lowest score that a customs office can record in terms of each of the elements evaluated.

Main Results

Based on the answers received, the data was tabulated, obtaining the quantitative results shown in the following graph.

Illustration 89: Main Results

The overall average for Central American customs offices was 41 points

Average Central America

As can be seen, the elements "infrastructure" and "information" showed the largest gaps between the two participating groups.

While that of the sample of Ibero-American countries was 70 out of 100.

Sample averages from Ibero-American
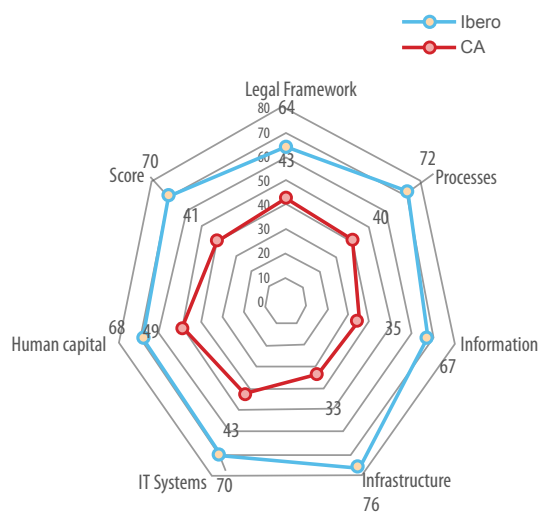
Lack of information and its quality limits the efficacy of any risk management model that can be applied.

In addition, poor infrastructure results not only in a lack of logistical control, which can lead to corruption and mismanagement, but also limits the ability of Customs to put in place adequate control and facilitation measures.

Source: CAPTAC-DR

Below is a summary of the main common flaws that were identified in each evaluated element.

Table 51: Major Common Flaws Identified

Element	Description
Legal framework	• Lack of an adequate sanctioning framework for the operational scenario. In most countries, sanctions do not help deter noncompliance. • Lack of clarity and complementarity between the competencies and functions performed by different departments and areas related to risk management. • Absence of legal initiatives to strengthen powers and improve the sanctioning framework. • Legal limitations for obtaining electronic information from various government entities.
Processes	• Lack of a continuous improvement culture to keep processes up to date. • Only 50% of the countries analyzed conduct risk analysis during prior control, and of these, most do not follow a systematic process. • Outdated handbooks and/or operational guidelines. • Lack of processes to analyze data quality. • Serious deficiencies or lack of handbooks or guidelines on the sampling procedure. • Serious deficiencies or inexistence of processes to address risks related to export operations, particularly those arising from simulation by extraction or overassessment of goods. • No structured process is followed for the analysis of selectivity criteria or rules, which are often discretionary.
Information	• 75% of the administrations agree that their information is of poor quality. • Although most receive information from their Tax Administration, in 50% of cases, this information is limited, so as to perform timely electronic validations and mass data analysis. These include the customs offices within a Tax Administration. • Information from other government departments, such as trade, economic development, health, and/or agriculture, is not received in electronic form, making it difficult to be useful for risk management. • Lack of sensitivity regarding the consequences of using poor-quality information for risk profiling.
Infrastructure	• The infrastructure at most international borders is deficient, which creates significant challenges for implementing effective controls and facilitating legal trade. • Lack of plans to improve border infrastructure and/or clarity on how to handle operational, maintenance, and improvement costs. • Most Administrations agree that their sea and air facilities do not have scales in optimal condition. • Non-intrusive screening equipment, linked to customs computer systems and a risk management strategy, has not yet been implemented in most countries. • Although most administrations have the support of a laboratory, they usually lack adequate material and equipment for sample collection and analysis.
Computer systems and telecommunications	• The risk module addresses only control during dispatch and with several limitations for the analysis and updating of selectivity criteria. • Most customs offices face difficulties in reconciling manifests, bills of lading, and customs returns. • In only three countries does the risk module used during the dispatch of goods provide for the automatic generation of a risk indicator, information on actions to be taken, and feedback. • The information provided by computer systems to customs officials is neither sufficient nor timely.
Human capital	• There lacks an administrative career path that allows for stability and continuous staff development. • There is a marked need to strengthen basic technical skills (classification, origin, and assessment) and those relating to personnel management. • Only two Customs Administrations have a customs school for the continuing education of their staff. • The training plans are implemented in a partial way and, in many cases, do not correspond to the strategic objectives of the Customs Administration. • Staffing is not adequate.

Source: CAPTAC-DR

2.3 Operational Approach

This approach comprises the elements that enable the practical implementation of the strategic and tactical approaches outlined above. It is basically related to the implementation of the operational risk management process promoted by the WCO in its Risk Management Compendium, Volume 1, which is shown in the following illustration.

Illustration 90: Major Common Flaws Identified

Operational Risk Management Process
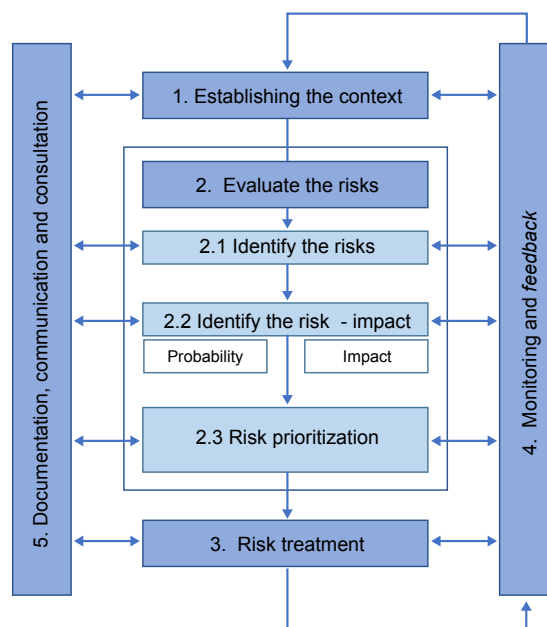
Source: Adapted by OMA based on CKR and ISO 31000/2009.

Below, we will introduce some methodologies that are considered important tools to support Customs Administrations in implementing the operational risk management process.

2.3.1 Segmentation and Classification of Commercial Operators

As indicated in the previous chapters, the Tax Administration - and, in this case, the Customs Administrations - must be able to access its own information and that of third parties, in accordance with the existing regulatory framework, to establish the context and, in general, to adopt the operational risk management process. In this scenario, Customs should focus on the effective management of its information based on the following five key elements: (i) access; (ii) availability; (iii) quality; (iv) exploitation; and (v) competencies.

The main objectives of information management from the point of view of comprehensive risk management are, on the one hand, to establish policies and mechanisms that allow timely access to information according to the profiles that require it, as well as security measures for this information that prevent malicious use both internally and externally and that allow the respective traceability to identify unauthorized access to it.

Another important objective is to increase knowledge about taxpayers, their behavior, and operations, as besides their production or commercial processes, for which it is necessary to have further channels of access to both internal and external information, and the quality and availability of this information must be guaranteed. There must also be methodologies that make it possible to exploit this information and achieve better identification of risk levels and the results generated by the control and facilitation actions established as treatments.

For the latter purpose, **the segmentation and classification of foreign trade operators according to their level of risk** provides Customs with useful elements to define actions aimed at further facilitating or strengthening control.

There are several methodologies under which operators can be segmented and classified, some of which were even mentioned in previous chapters. The form adopted and the efficacy of the results depend on the elements described above for effective information management.

One way to begin this procedure - which coincides in many respects with that used by the internal Tax Administration - encompasses, as an initial step, segmenting operators by defining a Global Risk Index (GRI), which serves as a benchmark to assess the level of risk and/or the behavior of each foreign trade operator. The results of this segmentation will be useful to perform a more specific analysis for each type of risk, so as to ultimately be in a position to define specific treatments for risk prevention and mitigation based on the information.

It is important to highlight that, as customs and Tax Administrations improve the exchange of information between them, the efficacy of each administration in determining the GRI will increase.

Below, we will detail the steps to be followed to implement this methodology for importers, which will serve as a basis for evaluating distinct risks and commercial operators.

Global Risk Index Definition

This step consists in determining a parameter through which Customs can classify the behavior of an importer from the point of view of customs compliance, which we will call Global Risk Index (GRI). This GRI provides reference information to better understand the importer and, thus, define treatment policies, both for facilitation and control, at each moment when Customs has the power to intervene. Next, the steps for the construction of this GRI will be detailed.

Step 1: Cleaning the database to be used. Cleaning the database is a prerequisite to begin with, as the quality of the information has a direct impact on the quality of the results obtained. To this end, it is suggested to evaluate the customs operations of the last four or five years (which coincides with the prescription period for most countries).

Step 2: Identification of the categories "importer size" and "importer noncompliance level". The category "importer size" is recommended to be constructed with the *cluster* methodology using the variables "quantity of shipments" and "customs value", taking into account atypical cases, in which these can be categorized in an *ex-ante* manner. It is advisable to exclude from the database the importers classified as "not relevant", that is, (i) micro importers[53]; and (ii) sporadic low-value importers.

To calculate the "importer noncompliance level" category, it is necessary to identify those who have a history of repeated postings and/or who have exceeded the average number of violations of the set of importers with violations. This allows a separation in the database between those with "low level of noncompliance" and those with "high level of noncompliance", which will be useful in the following steps.

Step 3: Identification of risk indicators. For the construction of the GRI, it is necessary to define a set of indicators, which will depend on the feasibility of its construction, determined according to the availability and quality of information available to Customs. These indicators are variables or calculations that make it possible to measure the behavior of importers based on different criteria, which cumulatively will provide the GRI for each of them.

Below is a list of indicators, which is not exhaustive since Customs Administrations could generate new indicators as more sources of information become available.

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53 Importers who do not perform imports for business purposes and/or whose transactions do not exceed a certain CIF amount.

Matrix 1: Examples of Risk Indicators for GRI Calculation

Recent importer	Legal entity vs. private individual
Value of exports greater than or equal to declared revenue	Declared value less than or greater than indicative value determined by Customs by x %
Value of imports greater than or equal to declared sales	History of risk for other government agencies
Average VAT rate and average tax rate	Insolvent importer
Growth of gross revenue less than proportional to CIF imported	Declared sales VAT less than purchase VAT
Net profit level in relation to net revenue level	Country of origin of goods considered risky
Risky supplier	Weight inconsistency (historical records of containers vs. weight vs. declared goods
Risky carrier	Dual-use goods
Risky port	Domicile considered risky
Risky customs agent	Use of residual items
Imported goods inconsistent with line of business and/or sector declared to Tax Administration	High concentration of imported customs value in special regime operations
History of serious customs incidents	High concentration of operations with tariff priority
Non-habitual importer (relation with shipper, port of shipment, origin, and goods)	z of internal Tax Administration
History of complaints	Net profitability (internal taxes)
Disproportionate growth of imports in relation to reported gross income (internal taxes)	Debt level (internal taxes)

Step 4: Calculation of the indicators for each importer. These indicators should be calculated for all importers classified as "high level of noncompliance" at first instance to determine the level of impact they have on those who have historically had violations. This will allow us to determine the profile of the highest risk importers.

awho have debts with the Customs Administrations. However, others require the prior definition of the respective risk catalogs for a group of indicators, in order to subsequently construct the final indicator. For example, the indicator "country of risk origin" requires, as a first step, the identification of the risk countries, based on the number of data that have been registered and/or on complaints or external information received, so as to subsequently analyze, for each importer, the percentage of the customs value imported from these countries. Therefore, the suggested formula for its calculation is as follows:

Formula 13: Calculation of the Indicators for Each Importer

Level of imports from risk countries i

$$=\sum_{1}^{Q} CIF\, Country\, of\, origin\, risk\, i / CIF\, total\; i$$

Country of Origin Risk 1,2 .....Q

Importer i = 1,....., *Total risk importers*

It is important to take into account that for each indicator, thresholds should be set that make it possible to establish a binary classification for importers: those who exceed the threshold for each indicator (1) and those who do not (0).

Step 5: Estimating the weights of each indicator. Once the profile of risky importers has been identified, it should be applied to importers who were initially considered "low noncompliance level" because they have no or low historical data, by performing a binary allocation following the same thresholds that are applied to these of a higher risk.

To determine the relative weight of each indicator, the risk cases (value 1) for each indicator are added, using only the risky importers, and then the sum obtained for each indicator is divided by the total sum of all indicators evaluated, thus obtaining the relative weight of the specific indicator in the sample of risky importers. The following matrix shows an example with some indicators.

Matrix 2: Estimated Indicator Weights

RUC[54]	Number of Returns	Customs Value impo	Ind. 1	Ind. 2	Ind. 3	Ind. 4	Ind. 5	Ind. 6	Ind. 7	Ind. 8	Ind. 9	Ind. 10	:	Total
XXX	211	36,869,950	1	1	1	1	0	1	0	1	1	0		
ZZZ	66	2,850,000	1	1	0	1	0	1	0	0	0	0		
YYY	48	95,000	1	1	0	1	0	1	1	1	0	0		
:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Total "1"			150	125	80	169	280	199	45	36	77	44		1490
Weights (%)			10.1[55]	8.4	5.4	11.3	18.8	13.4	3.0	2.4	5.2	3.0	5.7	100

Step 6: Constructing the GRI. There are three aspects that make up the GRI for each importer: (i) the weights assigned to each indicator; (ii) the values obtained in response to each of them; and (iii) the algorithmic form selected. Regarding the latter, Customs must define if the GRI it chooses will follow a linear or exponential trend, or any other decided by Customs for

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54   Single Taxpayer Registry. In some countries, it is known as Tax Identification Number (TIN).
55   The weight is calculated as follows: 150 / 1,490

practical purposes. In order to facilitate the understanding of the other two components, it was decided to use linear form, without despite the fact that the line of reasoning will be the same if a different type is selected. Therefore, the formula to calculate the GRI would be as follows:

$$GR = \sum_{i=1}^{n} P_i R_i$$

Where

P_i = Weight Assigned to Indicator i

R_i = Response obtained for the Indicator

n = Total of Indicators

Step 7: Setting risk thresholds. Finally, in order to know the level of risk to be assigned, we should define thresholds that make it possible to determine what constitutes a high, a medium, and a low risk. This decision should be associated with the control and facilitation objectives defined in the strategic plan, the regulatory framework in force, and the technical and operational abilities to act in a complementary way before, during, or after dispatch.

Illustration 91: Distribution of the Risk Index

| 0 | LOW RISK | MEDIUM RISK | HIGH RISK | 1 |
| | | 0,75 | 0,85 | |

Step 8: Final segmentation of importers according to their risk level. Based on the defined indicators, the estimated weights for each indicator, and the definition of the risk thresholds, we are able to assign a GRI to each importer, regardless of the historical level of compliance identified in step 2 above.

2.3.2 Analysis of Specific Risks

The main thing at this stage is a complete identification of risks, that is, Customs must create a risk registry that allows it to know each risk, as well as to measure its probability and impact, its priority, and the person(s) responsible for its monitoring. Based on this registry, Customs must perform specific analyses for each of these risks, in order to identify the control segment to which it should direct its prevention and/or mitigation actions. Below is an example of the information that a risk registry could contain.

Sample Initial Risk Registry

	Objective	Risks	Probability	Impact	Priority	Risk Owner
1	Effective tax collection	1.1 Fraud by tariff misclassification	A	A	High	Operations Director

Source: WCO Risk Management Compendium, Volume 1.

Some of the common risks faced by Customs Administrations are as follows: (i) underassessment; (ii) incorrect tariff classification; (iii) improper use of tariff preferences or misdeclaration of origin; (iv) undue use of exemptions, exonerations, and special regimes; (v) lack of cargo traceability; (vi) risks related to security and protection; (vii) risks of concealed introduction of cargo; and (viii) smuggling risks.

Once the risks have been identified, a specific analysis of probability and impact should be carried out, as well as determining the priority to be given to each of them. This analysis will allow the identification of a target group of importers, which should be subject to facilitation or control measures. Depending on the result of the analysis, out of the indicators employed for the calculation of the GRI, a single indicator or a group of them may be used, as appropriate, in addition to others directly related to the type of risk, always taking as a reference the GRI of each importer.

A practical, step-by-step example of the specific type of analysis to be performed at this stage will be provided below.

Practical Example: Identification of Goods Sensitive to the Risk of Misclassification and their Associated Importers

Misclassification of goods at the time of importation can occur due to the pursuit of committing fraud in the following ways, among others:

• Avoiding or reducing the payment of fees.

• Resorting to inadequate tax benefits.

• Requesting an inadequate tariff preference by origin.

• Underassessing goods.

• Avoiding compliance with non-tariff regulations or restrictions.

The following are the various steps suggested for identifying goods susceptible to misclassification for further treatment:

Step 1: Selection of the tariff subcategories that may represent a higher risk[56]. There may be various criteria for selecting the combination of subcategories considered as sensitive or of highest risk, from which Customs must select an initial target group. Suggested criteria for selecting these subcategories include: (i) those that are exempt from the payment of fees and VAT; (ii) those that have shown the greatest adjustments in classification, value, origin, or smuggling in recent years; or   (iii) a combination of the above criteria.

Step 2: Hierarchy of subheadings based on various variables.. After selecting the set of subcategories, it is suggested to conduct a more detailed analysis based on separate measurements for each subcategory, as shown in Matrix 3 and 4. This type of analysis will make it possible to find out if, for instance, there is a higher growth rate in trade volume in the subcategories involving payment of lower fees than other similar ones, which generates potential misclassification and evasion.

Matrix 3: Ranking of Selected Subcategories

Subcategory	Description	Customs Value (CV) Imports		RATES		Collection		No. Importers	
		USD$	AGR	VAT	Levy	USD$	AGR	No.	AGR[57]
0302.00.00	Fresh Fish	1000	20%	10%	5%	105	15%	50	20%
0303.00.00	Frozen Fish	10	1%	20%	10%	3	1%	5	0.5%

Matrix 4: Summary of Measurements per Tariff Subcategory

SP 0302.00.00		2015	2016	2017
CIF	VA IMPO 6402.00.01 / CIF TOTAL	%	%	%
	TOTAL, CIF	USD	USD	USD
Returns	TOTAL RETURNS	%	%	%
	TOTAL RETURNS	#	#	#
Collection	Collection 6402.00.01 / TOTAL COLLECTION	%	%	%
	TOTAL COOLLECTION	USD	USD	USD
Controls	Control 0302.00.00/ Total Controls	%	%	%
Importer Concentration – CV Imports	Importers who concentrate 80% CIF	#	#	#
	Importers who concentrate 50% CIF	#	#	#
Importer Concentration - Collection	Importers who concentrate 80% COLL	#	#	#
	Importers who concentrate 50% COLL	#	#	#
Participation of importers according to concentration of collection	RUC's 75% COLL/OPER 75% COLL	%	%	%
	RUC's 50% COLL/OPER 75% COLL	%	%	%
	RUC's 25% COLL/OPER 75% COLL	%	%	%

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56   It is advisable to conduct the subsequent analysis of all tariff levels. However, it is suggested to start with an initial combination, in order to become familiar with handling and studying the data.

57   Average growth rate (AGR): (Current Value / Previous Period's Value) 1/n - 1, where n is the number of time intervals in the data set. For example, if the analysis covered operations from 2000 to 2015, n would be 15.

Step 3: Identification of importers for sensitive products. Based the set of subcategories chosen, and considering the operators involved, a matrix should be constructed that summarizes their participation according to each variable in the set of predefined subcategories, as shown in Matrix 5, in which the levels of participation of each operator are distributed according to the CIF value. In addition, three new measures are incorporated into the analysis: number, mean, and standard deviation. The number line shows how many operators import the identified goods, regardless of their relative weight. The mean, in turn, defines the mean participation of the operators, i.e., 100%/Number. Meanwhile, the standard deviation adds a measure of the scattering of the data from the average value[58].

Matrix 5: Level of Participation of Importers by Subcategory

Importer	Tariff Subcategory		
	0302.00.00	0303.00.00	0304.00.00
RUC- A	%	%	%
RUC- B	%	%	%
RUC-C	%	%	%
Number	%	%	%
Mean	%	%	%
Stan. Dev.	%	%	%

Step 4: Definition of criteria to determine the size of the importer according to their level of importation of sensitive products. Based on the mean (M) and standard deviation (SD) of the participations, it is possible to define attributes that categorize the operators according to their relative frequency of participation in total transactions for each subcategory. For this purpose, five frequency levels are defined, as shown in Matrix 6. It is important to mention that the cut-off points for each frequency category can be defined based on an analysis of the inflection points. From the frequency levels, we can classify our operators into large, medium, and small.

Matrix 6: Criteria for Determining Frequency Levels

FREQUENCY	DETAILS	SIZE
Very Low (VLF)	% Share <= (M - 0.75 SD)	Small
Low (LF)	(M - 0.75 SD) < % Share <= (M - 0.25 SD)	Small
Medium (MF)	(M - 0.25 SD) < % Share <= (M + 0.25 SD)	Medium
High (HF)	(M + 0.25 SD) < % Share <= (M + 0.75 SD)	Large
Very High (VHF)	Share > (M + 0.75 SD)	Large

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58   The calculation can be done using an Excel spreadsheet, Function DESVEST.M.

Step 5: Identification of each operator according to size and risk level. This process identifies which operators are located in the defined sizes (see Matrix 7 below) and should be associated with their corresponding GRI previously calculated. This information contributes to selecting the set of importers that will be subject to control by Customs for each sensitive product.

Matrix 7: Classification of Operators according to the size of each Subcategory

SP 0302.00.00	RISK LEVEL (GRI)	ID	CV Imports	No. Returns	Frequency	Participation
LARGE	High	RUC-1				
	Medium	RUC-2				
	Low	RUC-3				
MEDIUM	High	RUC-4				
	Medium	RUC-5				
	Low	RUC-6				
SMALL	High	RUC-7				
	Medium	RUC-8				
	Low	RUC-9				

As indicated above, as a result of this classification, it is possible to have more elements to measure these risks and define specific prevention and mitigation actions for these importers and goods.

Additional studies should be conducted for each type of risk identified by Customs, as mentioned above, which increases the ability for risk prevention and mitigation, besides facilitating compliance by low-risk importers.

2.3.3 Implementation of Control Actions (Risk Treatment)

The results of the GRI and the specific risk analysis generates a set of control operators on which Customs must focus and take action at each control phase, as appropriate to the type of risk.

It is important to mention in this case that it is not suggested to take isolated actions, but, on the contrary, to define comprehensive prevention and mitigation actions involving several areas of the institution, in order to send a clear message to operators about their level of risk with respect to the Customs Administrations, so that this perception promotes customs compliance.

The considerations to be taken into account in this case are as follows:

An adequate alignment between the risk registry and its treatments, for each risk, requires adding up the identified measures, as well as the associated performance indicator for monitoring their results. The following table shows the complete risk registry.

Table 52: Complete Risk Registry, Including its Treatments and Indicators

	Objective	Objective	Probability	Impact	Priority	Risk Owner	Treatments	Indicator
1	Effective tax collection	1.1 Fraud due to tariff misclassification	A	A	High	Operations Director	1. Training for trade operators, gaugers, and auditors based on sensitive misclassified goods 2. Control of importers with high risk of misclassification during dispatch (includes customs laboratory). 3. Focused audits in sectors with risk of misclassification	Contribution to reducing the gap of foreign trade tax evasion

Source: WCO Risk Management Compendium, Volume 1, adapted by the authors.

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59   In some countries, also known as appraisers or customs officials for cargo inspection/verification.
60   Abbreviation used to identify dogs that detect drugs, weapons, explosives, money, precursor chemicals, among others, used by Customs or other competent bodies to carry out their control actions at land borders, ports, and airports.

Final Remarks on the Operational Approach

- The operational approach comprises the implementation of the operational risk management process.
- The methodology for segmentation and classification of operators provides a structured and auditable process, through which it is possible to identify the behavior of operators in Customs, with the aim of defining actions to treat operators according to their risk level.
- The operators' GRI should be used both to facilitate compliance, e.g., as guidance to AEO programs, as well as to define risk prevention and mitigation actions at each phase of customs intervention.
- It is advisable to use several indicators to determine the GRI and a sample of imports of three to five years.
- Based on the GRI obtained for each importer, control and facilitation policies must be defined before, during and after dispatch.
- The segmentation of operators should be reviewed and updated periodically; it is recommended every 6 months. Ideally, Customs should rely on additional sources of information, especially from internal taxes.
- This methodology can be used as a support tool to define audit plans and should be complemented by additional indicators derived from historical audit results, cross-checks for consistency, and studies by economic sector, tariff level, or customs regime.
- As far as possible, it is suggested to automate the application of the operator segmentation methodology.
- Carrying out the specific risk analysis will initially require the identification of risks, for which it is suggested that a risk registry, like the one provided in this chapter, be prepared.
- For the evaluation of specific compliance risks and for the determination of the set of control importers, as well as for the definition of the treatments to be applied, an additional analysis must be carried out, considering, for this purpose, specific indicators for each type of risk.
- The specific risk analysis can be reviewed and updated as needed, depending on the occurrence of risks or the success of the previously defined control or facilitating actions.
- Risk treatment must be comprehensive, so as to comprise prevention and mitigation actions and allow for interventions before, during, and after dispatch.
- The results obtained in each of the elements of this operational approach must be brought to the attention of the Institutional Risk Committee for decision-making.

Chapter 6

Appendix

VI APPENDIX

Appendix I: Scenario in Select Tax Administrations

This appendix shows the scenario in several tax administrations with respect to attributes or variables that could serve as a basis for observing or measuring taxpayer compliance, i.e., attributes that could be used for assessing both the taxpayer's risk rating and the specific noncompliance risks.

Ecuador

In the risk models based on taxes, both financial and tax indicators (ratios) are used, in which taxpayers are compared to the economic sector in which they exercise their activity or, in the case of individuals, to the registry to which they belong (entrepreneurs, professionals, or capital owners). As examples of these variables, we have % of tax incurred over revenue, % of operating profit over revenue, and % of cost over revenue.

The risk models based on processes uses variables to characterize the processes, which are analyzed based on joint efforts with the administrative party who manages it. Examples of these variables are amount requested, amount to be refunded, province, economic activity, age, gender, etc.

The risk model based on tax fraud schemes uses behavioral variables that were identified in the analysis of the schemes. As examples of these variables, we have legal representative, accountant, and shareholders of previously identified shell companies that do not report revenues. However, there is information about revenues reported by third parties, bank transactions, etc.

For the construction of any variable, information from tax returns, detailed information attachments, third-party reports, and information from financial institutions are used, i.e., information that is in the SRI database and can be exploited automatically. However, if necessary, manually collected information can be used.

Spain

There are a large number of variables. By way of example, we will list three of the forty-six variables in the sectoral analysis of legal entities.

1. Low economic performance

A taxpayer is considered to be in this situation when the accounting balance for the year is equal to or less than xx% of turnover. The increase in inventories is not considered turnover.

The formula used is: Profit before Tax / (Net Turnover + Other Operating Revenues) 100.

Therefore, this risk occurs in institutions where the above proportion is less than xx%.

This risk is identified as HERMES SEC1 RISK.

2. Analysis of business activity without financial movements

This is the case if personnel expenses exceed xx% of the revenue amount (amount of net turnover plus other operating revenues). Since revenues are compared to expenses, this risk also assumes low economic profitability.

The formula used is: Personnel Costs / (NTA + Other Operating Revenues).

This risk occurs if the value of this ratio is greater than 0.x, giving a higher weighted risk if it is greater than 1, and, in addition, it occurs that (Provisions + Other Operating Expenses) > 0.9 x (NTA + Other Operating Revenues).

This risk is identified as HERMES SEC2 RISK.

 Two points are given if the ratio is greater than xx% and less than 100%.

3. Analysis of labor-intensive activities

This is the case if personnel expenses exceed xx% of the revenue amount (amount of net turnover plus other operating revenues). Since revenues are compared to expenses, this risk also assumes low economic profitability.

The formula used is: Personnel Costs / (NTA + Other Operating Revenues).

This risk occurs if the above quotient is greater than 0.xx. In addition, a higher weighted risk value is given if the above quotient is greater than 1.

This risk is identified as HERMES SEC3 RISK.

OPERATING PROFITS AND GROSS PROFITS	FORMAL OBLIGATIONS	EXOGENOUS INFORMATION	CONSISTENCY	SOLVENCY	TRANSFER PRICES	VAT	TAXPAYER REGISTRATION AND INCOME TAX RETURN	LOSSES AND COMPENSATIONS
Review the operating profit, considering sales cost and operating revenue	Review the legality of the declared deduction. For this purpose, cases that used this deduction for the 2015 tax year and without contracts are identified. The risk is assessed based on two indicators, which are not mutually exclusive.	Discounts on taxes paid abroad and has no revenue from abroad.	Identify taxpayers who provide higher than average reported withholdings than their peers.	Analysis of collectable accounts	T.P. Revenues Amount/Income Revenue Amount	VAT Purchases / Income Costs and Deductions	Determine the operating loss for taxpayers who are economically linked	Identify the taxpayers who have declared losses for five consecutive years. Through an economic perspective, an economic agent could not survive in the market with so many years of losses, except for companies undergoing unproductive periods or in exploitation and prospecting phases. Furthermore, it allows a review of the legality and merits of the offsets declared for five years.
Review the non-operating profit, considering other non-operating costs and revenues.	Review the legality of the declared deduction. For this purpose, cases that used this deduction for the years 2015 and 2014 and without contracts are identified. This risk is classified into two indicators, which are not mutually exclusive.	Verify cash and banks declared with exogenous information	Identify the taxpayers who manifest differences in this comparison. In this risk, the greater the distance between the taxpayer value and the average value per economic activity, the higher the risk rating.	Variations in revenue over time	Amount of T.P. Expenses / Total Costs and Deductions	Net Purchases/Net Revenue	Determine the operating loss of the financial and insurance sector and that are linked to the following economic activities: 6412 Commercial banks; 6421 Activities of financial corporations; 6422 Activities of financing companies; 6431 Escrows, funds, and similar financial entities; 6491 Leasing; 6493 Portfolio purchasing or factoring activities; 6492 Financial activites of employee funds and other forms of associations in the solidarity sector. 6494 Other fund distribution activities; 6499 Other financial-service activities, except insurance and pension activities.	
	Identify the taxpayers who manifest this result, since the maximum rate allowed by law was formerly 40%, but, as of 2010, it was reduced to 30%. As of tax year 2011, no income tax and complementary tax taxpayers could make use of the deduction except those who, prior to November 10, 2010, had entered into legal stability contracts, including investment stability. The statistical results were very high for the years 2015 and 2014, given the number of contracts that came into force.	Detect revenue difference by comparing consignment movements for exogenous information with revenues from the return.		Variation vs revenue variation				
Review the gross profit, considering the total cost associated with generating net profit.	Identify the cases involving the sale of fixed assets that had been subject to refund and not declaring occasional revenues for gains. This risk is detected if, after the operation has been carried out, the result is greater than zero.			Historical liabilities				
Review the operating profit, considering all costs, deductions, and revenues	Identify the proportion of exempt income declared and verify its origin and legality. In addition, it can be assumed THAT there are costs and expenses associated with the reported exempt income. The economic activities corresponding to the exempt income of publishing companies (5811, 5812, 5813, and 5819) should be excluded.							
Review the operating profit, considering the operating expenses for administration and sales.								
Review the gross profit, considering all costs, deductions, and net revenues.								

El Salvador

Several variables are used. Some examples are listed below:

Variable or Attribute?	Variable or Attribute Name	Variable or Attribute Description
Variable	Income tax margin	Percentage of tax calculated over revenues earned
Variable	Costs and expenses/taxed income ratio	Percentage representing costs over taxed incomes
Variable	VAT debit/credit ratio	Percentage that represents credit over total debit
Variable	VAT tax margin	Percentage of tax posted among sales taxed with VAT
Attribute	Income tax return omission	Percentage of total credit in relation to total debit

Bolivia

Below is a description of the variables and indicators calculated, as an example.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	1	Operating profit margin evaluation with group and activity average	0	13.1%	14.5%	⬆	10.8%
			1	73.6%	71.2%	⬇	-3.3%
			2	13.3%	14.4%	⬆	7.6%

Source: Studies and Risk Management

Description and applicability: Evaluates the comparative profit margin of taxpayers in relation to an average of this variable according to the segmentation of the group by economic activity. Indicative variable; must be combined or evaluated in conjunction with other indicators.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	2	Difference declared sales VAT and IT	0	98.4%	97.9%	⬇	-0.5%
			1	1.6%	2.1%	⬆	30.4%

Source: Studies and Risk Management

Description and applicability: Measures the difference between sales and income declared in two taxes (IM VAT and IT). Indicative variable; must be combined or evaluated together with other indicators.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	3	Operating profit margin evaluation with group and activity average	0	55.3%	50.2%	⬇	-9.2%
			1	16.1%	16.4%	⇨	2.1%
			2	28.6%	33.4%	⬆	16.6%

Source: Studies and Risk Management

Description and applicability: Evaluates the relationship between purchases (credit) and sales (debit) to determine the level of risk as a function of this ratio. These constitute variables that, combined, show an inherent risk, an aspect that allows its application individually under certain parameters or in combination with other indicators.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	4	Relation imports sales reported and purchases declared	0	75.5%	72.2%	⬇	-4.4%
			2	24.5%	27.8%	⬆	13.7%

Source: Studies and Risk Management

Description and applicability: Evaluates the relationship between the largest components of reported purchases (imports and sales declared by third parties) and purchases declared by taxpayers. As these variables are combined and constitute an essential component of commercial economic activity, the levels of risk detected are necessarily subject to analysis and verification.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	5	Relationship between reported sales and reported purchases	0	94.5%	93.4%	⬇	-1.1%
			1	1.5%	1.6%	⬆	7.4%
			2	4.0%	5.0%	⬆	23.9%

Source: Studies and Risk Management

Description and applicability: Evaluates the relationship between sales declared by the taxpayer and sales reported by third parties (informed purchases). This combination of variables explains a specific observable risk behavior; this indicator can be applied individually or in combination with others.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	6	Relationship reported sales difference+ declared imports and purchases	0	92.1%	90.8%	⬇	-1.4%
			2	7.9%	9.2%	⬆	16.4%

Source: Studies and Risk Management

Description and applicability: Primarily evaluates the evidence of purchases declared based on their relationship to sales informed by third parties (purchases made by the taxpayer) and imports carried out by the same taxpayer. The variables have already been incorporated into a previous indicator; the focus changes and is equally relevant as an indication of noncompliance risk. This indicator can be applied individually with a segmentation of amounts or in combination with others.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	7	Changes in the VAT tax burden	0	79.5%	77.8%	⬇	-2.1%
			1	20.5%	22.2%	⬆	8.1%

Source: Studies and Risk Management

Description and applicability: This risk is evaluated according to the observed behavior of the VAT tax burden, the proportion of the final balance in favor of the treasury, and the declared sales per tax period. The indicator must be combined, in order to establish a compliance risk scheme.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Tax	8	Changes in IUE tax burden	0	73.6%	65.0%	⬇	-11.6%
			1	26.4%	35.0%	⬆	32.2%

Source: Studies and Risk Management

Description and applicability: This risk is evaluated according to the observed behavior of the Corporate Profit Tax (IUE) tax burden, the proportion of the final balance in favor of the treasury for the annual IUE, and the sales declared per tax period. The indicator must be combined, in order to establish a compliance risk scheme.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Financial	9	Historical variation of financial variables	0	67.2%	56.5%	⬇	-16.0%
			2	32.8%	43.5%	⬆	32.8%

Source: Studies and Risk Management

Description and applicability: Evaluates the trend behavior of three financial variables: revenues, expenses, and assets. This indicator shows a reference of risk behavior by distortion of the declared variables and needs to be applied in combination with other indicators.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Financial	10	Situation of constant loss	0	22.9%	27.0%	⬆	18.2%
			1	35.5%	39.7%	⬆	11.8%
			2	41.6%	33.3%	⬇	-20.1%

Source: Studies and Risk Management

Description and applicability: Evaluates the presence of loss in financial returns in recent years. This indicator shows a reference of risk behavior by the results of operational management, which is why it could be analyzed individually regarding the option of detailed reviews in accounting terms.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Financial	11	Leap in profit rates in management (relationship between sales and operating profit)	0	66.5%	59.7%	⬇	-10.2%
			1	19.6%	23.2%	⬆	18.4%
			2	13.9%	17.1%	⬆	22.8%

Source: Studies and Risk Management

Description and applicability: Evaluates the medium-term trend (more than one term) of the operating profit rates related to sales. This indicator shows a reference of risk behavior for sudden variations (leaps) in the results of operational management, which is why it could be analyzed individually regarding the option to perform detailed reviews in accounting terms.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation	
Financial	12	Relationshhip between total expenses and total revenues	0	93.3%	90.2%	⬇	-3.4%
			2	6.7%	9.8%	⬆	47.3%

Source: Studies and Risk Management

Description and applicability: Evaluates the relationship between total expenses and total revenues, as a reference for possible management that reduces the possibility of generating profits. This indicator establishes a reference for risk behavior through very close values, in order to reduce or eliminate payments. It is possible to combine or apply it specifically for high amounts.

TYPE	Number	Description	Risk Level	Share 2015	Share 2016	Variation
Subjective	13	Cases generated and concluded	0		93.5%	
			1		5.6%	
			2		0.9%	

Source: Studies and Risk Management

Description and applicability: The evaluation includes a subjective criterion of the presence of cases generated for the taxpayer in terms of prior or ongoing verifications or audits. This indicator is a benchmark, which should be combined with other compliance risk indicators.

Brazil

1. Value of debits declared.

2. Value of debits declared and not posted.

3. Value of debits declared and suspended with judicial measures.

4. Offsetting against withholding tax credits not gathered by the paying source.

5. Offsetting debits.

6. History of non-acceptance of offsets.

7. Variation in collection.

8. Distortion in operational behavior (sales, purchases, and employees) and in the behavior of declared debits.

9. Inconsistent returns and/or omissions.

Costa Rica

N°	VARIABLE NAME	DESCRIPTION	REQUIRED INFORMATION	INFORMATION SOURCE
1	Income Tax Omission	Income tax returns not filed	Registry of returns submitted	Returns submitted
2	Zero Income Tax	Filing income tax returns paying zero tax	Data from returns submitted	Returns submitted
3	Omission in Informational Return D151	Client, supplier, and specific expense information returns not submitted	Registry of returns submitted	Returns submitted
4	Inaccuracy in Income Tax Returns	Differences found between amounts declared and allocated amounts	Registry of returns submitted	Returns submitted
5	General Sales Tax Omission	General Sales Tax returns not submitted	Registry of returns submitted	Returns submitted
6	Number of third-party allocations	Number of times a taxpayer has been allocated during a single tax period	Data from informational returns submitted	Returns submitted
7	Number of Third-Party Allocations in Colons	Sum of the amounts corresponding to the allocations received from third parties	Data from informational returns submitted	Returns submitted

N°	VARIABLE NAME	DESCRIPTION	REQUIRED INFORMATION	INFORMATION SOURCE
8	False supplier	Suppliers reported that do not exist, correspond to shell companies, are deceased, or are unfit for business activities	Data from informational returns submitted and institutions in charge of the registration of companies and individuals	Returns submitted and relevant institutions
9	Non-registered regular importers	Concealment of economic activities through recurrent imports of significant amounts by liable subjects who do not declare commercial activities	Data from import registries and the Single Taxpayer Registry	Single Taxpayer Registry and imports
10	Several registered gauges	Number of water consumption gauges located in different sectors in the name of the same taxpayer	Water consumption gauges	Water consumption gauges of the corresponding institutions
11	Sales tax exemption on authorized sales	Taxpayers who are authorized to carry out purchases that are exempt from payment of the respective sales tax	Registry of the authorized exemptions	Authorized exemptions
12	Credit balances in general sales tax	Credit balances in general sales tax reported in three or more periods during the same complete tax year	Data from returns submitted	Returns submitted
13	Deviations from amounts declared in income tax	Both tax increases and decreases, in relation to the sectors and subsectors to which they belong and in relation to what was declared in previous periods. Application of offsets (for large taxpayers)	Data from returns submitted	Returns submitted
14	Deviations from amounts declared in sales tax	Both tax increases and decreases, with a decrease in tax liabilities, an increase in tax credits, and application of offsets (for large taxpayers)	Data from returns submitted	Returns submitted

Guatemala

No.	VARIABLE	DESCRIPTION	SYSTEM
1	LEVEL OF OMISSIONS	Number of omitted VAT declarations divided by obligations	OMISSIONS
2	LEVEL OF ADJUSTMENTS AND AUDIT AMOUNTS	Adjustments and related amounts by audits performed	FISAT
3	LEVEL OF ADJUSTMENTS AND TAX CREDIT REFUND AMOUNTS	Number of adjustments with their values related to VAT TC refund requests	FISAT
4	LEVEL OF DENIAL AND TAX CREDIT REFUND AMOUNTS	Number of denials with their related amounts	FISAT
5	LEVEL OF SUPPORT RESOURCES AND AMOUNTS RELATED TO VAT TAX CREDIT REFUND	Number of protective actions related to VAT TC refund requests	EXCEL
6	ACCUMULATED MONTHS AND TAX CREDIT AMOUNTS	Number of months and accumulated TC amounts per year	BANKING
7	LEVEL OF SANCTIONS PER CLOSURE	Number of sanctions	FISAT
8	INVOICE TURNOVER LEVEL	Number of invoices authorized per taxpayer in relation to their level of use	RTU
9	CRIMINAL PHASE	Taxpayer with proceedings in the criminal stage	PROCESS
10	COERCIVE ECONOMIC STEP	Taxpayer with process in the economic coercive stage	PROCESS
11	MARKER NOT LOCATED FISAT	Identified in FISAT if the "not found" marker appears	FISAT
12	MARKER NOT LOCATED RTU	Identified on the RTU if the "not found" marker appears	RTU
13	NOT LOCATED PF	Identified in FISAT if the marker "not found FP" appears	FISAT
14	WRONG ADDRESS	Identified on the RTU if the "invalid address" marker appears	RTU
15	OPTIONAL VAT TAX CREDIT REFUND SCHEME	Optional scheme	REIMBURSEMENTS AND COMPENSATION
16	PAYMENT ARRANGEMENTS	Does the taxpayer have VAT payment arrangements?	RTU
17	SALES-PURCHASES RATIO	Level of sales over purchases	BANKING

Appendix II: Attribute Template

FICHA DE ATRIBUTO								
Gestor		**Departamento**		**Fecha**		**Versión**		
Riesgo Asociado								

ATRIBUTO	**Código**	
	Nombre del Atributo	
	Descripción	
	Estado	
	Tipo Variable	
	Fuentes Datos Principal	
	Otras Fuentes	
	Comentario (restricciones - excepciones)	
	Algoritmo o forma de cálculo	

	Estado Programación		
DIMENSIÓN		**Marcar**	**Motivo**
	REGISTRO		
	DECLARACIÓN		
	INFORMACIÓN		
	PAGO		
ÁMBITO	**IVA**		
	Renta		
	Comercio Exterior		
	Reorganización		
	Op. Internacionales		
	Franquicias		
	Reg. Tributario		
	Facilitación		
	Tesorería		
	Otros		**¿Cuál?**

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Appendix III: Risk Template

FICHA DE RIESGOS TRIBUTARIOS

MÓDULO OBLIGACIÓN TRIBUTARIA

Indicar ID de Obligación Tributaria	
Obligación tributaria que se ve vulnerada por este riesgo de incumplimiento	
Descripción de quienes son los contribuyentes sujetos a esta obligación	
Normas legales (Leyes, Circulares, Resoluciones, Oficios, etc.) que sustenta la existencia de la principal obligación tributaria	
Ámbito principal donde se clasifica la obligación tributaria que se ve vulnerada por este riesgo de incumplimiento	
Indique la materia tributaria que se ve vulnerada por este riesgo de incumplimiento	

MÓDULO SEGMENTO (OPCIONAL)

ID Segmento	
Nombre del segmento	
Descripción del segmento	
Justificación del segmento	
Especifique cuales son las características para definir a este segmento de contribuyentes	

IDENTIFICACIÓN DEL RIESGO ESPECÍFICO

Qué nombre general propone para identificar este riesgo	
Descripción del Riesgo	
Indique el nivel de incumplimiento	

MÓDULO CAUSAS

Describa las causas internas o externas (al SII) que originan este riesgo.

Código	Nombre Causa	Descripción Causa	Origen (interna o externa)	Tipo de causa (BISEP o RRHH, Sistemas, etc.)	Validada (Sí/No)	Código del Atributo

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MÓDULO CONSECUENCIAS

Indique las consecuencias que produciría este incumplimiento

ID Consecuencia	Afectación	Tipo	Título	Descripción consecuencias directas	Código del Atributo

MÓDULO CARACTERÍSTICAS

Características de los contribuyentes que presentan este riesgo

ID_Característica	Nombre Característica	Descripción	Código del Atributo

MÓDULO PATRÓN DE COMPORTAMIENTO

Describa el patrón de comportamiento de los contribuyentes que presentan este riesgo (Definir patrón de comportamiento)

ID_Patrón Comportamiento	Nombre Patrón	Descripción	Código del Atributo

Especifique las fuentes internas y externas de información necesarias para detectar las causas, características y/o el patrón de comportamiento que NO están disponibles

Fuentes Externas al SII	Descripción

Fuentes Internas del SII	Descripción

MÓDULO ATRIBUTOS

Id Atributo	Tipo de Objeto	Nombre Atributo	Descripción de la forma de calcular el atributo	Tipo de Dato	Ponderador

MÓDULO TRATAMIENTOS

Tratamiento "N"

¿Ha sido ejecutada para este incumplimiento? (Sí/No)		Desea enviar a consolidación esta acción (Sí/No)		Responsable de implementar:	
Tipo de acción de tratamiento		Nominativo (Sí/No)		Efectividad:	

Nombre acción de tratamiento:

Describa la acción de tratamiento:

Código de la acción de tratamiento

Causa(s) que aborda este tratamiento. Inserte código(s)		Canal de Atención		Modalidad de la aplicación:	
Clasificación de la acción de tratamiento:		Periodicidad		Automatización	
Sistema operacional:		Unidad de medida:		Tiempo de ejecución	
Periodo óptimo de ejecución:		Metodología para evaluar			

Appendix IV: Obligation Map

MAPA DE OBLIGACIONES		
Dimensión obligación	Nombre Obligación	Dimensión Incumplimiento
Declarar Impuestos	Declaración de Impuesto a la Renta en F22	No cumplimiento
Declarar Impuestos	Declaración F22 dentro del plazo de contribuyentes de primera categoría	Cumplimiento fuera de plazo
Declarar Impuestos	Declaración F22 dentro del plazo de contribuyentes de segunda categoría	Cumplimiento fuera de plazo
Declarar Impuestos	Declaración F22 en régimen correspondiente, para contribuyentes acogidos al 14 ter	No cumplimiento
Declarar Impuestos	Declaración F22 en régimen correspondiente, para contribuyentes no acogidos al 14 ter	No cumplimiento
Declarar Impuestos	Declaración F29 dentro del plazo	Cumplimiento fuera de plazo
Declarar Impuestos	Declarantes F29 afectos a IVA	No cumplimiento
Declarar Impuestos	Declarar rentas íntegramente según observación A08	Cumplimiento erróneo de la obligación
Declarar Impuestos	Retener mensualmente Impuesto Único de Segunda Categoría en F29	No cumplimiento
Declarar Impuestos	Declarar traspasos de FUT a Sociedades que nacen por División	No cumplimiento
Declarar Impuestos	Declarar correctamente el crédito fiscal del IVA	Cumplimiento erróneo de la obligación
Declarar Impuestos	Declarar correctamente los créditos imputables al impuesto de primera categoría por adquisición de bienes físicos en activo inmovilizado.	Cumplimiento erróneo de la obligación
Declarar Impuestos	Tributar en el régimen correcto en el caso de Transporte de Pasajeros	Cumplimiento erróneo de la obligación
Declarar Impuestos	Declarar correctamente el débito fiscal del IVA	Cumplimiento erróneo de la obligación
Declarar Impuestos	Declarar correctamente los gastos tributarios asociados al artículo 31 de la Ley sobre impuesto a la Renta	Cumplimiento erróneo de la obligación
Declarar Impuestos	Declarar correctamente los costos tributarios asociados al artículo 30 de la Ley sobre Impuesto a la Renta	Cumplimiento erróneo de la obligación
Declarar Impuestos	Cumplir los requisitos establecidos para el uso del crédito por impuesto específico al petróleo diésel (IEPD)	No cumplimiento
Declarar Impuestos	Declarar correctamente el Impuesto Adicional por operaciones afectas a dicho tributo en los casos que no corresponde la aplicación de exenciones	No cumplimiento
Declarar Impuestos	Imputar contra los impuestos que les corresponde pagar en Chile, créditos por impuestos pagados en el exterior cumpliendo los requisitos y condiciones	Cumplimiento erróneo de la obligación
Declarar Impuestos	Declarar correctamente la base imponible del Impuesto Global Complementario	Cumplimiento erróneo de la obligación
Entregar Información	Presentación Declaración Jurada 1879.	No cumplimiento
Entregar Información	Presentación Declaración Jurada 1884.	No cumplimiento

MAPA DE OBLIGACIONES		
Entregar Información	Presentación Declaración Jurada 1887 informando retenciones de Impuesto Único de 2° CAT.	No cumplimiento
Entregar Información	Presentación Declaración Jurada 1887.	No cumplimiento
Entregar Información	Presentación Declaración Jurada 3327.	No cumplimiento
Entregar Información	Presentación Declaración Jurada 3328.	No cumplimiento
Entregar Información	Presentación Declaración Jurada 3500.	No cumplimiento
Entregar Información	Presentación Información Electrónica de Compras.	No cumplimiento
Entregar Información	Presentación Información Electrónica de Ventas.	No cumplimiento
Pagar Impuestos	Pago de giros por postergación de IVA	No cumplimiento
Pagar Impuestos	Pago de giros por RENTA diferida	No cumplimiento
Pagar Impuestos	Pagos de giros por diferencia de F29	No cumplimiento
Pagar Impuestos	Pagos de giros por diferencia de F50	No cumplimiento
Registrar	Acreditar Domicilio	No cumplimiento
Registrar	Efectuar timbraje de documentos con sus obligaciones de IVA y Renta cumplidas	No cumplimiento
Registrar	Presentación de Término de giro mediante F2121	No cumplimiento
Registrar	Registro de operaciones contables en documentación autorizada.	No cumplimiento
Registrar	Efectuar Inicio de Actividades por parte de Sociedades RES	No cumplimiento
Registrar	Finalizar el proceso de Término de Giro por parte de Persona Jurídica	No cumplimiento
Registrar	Finalizar el proceso de Término de Giro por parte de Persona Natural	No cumplimiento
Registrar	Informar que son agentes retenedores del IVA en actividades de construcción	No cumplimiento
Registrar	Registrar y/o actualizar sucursales.	No cumplimiento
Registrar	Informar reorganizaciones empresariales (fusiones)	No cumplimiento
Registrar	Emisión de las facturas de ventas de bienes corporales muebles en el plazo establecido	Cumplimiento fuera de plazo

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Appendix V: DGC Qualitative Tool

	Instrumento de recopilación de información Cualitativa de los Contribuyentes DGC					
	I) Antecedentes Generales.					
	Nombre o Razón Social					
	RUT					
1	Nombre Contacto 1			Función		
	N° Teléfono Fijo		N° Teléfono Móvil		E - mail	.
2	Nombre Contacto 2			Función		
	N° Teléfono Fijo		N° Teléfono Móvil		E - mail	.
3	Nombre Contacto 3			Función		
	N° Teléfono Fijo		N° Teléfono Móvil		E - mail	.
4	Nombre Contacto 4			Función		
	N° Teléfono Fijo		N° Teléfono Móvil		E - mail	.
5	Principal giro de la empresa.					
	Otros Giros (nombre los 3 más importantes)					
6	Pertenece a una Sociedad cuya Matriz está domiciliada en el extranjero					
7	Sectores Industriales en los que la empresa participa (3 más importantes)					
8	Pertenece a algún grupo Económico					
9	En el caso que la pregunta anterior sea afirmativa; ¿En qué sectores Industriales participa el Grupo Económico ?					
10	Número de empresas que pertenecen al grupo					
11	¿Cuantas empresas del grupo pertenecen a la nómina de la DGC?					
12	Cantidad de Socios Chilenos					
13	Cantidad e Socios extranjeros					
14	Cantidad Controladores* Personas Naturales					
15	Cantidad de Controladores* Otras Personas Jurídicas					
16	La contabilidad de la empresa es realizada internamente o se encuentra tercerizada?					
17	Tiene sistema informático para contabilizar sus operaciones					
18	En caso de ser positiva la respuesta N° 17 indique, es un software standard o software a la medida?					
19	En caso de ser positiva la respuesta N° 17 indique el nombre y proveedor del software					

20	Posee certificaciones ISO o similares en sus procesos	
21	Tiene cuentas bancarias en países con tributación privilegiada, de acuerdo con el N° 2 del Art. 41D de la LIR	
	II) Complejidad del Grupo económico	
22	Posee inversiones en el exterior	
23	Si la respuesta anterior es afirmativa indique si se trata de: Inversiones en Activos fijos (1), Activos financieros (2), Ambos u Otros (3)	
24	La malla del Holding se puede construir totalmente con las DDJJ presentadas por las Empresas	
	Sugerencia: En el orden de prelación la información base para tener un estándar, sería información que aparezca en el SIIC (Participación y participación de K), luego si la DDJJ 1xxx (N° de Acciones), luego la DDJJ xx5 (acciones en custodia y cantidad, se sustraen las que por ejemplo pertenecen a corredoras de bolsa), si se hace necesario construir el complemento del % de acciones la DDJJ 1XXX (restando lo que está en el Sistema y la DDJJ 1xxx); por último si no existe información, agregar la obtenida de la DDJJ XXX	
25	Total de impuesto pagado por el Grupo el último AT	
26	Porcentaje que representa el pago de impuesto de la empresa, en relación al total de impuesto pagado por el grupo	
27	Tasa de Impuesto efectiva pagada por el Grupo	
28	Tasa de Impuesto efectiva pagada por la Empresa	
	III) Gobernanza de Impuestos	
29	Tiene Gobierno Corporativo	

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Appendix VI: Classification according to Efficacy Level

PERIODICIDAD	OPORTUNIDAD	AUTOMATIZACIÓN	VALOR	CLASIFICACIÓN
PERMANENTE	PREVENTIVO	INFORMATIZADO	5	OPTIMO
PERMANENTE	PREVENTIVO	SEMI INFORMAT	5	OPTIMO
PERMANENTE	PREVENTIVO	MANUAL	5	OPTIMO
PERMANENTE	CORRECTIVO	INFORMATIZADO	5	OPTIMO
PERMANENTE	CORRECTIVO	SEMI INFORMAT	5	OPTIMO
PERMANENTE	CORRECTIVO	MANUAL	5	OPTIMO
PERMANENTE	REVISIONES RIESGO	INFORMATIZADO	4	BUENO
PERMANENTE	REVISIONES RIESGO	SEMI INFORMAT	4	BUENO
PERMANENTE	REVISIONES RIESGO	MANUAL	4	BUENO
PERIODICO	PREVENTIVO	INFORMATIZADO	4	BUENO
PERIODICO	PREVENTIVO	SEMI INFORMAT	4	BUENO
PERIODICO	PREVENTIVO	MANUAL	4	BUENO
PERIODICO	CORRECTIVO	INFORMATIZADO	3	MAS QUE REGULAR
PERIODICO	CORRECTIVO	SEMI INFORMAT	3	MAS QUE REGULAR
PERIODICO	CORRECTIVO	MANUAL	3	MAS QUE REGULAR
PERIODICO	REVISIONES RIESGO	INFORMATIZADO	3	MAS QUE REGULAR
PERIODICO	REVISIONES RIESGO	SEMI INFORMAT	3	MAS QUE REGULAR
PERIODICO	REVISIONES RIESGO	MANUAL	3	MAS QUE REGULAR
OCASIONAL	PREVENTIVO	INFORMATIZADO	2	REGULAR
OCASIONAL	PREVENTIVO	SEMI INFORMAT	2	REGULAR
OCASIONAL	PREVENTIVO	MANUAL	2	REGULAR
OCASIONAL	CORRECTIVO	INFORMATIZADO	2	REGULAR
OCASIONAL	CORRECTIVO	SEMI INFORMAT	2	REGULAR
OCASIONAL	CORRECTIVO	MANUAL	2	REGULAR
OCASIONAL	REVISIONES RIESGO	INFORMATIZADO	1	DEFICIENTE
OCASIONAL	REVISIONES RIESGO	SEMI INFORMAT	1	DEFICIENTE
OCASIONAL	REVISIONES RIESGO	MANUAL	1	DEFICIENTE
PERMANENTE	ESTRUCTURAL	INFORMATIZADO	5	OPTIMO
PERIODICO	ESTRUCTURAL	INFORMATIZADO	5	OPTIMO
OCASIONAL	ESTRUCTURAL	INFORMATIZADO	5	OPTIMO
PERMANENTE	ESTRUCTURAL	SEMI INFORMAT	5	OPTIMO
PERIODICO	ESTRUCTURAL	SEMI INFORMAT	5	OPTIMO
OCASIONAL	ESTRUCTURAL	SEMI INFORMAT	5	OPTIMO
PERMANENTE	ESTRUCTURAL	MANUAL	5	OPTIMO
PERIODICO	ESTRUCTURAL	MANUAL	5	OPTIMO
OCASIONAL	ESTRUCTURAL	MANUAL	5	OPTIMO
NO DETERMINADO	NO DETERMINADO	NO DETERMINADO	1	INEXISTENTE

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