

# Guarda Nacional Republicana Risk Analysis and Revenue Management System. Case Study: Comando Territorial de Lisboa

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**Abstract:** The complexity and decentralization of revenue along with the need for effective allocation of public resources in the Guarda Nacional Republicana are the core of this research. The present research aims to analyze the impacts of a risk management system in the decision-making process. In this context, the objective is to identify and analyze the most critical areas and control mechanisms implemented in the monitoring of the inherent risks in the process of road accident certificates. Thus, the purpose is to analyze the impacts of a risk management system in the process under study in the Comando Territorial de Lisboa and, consequently, its consequences in the administration of the internal resources of the Guarda Nacional Republicana. The findings show that the most critical areas in the process of own revenue management are related to the collection and saving of public funds, therefore, the control mechanisms implemented reduce the margin of error. However, it is noted that the revenue is collected in a decentralized manner associated with various computer systems without interoperability which implies technical inconsistencies that severely affect their management. Thus, it is concluded that an adequate risk management methodology reveals an optimization of the application of the internal resources of the Guarda Nacional Republicana based on the alignment of the strategic objectives with the institution's risk assessment. In conclusion, a risk management system is a tool meant to support decision making allied to the safeguarding of assets, the protection of the institutional image and the fulfillment of the mission.

**Keywords:** Risk management, Own revenue, Control mechanisms, Guarda Nacional Republicana.

## 1. INTRODUCTION

The administration and management of public values should be guided by the principles of accountability and transparency to properly allocate public resources. Therefore, the quality and timeliness of decisions taken in the area of financial resource management have a decisive impact on the performance of an organization.

All the organizations face the responsibility of making important decisions to ensure sustainability and financial stability in conditions of uncertainty and risk (Jankelová, Jankurová, Beňová and Skorková 2018).

All organizations are exposed to numerous risks (Braun, 2015), so risk management makes a significant contribution to performance enhancement through an integrated analysis of organizational structure (Niemann, Kotzé and Jacobs 2018). Also, investing in prevention will significantly reduce financial costs compared to responding to events with negative impacts on the organization (Bialas 2016).

Given an organization's finite resources, prioritizing tasks by optimizing administrative processes is critical.

Therefore, it is important to emphasize the true priorities of an organization taking into account the safeguarding of material, financial and human resources, as well as the promotion of the institutional image.

The current fragmented context of the Public Sector has triggered the start of a reform materialized by the publication of the new Budget Framework Law. Thus, one of the cornerstones of the implementation of this law is the reform of public revenue management. In this sense, it follows from the current system "*some limitations that may affect efficient cash management and the occurrence of higher budgetary risks, at a macro level, such as the State bearing higher financial burdens due to that inefficient management*". As a result, "*this situation prevents the proper management of revenue, particularly the checks that need to be made on the financial amounts delivered*" (UniLEO 2017:5-6).

Indeed, there is a need for reform of the financial management regime based on "accountability for results and assumption of those results and adherence to an internal control model by good international practice" (UniLEO 2017:7).

Therefore, "efficient management of public requires a better and more efficient allocation of public

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resources and transparency in the allocation of money to the implementation of public policies". Also, due to the "requirements arising from the new Budget Framework Law, it is necessary to create the technical and institutional conditions necessary for its effective implementation". As a result, "and in response to such demands, alongside the new Budget Framework Law was published the Decree-Law introducing the Accounting Standardization System for Public Administrations" (Nunes, Rodrigues and Viana 2016:3).

The Accounting Standardization System for Public Administrations "is based on an organization's risk management process, which requires proper identification, assessment, and management of relevant risks" (Treadway Commission 2019:1). Indeed, the internal control system "to be adopted by public authorities should be based on appropriate risk management, information and communication systems" with a view to "ensuring proper risk management" (art. 9.º n.º 2 e 3 al. j) Decreto-Lei (DL) no. 192/2015, 11<sup>th</sup> September, respectively).

Thus, by the Treadway Commission (2019:1), "effective risk management should be designed and monitored according to an appropriate methodology based on the methodologies advocated by COSO" (Committee of Sponsoring Organizations of the Treadway Commission).

Therefore, risk management integrates the decision-making process on all risks that may affect the organization and, consequently, allows a global understanding of them in all activities and processes (Niemann, Kotzé and Jacobs 2018).

## 2. FIELDWORK AND RESEARCH METHODOLOGY

### 2.1. Type of Research

The present investigation is based on the deductive method that is based on a logic of "general to the particular, that is, to deductively reason from general premises in search of a particular truth". As such, the "conclusions are derived from the premises using logical reasoning and, once found, are undisputed" (Freixo 2011:106).

This is a study that followed a mixed strategy of inquiry, including a qualitative approach and a quantitative approach.

The methodological approach found in this research is limited to a case study that, according to Yin (2009),

investigates an in-depth phenomenon on its characteristics.

### 2.2. Sampling / Sample

Rosado (2017:126) states that "sample construction is an important part of the research process". Fortin (2005:160) defines the sample as the "set of all persons or other elements of a well-defined group, with one or several similar characteristics in common, which is the base for research".

Therefore, the exploratory interviews include people from outside the renowned Guarda Nacional Republicana in the area of research concerned. As part of the case study, the interviewees include the Chief of the Secção de Recursos Logísticos e Financeiros and the Financial Assistant of the Comando Territorial de Lisboa, the Officers of the Divisão de Controlo Interno and the Divisão de Contabilidade with roles of interest to the investigation and the representatives of the Accounting and Billing Document Project implementation plan. Thus, the sample of interviews makes up 16 structured interviews.

The sample of the questionnaire survey is based on the military with secretariat functions of the Comandos Territoriais, except for the Azores and Madeira, since in these Autonomous Region, the attributions are carried out exclusively by the Polícia de Segurança Pública, totaling a total of 1127 military personnel. Importantly, the number of military personnel indicated 57 belong to the Accident Sections of the Destacamentos de Trânsito. On the other hand, the sample also falls on the 227 military personnel constituting the Secções de Recursos Logísticos e Financeiros of these Comandos Territoriais.

### 2.3. Instruments

The theoretical and conceptual framework that supports this research results from bibliographic research, institutional documents and statistical data on the Guarda Nacional Republicana's revenue. The empirical research relies on interviews and a questionnaire survey.

### 2.4. Procedures

From Quivy and Campenhout (2008:25) point of view, a procedure is designed to "progress towards a goal".

Given the nature of the research, this study uses several computer applications. Regarding the

processing of data collected through the questionnaire survey, the Statistical Package for Social Sciences is used, which culminates in the construction of tables with the identification and assessment of risks associated with the process studied using Microsoft Office Excel.

**3. RELATED BACKGROUND AND THEORY**

The related background aims to understand the main concepts of the art., as well as the methods and procedures relevant to understanding the development of empirical work.

**3.1. Core Concepts**

**3.1.1. Governance**

Following IIA (2018), governance consists of the combination of processes and structures implemented by the administration to inform, direct and monitor the activities of the organization to achieve its objectives. Indeed, the governance process refers to the implementation of rules and procedures at all levels of the entity, based on cementing accountability (Moeller 2011), building a core organizational culture in compliance with the established strategy (IIA 2018).

The principles of effective governance translate into *“increased accountability, more appropriate segregation of duties, compliance with international standards, information building and clarification of operational functions”* (Pinheiro 2014:31).

Thus, organizational culture impacts the internal control system’s information and communication activities, the way controls are developed, and therefore the quality of risk management (Kline and Hutchins 2017). The IIA 2100 International Standard for

Internal Auditing Professional Practice, The Nature of Work, highlights the role of ethical values in the governance process and highlights the inextricable relationship between it, control procedures and risk management.

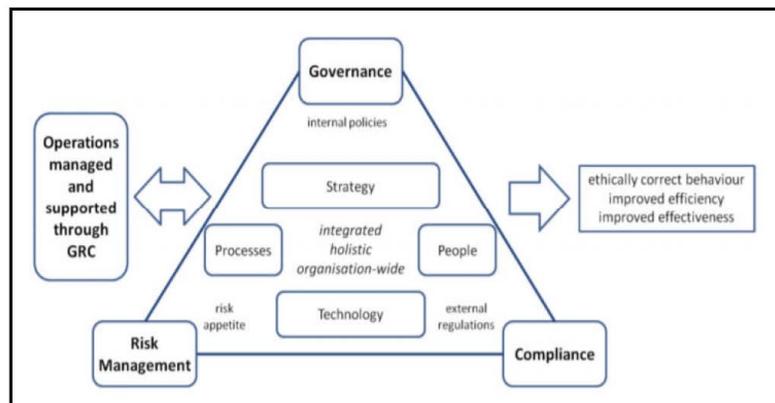
**3.1.2. Risk**

According to COSO (2004), risk represents the possibility of an event occurring that will impact the achievement of the organization's objectives. As such, it is considered in formulating the strategy and setting the objectives (Dias 2017), ensuring that they support and integrate the former.

**3.1.3. Compliance**

According to IIA (2018), compliance patents organizations' adherence to the policies, plans, procedures, laws, and regulations implemented. Consequently, it takes a prominent position, since the documents referred to determine the mission and structure of organizations (D'Aquila and Houmes 2014). Thus, the entity must ensure that its processes comply with laws and regulations. However, this procedure contains some challenges: the frequent introduction of new laws, vaguely written regulations that require interpretation and there is no consensus on compliance best practices and changes in legislation (Moeller 2011).

Therefore, compliance with laws and regulations becomes a continuous process integrated into the entity's structure. Thus, a compliance-driven approach to resource utilization enhances the following benefits: cost savings, greater ability, and flexibility to adapt to new laws and regulations and competitive advantage (Moeller 2011).



**Figure 1:** Frame of integrated GRC.

Source: Racz, Weippl, and Seufert (2010:113).

The importance of good governance processes and the need for effective compliance programs across the organization are two issues affecting institutions around the world (Moeller 2011). Also, the risk is a concept that is inherent in all activities and functions of an entity (Manson 2018). Although the three concepts referred to are often managed as separate areas, they should be viewed as interrelated, given that the concepts do not overlap (Moeller 2011).

In short, it is essential to emphasize that the sustainability of the organization is closely related to the governance, risk and compliance process, as it gives a holistic view of all operations through the analysis of the organization's processes and policies (Widhoyoko 2017).

### 3.1.4. Risk Management

According to COSO (2004), risk management is a process designed by the administration applied in the definition of the strategy and in all activities and functions, designed to identify possible events that may affect the entity's performance. Also, it provides reasonable assurance regarding the achievement of the objectives. That said, it is a tool for mitigating risks and consequently gaining competitive advantage (Aziz and Yazid 2015). Since it is impossible to anticipate all risks, there is a need to develop their management capacity (Siegel, 2018).

Indeed, events that may affect the strategy and objectives of the organization are the heart of this method (Anderson 2017) and therefore comprise a holistic analysis of all risks (Banham 2016). Thus, its implementation becomes pertinent (Yap Kiew Heong and Teng 2018) aiming at the sustainability of organizations (Kline and Hutchins 2017) and, inherently, its alignment with the governance process and strategy (Bromiley, McShane, Nair and Rustambekov 2015).

Therefore, the risk management process is a catalyst for potentialities and a reducer of the entity's weaknesses (Griffiths 2009) and should involve all people at all levels and functions of the entity (Moeller 2007).

### 3.1.5. Enterprise Risk Management – Integrating with Strategy and Performance

COSO uses a three-dimensional model consisting of four columns representing the organizational objectives on the upper face, eight rows that materialize the components on the front face and four

levels of the organization on the side face varying by the entity.



Figure 2: Enterprise Risk Management.

Source: COSO (2004:55).

### 3.1.6. Risk Identification

External and internal events that may affect the achievement of an entity's objectives should be identified and categorized into risks and opportunities (COSO 2004). As such, the risk identification process requires a meticulous and organized approach to analyze the potential risks in each entity's activity and then identify the most significant ones and thus those that hurt the organization over a period of reasonable time (Moeller 2007).

For the process to be effective, it is necessary to identify people at all levels of the organization to list all risks in each activity and function (Emmons, Mazzuhchi, Sankani and Larsen 2018).

### 3.1.7. Risk Assessment

Following the risk identification process in all activities and functions of the organization, the subsequent task is to assess them. Indeed, the inherent risk, defined as the risk in the absence of any controls that the management body may implement, is considered and the residual risk materialized by the risk after the responses developed (COSO 2004).

Thus, the risk is measured in terms of its probability of occurrence and impact, defined as the potential outcome, effect or consequence of the event (COSO 2004).

### 3.1.8. Probability and Impact

An effective mechanism for conducting and documenting risk assessment is to create a risk matrix.

However, the evaluation of this matrix may convey the idea that probability and impact are equally important (IIA, 2018). For example, a risk classified with high impact and low probability should be prioritized over risk with low impact and high probability (COSO 2004).

The elaboration of this matrix supports decisions about risk responses and assists in the calculation of the risk rating and, consequently, in determining the most significant risks (Steinberg, Everson, Martens and Nottingham 2004). Information extracted from that matrix is then incorporated into the preliminary risk assessment used for goal setting (IIA 2018).

The risk assessment methodology comprises a combination of qualitative and quantitative techniques. In this sense, qualitative techniques are used when the necessary data for the evaluation is not available. On the other hand, quantitative techniques require more rigor and data quality, allowing greater precision based on the use of mathematical models (COSO 2004). In this context, the calculation through a quantitative analysis is recommended (Ríos, Duque and Gómez 2019).

### 3.1.9. Risk Response

Risk response is based on inherent risk analysis to achieve a residual risk level aligned with the entity's tolerable risk (IIA 2018). In this context, it is imperative that the risks the entity faces are not at the unacceptable level of risk.

In this context, the determination of responses should consider the following: potential effects on the likelihood and impact of risks, cost-effectiveness and possible opportunities for the organization. Thus, they fall into the following categories:

- Avoid: Assessment of activities that increase risk and therefore may lead to their termination;
- Reduce: Actions taken to reduce the likelihood and impact of risk;
- Share: Reduce risk by transferring it to another entity;
- Accept: No measures are implemented to reduce the likelihood or impact of risk (COSO 2004).

## 4. RISK MANAGEMENT IN THE GUARDA NACIONAL REPUBLICANA

### 4.1. Internal Control System

According to art. 4 No. 1 of DL No. 166/98 of 25<sup>th</sup> June, the internal control system “considers itself struct

three levels of control, designated operational, sectoral and strategic, defined in reason of the nature and scope of the services they integrate”.

Strategic control is exercised by the Inspeção-Geral das Finanças, which “*performs the functions of audit and control in the budgetary, economic, financial and asset fields*” [art. 2 No. 2 al. a) DL No. 96/2012, of 23<sup>rd</sup> April]. It is noteworthy that “*all internal control bodies must cooperate strictly with the Direção Geral do Orçamento*” (art. 10 No. 1 DL No. 191/2012, of 23<sup>rd</sup> August).

Sectoral control is the responsibility of the Inspeção-Geral da Administração Interna, whose mission is “*to ensure high-level auditing, inspection and oversight functions for all entities, services, and bodies, dependent or whose activity is legally supervised or regulated by the member of the Government responsible for the Internal Administration area*” (art. 2 DL no. 58/2012, of 14<sup>th</sup> March).

Operational control includes Inspeção da Guarda along with Divisão de Controlo Interno. The Inspeção da Guarda is the “*body responsible for the development of inspectorate and audit actions at the superior level of the Guarda*” (art. 27 Organic Law of the Guarda Nacional Republicana). According to Art. 29 al. b) and al. g) of Order No. 11132/2018 of 28 November, it is incumbent upon Divisão de Controlo Interno, according to Art. 12 of Regulatory Decree No. 19/2008, of 27<sup>th</sup> November, “*carry out audits in the financial area of Guard and evaluate the functioning and reliability of internal control processes*”, respectively.

### 4.2. Revenue Management System - Legal Framework

“*Own revenue of the entities that make up the central government subsector is the proceeds of transactions arising from the exercise of the mercantile activity in a competitive regime, as well as the amounts corresponding to the consideration for the service rendered*”. It should be noted that “*the management revenues of such entities are also those derived from donations, inheritances or legacies of individuals that, by their will, are specifically intended for these entities, as well as any other revenues that by law or contract should belong to them*” (art. 57 no. 1 and 2 Budgetary Framework Law). Following the principles of revenue and expenditure, according to art. 52 Budgetary Framework Law, no revenue can be paid or collected

without, cumulatively: being legal, correctly budgeted and classified.

In this sense, the *“services and bodies shall ensure a record of all revenue collected by them and of the revenue assigned to them”* (art. 14 DL 155/92, of 28<sup>th</sup> July). Also, revenue budget execution operations *“comply with the principle of segregation of settlement and collection functions”* (art. 52 No. 6 Budgetary Framework Law).

#### 4.3. Accounting and Billing Document

The current circuits for collecting own revenue from Public Administration bodies *“expose a set of current limitations observed within the scope of state revenue management, especially non-tax revenue.”* In this context, the Accounting and Collection Document Project aims to present a *“proposed methodology for inventorying the different types of non-tax revenue, and the respective legal bases, issuing entities and accounting and treasury distributions”* (UniLEO 2017:2).

In short, it allows for *“optimization of revenue management through improved treatment, accounting measurement and treasury control processes”* (UniLEO 2017:8).

#### 4.4. Guarda Nacional Republicana Own Revenue

Following art. 48 Organic Law of the Guarda Nacional Republicana, the revenues of the Guarda are the *“appropriations allocated by the State Budget, the proceeds from the sale of publications and the amounts charged for activities or services rendered, the interest on bank deposits, the own revenue assigned to the Guarda, the annual balances of the assigned income, the amount of the fines to which it is entitled by the performance of its mission, any other revenue attributed to it by law, contract or other titles”*.

Ordinance No. 19/2007, of January 11<sup>th</sup>, establishes the amounts to be charged by the security forces in return for the provision of services and activities specially developed for the requesting entities.

#### 4.5. Accident Certificates – Traffic Accident

Ordinance No. 1334-C / 2010 of December 31<sup>th</sup> approves the fee schedule to be charged for acts of secretariat provided by entities under the supervision of the Ministério da Administração Interna. According to art. 3 of the aforementioned law, the *“rates of fees*

*provided for in the attached table are automatically updated on March 1 of each year”*. As such, Annex I to Circular No. 01 / DRF / 13 of April 3<sup>rd</sup> expresses the updated figures for the year 2019.

Indeed, it is important to highlight some aspects related to the collection of own revenue. Thus, *“revenues from Units, Establishments and Organs shall be recorded following the instructions in force and transferred to Direção de Recursos Financeiros in order”*. Thus, the *“vault balance should preferably be nil or as small as possible, and should not exceed € 100.00”* [sub-paragraphs (1) (a) and (g) of paragraph 1 Circular No. 04 / DRF / 12 of September 4<sup>th</sup>], respectively.

At the strictly operational level, the issuing of road accident certificates is made in the Sistema de Informações Operações Policiais and validated by the Secção de Acidentes military. Subsequently, the collection of amounts constituting Guarda Nacional Republicana revenue must be based on the Guarda Nacional Republicana revenue management system, whereby an *“original revenue guide for the user”* is issued (paragraph 1 (a)). 3 of Circular 08 / DRF / 11 of July 29<sup>th</sup>).

In the event of a computer system failure, the issuing agency shall issue a bill of lading through the pre-numbered manual receipt book (Circular No. 08 / DRF / 11 of 29<sup>th</sup> July). It is essential to emphasize that, in the referred collection acts, the requirement of receipts and invoices constitutes a legal obligation (art. 123 Lei No. 15/2001, of 5<sup>th</sup> June).

## 5. RESULTS' PRESENTATION, STUDY, AND DISCUSSION

### 5.1. Interview's Content Analysis

By conducting a content analysis throughout the interview's results of the script applied to persons outside the reputed Guarda Nacional Republicana in the area of investigation concerned:

- COSO's published models provide a holistic view of all processes and, in turn, identify risks that may hurt the organization;
- Evaluate the effectiveness of the internal control system and therefore frame the necessary measures to be taken;
- They focus on the importance of governance processes, risk management, and controls;

- COSO is an international model accepted by large organizations and recognized for its basic aspects based on the complexity of operations, the need to foresee and structure management;
- Risk assumes a prominent position in the organization's performance, as it allows the creation of measurable objectives and thus the long-term sustainability of the entity.

By conducting a content analysis throughout the interview's results of the script applied to Officers with duties of interest to the investigation:

- The audit plan is not risk-based;
- Units are audited every two years;
- Between 10 and 14 annual audits are performed annually;
- The most critical aspects are the circulation of money, the lack of conditions to keep these values, the issuance of the certificate without the corresponding invoice and the failure and length of the computer systems;
- The risks associated with the reporting of financial and non-financial information are related to the long timeframe that mediates the receipt and integration into the Ministério das Finanças systems and the difficulty in relating the amounts transferred to the collection document;
- There is no interconnection between the Sistema de Informações Operações Policiais and the Guarda Nacional Republicana Revenue Management System, which in turn does not allow automatic control, but human and fallible control;
- Due to the volume of operational activity, the value stored in the safe is easily exceeded;
- Existence of loose legislation.

By conducting a content analysis throughout the interview's results of the script applied to the entities involved in the implementation plan of the Accounting and Billing Document Project:

- Revenue collection is spread across various computer systems and associated with various manual operations;

- Quite archaic systems and the difficulty associated with the redefinition of circuits and systems.

## 5.2. Surveys' Descriptive Statistical Analysis

The purpose of the questionnaire is to identify risk activities associated with the management of the Guarda Nacional Republicana's revenue.

The first question related to the heart of this investigation was "what are the operational risks associated with revenue management of the Guarda Nacional Republicana?"

The most significant operational risks are related to the safekeeping and consequent invoicing, which points to a vulnerability of the own revenue management system.

The second question related to the heart of this investigation was "what are the reporting risks associated with revenue management of the Guarda Nacional Republicana"?

The amount stored in the vault is found to be high, exceeding the stipulated amount. This scenario has a weakness based on the possibility of misappropriation of public values.

The third question related to the heart of this investigation was "what are the compliance risks associated with revenue management of the Guarda Nacional Republicana"?

There is the existence of loose legislation associated with an incorrect interpretation of the legal norms. However, the results prove that this is the least significant risk category.

The fourth question related to the heart of this investigation was "how effective are the control mechanisms implemented by the Secção de Recursos Logísticos e Financeiros"?

For this purpose, the following scale is used; 1 - Good, 2 - Satisfactory, 3 – Unsatisfactory.

**Table 1: Controls Implemented**

| Control        | Frequency | Percentage |
|----------------|-----------|------------|
| Good           | 93        | 42,9       |
| Satisfactory   | 113       | 52,1       |
| Unsatisfactory | 11        | 5,1        |

Statistical analysis of the questionnaire variables shows that the most pertinent questions address issues related to anomalies and possible value deviations, which reveal critical aspects of own revenue management.

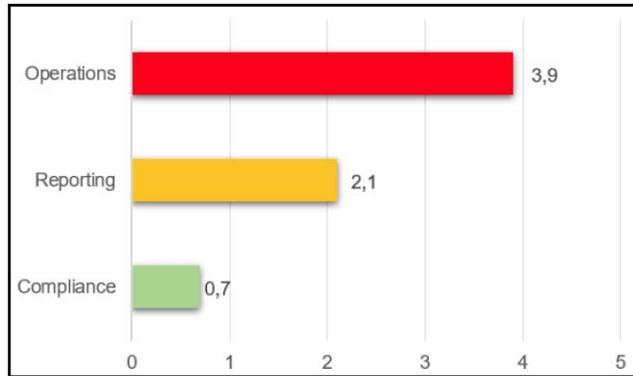


Figure 3: Likelihood and impact of risk categories.

In sum, despite the values obtained regarding the effectiveness of the controls exercised by the Secção de Recursos Logísticos e Financeiros, it appears that they do not have the desired effect on the risks associated with the processing of their revenue. In this sense, it is proved that the operational scope of the studied process coupled with the custody of values constitutes a vulnerability of this system.

It is important to highlight that the risks associated with receiving and keeping securities represent the greatest vulnerability of the own revenue circuit.

The questionnaire responses contain an ordinal scale that allowed respondents to respond to the frequency of a given phenomenon. Thus, the scale used is as follows: 1 - Never, 2 - Rarely, 3 - Sometimes, 4 - Often, 5 - Always.

Through the analysis of the graph, it can be seen from the observation of the operational risks together with the reporting risks that the cash and check payment system hinders effective revenue recording and control.

**5.3. Statistical Analysis of the Guarda Nacional Republicana’s Revenue**

Given the 662 collection sites of Guarda Nacional Republicana collection, the elimination of these means of payment is becoming increasingly prominent in the Guarda Nacional Republicana’s financial administration. Also, the fieldwork advocates the improvement of internal systems due to the technological needs felt. Thus, the Guarda Nacional

Republicana’s internal resource management platforms lack interoperability for better decision support. In this sense, it is essential to mention that there is always a risk of computer system failure, which in turn requires the definition of procedures in this eventuality. However, errors and delays in reporting financial and non-financial information are mitigated through better communication between Guarda Nacional Republicana platforms.

Through an analysis of the revenue from road accident certificates, it is possible to draw solid conclusions (see figure below).

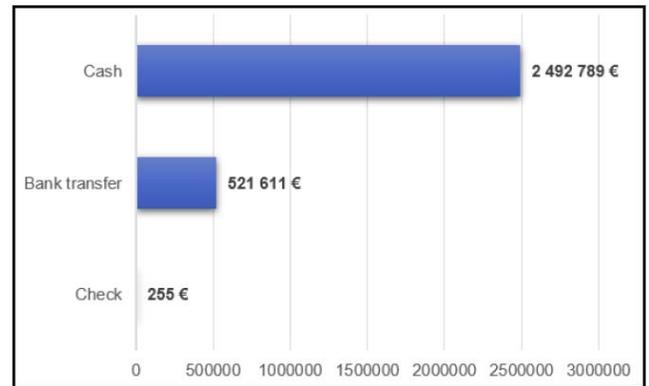


Figure 4: Payments by the value of road accident certificates in 2018.

In this sense, it is imperative to eradicate cash payments, as this type of payment involves the actual delivery of securities, their storage for a variable period and their subsequent bank deposit. Then, bank reconciliation is required and finally delivered to the Ministério das Finanças. Also, between the time of collection and its delivery, a high period elapses, which in turn involves the unavailability of its use (see the following figure).

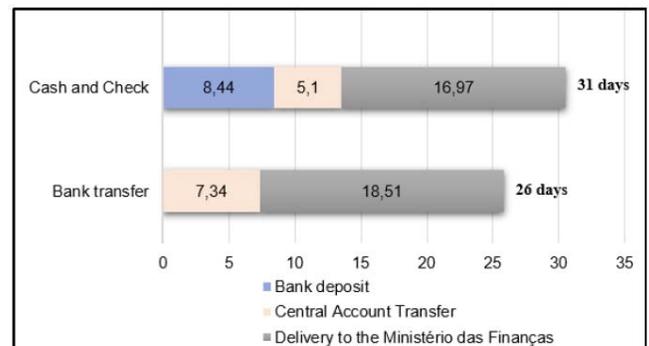


Figure 5: Time gap between the time of collection and reporting in 2018.

It should be noted that the Guarda Nacional Republicana Revenue Management System is

decentralized by about 662 collection sites without interaction and direct communication with Shared Financial Resource Management in Administração Pública, a computer system that provides information to the Tribunal de Contas. In this regard, it is essential to note that, in 2018, the amounts collected by cash and check lacked an average period of 31 days for their delivery to the Ministério das Finanças. Given the high amount of cash and check collected and coupled with poor cash management at collection sites, preventive and non-reactive control is needed to optimize its revenue management.

#### **5.4. Risk Management in the Internal Control Activities of the Comando Territorial de Lisboa**

The data obtained through the interviews and the questionnaire survey contribute to the elaboration of a risk management process about the revenue from the issuing of road accident certificates. In this context, the results obtained through the questionnaire responses allow a holistic view of the risk activities of the Financial Centers addressed. Also, interviews with the Divisão de Controlo Interno and the Divisão de Contabilidade Officers provide information about the compliance and integrity of the procedures, as well as the timeliness of

information coupled with the verification of accountability of the Units. Thus, the combined analysis of the tools used guides the risk management practices adopted in this investigation.

Indeed, the results obtained through the fieldwork allow us to list the risks inherent in the process of issuing road accident certificates associated with the respective control procedures expressed in the following table.

Thus, the assessment of the identified inherent risks becomes paramount. For this purpose, a scale from one to five is used to calculate the probability and impact with the appropriate weighting factors for each identified risk.

The process of calculating the probability and impact of each identified risk is carried out through the judgment of the Head of the Secção de Recursos Logísticos e Financeiros of the Comando Territorial de Lisboa. It is important to note that the valuation is not watertight, as such it is susceptible to change according to the evaluator, evaluation period and place of collection.

In this context, the risk assessment matrix shows that the controls verified to reduce the probability and impact of the identified risks, except for the "Segregation of duties" and "Information integration" risks. However, it should be noted that these controls do not fully safeguard the risk events presented and as such, it is imperative to analyze the inherent risks identified. Therefore, it is imperative to carry out an integrated risk analysis as they are associated with each other.

Thus, the analysis of the identified risks assessment allows differentiating each risk in terms of its priority and, consequently, making decisions about the measures to be taken. It is essential to emphasize that risks must be analyzed taking into account external and internal factors. Thus, external factors, economy, politics, and technology influence the identified risks. Also, internal factors such as infrastructure, human resources, processes, and technology have a decisive impact on risk management.

Given the risk map, expressed in the following figure, it is possible to infer conclusions about the significance of the identified risks.

The positioning of the risks identified in the matrix provides more information about the priority of control

**Table 2: Identification of Risks and Controls Associated with the Road Accident Clearance Process**

| Category   | Risk                                     | Controls  |
|------------|--|---|
| Operations | Resource management                      | Execution of inspection actions   |
|            | Asset management                         | Purchase safes with better conditions   |
|            | Resource security                        | At Destacamento de Trânsito level   |
|            | Segregation of duties                    | No checks   |
|            | Ineffectiveness of operations            | Issuance of internal policies   |
| Reporting  | Treasury management                      | Posting awareness documents   |
|            | Information technology                   | Using manual receipts   |
|            | Information processing                   | Clarification of doubts when requested  |
|            | Information security                     | Verify that the certificate identified on the canceled invoice matches the certificate number that was generated next |
|            | Information integration                  | No checks   |
|            | Inconsistency of information             | Proof of payment request  |
|            | Accountability                           | Process supervision   |
|            | Information management                   | Balance justification check   |
| Compliance | Failure to comply with legal obligations | Issuance of internal policies   |
|            | Application of legal regulations         | Issuance of internal policies   |

**Table 3: Assessment of the Likelihood and Impact of the Identified Risks**

| Operations |  | INHERENT    |        |       | CONTROLS | RESIDUAL    |        |       |
|------------|--|-------------|--------|-------|----------|-------------|--------|-------|
|            |  | PROBABILITY | IMPACT | FINAL |          | PROBABILITY | IMPACT | FINAL |
| R.1        | Resource management                      | 4           | 5      | 4,1   |          | 3           | 3      | 1,7   |
| R.2        | Asset management                         | 3           | 4      | 2,5   |          | 1           | 1      | 0,2   |
| R.3        | Resource security                        | 5           | 5      | 5,0   |          | 3           | 3      | 1,7   |
| R.4        | Segregation of duties                    | 5           | 5      | 5,0   |          | 5           | 5      | 5,0   |
| R.5        | Ineffectiveness of operations            | 3           | 5      | 3,4   |          | 2           | 2      | 0,7   |
| Reporting  |  | PROBABILITY | IMPACT | FINAL | CONTROLS | PROBABILITY | IMPACT | FINAL |
| R.6        | Treasury management                      | 5           | 5      | 5,0   |          |             | 3      | 3     |
| R.7        | Information technology                   | 4           | 4      | 3,2   |          | 1           | 1      | 0,2   |
| R.8        | Information processing                   | 2           | 1      | 0,4   |          | 1           | 1      | 0,2   |
| R.9        | Information security                     | 2           | 5      | 2,8   |          | 1           | 3      | 0,8   |
| R.10       | Information integration                  | 5           | 5      | 5,0   |          | 5           | 5      | 5,0   |
| R.11       | Inconsistency of information             | 3           | 3      | 3,3   |          | 1           | 1      | 0,2   |
| R.12       | Accountability                           | 2           | 1      | 0,4   |          | 1           | 1      | 0,2   |
| R.13       | Information management                   | 4           | 1      | 1,7   |          | 3           | 1      | 1,0   |
| Compliance |  | PROBABILITY | IMPACT | FINAL | CONTROLS | PROBABILITY | IMPACT | FINAL |
| R.14       | Failure to comply with legal obligations | 2           | 2      | 0,7   |          |             | 1      | 1     |
| R.15       | Application of legal regulations         | 2           | 2      | 0,7   |          | 1           | 1      | 0,2   |

measures. In this sense, it should be noted that only four risks are at the acceptable level and two at the tolerable level, the remaining being at the unacceptable level. Indeed, this matrix reveals prioritized weaknesses and emphasizes the need for more effective controls. It is essential to emphasize that the analyzed process assumes a strictly operational character in its genesis. That said, it can be seen that the activities carried out by the Divisão de Controlo

Interno and the Secção de Recursos Logísticos e Financeiros, within the scope of financial administration and internal control, are essentially amending and pedagogical. The main vulnerabilities found to relate to: the absence of segregation of duties in the context of issuing road accident certificates; use of securities in a safe for personal purposes; cash amounts to be deposited beyond the defined term; no interoperability and failures of computer systems and consequently duplication of tasks; incorrect recording of data in the Guarda Nacional Republicana Revenue Management System and the use of numbered receipts and origin of payments made by bank transfer.

The cessation of cash and checks through automatic payment transactions, such as the Multibanco Reference, is a constant concern based on its urgent need to implement this project.

| PROBABILITY         |                       | IMPACT   |
|---------------------|-----------------------|--|
| Up to 2 months      | <b>5</b><br>Very High | High financial losses and damage to image and reputation                       |
| Up to 4 months      | <b>4</b><br>High      | Strong consequences with financial, image and reputation losses                |
| Up to 6 months      | <b>3</b><br>Medium    | Moderate consequences with associated financial or image and reputation losses |
| Up to 12 months     | <b>2</b><br>Low       | Consequences with possible financial losses                                    |
| More than 12 months | <b>1</b><br>Very Low  | Consequence without financial loss   |

**Figure 6: Probability and impact scale.**

| PROBABILITY | LEVEL    | IMPACT |
|-------------|----------|--------|
| 1           | <b>5</b> | 1      |
| 0,8         | <b>4</b> | 0,8    |
| 0,6         | <b>3</b> | 0,5    |
| 0,3         | <b>2</b> | 0,4    |
| 0,1         | <b>1</b> | 0,2    |

**Figure 7: Weighting of probability and impact factors.**

Thus, as is the objective of the Accounting and Billing Document Project, the substitution of this form of payment through automatic payment operations denotes the increased level of control in all revenue collection operations and, as such, allows the reduction of manual operations. In this context, the use of a single platform for all Administração Pública bodies favors the integration of computer systems.

Thus, the analysis of the listed risk events entails a process of reformulation of the financial and administrative processes. In this context, the current model does not advocate the effectiveness of the studied process.

|             |           |             |              |        |      |                           |
|-------------|-----------|-------------|--------------|--------|------|---------------------------|
| PROBABILITY | Very high |             |              |        |      | R.3<br>R.4<br>R.6<br>R.10 |
|             | High      | R.13        |              |        | R.7  | R.1                       |
|             | Medium    |             |              | R.11   | R.2  | R.5                       |
|             | Low       | R.8<br>R.12 | R.14<br>R.15 |        |      | R.9                       |
|             | Very low  |             |              |        |      |                           |
|             |           | Very low    | Low          | Medium | High | Very high                 |

IMPACT

Figure 8: Matrix of identified risks.

Given a large number of Guarda Nacional Republicana collection sites and financial control of revenue, the elimination of these means of payment is becoming increasingly prominent in the Guarda Nacional Republicana's financial administration. Also, the fieldwork advocates the improvement of internal systems due to the technological needs felt. Thus, the Guarda Nacional Republicana's internal resource management platforms lack interoperability for better decision support. In this sense, it is essential to mention that there is always a risk of computer system failure, which in turn requires the definition of procedures in this eventuality. However, errors and delays in reporting financial and non-financial information are mitigated through better communication between Guarda Nacional Republicana platforms.

Indeed, another weakness identified is based on the segregation of duties in the revenue collection process. Through the results of the questionnaire survey and, subsequently, by corroborating the case study, the military man assumes the full functions at all stages of the recipe. It, therefore, urges the need for further measures to remedy the vulnerabilities found.

In this context, the interconnection of risks and controls are verified. The elimination of cash and check payments has a significant impact on reporting risks due to the elimination of custody at collection sites. Consequently, the possibility of diversion of public money considerably reduces and inherently the remaining risk categories.

Despite the low level associated with the risks of legal compliance, it is imperative to ensure compliance with legal regulations coupled with the technical support of the competent bodies. That said, the proper classification of revenue associated with in-depth and concise knowledge of laws and regulations governing operating activity and, in turn, having an impact on the management of financial resources is categorical.

In this sense, although the controls exercised by the Secção de Recursos Logísticos e Financeiros show a satisfactory level, the empirical results indicate the redefinition of guidelines and improvement plans to remedy the identified vulnerabilities. Therefore, the complexity of revenue management exposes the need for measures to increase the effectiveness and efficiency of public resource management.

Therefore, it is essential to establish responses and control measures based on the inherent risks identified. It is essential to note that each control measure has a distinct consequence on each risk.

The following table shows the resulting result in residual risk.

In this context, practice shows that no control procedure has the ability to eliminate military-citizen collusion or human error.

Indeed, the structural model adopted does not include risk assessment in audit planning, highlighting the imminent need for precision and definition of risks. Accordingly, the control procedures adopted at the operational level alongside the Divisão de Controlo Interno need to be adjusted due to their length and lack of regularity. Thus, the situation presented assumes an

Table 4: Control Measures

| Risk                                     | Response | Treatment priority                  | Control measures  | Residual risk |
|--|----------|-------------------------------------|---|---------------|
| Resource security                        | Avoid    | Immediate                           | Elimination of cash and check payments  | ↓ P and I     |
| Segregation of duties                    | Reduce   | Immediate                           | Function turnover   | ↓ I           |
| Treasury management                      | Avoid    | Immediate                           | Elimination of cash and check payments  | ↓ P and I     |
| Information integration                  | Avoid    | Immediate                           | Using a single computer system for recipe processing                                | ↓ P           |
| Resource management                      | Avoid    | Immediate                           | Electronic invoicing  | ↓ P           |
| Ineffectiveness of operations            | Avoid    | Immediate                           | Interoperability between computer systems   | ↓ P           |
| Inconsistency of information             | Avoid    | Immediate                           | Elimination of cash and check payments  | ↓ P and I     |
| Information technology                   | Accept   | Immediate                           | Internal directives emanating from the procedures to be adopted                     | ↓ I           |
| Information security                     | Avoid    | Immediate                           | ATM referral payments   | ↓ I           |
| Asset management                         | Avoid    | Immediate                           | Elimination of cash and check payments  | ↓ P and I     |
| Information management                   | Avoid    | Very short term<br>(up to 2 months) | Using a central platform in Administração Pública                                   | ↓ P           |
| Failure to comply with legal obligations | Reduce   | Short term<br>(up to 4 months)      | Inspection actions in conjunction with issuing directives (grouping of legislation) | ↓ P           |
| Application of legal regulations         | Reduce   | Short term<br>(up to 4 months)      | Inspection actions in conjunction with issuing directives (grouping of legislation) | ↓ P           |
| Information processing                   | Reduce   | Short term<br>(up to 4 months)      | Specific training   | ↓ P           |
| Accountability                           | Avoid    | Short term<br>(up to 4 months)      | Using a central platform in Administração Pública                                   | ↓ P           |

essential position in the reformulation of the administrative processes currently adopted.

Given the fact that the Guarda Nacional Republicana has a highly decentralized structure with high geographical dispersion, it is logical to note that the standardization and centralization of procedures associated with revenue management are imperative obligations.

In sum, the results presented are based on a process of restructuring internal control activities, as there is a lack of a structured and principled methodology. In this sense, having as its primary objective the effectiveness and efficiency of the allocation of public resources based on a process of change and continuous improvement, the adoption of COSO models gives a holistic view of all activities, thus contributing to the maximization of organizational performance.

## 6. CONCLUSION

The problem of revenue fragmentation associated with several separate statutes and the need for efficiency in the use of public resources is the core aspect of this research. The incentive to the

development of a risk management system in the financial administration of the Guarda Nacional Republicana, oriented towards the continuous improvement of the management practices built in the optimization of the own revenue cycle, represents the main contribution of this work.

It is important to highlight that the development of this research reflected the lack of an adequate risk assessment methodology in the planning and execution of audits, which, in turn, reveals that the current structural model advocates the redefinition of guidelines and continuous improvement plans. Thus, some weaknesses are proved and, as such, the complexity of the situation presented plays an essential role in the reformulation of the administrative processes currently adopted. The use of a risk management methodology provides preventive and non-reactive control based on the decisive relevance of optimizing the administration of internal resources of the Guarda Nacional Republicana. Thus, it assumes its relevance in better adapting the Institution to the vicissitudes of the internal and external environment, contributing to the alignment of the strategic objectives with the identified risks. Therefore, by analyzing atypical values and then correlating them with their historical performance, it is possible to identify areas where

controls are non-existent or ineffective. It should be noted that, through this strategy, a knowledge base is formed for human resources management, improvement of financial management methods and the promotion of efficiency in the execution of the logistics activity developed by the Guarda Nacional Republicana. This enables the identification of critical factors through the articulation of risk and opportunity analysis and, at the same time, the aspects that constitute a positive reinforcement of management and performance. Finally, it is a continuous process applied to the achievement of institutional objectives, supported by the promotion of accountability and the efficient allocation of internal resources of the Guarda Nacional Republicana.

This research concluded that the analysis of risks that may hurt the organization based on a systematic and integrated risk management methodology has a significant contribution to an efficient allocation of resources. Thus, by identifying the risks based on an overall view of the process studied through the application of the questionnaire survey, it is possible to verify a set of significant impacts on the management of material and financial resources. Also, it is found that the controls tested on the same tool are not effective in mitigating risks as the road accident clearance process is eminently operational. Indeed, the control mechanisms identified through the interviews carried out are within the financial component inherent in the process. It is therefore apparent from the case study that while controls reduce the likelihood and impact of risks, they do not safeguard the events that are at their origin. Their interconnection is proven, and for this reason, an integrated analysis of all listed events is urgent. In this way, their examination and correlation enable risk to be prioritized to emphasize key weaknesses and opportunities. Otherwise, they promote the accountability of all involved, the assessment of current practices and planning against the uncertainties associated with institutional objectives.

In this way, risk management enhances the safeguarding of assets and the institutional image combined with the sustainability of its mission. Consequently, planning and prioritization are carried out through a holistic and structured interpretation of all processes and activities, the volatility of outcomes and opportunities and threats. Therefore, risk management encompasses all advantages insofar as it reduces the weaknesses and limitations in the allocation and use of available resources.

Finally, risk management plays a major role in continually improving the decision-making process and is, therefore, a support tool for it. Given the decisive confrontations with a situation with multiple risks of varying magnitude and incidence, they must be considered cost-effective based on the objectivity of this method. In this sense, it allows balancing needs with available resources in constant alignment with the established objectives. That said, it is possible to establish confidence margins concerning the expected results. Therefore, it is essential to keep in mind the perception of the indestructible association of the degree of uncertainty with the decision-making process. Thus, regardless of the structure and size of the organization, the development of its activity requires a risk management system.

Finally, it is essential to emphasize the need for standardization of measures because of a built-up structure to support the decision-making process, which in turn constitutes the support of an appropriate methodology. Through the conclusions obtained, the objective is to contribute to the proficient overcoming of the challenges facing the fulfillment of the mission.

## 7. CHALLENGES FOR FUTURE RESEARCHES

The recommendations elaborated are oriented to the development of future investigations aiming to apply the methodology studied in other Guarda Nacional Republicana Units, since the case study was limited to the Comando Territorial de Lisboa, to verify and compare results. In this context, it is suggested that this research be replicated in other processes and, consequently, activity control and risk monitoring to corroborate or refute the effectiveness of the controls implemented.

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