

Causes of institutional efficiency in tax collection in rural municipalities in Ecuador. Application of the theory of resources and institutional capacities

Causas de la eficiencia institucional en la recaudación tributaria en los municipios rurales en Ecuador. Aplicación de la teoría de recursos y capacidades institucionales

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Resumen

El objetivo fue determinar cuáles son los procedimientos administrativos que influyen significativamente en la eficiencia de la recaudación tributaria municipal. Consideró el método inductivo y explicativo; aplicó 381 cuestionarios a contribuyentes del municipio de Guano, Provincia Chimborazo. Consideró para el análisis la teoría de recursos y capacidades. Los resultados muestran que la recaudación tributaria depende de las capacidades administrativas y de la competitividad institucional. El motivo, procedimientos administrativos y sanciones son causas de ineficiencia en la recaudación tributaria.

Palabras clave: tributación, capacidades, competitividad, municipios rurales

Abstract

The objective was to determine which are the administrative procedures that significantly influence the efficiency of municipal tax collection. He considered the inductive and explanatory method; applied 381 questionnaires to taxpayers from the municipality of Guano, Chimborazo Province. He considered the theory of resources and capabilities for analysis. The results show that tax collection depends on administrative capacities and institutional competitiveness. The reason, administrative procedures and penalties are causes of inefficiency in tax collection.

Key words: taxation, skills, competitiveness, rural municipalities

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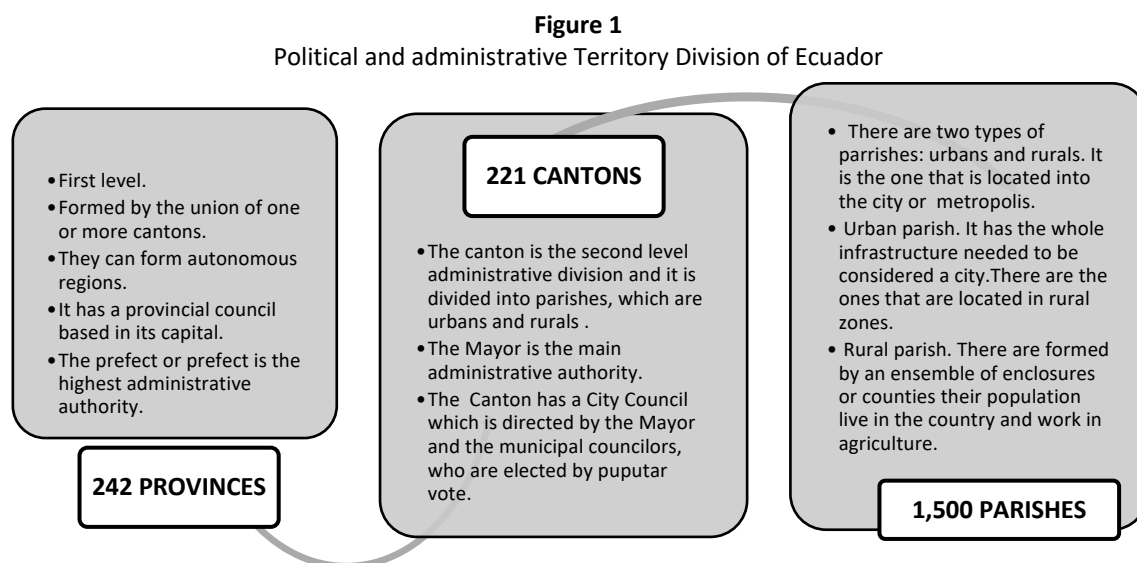
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1. Introducción

Latin American countries have been organized through political-administrative division at the territorial level.. In Ecuador, the article number 242 of the new Constitution determine as follow:

The State is organized territorially in regions, provinces, cantons and rural parishes. Special environmental regimes may be established for environmental, ethnic-cultural or population conservation reasons. The autonomous metropolitan districts, the divided in territory for regions, provinces, cantons and rural parishes. Special environmental regimes may be established for environmental, ethnic-cultural or population conservation reasons. The autonomous metropolitan districts, the province of Galapagos and the indigenous and pluricultural territorial constituencies will be special regimes (Ecuadorian Political Constitution, 2008).

Therefore, Ecuador has 21 provinces, 221 cantons and 1500 parishes, as show in figure 1.



Source: Own elaboration based on Ecuadorian Political Constitution (2008).

In this way, Municipalities are part of the cantons; therefore, the city council have to fulfill several duties and responsibilities ordered by the Ecuadorian Political Constitution (2008), as mentioned in its article number 264.

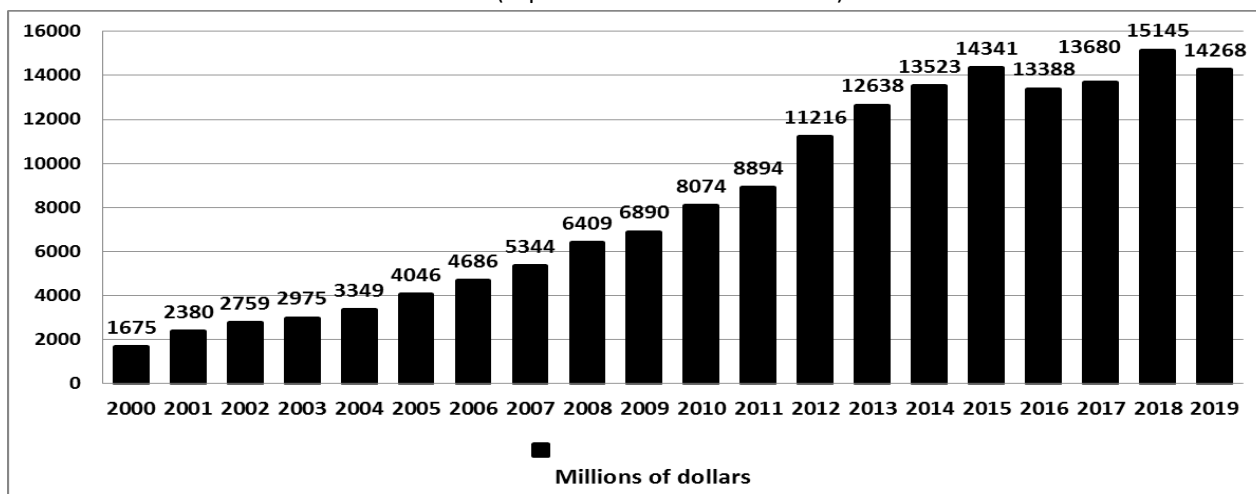
1. Plan the cantonal development and formulate the corresponding land planning plans, in a manner articulated with national, regional, provincial and parish planning, in order to regulate the use and occupation of urban and rural land;
2. Exercise control over the use and occupation of the land in the canton;
3. Plan, build and maintain urban roads;
4. Provide public services for drinking water, sewage, wastewater treatment, hazardous waste management, environmental sanitation activities and those established by law;
5. Create, modify or delete through ordinances, fees and special contributions for improvements;
6. Plan, regulate and control traffic and public transport within its cantonal territory;
7. Plan, build and maintain physical infrastructure and health and education equipment, as well as public spaces for social, cultural and sports development, in accordance with the law;
8. Preserve, maintain and disseminate the architectural, cultural and natural heritage of the canton and build public spaces for these purposes;
9. Form and manage urban and rural real estate cadastres;
10. Define, regulate, authorize and control the use of sea beaches, riverbanks and river beds, lakes and lagoons, without prejudice to the limitations established by law;
11. Preserve and detect the effective access of people to the use of sea beaches, riverbanks, lakes and lagoons;
12. Regulate, authorize and control the exploitation of arid and stone materials, which are found in riverbeds, lakes, sea beaches and quarries;

13. Management of prevention, protection, relief and firefighting services; 14. Manage international cooperation for the fulfillment of its powers. In the field of their powers and territory, and in the use of their powers, they will issue cantonal ordinances (Ecuadorian Political Constitution, 2008).

In addition, of these functions the Organic Code of Territorial Organization with Official Registration Supplement number 3030 of October 19, 2010 (in force) in the article number. 185 empowers "municipal governments and autonomous metropolitan districts, in addition to their own income they may generate, will be beneficiaries of the taxes established by law"; the article number 186 indicates that, "Municipal governments and autonomous metropolitan districts might create, modify or exempt tariffs and fees and general or specific special improvements contributions by a Municipality order in order to stablish or enlarge public services due to the fact that it is their responsibility, the use of public goods or spaces and by reason of the works they carry out within the scope of their competences and jurisdiction, as well as the regulation for the collection of capital gains". On the other hand, the article number 187 define that "own income of the decentralized rural parish autonomous government those that come from the administration of community infrastructure and the parochial public space. Similarly, rural parish governments may count on income from the delegation that in their favor make other levels of decentralized autonomous government and those that come from international cooperation, legacies, donations, and self-management activities". And the article number 492 mentions, "municipalities and metropolitan districts will regulate through ordinances the collection of their taxes".

The Taxing Code issued into the official Register number 38 of June 14, 2005 modify on August 21st, 2018, through the article number 8, define which it is mentioned in the article number 186 from The Territorial Organization Organic Code within official Register (2010) and considers the article number 9. "The tax management corresponds to the organism that the law establishes and includes the functions of determination and collection of the taxes, as well as the resolution of the claims and absolution of the tax consultations". In this way, in Ecuador taxes are collected from the administration of the Internal Revenue Service, such as Special Consumption Tax, Income Tax, Value Added Tax, Currency Exit Tax, Foreign Assets Tax, Tax on motor vehicles; and the municipalities: urban and rural property taxes, Patent Tax, Tax 1.5 per thousand on total assets; Income tax; Public entertainment tax; Game tax without bets, electronic and/or permanent and occasional mechanics games. Data from the Internal Revenue Service of Ecuador show that in 2018 it reached the tax collection of 15,145 million dollars and in 2019 of 14,268 million dollars, the growth rate between 2017 and 2018 being 10.7% and a reduction between 2019 and 2018 by 5.79%. As showed in graphic 1.

Graphic 1
Evolution of the gross tax collection (2000-2018)
(Expressed in millions of dollars)



Source: Internal Revenue Service (2019)

This local municipal tax collection behavior in 2019 shows a reduction. The Organic Code of Territorial Organization, COOTAD, Official Registry supplement number 303 of October 19, 2010, in its last modification of January 16, 2015, in its Article 171 and 172 stipulates that the municipal government's own income comes from taxes, fees and special contributions, among others, which means that municipalities can manage their budget not only from transfers from the general state budget, but also from their own management, so from this perspective, municipalities must achieve efficiency and the effectiveness of its economic resources. In this case, there are few studies carried out on municipal efficiency in Ecuador; however, research can be found in Latin American countries related to municipal management efficiencies (González, 2012), (Becerra, 2017) (Alvarez, 2012); efficiency of expenditure (Herrera & Francke, 2014); application of the non-parametric model in municipal efficiency (Del Pozo, Vargas, & Paucarmayta, 2017); estimation with the parametric model of efficiency (Pacheco, Sánchez & Villena, 2013); fiscal capacity (Oyervide, 2012). The same applies to investigations related to municipal tax efficiency; with the exception of those related to: measurement of efficiency in the administration of taxes (Esteller, 2001), (Ramírez & Carrillo, 2017); tax management (Villar, 2012); tax policy (García & Valderrama, 2006); fiscal situation (United Nations, 2018).

The previous studies show the importance of know urban and rural municipalities' efficiency levels related to tax collection in order to support planning and execution of municipalities expenses as well as invests to improve local development, the same as reflected in the annual budget plan. From this perspective, *the investigation begins with a question: On what factors does economic efficiency depend on the tax collection of municipalities?* The theory shows different ways of determining efficiency, such as those mentioned by Herrera & Francke (2014), with the understanding that from the tax point of view:

The efficiency comprises of the partial closure or the set of tax gaps through control actions and strategies to increase the taxpayer risk perception and at the same time improve their behavior. ...In order to measure Tax administration it is necessary to distinguish three factors that influence into tax collection: economic activity, tax policy, tax obligation compliance (Ramírez & Carrillo, 2017, p. 3)

One of the important aspects considered of these three factors, is related to the fulfillment of tax obligations as mentioned by Ramírez & Carrillo (2017, p. 3), since it depends on the type of tax to be collected, on the tax gap that it exists, of the tax risk and of the segment of taxpayers that the municipality has. In this regard, the investigation considers the third factor since efficiency depends on compliance with tax obligations. Different authors, such as Allingham and Sandmo (1972), Andreoni, Erard and Feinstein (1998), Myles (2000), Slemrod and Yitzhaki (2002), Sandmo (2005) and Torgler (2007) conduct studies related to compliance with tax obligations, where they identify different factors that in turn explain, such as:

Risk aversion, the perception of tax control, the institutional strength of the tax administration, the administrative costs for the tax declaration, the interaction between the taxpayer and the tax administration, the complexity of the tax legislation, the tax justice, the tax morale and social dynamics (Ramírez & Carrillo, 2017, p. 4)

In the same way, Sancak, Xing, & Velloso, (2010, p. 4) mention, "Tax efficiency is positive related with solid institutional bases of income administration and it is negative correlated with general tax burden into de economy"; municipality tax collection efficiency is related with management procedures utilized. Besides it is mentioned that:

The achievement of the results of the institutions is not achieved through laws, or regulations, but they are achieved by changing the behavior of each of the actors involved in the management of public resources. ... Where the behavior of the actors and the decisions that are implemented are strongly influenced by the processes that regulate them (Marcel, Gúzman, & Sanginés, 2014, p. 8)

Therefore, the fiscal management of the municipalities is operationalized through tax collection, and this is the result of the effort to modernize the administrative collection processes implemented. Considering this background, the investigation aimed to determine what the administrative procedures are administrative procedures significantly influence the efficiency of municipal collection in order to allocate resources for local development expenditures through budget planning in rural territories. Hypotheses (H) is raised, such as: H1: the efficiency in tax collection depends on the institutional capacities of the tax administration in municipalities in rural territories. H2: Institutional competitiveness depends on the tax performance, based on the motives and penalties addressed to the taxpayer; H3: factors such as the reason, administrative procedures and penalties are the causes of inefficiency in tax collection.

the research aims to determine whether administrative procedures significantly influence the efficiency of municipal collection in order to allocate resources for local development expenditures through budget planning in rural territories, in order to prove that, H1: the efficiency in tax collection depends on the institutional capacities of the tax administration in municipalities in rural territories. H2: Institutional competitiveness depends on the tax performance, based on the motives and penalties addressed to the taxpayer; H3: factors such as the reason, administrative procedures and penalties are the causes of inefficiency in tax collection.

2. Methodology

The research uses the inductive method in order to infer the conclusions, has a level of descriptive - explanatory research; A total of 8,365 taxpayers from the municipality of Guano, located in the Chimborazo Province of the Republic of Ecuador, were considered to be the study population in 2019. A taxpayer is "the natural or legal person to whom the law imposes the tax benefit for the verification of the operative event. Those who, according to the law, have to bear the tax burden, even if they carry out their transfer into other persons, shall never lose their status as taxpayers" (Tax Code (2005) Art. 25). Likewise, they are classified as: taxpayers of the General Regime (RUC), Simplified Tax Regime (RISE), Special (RE) and other; however, the collections made by rural municipalities are framed in the: urban property tax; rural property tax, tax on municipal patents and the tax on firefighters, mainly and collections for different other concepts such as special rates and contributions.

Probabilistic sampling was used; 381 taxpayers were determined as the sample size. The collection of information was random and the systematic method was used, which consisted of considering those taxpayers who entered the municipal offices to make payments to the collection window every three people for a week. The instrument for collecting information was the questionnaire, submitted to a pilot test; The questions that were posed are characterized as: gender, age, occupation, canton, organization to which you belong, level of education, monthly income; and Likert scale questions associated with the variables: tax payment, reason, penalties, administrative and accounting procedures, satisfaction levels, perception, each with scales of 1 Strongly disagree, 2 disagree, 3 undecided, 4 agree of, 5 strongly disagree. The questions respond to the variables of the theory of resources and business capacities (TRC) and their relationship with the efficiency of tax collection. The results of the application of the questionnaire, according to the Cronbach's alpha index is 0.931 and a Cronbach's alpha based on standardized elements of 0.924, which means that the data collected has a degree of reliability of 93.1%. The data is analyzed through the linear regression and factorization model.

2.1. Application of the theory of resources and capacities to measure the efficiency of tax collection

Following what was stated by Sancak, Xing, & Velloso (2010, p. 4) on the determinants of inefficiency, it is mentioned that it is a consequence of the application of institutional bases; which means that the investigation considers elements related to management, since according to Vega (2016). "the tax system must not only conceive the tax system taking into account not only the body of normative data (mainly constituted by tax

legislation) , but also the economic dimension, the institutional context, notably the administrative one and the psychosocial aspects ". From this perspective, municipalities are considered organizations that have the function of informing; that is, to inform the taxpayers about the taxes they must pay, the fees, fees according to the current tax regulations, in addition to the control and control of higher entities. Unlike the companies that fulfill the functions of "paying and informing. The first action represented by a defined economic payment to its fiscal regime and economic activity contemplated in the fiscal norm, and the second action relative to make known to the determined fiscal authorities Information that interests you for your inspection and control. This is how the tax environment is perceived for companies"(Vega, 2016, p. 9).

One of the theories that considers the institutional functions of a municipality is the theory of resources and capabilities (TRC), "suggests that the extraordinary benefits of companies are the income generated by especially valuable resources, which become the source of competitive advantage ... "(Fong, 2011, p. 27), as presented in figure 2. And besides that" business success is associated with obtaining extraordinary benefits, and usually expresses the efficiency of the company in terms of the maximization of benefits, associated with the provision of competitive advantage "(Fong, Carlos; Flores, Karina; Cardoza, Luz, 2017), as also shown by Suárez & Ibarra (2002, pp. 66-67).

From this perspective, municipal governments are also responsible for achieving a competitive advantage in tax collection, since improving their management capabilities can make them more efficient than their rivals, identify the resources required for each capacity they have, as well as the complexity of that capacity (Ayaviri and Alarcón, 2008; Fong, 2011; Ayaviri and Quispe, 2011). In other words, institutional revenues can be the result of a "set of resources, and their growth due to the ability to generate, from these resources, services. ... and, resources and capacities are the main source of profitability of company "(Suárez & Ibarra, 2002, p. 68), in this way resources and capacities are the source of income in the case of municipalities, since they offer services based on the use of resources ¹, considering that the population It requires efficient services. Thus, in this way, the importance of considering in the present investigation, the theory of resources and capacities (CRT) is explained; because municipalities, as service institutions, not only depend on business success. On competitive performance; which depends on external factors, it is analyzed by the structural theory and posed by Porter (1980). On internal factors, explained by the theory of resources and Capabilities, posed by Wenwefwlt (1984), Barney (1991), which explains, that the company's success is based on: "The characteristics of the resources and capabilities that the company controls, and its ability to generate income; and emphasizes how an efficient combination of its resources and capabilities allows obtaining and maintaining its competitive advantage (Teece, Pisano and Shuen, 1997) "(Fong, Carlos; Flores, Karina; Cardoza, Luz, 2017, p. 415). From this theoretical perspective, research means capabilities that:

The obtaining and usage of enterprise resources boost its efficiency and efficacy (mainly those that are strategic or superior). This efficiency is manifested by three complementary aspects: strategic capabilities allow the company to carry out its functional activities in a better way than its competitors, dynamically adjust to the demands of the environment and encourage the company to obtain strategic resources, cited by (Fong , 2005, p. 96).

Then the fact of considering the institutional capacities of the municipality, allows to generate extraordinary benefits "when they enhance the value and productivity of the resources that the organization possesses.

¹ The reserces or assets "are the available controllable factors by the companies in order to develop a competitive strategy (Cuerco, 1993; Lopez, 1996), and there are classified into financial, human and technological and reputation" (Suárez & Ibarra, 2002, p. 93). "The strategic value of the resources is determined by the degree of contributing the capacities development and central aptitudes and finally, the fulfillment of a competitive advantage". (Cruz & Vega, 2001, p. 3).

Therefore this mechanism of profit generation acts after the company has obtained its resources” (Makadok, 2001) cited in (Fong, 2005, p. 97), in this way to achieve a competitive advantage aimed at tax collection.

3.2. Variables that are considered for the measurement of institutional capacities related to the efficiency of tax management

Identify variables means considering the relationship between institutional capacity and the tax management¹ of rural municipalities, taking into account that the “tax management in practice is transformed into procedures, training in tax matters, search for organizational structures that contribute to reducing tax burdens and others” (Vega, 2015, p. 113). Then, the variables are financial, personal and administrative capacities (managerial capacities) and technological capacities (functional capacities) based on Vega (2015, p. 121) and Fong (2011). As presented in chart 1, since through the identification of the most important internal factors of each of the variables, the efficiency or inefficiency of the municipality and the degree of competitiveness in tax collection in rural settings can be explained.

Chart 1
Variable identification

Variables	Definition	Indicators
Financial capabilities	Examines the relevant financial procedures to generate tax information in the organization.	- Information quality - Accounting procedure
Personal capabilities	Identify the learning capacities of individuals who participate to generate tax information through training courses and tax updates, either internally or externally to improve the degree of understanding of such discipline.	- Satisfaction - Time
Technological capabilities	They involve the routines through which the personnel in charge of tax management combine their skills and knowledge for the management of technology to generate tax information.	- Information verification
Administrative capabilities	Identify the capacity of those responsible for managing tax procedures in the organization aimed at optimizing tax knowledge	- Presentation of the identification, card or previous years' payroll. - Official attention. -Information verification. - Payment process. -Ticket printing.
Tax performance	It implies to assess the fiscal results obtained by the organization because of its tax management.	Sanctions Reasons
Tax system	Recognize the impact of the current tax system of the organization to generate competitiveness according to its environment.	Perception

Source: Own elaboration based on Vega (2015, pp. 121-124); Fong (2005); Vega (2015)

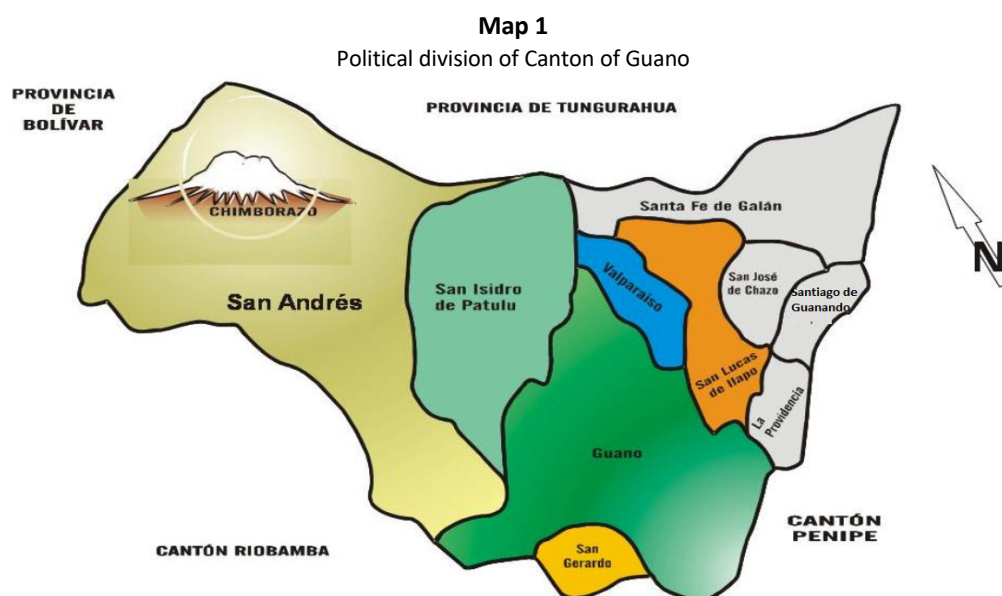
¹ Tax management system in the organization as the set of administrative actions incorporating in an enterprise because of interpreting the correspondent tax phenomenon according to attributes, derived from an interpretive process in order to ensure a tax performance (Vega, 2015, p. 113).

3. Results

3.1. Which are the territory characteristics of rural municipalities, mainly Guano Municipality?

Guano Municipality are part of Canton of Guano, it is located in Chimborazo province, Zone Three. Through the Gran Colombia Decree of June 25, 1824, Guano is considered as Canton of Cimborazo province. On December 17, 1845, Guano achieves category of Canton. Finally, through ordinance into the Official Register number 158 from June 23, 2011(Caiza,2012), the name of Illustrious Municipality of Guano is changed for Decentralized Autonomous Government. Guano has 10 rural parishes: Guanando, Ilapo, La Providencia, San Andrés, San Gerardo de Pacaicaguán, San Isidro de Patulú, San José del Chazo, Santa Fe de Galán, Valparaíso. El Rosario is an urban parish. Guano is the capital of the canton. Its territory is the 7.1% of the whole Chimborazo province, being its size 473.3 km² (INEC,2020), as showed in map 1.

It has a population according to the last census of the National Statistics Institute of 2010 around 42.9 thousand inhabitants, which represents 9.3% in relation to the population of the province of Chimborazo. The 18.1% corresponds to the urban population and 81.9% rural, of which 52.2% are women and 47.8% are men. The economically active population constitute 53.3%, where the activity carried out by the population by 45.5%, it is agriculture, livestock, forestry and fishing, followed by 15.7% by the manufacturing industry, 9.9% wholesale and retail trade and 9% construction. In addition, Unsatisfied Basic Needs (INEC, 2020) consider the 81% of the population poor.



Source: Source: Development and Territorial Planning Plan, 2009 - 2014 (2009)

3.2. What regulatory framework does regulate the municipality's fiscal collections?

The Decentralized Autonomous Governments (GADs) from the normative point have the right to have financial resources such as their own income, transfers from the general state budget, other types of transfers, legacies and donations, participation in the income from the exploitation or industrialization of non-renewable natural resources and resources from financing, mentioned in Article 171 of COOTAD (2010). Likewise, Article 173 mentions that "autonomous parish decentralized rural governments would benefit from their own income and delegated income from the other levels of governments". That is, the budgetary income for its operation is

stipulated in 1) Codes such as: the Organic Code of Territorial Organization (COOTAD)(2010) and the Tax Code; 2) General ordinances; 3) General resolutions; 5) Specific ordinances. Thus, Article 223 of COOTAD (2010), mentions that “budgetary income will be divided into the following titles: Title I. Tax revenue, Title II. Non-tax income and Title III. Borrowing. “Where, tax revenues come from: taxes, fees and special contributions. Non-tax revenues come from property income, such as income from the property domain (land and buildings), profits from the commercial domain, profits from the industrial domain, and profits from financial investments and income from the use or lease of real estate assets. Public domain; transfers and contributions, such as fiscal allocations, allocations of autonomous, decentralized entities, transfers from abroad; sale of assets, such as real estate and other assets. The loans can be internal and externa.

Likewise, Article 6 subsections j) requires “autonomous governments to collect or withhold taxes and income in favor of third parties, with the exception of those for which the law imposes such obligation on them. In the cases in which by agreement it must collect them, the autonomous governments will have the right to benefit up to ten percent of the proceeds ”; this in order to budget expenses related to: a) general services; b) social services, c) economic services, and e) unclassifiable services (art.230). In this regard, GAD Guano administers the following taxes presented in Figure 2.

Figure 2
Taxes, fees and contributions of GAD Guano

TAXES	FEES	CONTRIBUTIONS
<ul style="list-style-type: none"> •Urban property taxes •Rural property taxes •Alcabala taxes •Vehicle taxes •Patent taxes •Income tax on the transfer of urban property and capital gains •Gambling tax •Tax of 1,5 per thousand on total assets 	<ul style="list-style-type: none"> •Approval of plans and construction inspection. •Drinking water. •Public cleaning and garbage collection •Habilitation and control of commercial and industrial establishments. •Administrative services. Sewage and canalization system 	<ul style="list-style-type: none"> • Opening, paving, widening and construction of all kinds of roads. • Urban repaving ; Sidewalks and fences. •Sewage construction work. • Work construction and widening , and drinking water systems.

Source: Own elaboration based on municipality data from Guano and COATAD (2010)

3.3. Who are the municipal taxpayers in rural sectors?

In rural or urban areas, according to the countries and current regulations stipulates who the taxpayers are. In Ecuador, the Tax Code promulgated according to Official Registry 38 of June 14, 2005 amended on August 21, 2018, in its Article 25 the “Taxpayer is the natural or legal person to whom the law imposes the tax benefit by verification of the generating fact. You will never lose your taxpayer status who, according to the law, must bear the tax burden, even if you transfer it to other people”.

3.4. Which is the municipal efficiency rate in tax collection in GAD Guano?

According to data from the Internal Revenue Service (2019), they show that the level of collection considering the year 2016 as a base, for the year 2019 it suffered a reduction of 8.78 to 1.57%, as shown in the table 1. It is generally expected to increase collection, however, in the year 2019 for different reasons a reduction is observed.

Table 1
Gross Tax collection evolution in GAD
Guano (2014 a 2018) (Millions of dollars)

Year	2014	2015	2016	2017	2018	2019
January	144,343	114,379	191,554	245,861	269,052	289,332
February	96,978	84,516	137,609	110,072	211,766	166,354
March	107,653	184,318	203,827	170,149	234,480	208,593
April	139,145	103,173	165,002	187,593	248,719	293,446
May	113,344	125,370	153,608	252.983	213,346	223,832
June	106,743	94,616	189,058	182.190	148,458	218,208
July	109,876	203,496	235,672	180.074	168,346	213,179
August	104,196	113,529	171,661	178.750	187,014	219,207
September	110,063	215,538	203,358	228.044	257,206	204,775
October	114,990	117,565	136,312	168.056	165,335	252,588
November	95,593	236,425	127,963	137.774	151,351	197,870
December	148,321	194,124	147,245	149.255	216,520	252,608
Total	1,391,247	1,787,050	2,062,869	2.190.801	2,471,593	2,739,992
%		77.85	86.63	94.16	88.64	90.20
% Growth			8.78	7.53	-5.52	1.57

Source: Internal Revenue Service (2019)

At the municipal level, land and patent tax data show that collection is highly variable, demonstrating the inefficiency of collection, as shown in table 2.

Table 2
Gross Tax collection evolution in GAD Guano (2014 a 2018)
(Millions of dollars)

Year	2014	2015	2016	2017	2018	2019
January		260.25		10.00	202.03	
February	40.80	14.16			90.00	
March	61.74	64.29		92.50	5,087.87	2,956.48
April					4,689.61	3,270.60
May					210.00	
June	1,326.51				370.00	
July					510.00	
August			2,040.00		872.50	
September		10.00			30.00	1,455.00
October		28.38			1825	
November					60	7,682.08
December		1,226.79	2,136.00	2,158.65	30	
Total	1,429.05	1,603.87	4,176.05	2,261.15	13,977.01	15,364.16
% efficiency		89.10	38.41	184.69	16.18	90.97
Growth			-50.69	146.28	-168.51	74.79

Source: Internal Revenue Service (2019)

3.4. Which are the determinant factors in tax inefficiency?

3.4.1. Taxpayers Characterization

The results of the investigation show that the taxpayers who go to the Municipality of Guano to pay their taxes have the following characteristics: 55.1% are male and 44.9% are female; 33.1% are 25-35 years old, 36.6% are 64-45 years old; and from 46 to 55 years 2.4%; 31% work as merchants, 20.7% are housewives, 13.6% bricklayer,

10.2% shoemaker, 10.5% baker, 7.1% public employee, 6.8% farmer; 65.4% have a primary education level, 27.6% secondary education, and 7.1% a university level. In addition, 82.7% have their own business, 10.2% work in a private entity and 7.1% in a public entity. The level of income reaches from 0 to 400 USD of 82.7%; from 401 to 800 USD of 13.6% and from 801 to 1200 USD of 3.7 %.

3.4.2. Tax types paid in GAD Municipality of Guano

Table 3 shows that the taxes paid in the municipality are: the urban property tax 93.2%; rural property tax 86.1%; municipal patent tax 55.1% and firefighter tax 93.2%.

Table 3
Types of municipal taxes

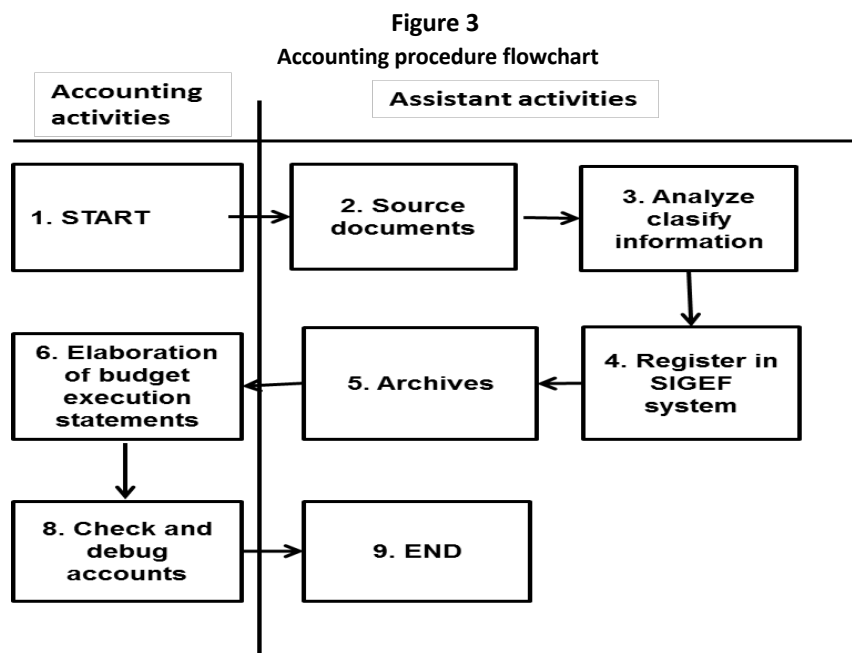
Tipo de impuesto	No	Yes	Total
Urban property tax collection	26.0	355.0	381.0
Percentage	6.8%	93.2%	100.0%
Rural property tax collection	53.0	328.0	381.0
Percentage	13.9%	86.1%	100.0%
Firefigthers tax collection	171.0	210.0	381.0
Percentage	44.9%	55.1%	100.0%
Payment of the patent tax	171.0	210.0	381.0
Percentage	44.9%	55.1%	100.0%

Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

3.4.2. Financial capabilities

The results show that 65.9% of taxpayers have knowledge about the taxes that must be paid and 34.1% do not know; their taxes pay 48.3% and 51.7% do not. However, in order to know if the payment of taxes depends on the quality of the information received by the taxpayer, the results of the linear regression application show that there is a proportion of 40.7% ($R = 0.407$) and explains 16.6% ($R^2 = 0.166$); In addition, that the payment of taxes depends on the quality of the information based on the degree of knowledge in 65.9% (know the taxes that must be paid in the GADM of the Guano Canton). This shows that the development of financial capacities is important for tax collection and that it can contribute to municipal efficiency.

Likewise, it is identified that the accounting procedures used for tax collection are based on activities developed by: 1) Accounting assistant, such as: preparation of source documents, analyze and classify information, register in the SIGEF systems, and file; 2) Accountant: review and debug the accounts, prepare the budget execution statement and financial statements, as presented in figure 3. What it means is that the municipalities in rural environments are adequately executing the accounting procedures according to the regulations that regulate its operation. In addition, the quality of information and tax procedures significantly influences tax collection. Checking that there is information to both the municipality and taxpayer at the right time and timely to comply with the payment of local taxes.



Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

3.4.3. Personal capabilities

The results of the investigation show that the personal capacities of the officials are reflected in the degree of satisfaction that the taxpayer receives when making the payments of the taxes in the municipality, since the training that each staff has is reflected in the tasks that they develop in each process that concerns tax collection. The results of the line regression in MODEL 1 shows that the payment of taxes depends on the factors, such as: 1) Presentation of the card, 2) Presentation of letters, return of previous years, 3) Attention of official, 4) Verification of your information, 5) Payment process, 6) Print your voucher, 7) Cancellation of your tax, in 11.3% ($R^2 = 0.113$), $P = 0.000$ and a relationship between the variables of 33.7% ($R = 0.337$). However, the analysis shows that not all factors contribute to the overall explanation, but customer service, the payment process and the printing of the receipt do not contribute significantly. In such a case, removing these variables from the analysis, in the MODEL 2: 1) Presentation of the card, 2) Presentation of letters, return of previous years, 3) Verification of your information, 4) Cancellation of your tax; the results of the determination coefficient show that these factors explain the payment of taxes in a 9.9% ($R^2 = 0.099$), p value = 0.000 and a correlation of 31.4% ($R = 0.314$). What it means is that the officials adequately perform their tasks related to the presentation of the card, presentation of letters, verification of the information and the cancellation of the tax, these being the personal capabilities that contribute significantly to achieve efficiency in the tax collection. (see table 4).

Table 4
Personal capabilities Factors - Model^b summary

Model Independent Variable: Municipal tax collection	R	R square	R square adjusted	Standard error of estimates	Durbin-Watson	Anova Sig.
MODEL 1:	0.337 ^a	0.113	0.097	0.476	2.430	0.000
ID Presentation	0.159 ^a	0.025	0.023	0.495	2.179	0.002
Payroll Presentation, Previous years payrolls	0.205 ^a	0.042	0.039	0.490	2.398	0.000
Worker attention	0.078 ^a	0.006	0.003	0.500	2.133	0.129
Information verification	0.151 ^a	0.023	0.020	0.495	2.360	0.003
Payment process	0.006 ^a	0.000	-0.003	0.501	2.213	0.903
Voucher printing	0.066 ^a	0.004	0.002	0.500	2.154	0.193
Tax payment	0.144 ^a	0.021	0.018	0.496	2.156	0.005
MODEL 2	0.314 ^a	0.099	0.089	0.478	2.292	0.000

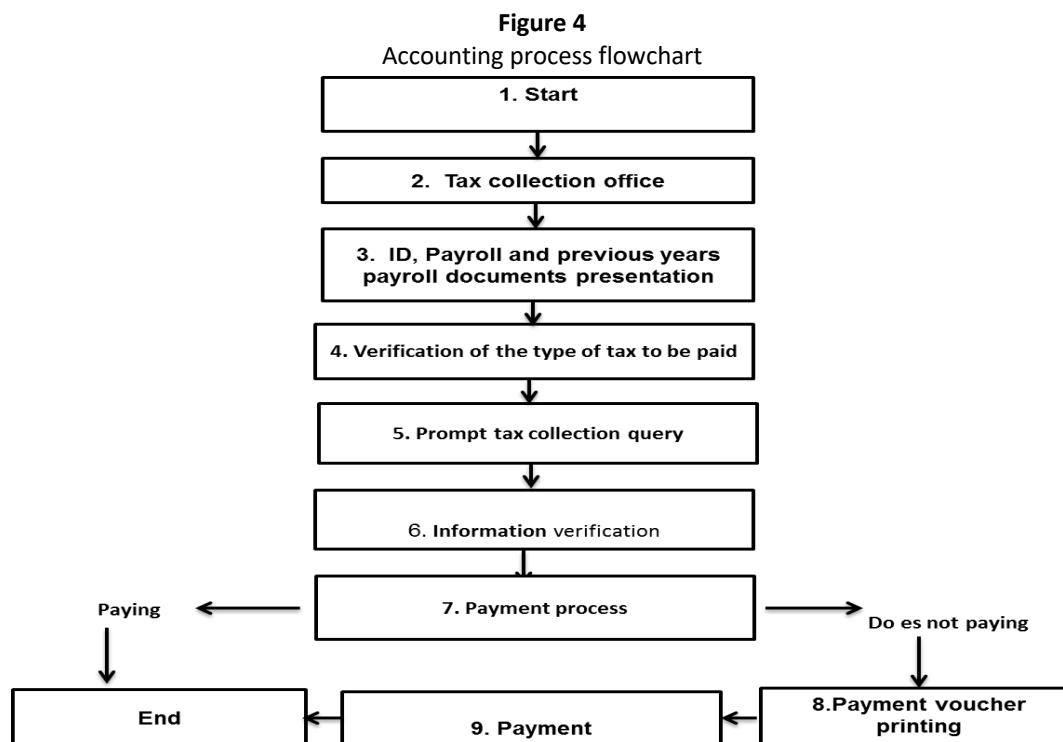
Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

3.4.4. Technological Capabilities

According to the results of the investigation, the institution verifies the information of the taxpayers in 48%, which means that this activity should be deepened; however, there are the technological systems with which tax collection is executed.

3.4.5. Administrative Capabilities

The administrative capacities are found in each of the administrative procedures with which it is implemented in the municipality in order to collect taxes. The results of the investigation indicated that the administrative procedures contemplate different activities reflected in the flowchart of Figure 4.



Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

However, it is not only enough to identify the procedures from the observation, but according to the theory of resources and capabilities, it identifies they must be measured based on the perception of the taxpayer in order to determine how they influence the payment of taxes and therefore the efficiency of collection. In this way, the linear regression is applied, the results presented that the factors (MODEL 1), such as: 1) Presentation of the card, 2) Presentation of letters, return of previous years, 3) Attention of official, 4) Verification of your information, 5) Payment process, 6) Print your voucher, 7) Cancellation of your tax, explained in 22% ($R^2 = 0.22$), p -value = 0.00 and correlation of 46.9 % ($R = 0.469$) the cancellation of taxes by taxpayers. Removing the non-significant factors, the results of MODEL 2 are: MODEL 2: (1) Presentation of letters, return from previous years, 2) Attention of official, 3) Verification of your information, 4) Printing of your receipt), explains in a 16.6% ($R^2 = 0.166$), p -value = 0.000 and correlation of 40.7% ($R = 0.407$).

Therefore, administrative procedures that influence the efficiency of the tax contribution depend fundamentally on procedures such as: the presentation of documents, the attention of the official, the verification of the information of the type of tax to be paid, and the impression of the receipt, each of them with their contributions in the total explanation, as presented in table 5. This shows that administrative capacities are important to achieve efficiency in the tax contribution since developing in a way adequate procedures become competitive factors of the municipality in the collection of taxes

Table 5
Administrative capabilities Factors - Model^b summary

Model	R	R square	R square adjusted	Standard Error of estimation	Durbin-Watson	Anova Sig.
MODEL 1:	0.469 ^a	0.220	0.206	0.446	2.193	0.000
ID Presentation	0.020 ^a	0.000	-0.002	0.501	2.213	0.693
Payroll Presentation, Previous years payrolls	0.219 ^a	0.048	0.046	0.489	2.254	0.000
Worker attention	0.153 ^a	0.023	0.021	0.495	2.299	0.003
Information verification	0.176 ^a	0.031	0.028	0.493	2.299	0.001
Payment process	0.007 ^a	0.000	-0.003	0.501	2.216	0.885
Voucher printing	0.160 ^a	0.025	0.023	0.495	2.174	0.002
Tax payment	0.024 ^a	0.001	-0.002	0.501	2.229	0.642
MODEL 2:	0.407 ^a	0.166	0.157	0.460	2.215	0.000

Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

In this way, it is demonstrated that H1 the efficiency in tax collection depends on the institutional capacities of the tax administration in municipalities in rural territories, mainly on the capacities related to administrative processes.

3.4.6. Competitiveness Factors- Tax performance

Competitiveness factors related to the efficiency of tax collection are also determined. It is measured through tax performance, it depends on factors, such as: 1) Reasons or motives and 2) the penalties, which influence the payment of municipal taxes. The results of the investigation, after applying the linear regression, it can be identified that the factors of MODEL 1 AND MODEL 2, show that the payment of taxes depends on the taxpayer not being sick or being neglected by 6.2% ($R^2 = 0.062$). Likewise, it depends on the sanctions that are introduced, mainly that which is related to the taxes of the rural property, patents and firefighters by 15.7%, as presented in Table 6. Proving that H2 the reasons and the sanctions are factors which determine the institutional competitiveness of the municipality by 23.9%

Table 6
Tax performance Factors - Model^b summary

Dependent variable: Tax payment	R	R square	R square adjusted	Standard Error of estimation	Durbin-Watson	Anova Sig.
MODEL 1: 1)Accident, 2)lack of money, 3) Neglect, 4) Sanctions, 5) Lack of communication, 6) Illnesses, 7)Death	0.381 ^a	0.145	0.132	0.466	2.401	0,000
Lack of communication	0.088 ^a	0.008	0.005	0.499	2.223	0.087
Neglect	0.198 ^a	0.039	0.037	0.491	2.178	0.000
lack of money	0.086 ^a	0.007	0.005	0.499	2.231	0.095
Sanctions	0.026 ^a	0.001	-0.002	0.501	2.214	0.609
Illnesses	0.066 ^a	0.004	0.002	0.500	2.217	0.200
Death	0.081 ^a	0.007	0.004	0.499	2.234	0.113
Accident	0.081 ^a	0.007	0.004	0.499	2.234	0.113
MODEL 2: 1) Neglect, 2) Illnesses	0.249 ^a	0.062	0.057	0.486	2.163	0.000
Model^b Summary						
MODEL	R	R square	R square adjusted	Standard Error of estimation	Durbin-Watson	Anova Sig.
MODEL 1: Urban property sanctions, rural property sanctions, patents sanctions, firefighters sanctions	0.420 ^a	0.177	0.168	0.456	2.258	0.0
Urban property sanctions	0.093 ^a	0.009	0.006	0.499	2.191	71.0
rural property sanctions	0.194 ^a	0.038	0.035	0.491	2.115	0.0
Patent sanctions	0.221 ^a	0.049	0.046	0.489	2.145	0.0
firefighters sanctions	0.322 ^a	0.104	0.101	0.474	2.158	0.0
MODEL 2: Rural property sanctions, Patent sanctions, firefighters sanctions	0.396 ^a	0.157	0.150	0.461	2.377	0.0

Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

3.4.7. Determination of the causes of Municipal Tax system efficiency

The application of factor analysis, allows to reduce from a set of factors to the most important. The results show that it is reduced from a total of 28 factors to 5 factors, as presented in table 7; where the first factor corresponds to the reasons, the second factor to the sanctions, the third factor to the administrative procedures, the fourth factor to the levels of satisfaction, and the fifth factor to the perception of investments. Of these factors the most important are: 1) lack of communication (0.961); 2) Rural property tax (0.859); 3) presentation of letters, form of previous years (0.933); 4) Verification of the printing of the receipt (0.859); (5) the investment of public works collection (0.709).

Table 7
Rotated^a Component Matrix

	Component				
	1	2	3	4	5
Reason – Lack of communication	0.961	0.099	0.026	0.172	0.037
Reason - Neglect	0.862	0.035	0.188	0.119	-0.090
Reason - Lack of money	0.880	0.176	-0.045	0.180	-0.123
Reason - Sanctions	0.932	0.107	0.004	0.161	0.115
Reason – Illnesses	0.945	0.052	0.084	0.120	0.204

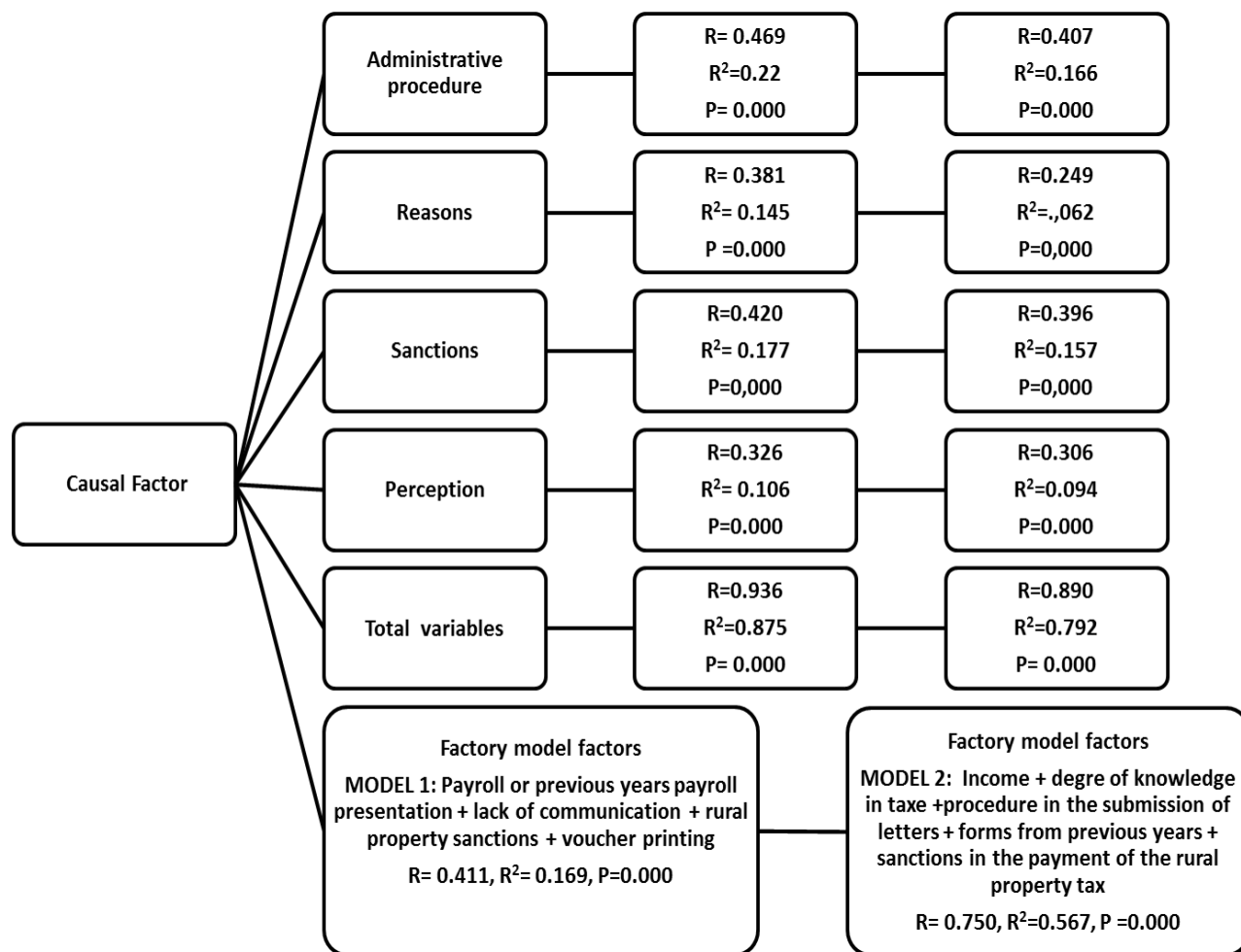
	Component				
	1	2	3	4	5
Reason - Death	0.947	0.042	0.124	0.129	0.123
Reason - Accidents	0.947	0.042	0.124	0.129	0.123
Sanctions – Urban property tax	0.497	0.214	0.027	0.745	0.256
Sanctions - Rural property tax	0.308	0.263	0.228	0.859	0.067
Sanctions s – Patent taxes	0.204	0.235	0.319	0.837	-0.058
Sanctions – firefighters	0.278	0.210	0.250	0.827	0.059
Adm. Procedure.- ID Presentation	0.200	0.620	0.090	0.176	0.580
Adm. Procedure. - Payroll Presentation and Previous years payrolls	0.079	0.074	0.933	0.044	0.016
Adm. Procedure. - Worker attention	-0.022	0.699	0.225	0.071	0.054
Adm. Procedure. –information verification	0.110	0.167	0.879	0.114	-0.073
Adm. Procedure. - Payment process	0.226	0.794	0.281	0.107	0.007
Adm. Procedure. - Voucher printing	0.181	0.859	0.133	0.312	0.115
Adm. Procedure. - Tax payment	0.346	0.772	0.176	-0.090	-0.115
Satisfaction- ID Presentation	0.195	0.511	0.115	0.654	0.214
Satisfaction - Payroll Presentation and Previous years payrolls	-0.065	0.121	0.930	0.143	0.059
Satisfaction- Worker attention	-0.056	0.646	0.012	0.561	0.156
Satisfied- information verification	0.065	0.124	0.875	0.139	-0.215
Satisfied - Payment process	0.048	0.747	0.031	0.142	0.241
Satisfied- Voucher printing	-0.134	0.760	-0.073	0.377	-0.027
Satisfied - Tax payment	-0.007	0.790	-0.040	0.527	0.091
Perception of tax collection for Public works	0.220	0.512	0.151	0.296	0.709
Perception of tax collection for wages and salaries	0.127	0.119	0.820	0.230	0.333
Perception of tax collection for internal financing	0.210	0.040	0.814	0.087	0.486
Extraction method: Main components analysis.					
Rotation method: Varimax with Kaiser normalization.					
a. The rotation has converged in 5 interactions.					

Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

Thus, considering the 6 most important factors identified with the factor analysis method, linear regression is applied in order to identify if these factors cause municipal efficiency or inefficiency?.

The results reflect that the factors that cause the inefficiencies are related to (MODEL 1): the lack of communication, sanctions to the rural property tax, procedure of presentation of Payroll Presentation and previous years payrolls; and the voucher printing, the perception of the investment that can be given in public works, in 41.1% ($R = 0.411$) and explained in 16.9% ($R^2 = 0.169$, $p = 0.000$). However, if these factors are included (MODEL 2), such as: the income and the degree of knowledge of the taxes, the factors of presentation of Payroll Presentation and previous years payrolls and penalties in the rural property tax collection (these last two with $p = 0.000$), these are related in 75% ($R = 0.750$) and explain in 56.2% ($R^2 = 0.562$, $p = 0.000$), as presented in figure 5. This means that H3 factors such as reason, administrative procedures, perception and sanctions, in addition to income and taxing knowledge are causes of inefficiency in tax collection.

Figure 5
Causes of efficiency



Source: Own elaboration, based on questionnaire addressed to taxpayers (2019)

4. Conclusions

The urban property tax, the rural property tax, the municipal patent tax and the fire tax are those that affect municipal income in relation to fees and other types of contributions.

Efficient administrative and accounting processes in rural municipalities improve tax collection.

It is important for the taxpayer to access a payment point, the quality of the information, the reasons and the penalties for making his tax contribution to the municipality.

Municipal tax efficiency depends on factors related to: 1) :penalties for non-payment of taxes to rural premises; (2)administrative procedures for the submission of letters and forms from previous years; (3) levels of satisfaction with the verification of your information;4) reasons for not paying taxes for lack of communication and; (5) the perception on investments of the fundraising in public works.

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