

Volume 5, Issue 9 — July — December — 2021

# Journal-Microeconomics

ISSN-On line: 2531-2987

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**RINOE Journal- Microeconomics**, Volume 5, Issue 9, July - December 2021, is a journal edited semestral by RINOE. 38 Matacerquillas street, Postcode: 28411. Moralarzal –Madrid: [www.rinoe.org](http://www.rinoe.org) /, [journal@rinoe.org](mailto:journal@rinoe.org). Editor in Chief: OLIVES-MALDONADO, Carlos. MsC. PhD. ISSN: 2531-2987. Responsible for the latest update of this number RINOE Computer Unit. ESCAMILLA-BOUCHÁN, Imelda. PhD, LUNA-SOTO, Vladimir. PhD. 38 Matacerquillas street, Postcode: 28411. Moralarzal –Madrid last updated December 31, 2021.

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## **Presentation of Content**

In the first article we present, *Impact of the tax collection of the Redeemable Tax on Plastic Bottles for environmental conservation. Case of bottling and marketing companies in Machala*, by YÁNEZ-RÍOS, Katerine Alexandra, CASTILLO-MACAS, Lizbeth Margarita and GUTIÉRREZ-JARAMILLO, Néstor Daniel, with adscription in the Universidad Técnica de Machala, as the next article we present, *The inventory as an importance factor in the administration of micro-businesses*, by ARIAS-ORDÓÑEZ, Gabriela Fernanda, PALMA-GUTIÉRREZ, Karina Mercedes and ORELLANA-ULLOA, Milca Naara, with adscription in the, EGADE Business School Tecnológico de Monterrey and the Universidad Técnica de Machala, as the next article we present, *Micro and small enterprises and their impact on external financing*, by AGUILAR-PÉREZ, Esmeralda, HERNÁNDEZ-HERNÁNDEZ, María Elena and IRIGOYEN-ARROYO, Luis Ernesto, with adscription in the Universidad Tecnológica de León, as last article we present, *The management of administrative indicators and the impact of COVID-19 on business, the case of the locality of Hecelchakán*, by BACAB-SANCHEZ, José R., with adscription in the Instituto Tecnológico Superior de Calkiní.

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## **Impact of the tax collection of the Redeemable Tax on Plastic Bottles for environmental conservation. Case of bottling and marketing companies in Machala**

### **Impacto de la recaudación tributaria del Impuesto Redimible a las Botellas Plásticas para la conservación ambiental. Caso empresas embotelladoras y comercializadoras del cantón Machala**

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**DOI:** 10.35429/JM.2021.9.5.1.10

Received July 10, 2021; Accepted December 30, 2021

#### **Abstract**

This research focuses on analyzing the impact generated by the tax collection of the taxable tax on plastic bottles, through the search and collection of statistical data in official sources, for environmental conservation, in the bottling and marketing companies of the Machala canton. The methodology applied is qualitative-descriptive, based on the bibliographic review and data obtained from reliable sources for their respective analysis depending on the object of study. The results obtained through the research give as a response that the tax collection of the IRBP has increased with the passage of time and that together with the figures of the refunds reached can be taken as a measure that has contributed to improve environmental conservation and this is equivalent to 43,137 tons of non-polluting plastic bottles to the environment that have been recycled; it is advisable a deep socialization by the tax entity, on the end of this tax. The research contributes to visualize how a tax policy contributes to conserving the environment through the establishment of an environmental tax on plastic bottles with a fee of \$ 0.02 to promote recycling and the mechanics of return to those who collect such plastic bottles.

**Tax collection, Redeemable tax on plastic bottles, Environmental conservation**

#### **Resumen**

La presente investigación se centra en analizar el impacto que se genera por la recaudación tributaria del impuesto redimible a las botellas plásticas, mediante la búsqueda y recolección de datos estadísticos en fuentes oficiales, para la conservación ambiental, en las empresas embotelladoras y comercializadoras del cantón Machala. La metodología aplicada es de enfoque cualitativo-descriptivo, sustentada en la revisión bibliográfica y datos obtenidos de fuentes confiables para su respectivo análisis en función del objeto de estudio. Los resultados obtenidos a través de la investigación dan como respuesta que la recaudación tributaria del IRBP se ha incrementado con el paso del tiempo y que junto a las cifras de las devoluciones alcanzadas se puede tomar como medida que ha contribuido a mejorar la conservación ambiental y esto equivale a 43.137 toneladas de botellas plásticas no contaminantes al medio ambiente que han sido recicladas; es recomendable una socialización profunda por parte del ente tributario, sobre el fin de este impuesto. La investigación contribuye a visualizar como una política tributaria coadyuva a conservar el medio ambiente a través de la instauración de un impuesto ambiental a las botellas plásticas con una tarifa de \$ 0.02 a promover el reciclaje y la mecánica de devolución a quien recolecten dichas botellas plásticas.

**Recaudación tributaria, Impuesto redimible a las botellas plásticas, Conservación ambiental**

**Citation:** YÁNEZ-RÍOS, Katerine Alexandra, CASTILLO-MACAS, Lizbeth Margarita and GUTIÉRREZ-JARAMILLO, Néstor Daniel. Impact of the tax collection of the Redeemable Tax on Plastic Bottles for environmental conservation. Case of bottling and marketing companies in Machala. *Journal-Microeconomics*. 2021. 5-9:1-10.

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**Introduction**

For some decades, developed countries have given way to a complex and long road to the application of environmental taxes in order to help preserve the environment, of which, according to several environmental studies, catastrophic damage was already predicted. Thanks to the international agreements that were agreed at world summits such as the commitment of the Paris Agreement and the awareness they have taken regarding environmental degradation and, more importantly, climate change, developing countries have chosen to start implementing environmental taxes in their states. In this case we can highlight that Latin American countries have not been indifferent to this propensity and many countries have implemented these taxes to contribute to environmental conservation (Rius, 2016).

Environmental taxes can be differentiated from others because they are intended to reduce the problems that threaten the conservation of the environment, the proceeds of which are earmarked for a particular purpose. To analyze the collection of environmental taxes in different countries, which are considered as a global strategy to face the environmental crisis worldwide, it is necessary to address the conceptualization and objectives that these taxes pursue in the place where they have been applied. The application of these taxes in many Latin American countries makes polluters pay a fee according to the level of pollution that the activity carried out causes. It is essential that the regulatory body exercises and applies the current regulations in order to reduce the risk of manipulation of information by polluting companies. Finally, although no greater revenue is generated with this type of tax, the idea is that these are considered an environmentally successful tax (García López, 2018).

In the Ecuadorian context, the National Assembly of Ecuador in 2011 arranges actions with the environment creating the redeemable tax on non-returnable plastic bottles, consolidating itself as a pioneer when a tax that stimulates the environmental culture of recycling, reducing and reusing comes into force; positively affecting the control and reduction of solid wastes that pollute the planet causing a problematic situation that the State wants to avoid with this tariff (Bedoya Jara *et al.*, 2017).

As an economic instrument to the environmental damage caused by this waste sets a value that will be canceled by bottlers and importers, this fee of 0.02 cents for each bottle, starts the creation of microenterprises that will receive with the required documentation the return of the same and the recyclers will transform the solid waste into material or reused product that generate an environmental and economic benefit, with a view to sustainability in the development and care of the environment. It should be noted that the application of the tax yielded positive results in 2019, data presented by the SRI in the collection of the rate of the companies obliged to declare the tax, although there are still shortcomings in the operation, collection and return due to the surplus of plastic bottles, where it is intuited that they are illegally entered into the territory of neighboring countries, therefore it is necessary to analyze and provide solutions to any inefficiency (Garabiza Castro & Zavala Soledispa, 2018).

The research is aimed at analyzing the impact that is generated by the tax collection of the tax redeemable to plastic bottles, through the search and collection of statistical data from official sources, for environmental conservation, in the bottling and marketing companies of the Machala canton; in this way, the conservation of the environment has taken a lot of force, due to the drastic climate changes that are occurring, for this reason measures have been taken to reduce the negative impact.

In Ecuador there is approximately a total of sixty-two bottling companies, marketers, collection centers and recyclers of which in the Machala canton there are two bottlers and marketers, four recyclers and collection centers which represents 9.68% nationally.

The study will be carried out from a qualitative-descriptive approach, based on a documentary literature review, which consisted of the search, selection and analysis of sources of information published on official pages, scientific articles and online books related to the object of study.

Environmental protection is the backbone that is required for sustainable development before any economic model and is the result of the adoption of measures taken by the Ecuadorian government from a social, economic and environmental point of view.

For this reason, the State adopted the environmental policy in order to raise awareness and regulate the excessive consumption of plastic bottles by companies and the population, aimed at the conservation of the environment.

### **Tax collection and environmental conservation**

Environmental taxes are part of the precautions with which governments intend to reduce the impact that certain activities generate on the environment, and as a protective measure to stop the effects caused by pollution. In short, taxes can be defined as those levies that have a collection purpose, and are aimed at managers to control their conduct, in terms of the execution of activities harmful to nature, without prejudice to the funds collected (Salassa Boix, 2016).

According to the literature on environmental taxes, taxes of this nature obey Pigou's logical reasoning, since he considers it imperative that whoever is dedicated to producing a good or service, and as an effect of his activity causes pollution, should internalize the cost of this negative effect (Navarro Schiappacasse, 2019).

It is necessary to be clear about the environmental damage that exists in Ecuador, either by emission of polluting gases or by contamination of solid waste, reasons that triggered on the part of the State to the application of environmental standards that entails to adapt protection measures in companies for the damages that they may cause to the environment and demand judicially the reparation of this damage, in addition to the personnel in case of having suffered as a result of environmental deterioration. Environmental taxes are specifically designed to achieve an environmental purpose with the purpose of conservation and protection of the environment, maintaining the levels of collection for the best distribution of the public resource (Matus Fuentes, 2015).

For the declaration and return of the IRBP by the bottling companies, importers, recyclers and collection centers, evidence that, the bases of this tax were established under the conception of a deposit, return and return system, where the units produced with a monetary value are involved in order to stimulate their return, however, this return does not refer specifically by consumers, but to the bottlers, collection center and others legally recognized and qualified. The most advisable thing would be to determine an effective system, with more rigorous characteristics, that limits the fraudulent declarations that have been presented by some bottling companies in the IRBP declaration (Pinos Flores *et al.*, 2018).

### **IRBP rate**

The tariff established to the IRBPNR is called as a collection cost in the presence of polluting elements such as plastic bottles in Ecuador, due to the high consumption of plastic; the purpose of implementing a fee for non-returnable plastic bottles is to reduce pollution and promote good environmental practices through recycling, even if the fee to be canceled for collecting, returning is low (Encalada Encarnación & Ruiz Quesada, 2017).

In this matter, it is important to establish an appropriate measure regarding the rate established for the payment of the IRBP, which is why it will be advisable to propose a higher value of the tax, since currently the rate to be paid the USD 0.02 which does not represent an incentive or attraction factor to promote the return of the packaging that is purchased by consumers, this relating to the fact that in other countries there is a greater motivation for the return of the container. In addition, there is no guarantee that only the containers that are declared in the IRBP are recovered, because there is evidence of the illegal incorporation of bottles from neighboring countries in which no environmental regulation has been proposed to promote recycling (Pinos Flores *et al.*, 2018).

### 'Polluter pays' principle

This principle was created as a measure of prevention and control of environmental pollution, so that it does not occur and that the polluter assumes the costs to reduce and avoid. It is worth mentioning another principle of cost distribution "who benefits pays" where the subject receives or expects to receive benefits for control activities in conservation actions; if natural resources are limited or subject to their economic value, whoever benefits from it must pay (García López, 2018).

Within the literature on the polluter pays principle, it is used as an economic instrument, which is used to implement environmental policy in many countries, such is the case in Mexico where it is the means for the conduct and formulation of environmental policy and legislation, where it establishes that the person who performs activities that affect the conservation of the environment, is in the duty to prevent, minimize and repair the damage caused by such activity, in the same way the person is encouraged to take care of and make reasonable use of natural resources (García López, 2018).

### Reuse of plastic material

This is posed as a global challenge, considered one of the biggest problems to be faced, environmental pollution, and its effects as a result of the generation of solid waste. This also implies a difficult reality for individuals engaged in the work of collecting plastic materials, which has become a topic of discussion for the State. That is why it is essential to carry out an evaluation that allows the government to strengthen the positive points and work on the negative effects that are caused by the inadequate handling of plastic materials on the well-being of society and nature (Sanmartín Ramón *et al.*, 2017).

Recycling in this case plays an indispensable role to achieve the objectives of the implementation of environmental taxes, which is why people have been motivated to reuse packaging, which has given way to a new form of awareness in individuals since in one way or another awareness of the protection of the environment has been achieved (*Ruiz Guajala et al.*, 2015).

Ecuador gave way to the implementation of environmental taxes in 2011, the same q governed at the beginning of 2012 see table 1, with the purpose of conserving the environment as provided by the Constitution of the Republic of Ecuador in its article 14.

Environmental taxes	Environmental tax on vehicular pollution	Redeemable tax on non-returnable plastic bottles
Date created	November 2011	
Date of implementation	Since 2012	
Elimination	August 16, 2019, published in the Second Supplement to the Official Registry No. 19	In effect
Collected from 2012-2019	889.927,57	-
Collected from 2012-2021 Ene/April	-	245.770,75

**Table 1** Implementation of environmental taxes  
*Source: Own elaboration [Excel] with data from the Internal Revenue Service (2021)*

### Collection of the Redeemable Tax on Non-Returnable Plastic Bottles

Solid waste pollution in the country is a major problem that affects the environment, in the field of progress actions were taken such as the creation of the redeemable tax as a change to the environment using a strategy to achieve an increase in the green tax and thus mitigate the environmental impact to non-returnable plastic bottles; as a collection system that generates a fund for the State to carry out the management and control in the bottling and marketing companies for the payment of the tax, it is worth mentioning the primary characteristic of the collection is the conservation and preservation of the ecosystem so Ecuador establishes this tax (Reinoso-Haro & Mantilla-Falcón, 2020).

With the aim of reducing the environmental pollution produced by the late degradation of plastic components and encouraging the practice of the reuse of recyclable materials in Ecuador, executing the Redeemable Tax on Plastic Bottles, which was created in order to encourage recycling, reducing the great negative effects, and inquire about a change in the behavior of consumers and producers (Pinos Flores *et al.*, 2018).

**Regulations governing the redeemable tax**

In the case of Ecuador, the National Assembly in 2011 in the legal basis takes corrective actions with the environment in order to enact environmental conservation, the law creates the Redeemable Tax on Non-Returnable Plastic Bottles with the criterion of "positively influencing the control and reduction of environmental inoculation and on the other hand stimulate good environmental practices such as: recycle, reduce and reuse" (*García-Álvarez et al.*, 2020,p.2).

The Environmental Development Law issued in 2011 the redeemable tax on plastic bottles, based on the Constitution of the Republic of Ecuador that indicates the recognition of the right to nature where its inhabitants can live in a balanced ecosystem and in a healthy environment. In addition, the Constitution clarifies the need for the tax law to aim at promoting environmentally friendly practice (*Bedoya Jara et al.*, 2017).

**Environmental culture**

It is important to create an environmental culture in the inhabitants of the populations to promote the development of people's critical ethics for the mitigation of environmental impacts. How it is possible to mitigate but is through preparation, promotion in education that is promoted in the awareness of values, habits, capacities, on the problem and environmental change, to achieve sustainable development without affecting natural resources and obtain a quality of life of future generations (*Gonzaga Figueroa*, 2017).

Environmental education is the main tool, where people must become aware of how essential it is to preserve the natural environment and be able to improve their living conditions, values and behavior, as well as expand their knowledge to promote the action of preventing and mitigating the problems that exist currently and future, therefore, environmental education must be practiced. Learning is important in the educational system is invited to reflect on the change that must be made in the environment based on a globalized culture about the sustainability of the environment together with society (*Severiche Sierra et al.*, 2016).

**Tax evasion**

In Ecuador, as in many countries have become aware of the environmental pollution caused by solid waste, the environmental culture has been promoted that, if you pollute you are obliged to pay, but a problem that occurs is tax evasion we observe in the smuggling of non-returnable plastic bottles that enter the country illegally. Although the state's efforts have been insufficient, for the payment of taxes which affects public revenues by not being taxed and taking advantage of the lack of territorial controls (*Delgado-Olaya et al.*, 2017).

Tax evasion is the payment that must be made by the taxable person but that violates the tax rule which results in the total or partial reduction of the payment of taxes provided for by law. These events of non-compliance with the values that the State imposes to pay in the tax regulations; in theory it is based on the contribution declared by the taxpayer of which the value of the income will not be declared, tax evasion declines with the possibility of it being detected and the amount of the penalty (*Paredes Floril*, 2016).

Tax avoidance and evasion is one of the main impediments to the use of public resources for sustainable development in the country, tax non-compliance by the taxpayer is equivalent to large losses, if it is possible to collect that missing income could achieve the economic and social goals that are integrated into the Sustainable Development Goals (*CEPAL*, 2019).

**Mitigation of environmental impacts**

One of the processes for the mitigation of environmental impacts is the process of culture and education to the environment in the taxpayer, being evidence of the change of individual and social consciousness in the human being, in a system of attitude, knowledge, value and feeling to the problem that the planet lives by pollution, there are many organizations around the world that have extended actions to mitigate the environmental problem (*Gonzaga Figueroa*, 2017).

It is necessary to curb pollution by solid waste and mitigate the impact it causes to the environment that greatly raises climate change, being a serious problem to the planet and therefore to the human being, we must increase actions in favor of the climate; Ecuador with the commitment to mitigate these effects creates the redeemable tax to compensate for the damages caused by the contamination of non-returnable plastic bottles (González Ordóñez, 2016).

### Methodology to be developed

The focus of this research is qualitative-descriptive, since it uses the collection of reliable information or data depending on the object of study, in order to process the information obtained for the purpose of general analysis of the research. According to Corona Lisboa (2016) he points out that the qualitative method is most often used in the "social and related sciences" (p.82), based on qualities or interpretation of information in a subjective way close to reality.

The information obtained as a final result of this research was extracted from specialized scientific journals; Of scientific recognition, search for information in leyes, books, and other written or electronic documents in relation to the collection of green taxes on plastic bottles to conserve the environment; it is worth mentioning that the data were collected mainly from the Internal Revenue Service.

### Results

In Ecuador, the Redeemable Tax on Non-Returnable Plastic Bottles was created, forming a friendly and awareness-raising behavior with their environment; the impact produced by this tax is the application of a less polluting environmental culture by consumers and companies, opening up a recycling process for plastic containers through the incentive of the return and return of the tariff designated by the State, to those who collect, deliver and return non-returnable plastic bottles.

The difficult environmental situation that is currently visualized, its constant wear and tear and the need to protect and care for the environment, Ecuador took advantage of an environmental tax policy that fulfills two functions first of collecting the tax when bottling non-returnable plastic bottles and their deaduanization at the time of import; and secondly, as a conservation incentive, the return of the value paid to the collection centers and recyclers for collecting, delivering and returning plastic packaging. Since the tax was introduced, the collection has obtained effective revenues exceeding the budgetary goal, likewise the refund obtained a considerable increase mitigating the impact of polluting consumption and creating an environmental culture of recycling (Yáñez Sarmiento et al., 2017).

For his part, Jiménez-Vargas (2016) states that there is little political will to take advantage of environmental taxation as a way to obtain resources that allow to sustain a situation of well-being both for the environment and for the state coffers.

The Internal Revenue Service (SRI) is the regulatory body in charge of collections for environmental taxes, when analyzing what was collected in relation to the redeemable tax on non-returnable plastic bottles it is evident that in 2019 it was 35,906.77 below the collection target with a 99% compliance being satisfactory, while for the first quarter of 2021 it was 11,104.01 significantly exceeding the collection target with 112% see table 2, it denotes an increase in the goal compared to what was collected, because the bottlers and marketers at the country level reactivated their economic activities.

Indirect tax IRBP	Collection periods		
	2019	2020	2021 January- April
Collection goal	36.155,88	27.505,87	9.911,66
Collection	35.906,77	29.014,35	11.104,01
Compliance of the goal	99%	105%	112%

**Table 2** Collection of the redeemable tax on plastic bottles nationwide: Ecuador (In thousands of dollars)  
*Source: Own elaboration [Excel] with data from the Internal Revenue Service (2021)*



This tax collection helps environmental conservation through the recycling of non-returnable plastic bottles. From 2019 to 2020, the collection of the redeemable tax on non-returnable plastic bottles has fallen by 5.45% due to the pandemic that the country is going through due to COVID19, while in the first quarter of 2021 the collection is lower compared to the previous years of said tax in the Machala canton see table 3.

Year	Tax redeemable non-returnable plastic bottles
2019	3.292,36
2020	3.112,68
2021 January- April	224,14

**Table 3** Collection of the redeemable tax on plastic bottles in the Machala canton (In thousands of dollars)

Source: Own elaboration [Excel] with data from the Internal Revenue Service (2021)

From another perspective, Mogrovejo Jaramillo (2017) points out that in Ecuador environmental taxation demonstrates a promiscuous development. The sectors in which the State has paid the most attention due to its economic activity have been involved with the protection of the environment; with a vehicle tax and another aimed at non-returnable plastic bottles. The aforementioned tax has evidenced a public initiative to address the problem of waste, specifically plastic bottles made with polyethylene terephthalate. Promoting recycling through a recirculation method with benefits for the actors involved in the cycle and for the environment.

Just as this environmental tax is collected through the declarations by the bottlers and the marketers through the desaduanización, the Internal Revenue Service (SRI) returns the fee of 0.02 cents for the weight in kilograms to the collection centers and recyclers by prior request so that not all the declared non-returnable plastic bottles are returned in their entirety, in table 4 it is observed that in 2020 the refund of said environmental tax to non-returnable plastic bottles was 12,941,156.87, demonstrating a decrease of 57% compared to 2019 due to the effects of the pandemic at the beginning of March onwards, because the economy at the national level declined due to confinement, forcing to paralyze the sources of work.

Indirect tax IRBP	Return periods		
	2019	2020	2021
Refund of redeemable tax on plastic bottles	22.518.086,93	12.941.156,87	-

**Table 4** Refund of the redeemable tax on plastic bottles nationwide: Ecuador (In millions of dollars)

Source: Own elaboration [Excel] with data from the Revenue Service (2020)

The refund of the redeemable tax on non-returnable plastic bottles for recycling nationwide by recyclers and collection centers for 2019 was 75,060.29 tons, in 2020 of 43,137.19 tons, considering an average decrease of 31,923.10 representing approximately 39% per year see table 5. The purpose of the return is to reduce environmental pollution and stimulate the recycling process in the country.

Direct tax IRBP	Units returned in tonnes	Units returned in tonnes		
		2019	2020	2021
Collected non-returnable plastic bottles	75.060,29	43.137,19	-	

**Table 5** Return of non-returnable plastic bottles collection center and recyclers nationwide: Ecuador

Source: Own elaboration [Excel] with data from the Internal Revenue Service (2020)

Recyclers and collection centers that are certified by the Ministry of Industries and Productivity (MIPRO), as well as bottlers and importers, when they cannot calculate the exact number of non-returnable plastic bottles, recovered or collected in a given period, to make the settlement of the tax to be paid or refund of the tax, may consider the following values:

Year	Period	Resolution	Rate \$ per kg	Number of plastic bottles
2018	January	NAC-DGERCGC17-00000615	0,42	21 plastic bottles
	July-December	NAC-DGERCGC18-00000256	0,42	21 plastic bottles
2019	January	NAC-DGERCGC18-00000430	0,42	21 plastic bottles
	July-December	NAC-DGERCGC19-00000029	0,30	15 plastic bottles
2020	January	NAC-DGERCGC19-00000058	0,30	15 plastic bottles
	July-December	NAC-DGERCGC20-00000045	0,30	15 plastic bottles
2021	January	NAC-DGERCGC20-00000076	0,28	14 plastic bottles

**Table 6** Conversion of plastic bottles to kilos

Source: Own elaboration [Excel] based on resolutions of the Internal Revenue Service (2021)

The recovery of plastic bottles subject to the redeemable tax of the Internal Revenue Service (SRI), by official resolution has resolved the creation of a table of conversion values with non-returnable plastic bottles, recovered or collected at their equivalent in kilograms, which is updated semi-annually. Table 6 shows the different updates of the conversion values of non-returnable plastic bottles in kilograms from 2018 to the first half of 2021.

For his part, Valdivieso Ortega (2016) states that the Constitution of the Republic determines a healthy environment as a right and duty of citizens, since it is not enough to recognize it, but each person is obliged to take care of it. As for taxes, the taxable event of the same must manifest an economic capacity, the author defines it as an unrelated tax aimed at indivisible services, which makes it an optimal resource to be used as a measure of protection to the environment.

In relation to the redeemable tax on plastic bottles, it is clear that this has a purpose that is focused on reducing pollution, however, although there is a latent collection, its applicability as a tax is not clear, because its purpose of collection is null, since the nature of the taxes is to generate income to the treasury. In consideration, the tax is undoubtedly an excellent instrument used for the conservation of the environment, and since it is established in the Constitution of Ecuador it is considered as a constitutional guarantee mechanism with the purpose of conserving and protecting the planet (Valdivieso Ortega, 2016).

### Conclusionis

Since 2012 when the IRBPNR was created, the taxpayer did not perceive a direct impact of an increase or decrease of a polluting container, as happens with other taxes that were created based on the volume of products introduced to the environment; the impact generated by tax collection and environmental conservation since the entry into force of the tax has registered positive growth values in the beverage sector, as well as the greater number of bottles recovered or collected.

Therefore, the policy of this redeemable tax is to collect a monetary value for each plastic bottle to promote environmental conservation, which has been impaired by the excessive consumption of plastic; the tribute implemented gender sources of work in the recycling sector, since its applicability has increased the greater number of people who are dedicated to collecting plastic bottles.

Based on the results obtained, it is evident that the collection of the IRBPNR at the country level by the bottlers and marketers through prior declaration has been satisfactory compared to the proposed collection target, that is to say that it met with 99% for 2019, 105% for 2020 and for 2021 with 112%; on the other hand in the Machala canton there is a gradual decrease between 2019 and 2020 with 5.45% and for the first quarter of 2021 it is considerably lower in the presence of COVID-19; as for its return in the last year is null as there is no prior submission of application by the collection centers and recyclers that for reasons of pandemic have stopped their commercial activities of receiving non-returnable plastic bottles, however, the Internal Revenue Service has the expectation that, as well as manufactured they will be totally returned.

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## The inventory as an importance factor in the administration of micro-businesses

### El inventario como un factor de importancia en la administración de las microempresas

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DOI: 10.35429/JM.2021.9.5.11.18

Received July 15, 2021; Accepted December 30, 2021

#### Abstract

Inventory is one that represents an investment of great importance for MICRO-BUSINESSES, this according to the relationship it has with other assets, and are of great importance for sales, as well as essential to achieve profit optimization. The objective given in this research study is to analyze the importance of inventories by means of a bibliographic investigation predicting the effectiveness of their administration in Micro-businesses. In the following investigation the methodology of documentary analysis was used, where the purpose is to be able to arrive at an analysis of the administration techniques to carry out an inventory and recognize the importance that should be given to it in Micro-businesses, theoretical foundations on the administration of inventories in Micro-businesses will be detailed, factors that are used to carry out inventories. It was concluded as the techniques to carry out the inventory were known and attached, the probabilities that are given to have successful operation, profit and growth in companies, which allows generating profits for micro-businesses

#### Inventories, Utilities, Micro-businesses

#### Resumen

El inventario es aquel que representa una inversión de gran importancia para las empresas esto de acuerdo a la relación que tiene con los demás activos, y son determinantes para las ventas, así como indispensables para lograr la optimización de las utilidades. El objetivo que se da en este estudio investigativo es analizar la importancia de los inventarios mediante una investigación bibliográfica prediciendo la efectividad de su administración en las Microempresas. En la siguiente investigación se utilizó la metodología del análisis documental, donde el propósito que se tiene es el de poder llegar a un análisis de las técnicas de la administración para realizar un inventario y reconocer la importancia que se le debe dar en las Microempresas, se detallaran fundamentos teóricos sobre la administración de los inventarios en las Microempresas, factores que se utilizan para realizar los inventarios. Se concluyó conforme se conoció y anejo las técnicas para realizar el inventario, las probabilidades que se dan para tener éxito en la operatividad, ganancia y crecimiento, lo cual permite generar utilidades para la Microempresa.

#### Inventarios, Utilidades, Microempresa

**Citation:** ARIAS-ORDÓÑEZ, Gabriela Fernanda, PALMA-GUTIÉRREZ, Karina Mercedes and ORELLANA-ULLOA, Milca Naara. The inventory as an importance factor in the administration of micro-businesses. Journal-Microeconomics. 2021. 5-9:11-18.

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## Introduction

Inventories originate in the Egyptian peoples, since they were used to storing large quantities of food that were used in times of calamities.

In this way, inventory problems arise as a mechanism to deal with those times of shortage. Allowing in this way to ensure the sustainability of the companies, as well as the development of the activities they carried out, all this came to motivate the existence of inventories [1].

Inventories are an issue that allows financial problems to be avoided in organizations, being a fundamental component for the productivity of the company, work, capital and management, which contribute to generating profitability. It is also known as the engine that drives Micro-businesses, since it is the basis for commercialization between companies which allows them to generate profits [2].

Therefore, it should be mentioned that inventories are essential to have control and at the same time guarantee useful information to reduce production costs, increase liquidity and be able to reliably know the financial situation of the micro-businesses [3].

In relation to this, inventories are the set of articles or merchandise that every business has in order to be able to market, allowing the purchase, sale or manufacture, which occurs in an established economic period [4].

The fundamental purpose that is given in this topic is to provide the company with the materials it requires for its development, it should also be mentioned the importance that it has for the operation of the process of the production which allows demands to be met.

The inventory has to be managed effectively since it pursues two objectives that are fundamental:

- Guarantee through inventory the operability and availability of the company.
- Maintain the recommended levels which allow to minimize both maintenance and order costs.

Low inventories increase order costs, on the other hand, high inventories increase maintenance costs.

For this reason, it is essential to question the use of the different inventory techniques, with the sole purpose of determining the optimal level and at the same time reducing the total costs involved in the inventory in order to optimize profits [5].

When an adequate level of inventories is maintained, it is possible to have direct and continuous sources for supply at any time, thus providing a constant and efficient service for the client. In this way, becoming an important element in this case for Micro-businesses since through them there is an efficient management guaranteeing the operation and forming a profitable company.

The research is focused on the characterization of the inventories, their importance for which a qualitative methodology is used, with a documentary method, which will allow us to have the results that will guide us to meet the objective of this study, the which is to analyze the importance of inventories.

## Development

### Inventory characterization

Inventories represent the amount of goods that a company has in existence at a certain time, this will allow the sale of the business to be carried out in an ordinary way or they can be consumed in the production of goods and services for commercialization. It becomes a nexus that occurs between the production and sales of that product [6].

Inventories come into existence for different reasons, the same ones that are mainly justified since they predict a shortage, it is preferable to save products than cash due to the profitability that it generates, since it allows additional profits to be obtained, when it exists the rise in prices, etc.

Despite this, the immobilization that occurs in financial resources is treated as a consequence, which can be used efficiently in other activities where there is greater profitability, this means that a correct management could be chosen of financial resources and improve profits.

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Inventories are kept in stock in order to handle the following:

- Process inventories: these are the assets that are still in process for modification and which will be used for the production of a variety of products. As the raw material is transformed, the new product increases in value, this is due to production costs.
- Cyclical inventories: consists of periodically counting the reference groups instead of taking a single inventory per year.
- Seasonal inventories: they are used in order to more economically meet demand, which is seasonal in accordance with production levels.
- Safety inventories: this inventory is carried out in the extra stock that a warehouse has to be able to use it if unforeseen events happen, being able to mention as an example the delay that occurs on the part of the suppliers or the varied demand for products.

Speculative inventories: these occur when it is expected that there will be an increase in prices that are higher than the accumulation costs of inventories.

It is of great importance to mention that in large companies the financial manager is not the one who has control of the inventories, however the function he has is the necessary one, because he is the one who manages the financial resources to acquire the products. For this reason, there comes to be controversy in the different areas of the company about the different adequate levels of inventories that have to be managed.

According to this sense, the financial manager has to manage in a low level of inventories, since it is the current assets that present less profitability than the non-current assets, being property, plant and equipment, on the other hand the manager Marketing has to create a large amount of inventories of finished products to effectively serve consumers [7].

On the other hand, the production manager may need to have a high level of raw material inventories for finished products and production and thus deliver on time when requested by the marketing manager [8].

Inventory is the element that makes up the supply chain, specifically the internal logistics of inventory management made up of the supplier, manufacturer, distributor, merchant, buyer [9].

According to this order of ideas, if the client comes to request an order and it does not exist or comes to see little inventory, he must order the merchandise from the supplier, and then arrive at the factory and transform it where later the merchandise is sent through the distributors to reach the merchant and the final consumer.

Through this flow of actions, it is necessary to avoid delays and customer losses, especially nowadays when there is so much competitiveness. That is why it is required that the inventory control is carried out in an adequate way, being necessary an efficient management of financial resources in order to have excellent profits [10].

In this sense, inventory management becomes relevant in relation to the functions of the financial manager, since it allows determining the amounts of inventory that must be maintained in order not to incur in the lack and unnecessary costs for maintenance, date in which the orders must be placed and to be able to produce the inventory, the quantity of the units which will be requested for each order and the type of inventory which requires better attention. Therefore, two factors are taken into account:

- Minimizing the investment of inventories to minimize costs.
- Optimize profits in order to be able to meet demands and avoid losing customers.

### **Inventory types**

The person in charge of inventory management is aware that the area with the greatest importance of the company is in their hands, therefore, having proper management generates productivity, profits and a great balance between demand and supply. [eleven].

Each micro-businesses manages to solve inventory control in a different way and this occurs due to the different internal policies of the companies, as well as the demands that the industries have. However, the same classifications come into existence that can allow the entry, exit and storage of goods and materials to be managed in a more efficient way.

**Initial inventory:** They are established according to the operations that the micro-businesses have. According to accounting terms, inventory is referred to as that which reflects the balances before an additional inventory is acquired or the existing inventory is sold in a given period [12].

**Final inventory:** It is carried out at the close of each accounting period, it is of great importance since it is in the balance sheet of any company and provides information on the financial resources available [13].

**Anticipation inventory:** This inventory allows planning, as well as strategies, this type of inventory is moved according to the seasons or commercial promotions [14].

**Consignment inventory:** It refers to the goods that a consignor sends to other micro-businesses, companies or businesses with the sole purpose of being sold on behalf of the consignor [15].

**Periodic inventory:** Allows you to measure from the beginning to the end of the accounting period. It is based on the monthly, quarterly, semi-annual or annual physical count. It is a simple method, however it is not allowed to have an exact control of the problems which may arise due to scarcity or if there is an over-demand [16].

**Perpetual inventories:** These are those that record balances after a transaction has been made, providing reliable and updated information on a daily basis, the advantage of this inventory is in constant control and above all in the reduction of ant theft [16].

**Inventory of raw materials:** It is carried out to establish the stock of current stocks or of raw materials and inputs, they are treated to be able to generate final products according to their manufacture [17].

**Inventories of products in process:** These are the assets that are in production processes for which they can be used in the production of other goods that are in process [18].

**Inventory of finished products:** This inventory allows for the counting of the goods or products that the micro-businesses has and that are ready for sale [19].

### Importance of inventories in micro-businesses

It is of great importance that companies have a controlled inventory, ordered and guarded, since the purpose of this is to be able to supply and distribute the available material in an adequate way [20].

For any type of micro-businesses, company or business, it is necessary that inventories be controlled, to allow the following:

- Have control of the goods.
- Generate reports on the economic situation of the business.

It must be clear that by not carrying out an inventory, it will not be known what is needed, leading to a paralysis of the production of the company that we have to supply.

When you do a good inventory you can have the following advantages:

- The possibility of informing customers about the availability of the products is presented. This allows customers to have greater credibility and represent part of the good service, which can help the company for future negotiations.
- Ease of meeting delivery deadlines and reducing unforeseen events.
- Have the guarantee of knowing at any time the quantities of the products that are available.



It should be mentioned that inventories are the capital in physical form and through this a value is obtained for micro-businesses and especially those that are dedicated to the sale of products. Therefore, it is important and allows businesses to meet demand and compete within the market [21].

It is a great challenge to manage inventories efficiently allowing to decide how much will be needed to meet the requirements of a market, this implies being able to decide the amount that has to be placed for orders, receive them, store them and later take them to a record from inventories, since the primary objective is to keep costs low and sufficient finished products to take them for sale or for the replacement of those products that are consumed.

### **Inventory control and profits in micro-businesses**

It should be mentioned that everything that can save and control the assets of micro-businesses or any business will allow it to be more productive and in turn generate more profit.

When a business comes to have an inventory in a synchronized and fair way so that the sales that it has been estimated to have are made, it is productive because no resources are wasted and there are no problems such as having an inventory that is full of products with a low rotation and lack of cash to be able to stock up on the products that do rotate.

To generate profits, this resides in generating sales, and these in turn are the engine of all activity, however, it must be emphasized that, if inventories do not comply effectively, they will not allow meeting the demand for the product. This situation leads to the dissatisfaction of customers and will make them choose the competition, thus reducing the profits of the company.

The importance of inventories incurs that at present micro-businesses have managed to verify that inventory management can become the key tool to improve liquidity and profitability, otherwise the results will be negative for each micro-businesses that does not manage to manage effectively their stocks.

### **Methodology**

In order to develop this research, studies of descriptive, documentary and exploratory methods were assumed, the design of the methodological framework becomes or forms the core of the research, referring strictly to the development of the investigative work.

Thus, the contents of the inventory that are carried out in the micro-businesses in the field of study of the same are analyzed and incorporated.

Through the descriptive study, it is proposed that descriptive research It is one that seeks to specify the characteristics, properties and features that are important for the subject being analyzed. In this way, the types of inventories and their importance are specified.

Descriptive research comes to be when it is necessary to delineate what are the specific characteristics that have been discovered through exploratory research. The description can be made through qualitative study and in a descriptive study [22].

On the other hand. It is an explanatory study that aims to overflow the description of the concepts and phenomena that are establishing relationships between them. In this way they can respond to or explain visions and approaches from the fields of study.

The explanatory study is given in a qualitative investigation since it proposes to give the designs that are based on linguistic analysis the same one that reaches the construction of the codified paradigms, which represents a construction of reality that occurs through interaction subjective [23].

It should be mentioned that the method of synthesis and documentary analysis of the structured sources managed to contextualize and know the field of study, while the logical historical method allowed to interpret the current reality that occurs from the historical turns in this case how it was born and the inventory was evolving [24].

The documentary research comes to propose a methodology that goes from the qualitative, explanatory and descriptive since it is characterized in being able to collect and locate the existing bibliographic material that is necessary to elaborate the route on the subject dealt with in this case [25].

It is in this way that the analysis of this study has been carried out by means of this type of techniques and research in order to reach the fulfillment of the objective that is Analyze the importance of inventories through a bibliographic research predicting the effectiveness of their administration in Micro-businesses, once the study is carried out, the following results are presented.

### Results

The financial impact that occurs in the administration of inventories, in relation to the profits of the businesses is of great relevance, since the net profit is given by the contribution of expenses, that is, the cost of inventories such as leases, depreciations, materials management systems, labor costs that are associated with the maintenance, administration and conservation of the same.

In general terms, it must be said that the correct management of inventories will allow the company to achieve competitiveness in the market, and will have the products available to its customers, which will help to be recognized. As a second point, it will allow you to improve your profits in each period, since the inventory also influences the sales of each business, and the higher the sale, the greater the benefits for the micro-businesses.

### Conclusions

In this study it was possible to describe the importance of inventories and thus define a correct operation within micro-businesses, it was also pointed out that an efficient or adequate administration will optimally influence the finances of the company.

When it comes to large investments that the company makes, it is due to the decisions of the optimal level that is given to inventories, that is, the person in charge of the micro-businesses has in mind how important this issue is for the entity, it is because this means that a good inventory policy has to be managed, which allows the micro-businesses to have better liquidity, lower costs and as a way consequent increased profitability.

That is why proper inventory management must be studied in order to improve processes from the moment of purchase, during manufacturing and in the distribution of the final product.

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## Micro and small enterprises and their impact on external financing

### La micro y pequeña empresa y su impacto ante el financiamiento externo

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**DOI:** 10.35429/JM.2021.9.5.19.22

Received July 20, 2021; Accepted December 30, 2021

#### Abstract

The present research is carried out with the purpose of analyzing what are the sources of extrabank financing of micro and small enterprises, the study was developed through a statistical analysis to present the failures of the financial system, which have an effect on the participation of the directors of micro and small enterprises in extrabank loans. In this research the participants that were studied were the micro and small companies of the commercial sector of the municipality of San Martín Texmelucan, according to the SIEM there are 1127 registered companies that were taken as a base, of which 45% are commercial, 30% of services and the rest are industrial. The failures of the demand of the financial system, based on descriptive statistics and means, it can be perceived that the most noticeable difference appears in Failure 4: Mismanagement of resources, in Failure 2: Self-exclusion, and Failure 3: Risk aversion, and that these three failures have a significant effect on extrabank financing among the directors of MSEs.

**MyPe, Extra-bank financing, Financial decisions**

#### Resumen

Se realiza la presente investigación con el propósito de analizar cuáles son las fuentes de financiamiento extrabancario de la micro y pequeña empresa, el estudio se desarrolló mediante un análisis estadístico para presentar las fallas del sistema financiero, las cuales tienen un efecto en la participación de los directores de la micro y pequeña empresa en créditos extrabancarios. En esta investigación los participantes que se estudiaron fueron las micro y pequeñas empresas del sector comercial del municipio de San Martín Texmelucan, de acuerdo al SIEM existen 1127 empresas registradas que se tomaron como base, de las cuales el 45% son comerciales, 30% de servicios y el resto son industriales. Las fallas de la demanda del sistema financiero, en base a la estadística descriptiva y las medias, se puede percibir que la diferencia más notoria aparece en la Falla 4: Mal manejo de recursos, en la Falla 2: Autoexclusión, y la Falla 3: Aversión al riesgo, y que estas tres fallas tienen un efecto significativo en el financiamiento extrabancario entre los directores de las MyPe.

**MyPe, Financiamiento extrabancario, Decisiones financieras**

**Citation:** AGUILAR-PÉREZ, Esmeralda, HERNÁNDEZ-HERNÁNDEZ, María Elena and IRIGOYEN-ARROYO, Luis Ernesto. Micro and small enterprises and their impact on external financing. *Journal-Microeconomics*. 2021. 5-9:19-22.

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## Introduction

Without getting involved in the particularities that each country establishes for their definition, the level of development they present or their regional location, micro, small and medium-sized enterprises (MSMEs) currently constitute a fundamental sector for the world economy and its functioning. According to studies from various sources, such as the International Labor Organization (ILO) and the German Agency for International Cooperation (GIZ, for its acronym in German), MSMEs generate about 63% of total employment in the economy (Rojas, 2017), making the sector a fundamental element of the global economic gear today.

To evidence such importance in the Latin American case, it is necessary to review the figures in Table 1, which shows the socioeconomic relevance that this type of business organization represents for the region. Paradoxically, there is little academic and research production supported by empirical evidence that addresses such companies, a situation that demonstrates the need to study their structure and management aspects, particularly in the case of micro and small enterprises (MSMEs) in the region, for which there is an even greater scarcity of figures and analysis.

## Methodology

The study had a sample of 43,044 volunteer subjects located in 92 areas of Mexico, Colombia, Argentina, Peru and Ecuador. Information was collected between February and June 2021; the interviewer contacted the participant and asked him/her to answer an online form (16.8%), by telephone (35.1%) or in person (48.1%). The present analysis shows the results of the study developed in San Martin Texmelucan, Puebla, in which 399 surveys were applied, due to the current pandemic this was the maximum number of data possible; in those places where comparisons are made with Latin America, that is, specifically to the areas involved in the general study located in Colombia, Ecuador, Peru, Argentina and especially in Mexico.

## Results

To address the objective of the article, a comparative table of descriptive statistics from the Relayn study (Aguilar et al., 2021) is presented, so that the results can be contextualized in a broader scope. The second section presents a list of the failures that have an effect on extrabank financing, noting which have a statistically significant effect. Finally, the relationship between the variables is shown by means of a network graph that makes the correlations between them visible.

Differences between failures and extrabank financing of M&E managers. To compare the demand failures of the financial system, in Table 1 we present the basic descriptive statistics of both populations and the difference between the means. We find that the most notable difference appears in Failure 4: Mismanagement of resources.

Variable	Items	San Martín Texmelucan		Latin America		Difference
		Media	Standard Deviation	Media	Standard Deviation	
Failure 1: Financial literacy	5	3.98	0.701	4.10	0.732	-0.118***
Failure 2: Self-exclusion	6	3.81	0.756	3.87	0.813	-0.054
Failure 3: Risk aversion	4	2.97	1.164	2.64	1.094	0.326***
Failure 4: Mismanagement of resources	14	4.03	0.484	4.03	0.607	0.001
Extra-bank financing	3	3.21	1.075	2.68	1.185	0.526***

Significance codes: 0 '\*\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
The range of the scales of the five variables is from 1 to 5.

**Table 1** Financial system demand failures and extrabank financing: Descriptive and comparative between San Martín Texmelucan and Latin America

*Source: Own elaboration with data obtained with the research, 2021*

Assessment of the effect of demand failures on the propensity of MSE managers in San Martin Texmelucan to apply for extrabank financing.

There is a discussion about the validity of performing linear regressions on ordinal variable scales. While it is clear that it is not pertinent to apply it to ordinal items, results with more than 10 levels are usually accepted as a continuous variable. For the purposes of this study, the regression shown in Table 2 shows a regression of the four failures in extrabank financing and the results were assessed both assuming continuity and keeping the variable as ordinal with 15 levels of response.

Variables	Coefficient	Error.std.	t	p.value
Constant	1.803	0.383	4.710	0***
Failure 1: Financial literacy	-0.285	0.093	-3.070	0.002**
Failure 2: Self-exclusion	0.056	0.080	0.701	0.484
Failure 3: Risk aversion	0.505	0.041	12.344	0***
Failure 4: Mismanagement of resources	0.203	0.117	1.733	0.084

Significance codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Tabla 2** Regresión lineal de San Martín Texmelucan y Latinoamérica  
Source: Own elaboration with data obtained with the research, 2021

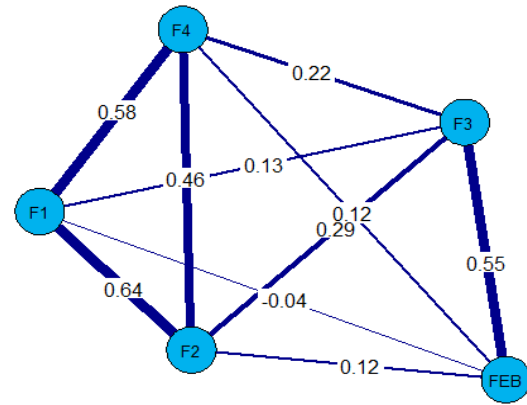
Failure 1 consists of having little knowledge, so a negative coefficient indicates that the failure is present.

The model analyzed from a parametric perspective has a residual standard error of 0.888 with 389 degrees of freedom, an adjusted  $R^2$  of 0.317 ( $F=46.7$  with 4 and 389 g.l.,  $p$ -value=0). Taking the response variable as ordinal, the dispersion parameter taken for the Gaussian family was 0.789; the null deviation was 454.1 (393 g.l.) and the residual deviation was 306.9 (389 g.l), from which it can be deduced that the model is adequate.

It can be observed in Table 2 that only Failure 2: Self-exclusion, and Failure 3: Risk aversion, have a significant effect on extrabank financing among M&E managers in San Martin Texmelucan.

Analysis of the correlations between the study variables.

To better assess the relationships between the variables, their partial correlations are presented graphically by placing the nodes of the network according to the algorithm of Fruchterman and Reingold (1991). The distances between the nodes in graph 1 denote the intensity of the correlation, so that the closest nodes are those that are most closely related, so that the groupings can be seen more clearly.



**Graphic 1** Network diagram of the correlations between the study variables  
Source: Own elaboration with data obtained with the research, 2021

**Conclusions**

As can be seen in the results of this research, the financing of the companies in the municipality of San Martin Texmelucan, according to what was revealed in the surveys applied, indicates that the owners, owners and managers of the companies resort to extra-bank financing, since this, in the mind of the businessman, presents an easier and faster procedure than the bank, which causes some problems such as: the high cost of financing, the loss of the goods that were pledged by such financial operation, to mention a few.

Therefore, to compare the failures of the demand of the financial system of San Martin Texmelucan with those of Latin America, based on the basic descriptive statistics of both populations and the difference between the means, it can be perceived that the most notorious difference appears in Failure 4: Mismanagement of resources, this means that the Texmeluquense entrepreneur still does not have an adequate decision making when investing and spending, since most of their resources are spent on expenses that do not generate a future return, likewise it causes them not to have access to the acquisition of merchandise that can meet their demand.

Regarding the impact of these financial decisions for the companies in the municipality of San Martin Texmelucan, it is observed that Failure 2: Self-exclusion, and Failure 3: Risk aversion, have a significant effect on extra-bank financing among the directors of MSEs in San Martin Texmelucan.

This means that an area of opportunity for the development of these entrepreneurs would be training in financial issues, specifically in formal bank financing, which would allow Texmelucan entrepreneurs to change their perspective to enter the formality of financing, perceiving their own economic and financial benefit, which would allow their businesses and companies to have a better position in the market and present a satisfactory economic recovery in favor of competitiveness.

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## The management of administrative indicators and the impact of COVID-19 on business, the case of the locality of Hecelchakán

### La gestión de los indicadores administrativos y el impacto del COVID-19 en los negocios, el caso de la localidad de Hecelchakán

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DOI: 10.35429/JM.2021.9.5.23.29

Received July 30, 2021; Accepted December 30, 2021

#### Abstract

The chaos that micro-businesses are going through due to the surprise of the mandatory temporary closure in the City of Hecelchakán, Campeche is exacerbated by the uncertainty of its employees. For this reason, it is urgent to describe the general administrative indicators of the micro-businesses of Hecelchakán. The study presented in this article is descriptive, the design is non-experimental transactional, the method was the study of the field and the technique is the survey, with the questionnaire as an instrument. The results indicate that the level of customer service in the electrical appliance micro-businesses in the town of Hecelchakán is good, although incomplete. 100% of them handle a guarantee on their products, which means a high possibility of demand. Three out of four businesses obtain their sales on credit and in cash. The current health situation put and continues to put household appliance micro-businesses at risk as these at the beginning of the COVID-19 pandemic were forced to temporarily close.

#### Resumen

El caos por el que atraviesan los micronegocios de electrodomésticos ante la sorpresa del cierre temporal obligatorio en la Ciudad de Hecelchakán, Campeche se ve acrecentado por la incertidumbre de sus empleados. Por tal motivo es apremiante describir los indicadores administrativos generales de los micronegocios de electrodomésticos de Hecelchakán. El estudio presentado en este artículo es del tipo descriptivo, el diseño es no experimental transaccional, el método fue el estudio de campo y la técnica es la encuesta, con el cuestionario como instrumento. Los resultados indican que el nivel de atención al cliente en los micronegocios de electrodomésticos en la localidad de Hecelchakán es bueno, aunque incompleto. El 100% de ellos manejan garantía en sus productos, lo que significa una alta posibilidad de demanda. Tres de cuatro negocios obtienen sus ventas a crédito y al contado. La situación sanitaria actual puso y sigue poniendo en riesgo a los micronegocios de electrodomésticos pues estos a inicios de la pandemia por COVID-19 se vieron obligados a cerrar de manera temporal.

**COVID-19, Micro-businesses, Home-appliances**

**COVID-19, Micronegocios, Electrodomésticos**

**Citation:** BACAB-SANCHEZ, José R. The management of administrative indicators and the impact of COVID-19 on business, the case of the locality of Hecelchakán. Journal-Microeconomics. 2021. 5-8:23-29.

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## Introduction

There are many problems that small businesses go through. The vast majority of them do not know how to offer a good management of their business without affecting their employees, their profits or their capital. Today the outlook is more complicated by what the world has experienced, a pandemic that forced many countries to close their borders and their establishments to avoid further harm to people. But that caused an unexpected adjustment for businesses that had to lay off staff, or in the best of cases adjust their salary to share losses.

It is the micro and small business sector that most strongly felt the impact of the pandemic that began in 2020. It is this group of companies that have decided to resist and survive this period of uncertainty that is being left by COVID- 19. In Mexico, it is known that this sector is one of the most important for its economy, but at the same time it is one of the most susceptible.

In 2019 in our country 94.9% of the establishments are of micro size. 4.9% are small and medium (PYMES) and 0.2% are large. The PYMES establishments contribute 30.7% of both the employed personnel and the added value in our country. Among micro and small businesses, the participation of women as business owners increased from 35.8%, in the 2009 census, to 36.6% in the 2019 census (INEGI, 2020).

In this work, the establishments that were directly affected by having to temporarily close their businesses were examined as they were not essential for the health contingency that they went through. This work was limited to the case of the City of Hecelchakán, Campeche, focusing on all establishments related to the sale of white goods and electrical appliances.

## Background and problem statement

One of the challenges of today is the survival of the small business in the face of sudden changes in society. The situation of the last two years has not been encouraging at all for businesses in general, as well as for those in the city of Hecelchakán. What happened in the field of commerce and consumption has put the ability to manage and manage businesses to the test.

One of the areas that companies located in areas of small cities neglect is related to the management of indicators of their day-to-day operation. Especially when MPYMES represent for the Mexican economy an importance of great value for national production and for the ecosystem related to them. Since, as mentioned (Gonzalez P and Bermudez T, 2009) they are the focus of interest for banks, companies that offer technology and publishing companies that are interested in making specialized publications about them.

The world was transformed by the COVID-19 pandemic, representing a growing and unprecedented global crisis, which contains devastating health, economic and social consequences in all countries. This pandemic puts the world economy in a recession of historic dimensions.

In the town of Hecelchakán these conditions are not the exception. Many of the micro-businesses were threatened since sales were notoriously affected, there was a great decrease in the demand for certain types of items. By orders of the health authorities, non-essential businesses had to temporarily stop their activities, and this was the case of the micro-businesses studied in this study. The micro-businesses closed for approximately six months in 2020. In the last quarter of that year, they resumed their work. In order to continue with their operation, sanitary measures were implemented such as the mandatory use of mouth covers to gain access to the establishment. The number of people within the businesses was also reduced. Some businesses had to replace staff who were in the range of vulnerable to contracting the virus. For example, employees with some kind of chronic illness were replaced. For all of this, this research aims to answer the following question: How are management efforts being carried out in the non-essential businesses of the City of Hecelchakan in the face of an unforeseen temporary closure?

## Objective

The objective of this work is to describe the general administrative indicators of non-essential establishments in the town of Hecelchakán.

### **Micro-enterprises in Mexico**

Microenterprises are businesses that have less than 10 workers and generate annual sales of up to 4 million pesos. They represent 95 percent of all companies and 40 percent of employment in the country. In addition, they produce 15 percent of the Gross Domestic Product (Secretary of the Economy, 2021).

### **Micro-enterprises and their functions**

A microenterprise is the entity where wealth is created. It allows human, material, financial and technical resources to be organized to transform inputs of finished goods or services, in accordance with the objectives that in most cases are profit of social utility and service (Valencia, 2007).

### **The administration**

Management is getting things done through other people or getting results through people using all kinds of resources in a rational way. Administration is a comprehensive process to plan, organize and integrate an activity or work relationship, so it is based on the use of resources to achieve a specific purpose (Hurtado, 2008, p. 40).

Administration is a process by which scarce resources are used to achieve proposed objectives and achieve profit maximization through the administrative process of planning, directing, organizing, and controlling (Ibidem). Hortigüela, M. and Sánchez, O., (2020) mention that good business management does not occur if the company does not take care of monitoring the sales of its products or services that occur with customers. Although at first glance, it may seem like a waste of money to use resources in an operation that has already been carried out. This translates into an investment, which becomes an additional value for the client (p. 12).

### **Materials and methods**

With this research project we have sought to describe the general administrative indicators of non-essential establishments in the town of Hecelchakán in the face of an unforeseen event such as the temporary closure of businesses and slow return derived from COVID-19.

Non-essential businesses were surveyed here after exceeding the mandatory 6-month temporary shutdown and entering the City's business activities.

### **Study type and design**

This study is descriptive, with a quantitative and mixed approach. The design is non-experimental transactional, since the participants belong to a specific group or level (all of them with micro-businesses). Data are investigated in a single time to describe variables and analyze their incidence or interrelation at a given moment (Hernández, Fernández & Baptista, 2014). The method is the study of the field, and the technique is the survey, with the questionnaire as an instrument.

### **Instrument**

The questionnaire that was applied to non-essential businesses in the town of Hecelchakán is made up of seventeen questions, which are divided into 4 dimensions.

The first part describes the dimension of customer service indicators and is made up of 6 questions of which five are open. The open questions deal with how many clients you serve per day, how much time they dedicate to you during your service, complaints, returns and which are the best-selling products. There is a closed question with yes or no options about the Customer Satisfaction and Suggestion Box.

The second part describes the indicators of the service process that consists of eight questions, of which four are open questions about the guarantees offered by your items, sales personnel, adequate service areas with chairs and tables. Another four questions are yes or no questions about after-sales services, layaway system, online sales, and home delivery.

The third part of the questionnaire describes the second dimension of financial indicators, which consists of seven open questions that describe the type of sales that are obtained the most in the business, the number of customers who buy on credit in a week, if payments for items sold are made by credit card or cash, products intended to be sold within a week, and the amount of sales within a week.

The fourth part of the questionnaire describes the impacts that businesses had due to the pandemic and is composed of six questions, of which one is an open question that describes the impact that the business had due to the pandemic, and four questions are with options for yes or no that describe the risk of the business, the liquidity problems, reduction or dismissal of personnel and the decrease in sales. There is also a multiple-choice question which describes the bases for decision making in the current crisis.

### Participants

Campeche is one of the 32 federative entities of the Mexican Republic, which it is located in the southeast of the country, bordering to the north and northeast with Yucatán, to the east with Quintana Roo, to the south with Guatemala, to the west with the Gulf of Mexico and to the southwest with Tabasco. The State of Campeche represents 2.9% of the total area of the country (INEGI, 2021).

Hecelchakán is one of the twelve municipalities that make up the State of Campeche. In 2020 it had a total of 31,917 inhabitants (Ibídem). It is a small city, so its businesses are sensitive to unexpected and unforeseen changes. In this phase of the study, non-essential establishments were selected, those related to household appliances and furniture in the town of Hecelchakán. A total of four were considered, which are the business of this type existing in the town.

### Results

After the closing process of non-essential businesses and a slow reincorporation to commercial activities, some of the results obtained are presented. This happened shortly after its opening to the market again, that is, in the last quarter of the year 2020.

### Customer service indicator

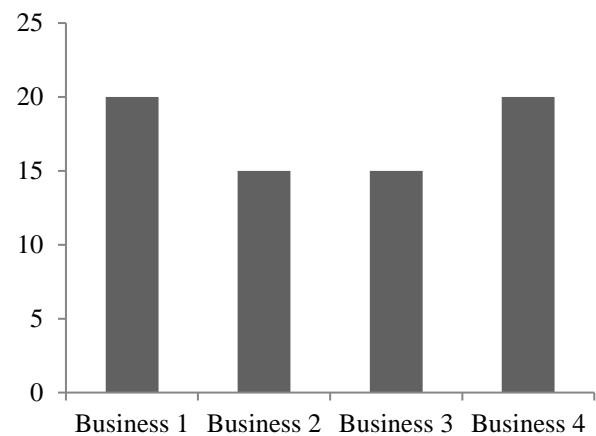
For businesses of the line of white goods and electrical appliances located in the town of Hecelchakán, we see that establishment number four is the one that serves the largest number of customers with a total of 30 people per day. It is followed by establishment one with 18 people per day, and then establishment two and three with an average of four people per day (see Table 1).

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Business	Customers
Business 1	18
Business 2	4
Business 3	4
Business 4	30

**Table 1** Total of Customers served per day  
*Source: Prepared with field information, 2020*

The time each business spends on each customer is as follows: Business 1 and 4 give customers an average of 20 minutes when they visit the store, that is, each customer who makes a visit to the business is given an attention 20 minutes to ask if you want something from the store, answer a question or provide you with any information regarding a product in the store. Graphic 1 shows business with the highest availability for the client.



**Graphic 1** Time dedicated to customer service  
*Source: Prepared with field information, 2020*

We can see that business 1 and 4 spend most of the time to serve their customers, these same businesses are the most visited (Table 1). A first result obtained with this work is that "the more time offered to serve customers, the greater the number of visits to the business" (Table 2).

Business	Customers	Time
Business 1	18	20
Business 2	4	15
Business 3	4	15
Business 4	30	20

**Table 2** List of clients and time of attention by establishment  
*Source: Prepared with field information, 2020*

The correlation coefficient between customer service time and the number of them visiting the establishments is calculated, resulting in 0.92. That is, as it can be seen in Table 2, both variables (customer and time) increase simultaneously and in the same direction, this means that when one variable increases the other also increases. The trend line goes to the right, which indicates a positive correlation, which means that the correlation between both data is good, because the more time is dedicated to customers, the greater the number of visits.

The best-selling products by business are the following: 75% of the establishments mentioned that the most sold product are washing machines, followed by televisions and motorcycles.

To the question if they have had complaints or returns of products in the week, the establishments answered the following: Only one commented that during the week of the interview they had had 2 complaints or returns, three mentioned that none.

When asked if the businesses have a suggestion box or customer satisfaction, only 1 mentioned that it does have a suggestion box, the other three mentioned that it did not. This implies not listening to the client and they generate a distancing from what is considered important.

What has been done by the businesses studied in this research in terms of customer service, it is insufficient. As it can be seen, it is contrary to what was found by Gonzalez P and Bermúdez T., (2009) who mention and conclude that the managers of microenterprises (56.8%) give great relevance to everything that allows them to know the level of customer satisfaction, which can be seen through the response obtained when rating customer service.

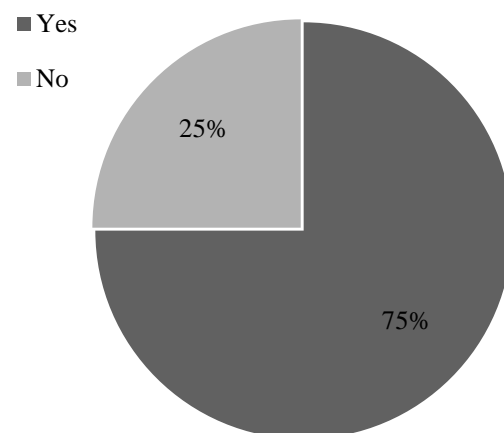
### Service process indicator

These establishments are of size called micro-businesses due to the total number of employees they have. All businesses studied have less than 5 employees (Table 3).

Businesses	Employees
Business 1	3
Business 2	2
Business 3	2
Business 4	2

**Table 3** Number of employees per business  
*Source: Prepared with field information, 2020*

When asked if all products have a guarantee, 100% of the businesses answered yes. About the warranty time, these range from 6 to 12 months for all products that have it. On the other hand, they were asked if they have an after-sales service, of which three answered yes and one answered no. That is, once they achieve a sale, the domain shipping service and customer service for the purchased product remains open. To the question about whether they handle online sales. 75% said yes, while the other 25% said no. That is, 3 of the 4 businesses interviewed mentioned that they do have an online sales system (Graphic 2).



**Graph 2** Online sales management  
*Source: Prepared with field information, 2020*

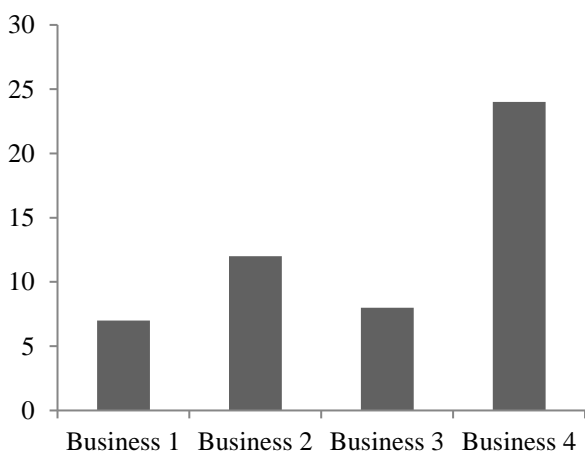
### Financial indicator

100% of businesses operate a credit system for customers. This allows visitors to choose between two business payment systems that give either cash payments or by obtaining a credit (Table 4). That is, three of the four establishments responded that credit and cash sales go hand in hand, that is, in equal parts, while one responded that sales are made to a greater extent via credit.

Businesses	Sales type
Business 1	Credit and cash
Business 2	Credit and cash
Business 3	Credit card
Business 4	Credit and cash

**Table 4** Businesses with a credit system  
*Source: Prepared with field information, 2020*

Regarding the question about the type of purchase made by customers in the week surveyed, the response was as follows: Establishment 4 had 24 movements for credit, followed by establishment 2 with 12 movements, establishment 3 with 8 and establishment 1 with 7, (see Graphic 3).



**Graphic 3** Credit purchases per establishment per week  
*Source: Prepared with field information, 2020*

To the question, are the payments of the products sold made with credit cards or with direct payment in the store? 75% answered that it was made with direct payment to the store, while 25% answered that it was made with credit card. That is, of the 4 establishments surveyed, one that is 25% of the micro-businesses, answered that they do accept that customers make their payments with cards, while 75% answered that they do not accept this type of payment.

To the question, how many products does the company intend to sell in a week? To find out if the company has a sales goal in the establishment, the situation is as follows: Three establishments mentioned that they do not have a specific number, that is, they do not have an established goal, on the other hand, one mentioned that it does have with one goal, he mentioned that he intends to sell 50 items a week.

To the question, what is the average amount of sales for a week? One business mentioned an average of 30,000 pesos a week, two had an average of 10,000 pesos a week. One business did not provide any information.

**Impact of the COVID-19 pandemic on micro-businesses**

To the question: what has been the impact of the pandemic on the business? The answers were the following:

Two of the businesses closed temporarily for approximately six months when the number of infections increased in the town, one closed because sales fell drastically, and another business closed on orders from the health authorities. In addition, those in charge of the business were seniors and their health was at risk.

100% of the establishments were at risk in financial terms for the business and health for the people. This resulted in stress for employees who saw their jobs at risk during all this time that businesses were not working as before the pandemic.

The businesses to which the questionnaire was applied responded that the health situation due to the COVID-19 pandemic put their business at risk. For all businesses, the current health situation presented liquidity problems as a result of the closure.

To the question: given the current health situation, does the business present or present problems such as reduction or dismissal of personnel? The four businesses responded that the number of employees was not reduced in their establishments. But, when the pandemic began, economic problems began to arise as a consequence sale decreased.

Montañez Balaguera, Y., & Romero Duran, Y. (2021), in a study conducted to analyze the economic and financial impact of Covid-19 in four and five-star hotels in the city of Cúcuta in Colombia, found that 67 % of managers stated that they did have to reduce part of their workers, since the quarantine forced them to close their establishments, where they produced significant losses, and without generating any type of income, therefore, they had no way of responding to expenses monthly.

On the other hand, 33% stated that they did not reduce staff and were able to support their workers in the midst of this economic crisis. Regarding decision-making in the face of crises such as the current one, all the electrical appliances micro-businesses responded that they were based on government information.

### Conclusions

The level of customer service in the electrical appliance micro-businesses in the town of Hecelchakán is good because 50% of the micro-businesses serve their customers for a period of 20 minutes and this makes it good because it should not be very fast. It is incomplete because other variables in care are neglected. The same percentage of businesses have the most clients per day. This has a direct relationship, because the more time is dedicated to customers, the greater the number of visits. This indicator is also considered good because of all the electrical appliance businesses, only one files claims or returns in a week. The service process indicator: 100% of micro-businesses have a guarantee on their products, which means a high possibility of demand. This indicator is used to measure the level of customer service, which means that 75% of the businesses in the town do have an adequate area with chairs and tables to serve their customers. Only 25% of businesses handle online sales and 100% have a section system. Regarding the financial issue, three of the four businesses obtain their sales on credit and in cash, and only one carries out the sales mainly by credit. Only 25% accept that the payment of the products sold is made by credit or debit card; 75% of the micro-businesses in the locality do not have established goals that indicate how many items they intend to sell in a week. The current health situation put and continues to put household appliance micro-businesses at risk, since at the beginning of the pandemic they were forced to close temporarily, and it was not until a few months ago that they resumed their activities, however, the economy of the the locality was affected, which caused sales in these businesses to decrease.

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#### **Abstract (In English, 150-200 words)**

Objectives  
Methodology  
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Methodology  
Contribution

#### **Keywords (In Spanish)**

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† Researcher contributing as first author.



**Introduction**

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General explanation of the subject and explain why it is important.

What is your added value with respect to other techniques?

Clearly focus each of its features

Clearly explain the problem to be solved and the central hypothesis.

Explanation of sections Article.

**Development of headings and subheadings of the article with subsequent numbers**

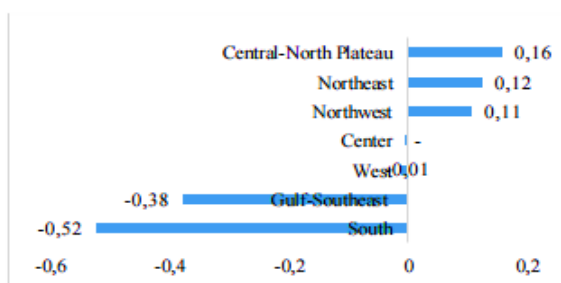
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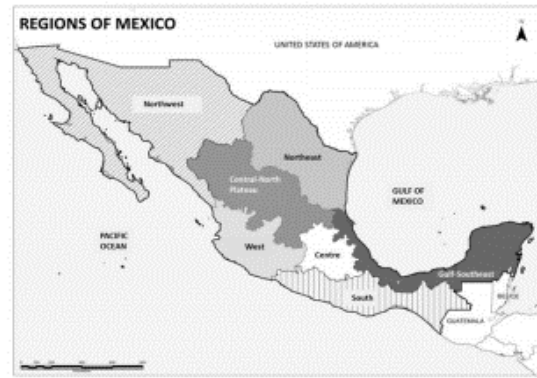
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**Graphic 1** Title and Source (in italics).

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**Figure 1** Title and Source (in italics).

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REGION	STATE	Participation (%) on		
		Surface	Population	Gross Production
1. Northwest.	Baja California; Chihuahua; Sonora; Baja California Sur; Sinaloa.	32.1%	11.1%	13.1%
2. Northeast.	Coahuila; Nuevo León; Tamaulipas. Aguascalientes; Durango;	15.1%	9.3%	15.6%
3.Center North Plateau.	Guanajuato; San Luis Potosí; Zacatecas.	15.1%	10.9%	9.2%
4. West.	Colima; Jalisco; Michoacán; Nayarit.	8.7%	11.9%	10.2%
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<b>TOTAL</b>	<b>MEXICO</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Table 1** Title and Source (in italics).

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**For the use of equations, noted as follows:**

$$Y_{ij} = \alpha + \sum_{h=1}^r \beta_h X_{hij} + u_j + e_{ij} \tag{1}$$

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**Methodology**

Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

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