

## Informal employment in the COVID-19 era

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### Abstract

The study of organizational complexity of the assumption that public policies affect the work culture. In this regard, the literature shows that the objective variables -availability, income, resources, investments, rates and subjective variables –needs, expectations, opportunities, capabilities– without considering community factors such as identity, trust, sense of belonging, trust, cooperation and satisfaction. Specify a model for the study of informal employment around the processing of municipal waste. What are the dependency relationships between objective and subjective variables relating to the processing of municipal waste in an informal organization of pickers? Which answers this question hypothesis assumes that an increase in the levels of the objective variables affects an increase in levels of the subjective variables. a non-experimental, cross-sectional and descriptive study with a non-probabilistic data selection Tax Administration System (SAT) was conducted. The model specified  $[\alpha = 1.8; \beta = 1.8; \delta = 1]$  showed a non-linear path, self-organizational and a limit cycle disturbance that opens up possibilities for qualitative interpretation of relations between authorities and citizens regarding the problem of municipal waste processing the importance of community variables included in the model to explain scenarios suffering and social cooperation to narrow the problem to isomorphism, negentropy and entropy warns.

**Keywords:** organizational complexity, municipal waste, informal employment, isomorphism, negentropy, entropy.

### Introduction

From a psychological approach, the objective of this work is to specify a model for the study of organizational complexity with emphasis on informal employment in order to anticipate scenarios of both decreasing and increasing entropy and negentropy, with respect to balance, chaos and disorder.

The psychology of organizational complexity focuses its object of study and unit of analysis on isomorphic

processes – models that explain the complex relationships between the variables of a system.

The theory of structural isomorphism posits that the guidelines of public policies, in this case labor policies, are disseminated in the organizational culture in such a way that they determine work climates. This is information concerning productivity and the evaluation of leadership and performance in accordance with pre-established objectives and

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goals.

The isomorphism, among other phenomena, evidences the negentropic and the entropic. The first consists of the balance between demands and resources. Instead, entropy is inferred from the imbalance between the contingencies of the environment and the capabilities of organizations.

In other words, an organization is complex because it generates isomorphism based on the guidelines of the State or the market. Isomorphism is inferred when the relationship climate is in balance with respect to the task climate, meaning that demands and resources are also in balance. Therefore, the isomorphism reveals the interrelationship between negentropy and entropy.

An organization is entropic when the demands exceed the resources, or the relationship climate is subject to the task climate. On the contrary, when an organization generates its opportunities based on its capabilities, it shows its negentropy.

However, organizational complexity can go beyond organizations, since there are informal systems such as those who process municipal waste. In such a system, isomorphism is observed in the transfer, separation, reuse and recycling of used products.

Negentropy is observed in the processing of waste, since it is an informal response to the entropy or consumerism that waste entails. This is how, in a city, the entropy indicated by the consumption of products and their transformation into waste is lowered by the negentropy of those who are dedicated to processing said waste.

The social isomorphism is transferred to the informal organization of the scavengers' guild. The entropy involved in the accumulation of various residues implies a processing that avoids the destruction of the system. It is the scavengers who not only avoid environmental catastrophe, but also redirect the waste towards a new reuse and, where appropriate, towards recycling or new transformation.

Precisely, the study of scavengers is essential to anticipate probable scenarios of local ecological disaster, or else, waste processing alternatives that contribute to municipal development.

However, research on informal employment has focused on formal economic activity as an alternative. In this sense, the models that explain the effects of public policies on formal and informal employment have focused on their determinants without considering isomorphism, negentropy and entropy.

A non-experimental, cross-sectional and exploratory

study was carried out with a selection of non-probabilistic data provided by the Tax Administration System (SAT) related to the separation of waste, the fiscal contribution, the total population in a locality and the tons approximate residuals, after specifying the variables in a model of dependency relationships.

### **Organizational Complexity: Consumerism and Waste**

Faced with the economic, political and military crises in Mexico, a group of people emerged who had the need to self-organize and seek an emerging way out of survival, by virtue of being people with fewer resources, with limited development opportunities, today they are known such as garbage collectors. These struggle to have formal job opportunities; however, due to these crises; They are dedicated to the collection of various waste and garbage that generate monetary value. During a population in constant growth and development.

It is precisely on this subject to be considered in this document, locating this phenomenon in an economic unit, how the Segregator becomes a merchant indirectly and a generator of employment in an informal economy. Also, as the Segregator being part of the population and for its survival depends on its growth, from this perspective, we will analyze the interactions that they have with respect to each other, that is, through a mathematical model, we will observe the growth and behavior of both populations.

Studying the progress of current garbage collectors (scavengers) through time allows us to understand why from generation to generation, from century to century; these segregators have played an important role in Mexico, being observed, without being seen, but used. In addition, it serves as a challenge for dedicated researchers in different disciplines such as: Political Scientists, Sociologists, Psychologists, Anthropologists, Biologists, Physicians, Economists, Administrators, Environmental Scientists, and Mathematicians, among others.

The Segregator must be studied from the different disciplines, how its causes and effects arise; how to organize for a common good within a self-organization process and how the synchronization of chaotic components can lead to organized behavior.

In their journey through life through time in search of work, opportunities to obtain liquidity find survival spaces as an alternative in places known as open-air dumps (garbage dumps); organizing individually, by family and spontaneously for a natural common good, with respect for the assigned spaces, but not for the content, by seniority "... they are in the best places

and will be willing to defend their rights at any cost" (Ostrom, 2011); not as a system of private or public property. We are not talking about Collective Action Institutions; however, the rules of coexistence that maximize the biological adaptation of individuals - says Ostrom - obey "values that arise from social cohesion and that give social organization a much deeper and broader meaning." In the assigned spaces they are dedicated to the separation and collection of a diversity of waste and garbage that generate value. Therefore, in this analysis, it will try to locate this phenomenon in an economic unit, of how the Segregator becomes a merchant and indirectly participates in generating employment in an informal economy. Likewise, how the Segregator depends on the growth of the population by consumerism. The growth of the segregators is increasing according to the economic crises, mainly in women. It should be noted that internal family growth is slower.

In order to be very clear about this phenomenon of segregators in an informal economic unit, a process of dynamic forms of growth, self-control and organization must be found, without ceasing to observe size, movement and time; that the dynamic economic essence of the studied process be captured.

Since the conquest, the internal military and political movements in Mexico have caused a part of the population, faced with the need for food and clothing, to start the pepena (a Nahuatl word that means: raise, gather)

During pre-Hispanic times, the garbage problem in the great Tenochtitlan was the responsibility of the nobles and monarchs who prohibited buying and selling outside the established markets, which is why no one littered the streets. The cleaning system among the Mexicas was attended by people dedicated to it, who carried out their work with pride and the satisfaction of having a clean city.

Fray Toribio de Motolinia in his book *Historia de los Indios de la Nueva España* -said- "In each city in their neighborhood there is a large square, where every day ordinarily a large market is held in which infinite people are helped to buy and sell, and in these markets that the Indians call tianguiz, everything on earth is sold, from gold and silver, to cane and ants" (small wood to light the ovens).

"Furthermore, he had many flower boxes and orchards and in it his rooms; it had crags surrounded by water, and that was a lot of game; He had forests and mountains fenced in, and in that very good houses and cool rooms, very swept, because he had

as many servants as the greatest lord in the world. All the streets and highways of this great city were so swept clean and swept that there was nothing to trip over, and wherever Moctezuma went out, as well as in it as where he had to pass, it was so swept and the ground so settled and smooth, that, although the sole of the foot was as delicate as the hand, the foot would not receive any detriment in walking barefoot.

Since the arrival of the Spaniards in Tenochtitlan, they expressed and marveled at the organization and cleanliness that existed before reaching it, a large circuit of patios, which I think were more than the square in Salamanca, and with two fences around calicanto, and the same patio and place all paved with large stones of white and very smooth tiles, and where there were none of those stones it was whitewashed and polished, and everything very clean, that they did not find a straw or dust in all of it.

However, at the time of the conquest, the pepena begins on the part of the Mexicas, including the elderly, women and children. This because of the siege that Hernán Cortes made in Tenochtitlan with the flotilla of boats on the lake and by land with his Tlaxcalan allies and other towns that joined Cortes, where they broke freshwater aqueducts and did not allow food to arrive. The group that remained to defend the remains of Tenochtitlan had to scavenge to feed the elderly, women and children, and themselves.

After the conquest, where the pyramids (Cu) were located, they were destroyed, remaining in ruins and the place was later taken as a garbage dump; The people who managed to escape were persecuted, the objective was the total extermination of all the Mexica and allies. Reason for which, being persecuted, they had to flee to the mountains or look for allied towns; however, they had to pick. The Franciscans, realizing the extermination attempt, began to defend them.

After the conquest in 1521, the population began to decline rapidly to add a century later to only 10% of that reached before the event: less than 100,000 people for the entire basin, and less than 30,000 in whatever it was. the great Tenochtitlan (Ezcurra, 2000).

This depopulation was a consequence of wars, slavery, and the arrival of new diseases against which the indigenous population was defenseless. In addition, the religious, political, economic and cultural collapse that the conquest entailed played a very important role, as did the destruction of urban infrastructure and the environmental deterioration induced by new species alien to the natural environment.

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The apparent harmony that Mexica society reached with its environment was lost forever, in the process that dried up the lakes and made the growing population dependent on water from the aquifer and other basins. This process, which finally seems to have achieved its objective of combating water, lasted almost five centuries, while the Mexica in less than two centuries managed to understand the functioning of the ecosystem and achieved an adaptation that allowed their culture to flourish.

With the growing Spanish population in Mexico, the garbage increased and accumulated, while on the side of the Mexica and other peoples, the scavenging decreased and increased.

Faced with this population growth of the Spaniards, the garbage, diseases and discontent of the natives grew (so called all people from Mexico) and who did not have the pretext of taking up arms against the Spaniards. Faced with this situation, Viceroy Revillagigedo in colonial times established an emerging exit with the first group of horse-drawn carts, which collected the garbage and deposited it in the dump, according to historians, in Santa María La Ribera.

At the beginning of independent Mexico, the political and economic crisis continued to affect the growing population; A cleaning system of animal-drawn carts was established in the Federal District, which in the mornings and at night passed through the streets ringing a bell so that people would come to deposit the garbage, on the other hand, people dedicated to cleaning continued to grow. pickle.

At the end of the 19th century, the rubbish was removed in about eighty carts. The town councils and the health police were in charge of cleaning the streets, markets, public squares, hospitals, prisons, welfare houses and removing everything that could alter Public Health.

From the twentieth century, there is an excessive growth of Mexico City, as a result of rural areas and natural growth. This increase in population provided more garbage due to the exaggerated consumption of unnecessary objects -that is to say- discarded almost always in a short period and on the street.

### ***Social isomorphism: Municipal waste pickers***

The scavenger is part of a whole of many components whose behavior gives rise to structures at various scales and patterns of manifestations, whose dynamics cannot be inferred with a simplified description of a system. This phenomenon should be focused primarily on your organization; and consider that the field is highly multidisciplinary and the

different disciplines must be brought together: Political Scientists, Sociologists, Psychologists, Anthropologists, Biologists, Doctors, Economists, Administrators, Environmental Scientists, etc.

In principle, complex systems may act in ways that are not predictable by analyzing their parts separately, but they function as a whole and have properties distinct from their component parts, known as emergent properties, since they emerge from the system while it is in existence. in action.

It must contemplate the whole and the parts, as well as their connections, be they moral, social and communication processes, studying the whole in order to understand the parts. Its behavior depends on the global structure, where the arrangement of the pieces is fundamental, like the parts connected and working together.

With this set of relationships, it is necessary to determine what kinds of interactions and transformations exist within a system and that contribute to the development and persistence of certain characteristics of the organization, it is not enough to analyze the relationships that these components have, but how it is conformed these components, to have more information with more significant values, which are connected and the way in which they interact showing the effectiveness of their development in the processes in which they participate and develop.

In this context, the analysis of the scavengers will allow us to visualize how the components and their interrelationships are connected and interacting in a way that can only be described by highly non-linear relationships, manifested in the structural changes that they undergo inside, manifesting themselves outside. , in this way the study of scavengers is placed within a much broader context in which they can be subjected to the same methods of characterization, modeling and description as is usual in other complex systems.

A scavenger is understood as one who lives in the garbage and lives from it. They are those who are in charge of collecting the garbage and selling it to intermediaries so that it can be reused.

The garbage collector after the conquest is reorganized naturally, out of necessity and to face the onslaught of the crisis after the Conquest, Colony, Independence, Reform, Mexican Revolution and to this day.

Unfortunately, this self-organization that was born spontaneously and naturally is lost in the main cities through the internal birth of leaders or chiefs,

politicians, intermediaries and industrialists.

Garbage itself is a very lucrative business, since it is made up of all the waste of society to be resold and many profits are obtained. That is why, as it is a lucrative business, historically it is a process that has evolved and has become a mafia.

All these people who live from garbage dumps are people who by inheritance are condemned to live in garbage, others who join out of necessity and finally those who, not having a job and seeing it as an emerging outlet, join this source of income, only some, manage to advance a little through power struggles, to obtain more economic gains and thus take advantage of other scavengers. This is how the mafia starts.

The garbage mafia has been around for decades, and has become a business that generates large monetary profits for a few with the sacrifice and hard work of many.

In the big cities, the scavenger, in the absence of protection from some body or institution that is in charge of regulating, taking care of their work operations, they have to go to other people and organizations in search of protection to be able to carry out their work, these people or organizations work under the legal framework, but to carry out their operations they always maintain a relationship with the authorities.

For example, in Mexico City, the union has the pickers under its authoritarian regime, any proposal that affects their economic and political interests does not allow it to be carried out, because they would lose control over the majority of the pickers, or otherwise, they would gain a certain independence and thus reduce their economic income. Such is the case of Rafael Gutiérrez Moreno; currently Cuauhtémoc son of Rafael, who was a deputy for the PRI (currently suspended for alleged acts of organized crime) and leader of a scavenger's union.

The cacique imposes his aggressiveness through various methods, either through the use of force, threats, imposing fears (with lies, they tell them that if they do not behave well, the government will take away their right to collect garbage and lose their livelihood). In this system of caciquismo and leader of the scavengers and other garbage mafias, a kind of informal government is established where elements of the Federal and State Government arise.

The intermediaries play an important role in this Mafia, they are in charge of linking what is collected by the scavengers with the recycling industry. Although they do not obtain an income as high as that

of a leader or cacique, they do receive a much higher monetary utility than that of the pepenadores.

There are different types of intermediaries. Some are the ones who go to the dumps and obtain the recyclable material through the representatives of the scavengers, so they go to the industries and sell it to them.

The other intermediaries with the industry have their own collection centers, where the personnel from the dumps go with the separated material.

Intermediaries, as in many points in the process of collecting, separating and marketing municipal waste, substitute an economic activity.

The mafia is an alternative organization to a government when it lacks a presence in any sector of society or in any economic activity. This is what has given way to the consolidation of the garbage mafia in Mexico.

The absence of laws and planning by the government in the process, treatment and commercialization of municipal waste has allowed the illegal and informal sector to have greater control over this activity, it should be noted that the laws and planning are for the commercialization of waste and not to control, restrict, marginalize and exploit the scavenger.

The segregators are not part of the public administration and do not belong to the formal sector of the economy; however, they dedicate themselves daily to extracting valuable materials from what other people throw away.

The way of life that develops in cities is a reflection of their economic dynamics, it also shows the segregation of different groups based on their position within their social structure, producing discrimination in the inhabitants who are segregated according to their level. Of income.

On the other hand, the economic dynamic largely defines urban growth, since at the same time that the use of advanced technology is increasing in industry, important migratory flows are generated that will create conflict in relation to the labor market, as it becomes more and more difficult to enter it.

The population of the segregators of the final disposal site in urban areas presents a marked difference with respect to the composition of the migratory population of the states. Many immigrants who go to the big cities, some of them stay to find a livelihood, for many of them the scavenging is the activity that gives them an opportunity to survive.

The population in Mexico grows by 1,342,000 people Mexico closed 2013 with a population of 118,397,000

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people, which represents an increase of 1,342,000 inhabitants compared to 2012, in which the population was 117,055,000 people.

Mexico is the 11th country in population of the 184 of which we publish this data in DatosMacro.com.

The female population is the majority, with 63,063,487 women, which represents 53.26% of the total, compared to 59,268,912 men who are 50.05%.

Mexico has a moderate population density, with 60 inhabitants per Km<sup>2</sup>, it ranks 74th in terms of density.

In this page we show you the progression of the population in Mexico. You can see a list with the population of other countries by clicking on Population and see all the economic information of Mexico in Economy of Mexico.

On the other hand, the responsibility of a family can be considered as one of the situations that drive the picker to continue developing his activity. The pepeña is a difficult, strenuous and highly polluting job, which is carried out in the open, which is considered to be a determining masculine factor.

The daily diet of the scavengers and their families consists of legumes (beans, corn, chicken, vegetables, fruits, others). Regarding education, it is made up of various levels, the first refers to illiterate, the second unfinished primary and finally those who completed basic education.

For the scavengers, performing a trade like the one they do on a daily basis does not require a high degree of preparation, on the contrary, it is enough to have the intention or decision to do it, however, having a low academic degree becomes a limitation for access other types of jobs, where at least secondary education is required (in the government of Felipe Calderón it emerged that by law basic education is up to the upper secondary level).

The expansion of the scavenger is the result of the socioeconomic dynamics of the low-income population in its process of settling in the urban space and also indirectly affects the proximity to sources of employment.

The process of growth of the scavenger is located in a space and in a time to all the settlements of the problems arising from the economic crises. That is, depending on the urban density and configuration, we know what is in the settlement at this stage of the process, and we can estimate how much remains to be done, that is, to saturate the territory and reach the maximum density recorded in low-income settlements. income.

In normal situations such as those studied, the

process of expansion and consolidation is linear and irreversible, that is, the same thing happens successively in each lot, in each block and in each neighborhood on the periphery. The settlement begins with the self-construction of a room within a lot, continues for decades with extensions, improvements and the gradual incorporation of services, until the limit of the horizontal and vertical growth of housing is reached.

### ***Specification of a model for the study of informal employment***

Next, we will present a model in which we can include two of the populations, on the one hand, we have the total population of inhabitants of a certain city and as the population increases, the proportion of scavengers increases at the same time, in terms in general, our model is as follows:

In Mexico, 86 thousand 343 tons of garbage are collected daily, can you imagine all that garbage? That is, 770 grams per person.

The Tax Administration Service (SAT) announced the incorporation into the taxpayer regime of some 400,000 scavengers and collectors from the recycling industry identified in the country, in a tax scheme that, if successful, would generate income for the treasury for around 21 billion pesos annually.

There are billions of tons of waste materials that are recycled annually in the country, with a value of around 100 billion and that will generate income of 5 percent for income tax (ISR) and value tax. (VAT), said the head of the SAT, Aristóteles Núñez Sánchez, announcing the new tax scheme for collectors. He argued that solid waste is a prosperous industry in the country, where those who generate it, that is, the collectors, are the last in the benefit distribution chain.

The income that is calculated from this segment of the population represents, for example, more than double what the federal government obtained in 2013 for the special tax on production and services (IEPS) paid for activities of games and raffles, telecommunications and beverages. energizing together.

The new fiscal scheme for the recycling sector was contemplated in the recent fiscal changes and that are part of the reforms to the Fiscal Code of the Federation (CFF) approved by Congress. But above all, he pointed out that the tax burden will fall on the purchasers of material destined for recycling and not on the collectors or those who carry out the collection.

Although most of the models experience an exponential growth/decrease in their initial phase, it is clear that this evolution cannot be maintained over time. It is necessary to create other density-

dependent models or, in other words, it is necessary to introduce growth limits, which are the coefficients for the growth of each population. Generally, the usual way to do it is to compare the populations with each other and carry out the work of data collection and comparison with each other, thus we have:

No species lives in isolation and interactions between species provide some of the most interesting models, here is a simple predator-prey system of differential equations where one species "eats" the other, in this model we have two time-dependent quantities. Our model then has two dependent variables that are both functions of time. In this case we will call the prey "the general population" and the predators the "garbage collectors", and we will denote the prey S and the predators by Z.

Lotka-Volterra growth model, also known as predator-prey equations, are a pair of first-order differential equations nonlinear that are used for modeling two interacting populations, a prey and a predator. The equations were independently proposed by Alfred J. Lotka in 1925 and Vito Volterra in 1926. Such equations are defined as:

$$\frac{dS}{dt} = \alpha S - \beta SZ \tag{1}$$

$$\frac{dZ}{dt} = -Z + \delta SZ \tag{2}$$

Where:

- Z is the total number of the population in a given region;
- S is the number of garbage collectors;
- dZ/dt and dS/dt represent the growth of the two populations over time;
- t represents time.

To formulate this model in mathematical terms, we need four additional parameters to our independent variable t and to our two dependent variables S and Z. The parameters are:

- $\alpha$ ,  $\beta$  and  $\delta$  are parameters that represent the interactions of the two species.
- $\alpha$ : Coefficient of the growth rate of the garbage collectors
- $\beta$ : Proportionality constant that measures the number of population-segregator interactions.
- $\delta$ : Proportionality constant that measures the benefit of the growth of the population of Segregators with the Total Population.

What we observe is the representation of the Total Population (green) and the segregators (red), as well as the proportionality of the latter with respect to the total -that is, of the Total Population there is a set number of segregators, these are increasing with respect to to the Total Population, but with the passage of time it stabilizes and is logical due to the proportion they maintain.

The equilibrium points are obtained by solving the system:

$$\frac{dS}{dt} = \alpha S - \beta SZ \tag{3}$$

$$\frac{dZ}{dt} = -Z + \delta SZ \tag{4}$$

Whose solutions are: P 1 = (S (t), Z (t)) = (0,0), P 2 =

$$\left(\frac{1}{\delta} + \frac{\alpha}{\beta}\right) \tag{5}$$

Although the equilibrium points were found, we cannot deduce the oscillatory behavior of the system. On the other hand, the system of differential equations is linearized around the equilibrium points, to study the stability of the system.

To do this, we use the Jacobian matrix. We define the functions:

$$f(S, Z) = \alpha S - \beta SZ, \quad g(S, Z) = -Z + \delta SZ \tag{6}$$

We calculate the following partial derivatives,

$$\frac{\partial f}{\partial S} = \alpha - \beta Z ; \quad \frac{\partial f}{\partial Z} = -\beta S \tag{7}$$

$$\frac{\partial g}{\partial S} = \delta Z ; \quad \frac{\partial g}{\partial Z} = -1 + \delta S \tag{8}$$

Substituting at the first equilibrium point P 1 we obtain:

$$\begin{matrix} \alpha & 0 \\ 0 & -1 \end{matrix} \tag{9}$$

Which shows that the equilibrium points P 1 = (0,0) is a saddle point node, with solutions that grow exponentially along the S(t) axis and decrease along the Z(t) axis. and that has linear solutions.

For the second equilibrium point P 2 =

$$\begin{pmatrix} 1 & \alpha \\ \frac{\alpha}{\delta} & 0 \end{pmatrix}$$

10

$$\begin{pmatrix} 0 & -\frac{\beta}{\delta} \\ \frac{\alpha\delta}{\beta} & 0 \end{pmatrix}$$

11

With eigenvalues (eigenvalues)

$$\lambda = \pm\sqrt{\alpha} = \pm i\omega,$$

12

What P 2 shows is a center and suggests that the solutions will revolve around it, giving rise, in this case, to periodic solutions of the populations.

$$\begin{pmatrix} S(t) \\ Z(t) \end{pmatrix} = C1 \begin{pmatrix} \cos \omega t \\ A \sin \omega t \end{pmatrix} + C2 \begin{pmatrix} \sin \omega t \\ -A \cos \omega t \end{pmatrix}$$

13

With:

$$A = \delta \sqrt{\frac{\alpha}{\beta}}$$

14

It is important to contemplate the law of periodicity of this model under the concept of limit cycle attractor. This is achieved by plotting the solutions parametrically in phase space, obtaining the superposition of two oscillatory functions that we can draw using a typical scatter diagram. Consequently, if we observe the population cycle, we will verify a typical pattern of behavior of the system.

With the Lotka Volterra model, a world of possibilities opens up to observe the reality of the system; where the key to understanding lies in the ability to disturb the model to draw conclusions, properties, principles and new insights of a qualitative nature that serve to understand this complex system. Particularly:

$$\alpha=1.8; \beta=1.8; \delta=1$$

Let us consider, from a systematic perspective, the limit cycle as a typical regularity of self-organization processes.

This analysis was carried out under the approach of nonlinearity and absence of normality in the simulation, results that must be considered for those methodologies that start from the assumption of normality to develop their expectations, a similar recommendation for when linear processes are used. The properties of self-similarity, persistence and

cycles, together with non-linearity and the absence of normality, allow taking advantage of the properties of dynamics, to incorporate new analysis tools in decision-making, which open the possibility of designing alternative strategies of negotiation, which could be used in transaction processes.

The findings of this research are added to similar ones with financial indices that provide evidence of chaotic structures, and not random behaviors as suggested by other theories, results that show the urgency of building new analysis procedures to study the dynamics, which by their nature it is highly complex, since stochastic, chaotic and fractal processes can coexist.

These results pose new challenges in the search for the explanation of the dynamics of the medium, as well as the need to consider other alternatives, which can be used in the design of negotiation strategies or combine different ones such as chaos-cointegration.

The informal economy is an economic activity that is not contemplated by legal regulations for reasons of tax avoidance (although in this sense it is currently undergoing modifications since the SAT wants to regulate the scavengers and not the intermediaries who are the ones who really generate the most wealth and could be the ones that collect the most taxes). That is, what is not declared in the tax collection institution, for example, domestic work, street vending, flannel work, street clowns, merchant stalls in itinerant markets (tianguiz), etc.

Now that people throw their garbage, they begin to generate a series of problems, contamination by virtue of not separating it, rivalry between garbage collectors, some paid by the public administration, who through their trucks collect, separate and sell and the rest is deposited in authorized dumps. On the other hand, the scavengers who go through their carts to each house and in exchange offer them money on average from \$5.0 to 10 pesos, they also separate the material and sell it to intermediaries, and some materials are sold in street stalls (tianguis).

To understand more accurately how the labor structure of waste collection is made up, those who make up this labor force can be divided into the economic sector.

formal economy. They carry out their work in accordance with the law. These may include truck drivers who collect household waste or waste pickers who have a formal job.

Informal economy. Their work activities do not follow the laws imposed by the authority at all, due to the above, they are "volunteer" people who are collecting



the materials detailed above daily.

The waste pickers are not part of the Federal or State Administration, and do not belong to the formal sector of the economy. However, they dedicate themselves daily to extracting valuable material from what other people throw away.

We could see the way of life that develops in cities as a reflection of an economic dynamic; It also shows the segregation of the different groups based on their position within their social structure, producing discrimination in the inhabitants who are segregated according to their income level.

Within the urban informal sector, we locate activities as varied as: flannel windshield wipers, homeless people, car washes, boleros, street vendors, acrobats, street clowns and segregators. With low income, insufficient instruction and vocational training and therefore a low level of education, there are some exceptions.

Through its centuries, Mexico has been more concerned about military and political growth and in the last two centuries about the growth of the Gross Domestic Product, with a very slow development, falling into an economic, political, social and cultural crisis. These crises have generated unemployment, bankruptcies of large, medium and small companies; therefore, backwardness in economy, politics, social and cultural, etc.

The informal economy is not bad, nor is it good, it is merely a fact, it is there, the problem is that it is growing very rapidly, there is no control and when economic policy, economists or political scientists, etc., react, the economy will not stop. economic explosion that is coming in Mexico.

Although the scavenger subsists, they must be specialized, offer security services, education, offer more benefits, preventing the scavengers who receive a salary from taking the material.

Remove the intermediaries, promote the companies that buy the material at a better price, that the same companies generate more employment.

That the tax collection institution (SAT), contemplate them as potential filers, in exchange for giving them all the services to which they are entitled, and clearly regulate (as already mentioned above), all the actors involved and always considering Note that some of the income is not fixed, which means a fair collection for all.

Greater planning in the collection and distribution of recyclable materials, garbage that is garbage, can be used to transform it into another input, for example, burning it would generate energy, and the residues

that remain (carbon) in fertilizer, etc.

Greater investment to put Mexican companies for recyclable, by virtue of the fact that the recyclable material is taken to other countries, obtaining millions of moneys by transforming it into another input.

### Discussion

The contribution of this study to the state of knowledge lies in the specification of a model for the study of informal economic activity with emphasis on underemployment related to municipal waste processing.

However, in relation to the specification of other models, the research excluded some environmental variables such as the availability of products, purchasing power, consumption of products, beliefs and satisfaction with the consumption of products that would affect production. of municipal waste.

Carreón et al., (2014) specified a model to anticipate the reuse and recycling of municipal waste. It included objective and subjective variables to demonstrate their incidence on responsible consumption, but unlike the present study, it did not consider the relationship between consumers and scavengers with the SAT. In other words, in a locality where eco-taxes do not condition the purchase, consumption and recycling of products, the relationship between citizens and governors seems to be subject to the growth of supply in a local market.

García (2007) warns that Sustainable Local Development is not only determined by public policies, but also these represent its main obstacle, since the laws seem not to regulate the supply of services and products, demand and consumption, as well as the waste processing, reducing citizens without alternatives to simple consumers that can be disseminated in the local market.

This situation is accentuated if migrants are considered in the equation, since they are the ones who are most exposed to the market, employment, consumption and informal processing of products and then municipal waste (García, 2008).

Therefore, the specification of a model does not only consist in establishing the trajectories of dependency relations between the variables, but also in the scrutiny of variables that in the future will determine the market, consumption and processing of local services and products.

In relation to future scenarios, the balance that a model can establish is linked to the prospective that the model can explain. García (2014) points out that entrepreneurship is a variable that, although it is not a current determinant of the dynamics of product

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consumption and waste processing, is fundamental in a future in which citizens have reached a level of awareness that forced them to propose alternative solutions. This will be so because individuals aware of the problem of municipal waste develop a sense of community that will allow them to generate initiatives based on cooperation to curb the effects of the problem on the quality of life and well-being of future generations (García, Carreón and Hernández, 2014a); at the same time that they will train competent citizens in terms of consumption reduction, product reuse and waste recycling (García, Carreón and Hernández, 2014b).

García et al., (2015a) showed that the quality of life not only depends on the supply and demand of services and products, but also on the perceptions that citizens have regarding the quality of the environment in which they live. An increase in the identity of that environment generates a sense of belonging and care observable in housing and employment (García et al., 2015b), as well as trust in local authorities (García et al., 2015c).

Therefore, the variables related to identity, sense of belonging and perception of the quality of the environment, when included in the present study, will allow us to anticipate future scenarios of care for the local environment (García et al., 2012), as well as the policies of sustainable human development (García et al., 2015e).

In other words, an explanatory model focused on social suffering would include objective variables – availability, rates, contributions, waste– and subjective variables –needs, expectations, resources, income, purchases, consumption, reuse and recycling of waste– that allow anticipating scenarios such as social suffering, or sustainable human development (García, Valdés and Sandoval, 2016).

Therefore, the specification of a model assumes; 1) review of the literature to extract the explanatory variables of the problem; 2) modeling of trajectories of dependency relationships between variables; 3) contrast of the model with respect to other models proposed in the explanation of the problem.

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