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SME´s semi-formality rate in Costa Rica: a clusters approach

Tasa de semiformalidad de la mipyme en Costa Rica: un enfoque por grupos

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Abstract

The MSME Observatory has been studying MSMEs in Costa Rica. Its findings show that for every formal enterprise, there are 2.4 semi-formal ones. The latter refers to those enterprises that have already started the formalization process with the corresponding municipality but that still do not have all the formalization requirements. Owing to the importance of the semi-formal sector in the economic activity of Costa Rica, this study analyzed this business park and the role of municipal management concerning MSMEs, calculated the correlation among semi-formality, competitiveness, and development, and finally, proposed a cluster design to deal with the state of affairs. It should be noted that this type of analysis has never been undertaken in the country.

Keywords: semi-formal enterprises, formal enterprises, municipal operating licenses, clusters.

Resumen

El Observatorio de Mipymes de Costa Rica ha estudiado el parque empresarial desde el 2005. De acuerdo con sus hallazgos, por cada empresa formal, existen aproximadamente 2,4 empresas semiformales, denominándose así a las mipymes que cuentan con una licencia de funcionamiento otorgada por el municipio correspondiente, pero pueden no cumplir los demás requisitos de formalización. Al considerar la importancia del sector semiformal en la actividad económica de Costa Rica, se analiza este parque empresarial y el papel de la gestión municipal respecto de la mipyme; comprobándose la relación de la semiformalidad con la competitividad y el desarrollo y, finalmente, se propone un diseño de conglomerados para afrontar la situación. Cabe señalar que este tipo de análisis no se había realizado con anterioridad en el país..

Palabras clave: semiformalidad empresarial, formalidad empresarial, licencias municipales, conglomerados.

1. Introduction

The Micro, Small, and Medium Enterprise Observatory (*Observatorio de Micros, Pequeñas y Medianas Empresas, OMIPYMES*) is an initiative from the State Distance University of Costa Rica (*Universidad Estatal a Distancia de Costa Rica, UNED*) in tandem with the other public universities: University of Costa Rica, the Technological Institute of Costa Rica, and the National University of Costa Rica. Its main goal is to generate information and strategic knowledge to inform the decision-making process and the design of public policy that foster competitiveness in Costa Rican MSMEs.

Costa Rica is subdivided in administrative units called cantons, which were used for the purposes of this investigation. Each one has a local government called municipality. In order to operate, MSMEs have to apply for an operating license with the corresponding municipality and keep it valid. This is the only necessary administrative procedure to create and operate an enterprise. The policies, procedures, and costs of this procedure are defined locally, which highlights the importance of municipal management for MSMEs. To this end, the researchers used the municipalities in all 81 cantons and the municipal district councils that award the operating licenses as primary sources.

Armed with the information, the researchers calculated the business park and analyzed the correlation with other cantonal indicators associated with competitiveness and development, thus using a mixed approach, both qualitative and quantitative.

1.1. Formal and semi-Formal Enterprise

There are three different categories of enterprises according the fulfillment of requirements. These are formal, semiformal and informal. Informal businesses are invisible to the institutions and the government. The formal enterprises comply all the requirements by law. There is an important area between formal and informal composed by enterprises that comply partially those requirements (Tokman, 2001; Carpio, 2007). In Costa Rica, Omipymes research found a large group of businesses that comply the local requirements but no the national requirements. This kind of business is called semi-formal enterprise.

Semi-formal park is determined using the active operating licenses granted by the local government, better known as canton or municipality. Omipymes collected the information from every locality in the country and published about semi-formality in Costa Rica (Brenes, Bermúdez & Zumbado, 2012) and found a correlation between this indicator and the local development indicator.

1.2 Current situation

Costa Rica is divided into 81 cantons distributed in seven provinces. Each canton is managed by a municipality. The following table displays the number of enterprises with a valid operating license between 2012 and 2014. To understand the semi-formal sector better, the researchers added a column with the number of MSMEs according to the national social security system (*Caja Costarricense del Seguro Social, CCSS*) and another one displaying the rate of semi-formality, which resulted from the comparison of both numbers.

The previous data show that, depending on the source and on the definition of MSME, the size of the business park is significantly different.

Moreover, when the size of the semi-formal park is determined using the active operating licenses, the total number of firms more than doubles, with a semi-formality rate of 2.4 for every employer registered in the *CCSS* in 2013 and 2014 (Table 1). In addition, in total, active licenses increase by five thousand each year.

Table 1. Number of Semi-Formal and Formal Enterprises, as well as Rate of Semi-Formality, 2012-2014

Year	***Semi-formal*** *(Licenses)*	***Formal*** *(Employers)**	***Rate of Semi-formality***
2012	151,879	65,473	2.3
2013	156,794	65,987	2.4
2014	161,996	66,645	2.4

*Only displays private sector enterprises until June of each year. All these employers are taken into account since 98.4% are MSMEs.

Source: prepared by OMIPYMES based on information provided by the CCSS and the municipalities.

The official definition of MSMEs can be found in the provisions of Law 8262 on Small and Medium Enterprise Promotion (*Fortalecimiento de las Pequeñas y Medianas Empresas*):

> b- SME: Permanent production unit that has stable physical resources and human resources, manages and operates them, as an individual or legal entity, in industrial, commercial, or service activities, excluding subsistence economic activities. (*Ministerio de Economía, Industria y Comercio*[1], 2003)

According to this definition and what the law establishes, semi-formal MSMEs are SMEs. However, they cannot benefit from Law 8262 since they have to comply with at least two of the following requirements in order to become formal:

1. Ministry of Economy, Industry and Trade.

* Contribution to the *CCSS*.

*Compliance with tax obligations to the internal revenue service (*Tributación Directa*).

* Compliance with labor obligations by payment of a workers' compensation insurance (*Póliza de Riesgos de Trabajo*).

* Thus, formal MSMEs are those reported by the *CCSS*, and the number of semi-formal MSMEs can be obtained by calculating the difference between the former and the total number reported by the municipalities.

2. Indicators and Statistic Analysis

The analysis includes three indexes created to measure development in the cantons from different perspectives: Cantonal Human Development Index (*Índice de Desarrollo Humano*, *IDH*, 2011), Cantonal Competitiveness Index (*Índice de Competitividad Cantonal, ICC,* 2011), and Social Development Index (*Índice de Desarrollo Social*, *IDS*, 2013). Moreover, three additional indicators measure relevant aspects of canton development: percentage of urban population, percentage of people with higher education, and percentage of households living in poverty (Table 2).

For the analysis of the data was used the software SPSS (*Statistical Package for the Social Sciences*) version 17 for Windows, with information for each canton of the country. The analysis includes descriptive statistics, correlation coefficients and cluster analysis.

2.1. K-Means Cluster Analysis

Another objective of this project is cluster analysis. The technique selected is K-means clustering. This statistic strategy of clustering aims to grouping a set of cantons or municipalities according similarities between them. This analysis offers researchers a different perspective or approach. The main results are a variance table that allows significance analysis of each variable selected and the groups created as a new input for the different stakeholders.

3. Results

3.1. Semi-Formality Rate and Its Connection with Canton Development and Competitiveness

There is significant variation in the semi-formality rate in the cantons, which ranges from 8.4 to 0.9 municipal licenses per registered employer (Table 3). This phenomenon is a result of the variation that is also observed in the number of semi-formal and formal enterprises, which ranges between 140 and 27,000 in the case of semi-formal enterprises, and 32 to 13,248 in the case of formal ones.

Table 2. Description of the Indicators and Indexes Included in the Analysis

Indicator	*Description*	*Period*	*Source*
Semi-formal enterprises	No. of semi-formal enterprises according to valid licenses	2014	OMIPYMES
Formal enterprises	No. of formal enterprises according to CCSS employer register	2014	CCSS
Semi-formality rate	Semi-formal/formal enterprise relationship	2014	OMIPYMES
Human Development Index	Value obtained in the Cantonal Human Development Index	2011	PNUD, UCR
Cantonal Competitiveness Index	Value obtained in the Cantonal Competitiveness Index	2011	UCR (OdD), Procomer
Social Development Index	Value obtained in the Social Development Index per canton	2013	Mideplan
% Housholds in poverty	Percentage of housholds with at least one unsatisfied basic need (necesidad básica insatisfecha, NBI)	2011	INEC (2011 Census)
% People with higher education	Percentage of people with higher education	2011	INEC (2011 Census)
% Urban population	Percentage of urban population	2011	INEC (2011 Census)

Source: prepared by OMIPYMES based on the analysis of the information.

Table 3. Statistical Descriptions of Analyzed Indicators

Indicator	*Average*	*Standard deviation*	*Minimum value*	*Maximum value*
Semi-formal enterprises	2000	3275	140	27,000
Formal enterprises	823	1572	32	13,248
Semi-formality rate	3.1	1.4	0.9	8.4
Human Development Index 2011	0.8	0.1	0.6	1.0
Cantonal Competitiveness Index 2011	0.3	0.2	0.0	1.0
Social Development Index 2013	53.8	22.4	0.0	100.0
% Households in poverty	26.8	10.1	8.6	55.0
% People with higher education	20.1	10.0	7.2	52.0
% Urban population	62.3	27.4	12.5	100.0

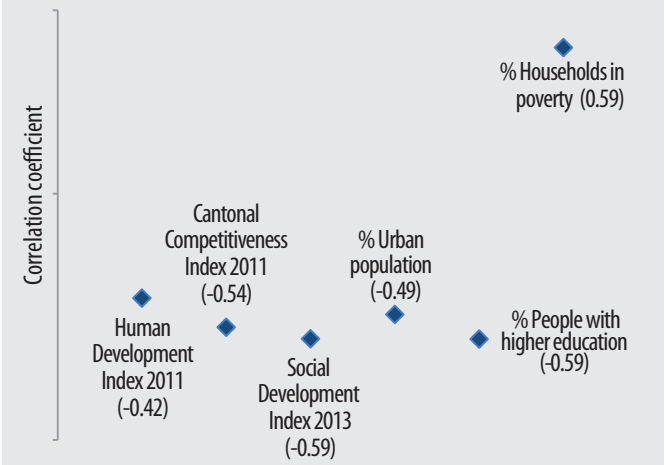
Source: prepared by OMIPYMES based on the analysis of the information.

Semi-formality and formality show significant direct correlation (Pearson's $r = 0.97$, $n = 81$, $P < 0.001$), which indicates that the more formal entrepreneurial activity a canton presents, the more semi-formal activity it presents, and vice-versa.

In all the cases, there is also a significant correlation between the semi-formality rate and the development and competitiveness indicators (Figure 1). The correlation coefficients between semi-formality and each of the three indexes show negative values, that is, an inverse behavior: the higher the semi-formality rate, the lower the index values, and the lower the rate of semi-formality, the higher the index values. Likewise, the correlation between semi-formality and the percentage of urban population and of people with higher education show negative coefficients.

The connection between semi-formality and the percentage of households in poverty is the only one that showed a positive value for its correlation coefficient. In other words, the rate of semi-formality tends to go up in those cantons with higher poverty rates.

Figure 1. Correlation Coefficients between Semi-Formality Rate and the Other Cantonal Development Indicators



Source: prepared by OMIPYMES based on the analysis of the information.

3.2. Cluster Design: Classification of Cantons According to Level of Semi-Formality, Development, and Competitiveness

Based on the previous verifications, it is valid to classify cantons according to the values that the indicators show. The statistical technique K-Means Cluster Analysis enables a classification into four homogeneous groups (Table 4).

Table 4. Central Values of Cluster Indicators

Indicator	*Cluster central values:*			
	1	*2*	*3*	*4*
Semi-formality rate	1.79	3.09	2.99	4.61
Human Development Index 2011	0.87	0.78	0.76	0.73
Cantonal Competitiveness Index 2011	0.59	0.33	0.27	0.14
Social Development Index 2013	85.31	66.59	48.43	26.94
% Households in poverty	14.39	20.41	27.84	40.63
% People with higher education	36.93	23.51	16.03	10.56
% Urban population	98.74	85.41	53.09	29.64
Number of cantons	15	15	33	18

Source: prepared by OMIPYMES based on the analysis of the information.

Table 5. Anayisis of Variance

Indicator	*F Value*	*Significance*
Semi-formality rate	18.24	0.000*
Human Development Index 2011	13.63	0.000*
Cantonal Competitiveness Index 2011	40.97	0.000*
Social Development Index 2013	90.92	0.000*
% Households in poverty	95.57	0.000*
% People with higher education	115.78	0.000*
% Urban population	127.47	0.000*

* Significant value to 1%.

Source: prepared by OMIPYMES based on the analysis of the information.

The clustering technique selected maximizes the differences between groups as shown by the highly significant values gotten in the variance analysis (Table 5).

The resulting groups can be labeled as follows:

Group 1: Cantons with a low semi-formality rate and very good development and competitiveness conditions

This group is made up of fifteen cantons whose semi-formality rates range from 1.0 to 2.7 and have the best general conditions. As part of this group are the canton of Belén, with the highest value in the Competitiveness Index (*Índice de Competitividad Cantonal, ICC*, 2011), the canton of Escazú with the highest Social Development Index (*Índice de Desarrollo Social, IDS*, 2013), as well as the canton of Montes de Oca, which has the highest percentage of people with higher education. All the cantons in this group are located in the Greater Metropolitan Area (*Gran Área Metropolitana, GAM*), whose urban population is very high and poverty levels are low.

Group 2: Cantons with a medium semi-formality rate and good development and competitiveness conditions

There are also fifteen cantons in this group. These cantons have a semi-formality rate that ranges from 1.9 to 4.9. Some of them are the central cantons of their provinces: Alajuela, Liberia, and Cartago; some are located near the center of the Greater Metropolitan Area such as Desamparados, Alajuelita, and La Unión; and still others are located in the periphery of the *GAM*, namely San Rafael, El Guarco, Oreamuno, Paraíso, Atenas, and Palmares. In spite of having indicators that are not as favorable as those of group 1, these cantons have good conditions to foster their development and competitiveness. In this group, the Alajuelita canton is the one that presents some adverse conditions with the highest percentage of households in poverty and the lowest number of people with higher education.

Group 3: Cantons with a medium semi-formality rate and less favorable development and competitiveness conditions

In this group, the semi-formality rate ranges from 0.9 to 8.4, which points to a wide variety of this indicator since this group

includes the canton with the lowest rate (Puntarenas) and with the highest (Jiménez). Nevertheless, regardless of these extreme values, the average semi-formality rate of this group is 2.9, which is close to the general average value.

There are thirty-three cantons in this group, which makes it the biggest group and has, therefore, the most diverse conditions. Most of the cantons are located out of the Greater Metropolitan Area and some in the periphery. The Aserrí canton stands out due to its being the only one located near the center of the *GAM*. In contrast with the other two groups, there needs to be an improvement in the development conditions in these cantons.

Group 4: Cantons with a high semi-formality rate and unfavorable development and competitiveness conditions

The other eighteen cantons, whose semi-formality rates range from 2.7 to 7.7, belong to this group. Most of them are far from the Greater Metropolitan Area, with some exceptions. Their development and competitiveness conditions are unfavorable. Among the cantons in this group are Los Chiles, with the lowest Competitiveness Index, and Talamanca, with the lowest Social Development Index. Likewise, they have low percentages of people with higher education and high rates of households in poverty.

Following is a breakdown of the cantons in each group (Figure 2). Moreover, the map in Figure 3 clearly shows that the cantons with the least semi-formality and the best development conditions are located near the center of the country, and the ones with the most semi-formality and unfavorable conditions are found away from the Greater Metropolitan Area, mainly in the north and south of the country.

Conclusions

In Costa Rica, public policy on MSMEs has traditionally been designed with a national approach in mind and directed towards formal enterprises. It is necessary to migrate to public policy that considers the local level and takes into account semi-formality.

By analyzing the collected information, the researchers were able to verify a statistically significant correlation among semi-formality, cantonal competitiveness, and human development. Thus, it follows that actions that municipalities take to improve license awarding have a direct effect on the development of the canton.

The grouping cantons in clusters based on informality rates and other related indicators enables a better understanding of the situation of SMEs in Costa Rica, defining priorities, and proposing actions to strengthen them.

Law 8262 establishes that only formal enterprises can have access to the support and incentives designed for SME, which has to be modified so that informal SME also benefit from them. This will allow them to consolidate themselves, which will be conductive to their formalization.

Finally, its necessary more research to zoom-in semiformal enterprise. Characterize better this kind of entrepreneurship in order to offer new knowledge for policy makers. Variables like economic activity, gender, needs, among others are yet unknown. More clarity about their behavior may contribute to

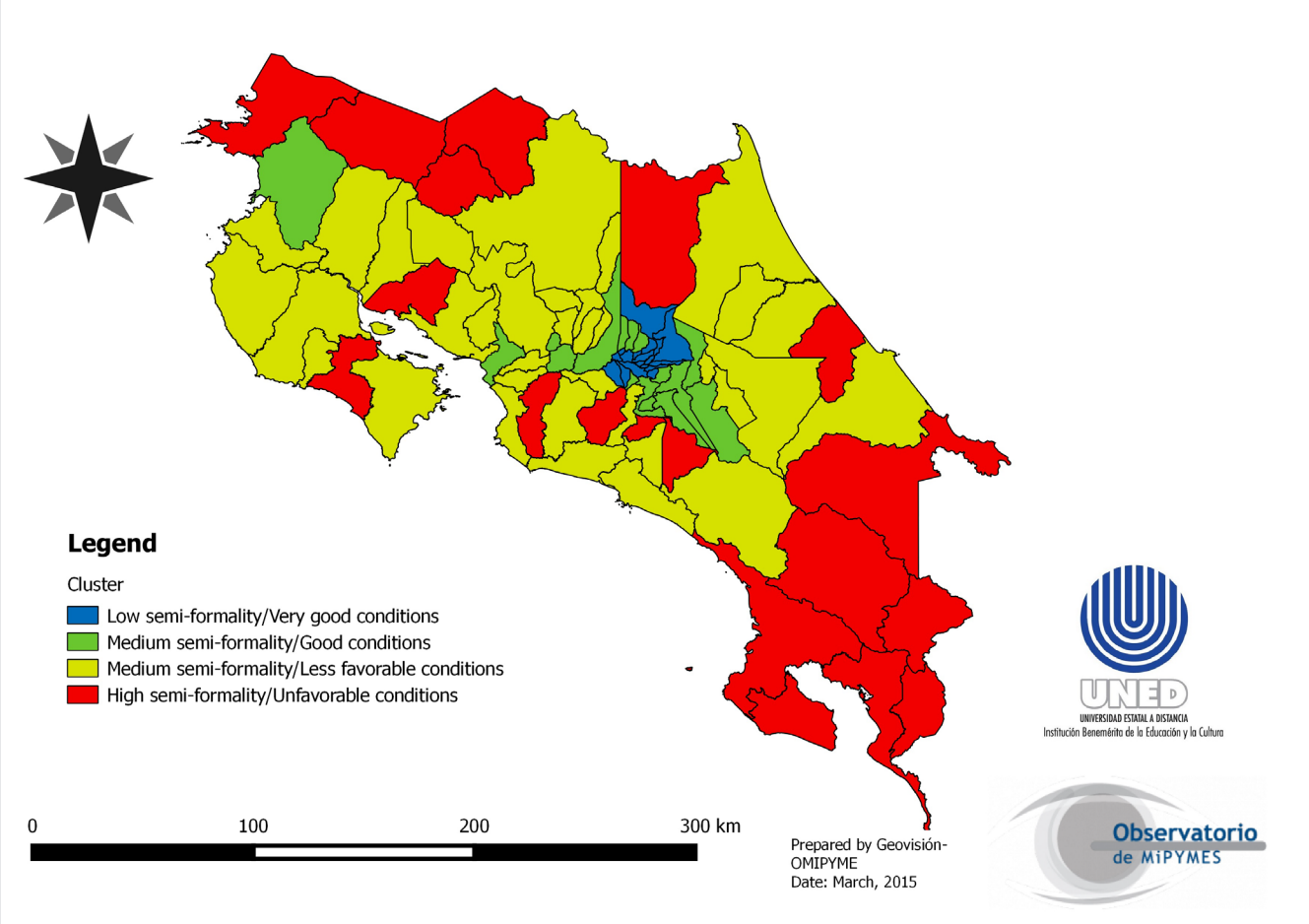
Figure 2. Classification of Cantons per Cluster

Development and competitiveness	Cluster 1	Cluster 2	Cluster 3	Cluster 4
	Flores			
	Montes de Oca			
	Escazú			
	Curridabat	San Rafael		
	Belén	Desamparados		
	Goicoechea	Cartago		
	Santa Ana	Santa Bárbara	Puntarenas	
	Tibás	Palmares	Mora	
	Santo Domingo	Atenas	Valverde Vega	
	Moravia	Esparza	San Carlos	
	San José	Alajuela	Naranjo	
	San Pablo	Barva	Grecia	
	Heredia	Liberia	Parrita	
	Vázquez de Coronado	Paraíso	Pérez Zeledón	
	San Isidro	El Guarco	Nicoya	
		Oreamuno	San Mateo	
		La Unión	Cañas	
		Alajuelita	Turrialba	
			Hojancha	
			Guácimo	
			Tilarán	
			Aguirre	
			Poás	
			Santa Cruz	
			Montes de Oro	Matina
			Bagaces	Corredores
			Orotina	Abangares
			San Ramón	Nanduyure
			Alfaro Ruiz	Acosta
			Puriscal	Dota
			Aserrí	Sarapiquí
			Limón	Coto Brus
			Pococí	Los Chiles
			Alvarado	Talamanca
			Tarrazú	Guatuso
			Siquierres	Buenos Aires
			Garabito	La Cruz
			Carrillo	Upala
			Jiménez	León Cortés
				Golfito
				Osa
				Turrubares

Semi-formality

Source: prepared by OMIPYMES based on the analysis of the information.

Figure 3. Canton Map Classified by Cluster



Source: prepared by OMIPYMES based on the analysis of the information.

better strategies for their competitiveness and country development.

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