

Convenience Stores in Bogotá at 2030: Modeling factors that determine their growth

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ABSTRACT

The objective of this research is to identify the key factors that impact the system of product commercialization in the Bogotá's market to allow a better comprehension of the growth behavior of the convenience stores in this city.

Its purpose is to develop an understanding of how the process of sales, consumer reaction through years of exposure to the commercialization format and the presence of informal commerce, among other factors enable the growth of convenience stores in the city of Bogotá to ultimately generate scenarios that allow the appreciation of relevant risks to investors interested in entering the market.

For research purposes, emphasis will be made on the system of competition of convenience stores as a whole, without differentiation among diverse chains that compete or will compete in the segment, attempting relate the factors that impact its growth.

Key words: Bogotá, neighborhood stores, system dynamics, modeling, and convenience stores.

1. BACKGROUND OF CONVENIENCE STORES IN THE CITY OF BOGOTA, COLOMBIA.

According to the WTO to the year 2007, Colombia had a population of 46, 117, 000 –less than half of Mexico’s population- and with a GDP per capita of \$3,729 dollars. However this doesn’t diminish the attractiveness as a potential market.

The National Association of Convenience Stores in the US defines a convenience store as an establishment smaller than 700 m², with a service schedule superior to 18 hours a day, opening the 365 days of the year. To date, a format like this that barely exists in the city of Bogota. It can be said that the market concentration in terms of convenience store offer in Bogota is very low, having little direct competition, thus for the present year 35 stores were estimated in the city.

Bogotá is the capital of Colombia and the most densely populated city in the country. In current times, the mass consumption markets is represented by different actors that in different ways and through diverse strategies compete to obtain the greatest possible market share in a recently explored market. Among them supermarkets, hypermarkets and warehouses can be found, those who seek the satisfaction of consumption needs to inhabitants of the city in general. To these it would be valuable to take into account informal commerce or neighborhood stores, who distribute merchandise in retail with competitive prices to the inhabitants in surroundings. These stores represent an immediate substitute for convenience stores, for in spite of having a very limited and inconsistent brand options and sizes, culturally represent a common alternative.

Given the previous situation presented in the retail market in the city of Bogota and the interest of some transnational chains of entering in such market to position themselves in this channel, simulating the consumption system of convenience stores is proposed to identify the behavior of growth of a brand given the variables that impact on it and generate possible scenarios that might present to the year 2030.

2. OBJECTIVES OF THE STUDY.

The objective of the model is to perform an exploration of how the sales process, the reaction of consumers through years of exposure to the commercialization format and the presence of informal commerce or neighborhood stores,

among other factors, enable or restrict the growth of convenience stores in the city of Bogota with the goal of generating scenarios that allow appreciate the relevant risks to investors interested in assessing the market.

2.1 DESCRIPTION AND CHARACTERIZATION OF THE SYSTEM OF STUDY.

The components of the system of study are defined as follows. The *suprasystem* is defined as the retail market or retail sales in Bogota. The *system* comprehends the retail market in small surfaces –including neighborhood stores, convenience stores and others –in the city of Bogota, Colombia. Finally the *subsystem* is defined as the market of convenience stores in Bogota.

About the *system environment* it can be said that it is found to be vacant in terms of competition, for the potential has not been completely explored. In spite of this, it is not a risk-free environment and some relevant aspects have to be taken into consideration: (1) in present days the bogotian consumer is not exposed to an extended schedule offer (like the one presented by the convenience store format in Mexico) because of this a familiarization process of the consumer has to be taken into account; (2) in contrast with the cities in Mexico, the geographical extension of the city is fixed, representing a space restriction for the establishment of stores, setting a fixed market saturation level as well; (3) in the present, the city presents an overwhelming presence of informal commerce or neighborhood stores.

2.3 DYNAMIC HYPOTHESIS.

Hypothesis 1. The growth of convenience stores will behave in an exponential way duplicating each year until reaching a market saturation level.

Hypothesis 2. With the passing of the years with greater consumer familiarization with the concept of convenience stores will potentialize its growth.

Hypothesis 3. Consequently, with higher familiarization of the consumer with the convenience store format, there will be less neighborhood stores in the city.

Hypothesis 4. As more convenience stores are established the sales will grow as a whole, until reaching a saturation point.

Towards the achievement of the objective and the proving of set hypothesis the following variables will be analyzed as critical: *number of*

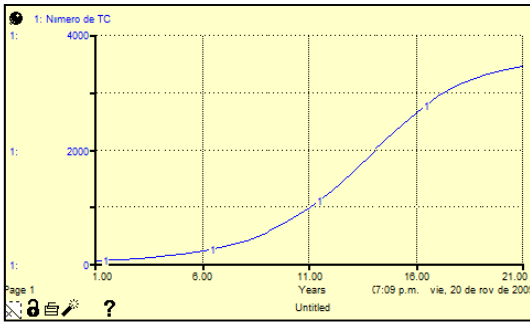


Figure 3. Base run, number of convenience stores

The graphic starts at a value of 35, the estimated quantity of actual convenience stores in the city. After 21 years, given the graph is asymptotic, it is found that the number of stores is that of saturation. When the second test was run in the model to 30 years it was found that the city reaches its maximum capacity approximately in the year 30. This level of saturation is in base to the territorial extension of the city, to a growth rate tied to the proportion of sales destined to investment, as well as to the closing down of neighborhood stores or informal commerce.

The second variable of interest is the *sales of convenience stores*. The graphic begins at a value of 0.2 billion dollars, the actual figure in industry reports. The growth in sales is determined by its growth rate, which is driven by the sales generated by the establishment of new stores and their volume of sales. The consumer familiarization with the convenience store format is another factor taken into account, thus considered that if the offer is presented it will be seized, the consumer demand has the potential to make the sales increase. In the graphic it is possible to observe an S shape growth, as defined, the sales tend to increase as the opening of new stores, until these reaches saturation.

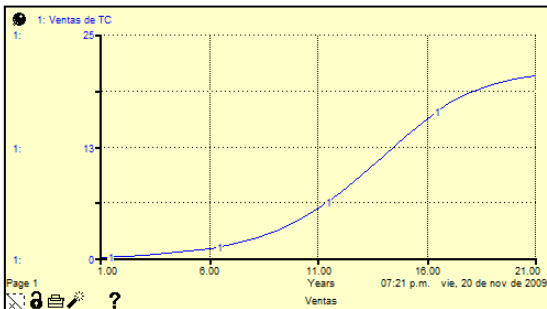


Figure 4. Base run, convenience stores sales

An important variable is the *number of neighborhood stores or informal commerce*. Even though by their informal character they are

difficult to measure, the actual number as an estimate figure for this type of establishment is 12,000 stores, which is the starting point in this graphic. The number of neighborhood stores is influenced by a closing rate, determined by the presence of convenience stores. In other words, and taking as experience examples in other countries, the bigger the presence of formal stores the more difficult it will be for informal commerce to survive. It is important to mention that of the 12,000 neighborhood stores considered more than half of them have a survival rate of 3 years, reflecting the feasibility of entering and exiting the market.

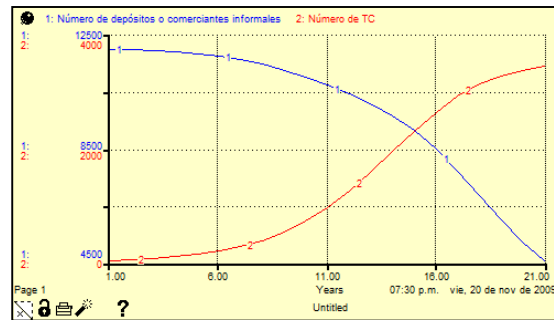


Figure 5. Base run, number of neighborhood stores or informal commerce

When crossing the number of convenience stores with the number of neighborhood stores in the same graph it is possible to observe that the number of neighborhood stores diminishes even though it never reaches zero –even while the number of convenience stores is reaching its saturation level.

By itself, the variable available market, defined in terms of number of stores available to open (in function of territorial extension left for the establishment or opening of convenience stores), exhibits a graphical behavior of an inverse S. This behavior is due to a representation of the difference between the level defined as market saturation and the number of actual stores, as this variable influences the establishment of stores, it regulates them making its growth slow until approximating zero.

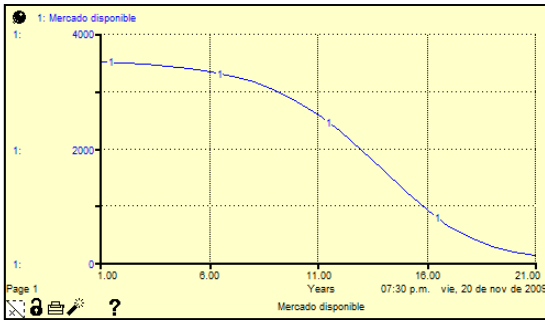


Figure 6. Base run, available market

3.1 SENSITIVITY ANALYSIS.

The sensitivity analysis improves the understanding of the parameters to which the model reacts. This consists on testing the reaction of the model to a change of parameters and the model structure by itself.

The sensitivity analysis of the model starts modifying the parameter that can cause the establishment of convenience stores to accelerate faster, this is the *investment rate*. For this parameter a simulation was carried out, considering what will happen if a decision was made of investing more money that doesn't come only from sales.

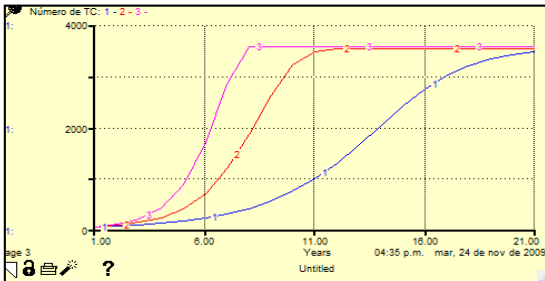


Figure 7. Investment rate sensibility

By modifying the investment rate parameter and observing the graphic results it is possible to verify that doubling (in red) or tripling (in blue) of the quantity invested causes an accelerated growth in number of stores. This might seem a very simple supposition; however the explosion in new store openings might not be too positive, for the city might not be prepared given the consumer familiarization with this consumption concept.

Another parameter to analyze is the *profit margin*. By modifying it is possible to see that given a greater profit margin generated by convenience stores sales it produces a slower growth rate in number of stores that can be established given the

capacity of the market as can be observed in the following graph:

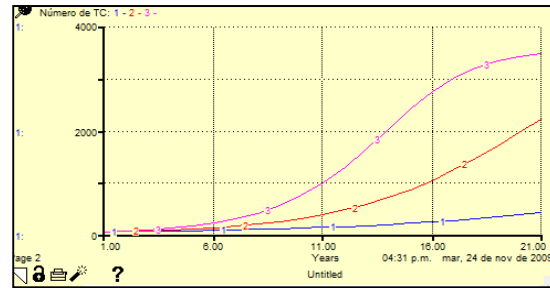


Figure 8. Profit margin sensibility

Additionally this parameter can be contrasted with the investment rate variable previously analyzed and observe the impact generated in investment, a reduction or increase in the perceived profits thus influencing the growth rate of new stores.

Finally the model sensitivity is analyzed with the variable *closing rate of neighborhood stores or informal commerce*, that are those which represent the direct competition in the retail chain, obtaining the following graphic results:

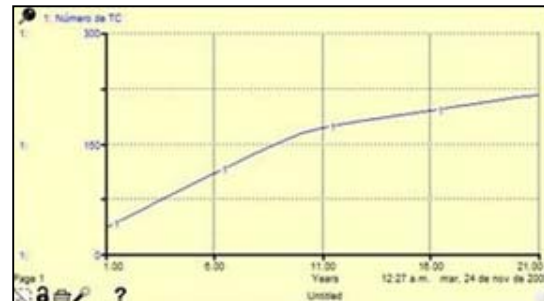


Figure 9. Closing rate of neighborhood stores or informal commerce sensibility

The graph shows that in spite of a constant or growth in the number of neighborhood stores, convenience stores will continue to grow, even if at a slower rate. In this case it was expected given the nature of the variable that the convenience stores would not grow or simply start closing, but the expected behavior was not obtained.

3.2 EVALUATION OF THE HYPOTHESES AND DECISION POLICIES.

After the base run was carried out and the set of tests done to the model, it is possible to see the conclusions of the set hypothesis proving the mental maps of the expected behavior that were preconceived –having now enough evidence to confirm its behavior.

Starting from this the model indicates that the growth of convenience stores doesn't have an exponential behavior duplicating each year until reaching saturation. It was found that the thought behavior is only manifested partially, for these follow the shape of a Gompertz curve forming an S until reaching the market saturation level where it is not possible the establishment of more convenience stores in the city.

Following this line of thinking, the model confirms the familiarization of the bogotanian consumer with the convenience store format through exposure to it with the passing of time; the number of stores will increase. Hence the number of neighborhood stores or stores from the informal commerce sector decreases through the establishment and using habit of the consumer.

The policies under which the model is governed permit to control its behavior as well as the representation of the addressed problem. In the same way they represent risks and restrictions for it because they limit or potentialize depending on the situation, the growth of the result variable. Two strategic changes are posed in which the sensitive variables are related, making the risks that a potential investor interested in entering the market evidently:

1. *The familiarization with the convenience store format* has an effect over the sales of stores; therefore manipulating the familiarization growth is limited influencing the investment and establishment of new stores.
2. The reluctance to change of the informal commerce as impacts as well the convenience store growth rate, the bigger the closing rate of neighborhood stores or extinction of informal commerce the attractiveness of establishing more stores increases, hence the growth rate is bigger, or in the contrary case actions can be taken by the National Federation of Shopkeepers (FENALTIENDAS) and the neighborhood stores can be kept constant or grow within the city.

3.3 SCENARIO CONSTRUCTION.

Starting from the mentioned policies, four possible variants are carried out in the model, which are specified later on as feasible scenarios.

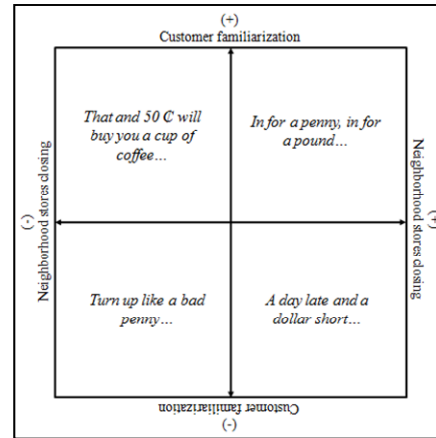
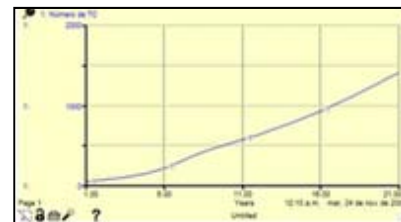


Figure 10. Quadrants of the proposed scenarios

Scenario 1: That and 50 ¢ will buy you a cup of coffee... The inhabitants of Bogota are fully identified with the convenience store concept, the familiarization with this new sales format in the city has been high and it is every time more common for consumers to shop in these establishments. When the convenience stores arrived lots of neighborhood stores were forced to close, even though most of them had little time in the market. With the passing of time as they became used to the presence of this new competitor that behavior stopped. Now it can be observed that the deposits are firm in their field and even though their total quantity is smaller, their average survival rate has increased. The presence of neighborhood stores provokes the convenience stores not reaching significant sales, which is represented in a lower opening rate of new stores with this concept.

What happens? The familiarization with the consumer behaves like in the base run and the neighborhood stores do not close and increase in number. This makes convenience stores grow at a slower pace and not reach a saturation level within the considered period of time.



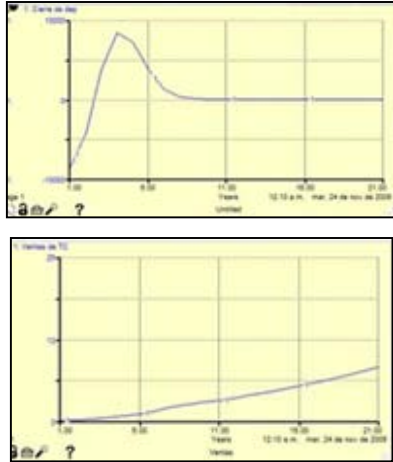


Figure 11. Scenario 1 results

How is this behavior achieved? The equation of closing of deposits is modified given the growth of convenience stores in the *neighborhood stores closing rate*, making the number of neighborhood stores increase.

Scenario 2: In for a penny, in for a pound... The convenience stores start to be identified by the consumer as the best consumption format according to their daily needs. The new service proposals, the availability and the product offer have made the bogotanian appropriate in a positive way to shop in these stores, not buying anymore in neighborhood stores that were previously used. A constant growth in the convenience stores sales is identified and these results have caused new stores to be built in different locations in the city. Every time there are found less informal commerce and the family has become used to buying commonly in the new stores. The new stores have learned to satisfy the needs and likes of the bogotanians and carry out activities as if they had always been there.

What happens? Variables behave like in the base run –consumer familiarization increases with the passing of time and the informal commerce close with the opening of convenience stores but don't disappear. This causes convenience stores to grow until reaching the saturation level.

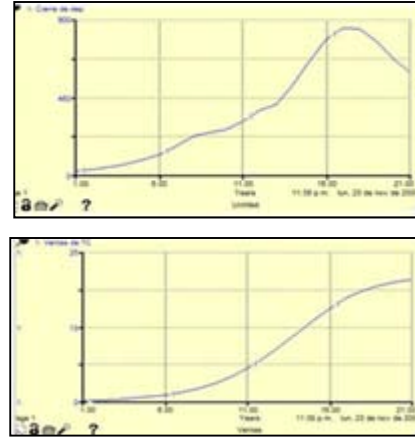
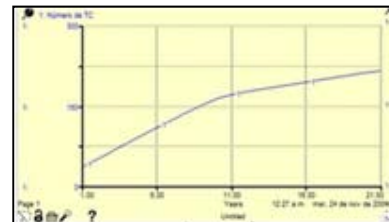


Figure 12. Scenario 2 results

How is it achieved? The variables are kept constant as in the base run.

Scenario 3: Turn up like a bad penny... The bogotanians still don't understand the new consumption concept that convenience stores represent. In spite of the efforts made, the consumer couldn't familiarize with the new stores; hence neighborhood stores are still the most frequent option for daily shopping. The sales in the new stores don't lift and the growth plans are not carried out. There is a small amount of stores in the city and finding one is not easy. The market penetration strategies were not successful, plans were just plans and the expected results never came.

What happens? The reluctance is identified by the new concept of convenience store and more consumption is generated in neighborhood stores making these grow. Therefore convenience stores grow only to satisfy a low consumption and saturation is not reached in the specified time period.



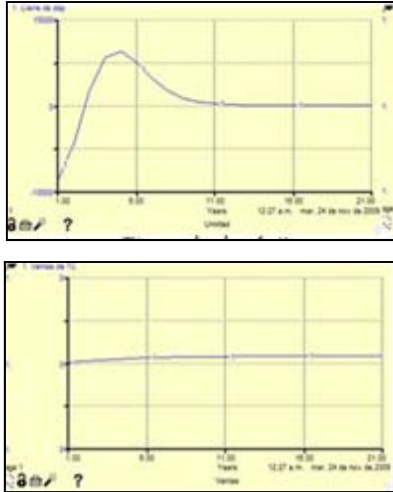


Figure 13. Scenario 3 results

How is this achieved? The closing of neighborhood stores equation is modified given the convenience stores growth in the *closing of neighborhood stores* variable, making informal commerce grow for a period of time after stopping to maintain equilibrium of consumption in the city. Also the table of *familiarization with the convince store format* was modified to reflect an attitude of reluctance that causes a fall in the growth rate in sales.

Scenario 4: A day late and a dollar short... The inhabitants of the city of Bogota don't familiarize with the convenience store concept, nor their schedule or their service. And only occasionally shop in them. The neighborhood stores are still present in the lives of the consumers without making a difference. It is observed that some have been closing by the fall in sales and presence of other competitors. The sales of convenience stores don't show signs of growth, which contributes to have a small amount of stores in the city. Other competitors as supermarkets and pharmacies have taken advantage of the situation and little by little are seizing a bigger slice of the retail cake.

What happens? There is no familiarization of the convenience store concept and on the contrary generates reluctance that causes a fall in sales. This provokes convenience stores to grow slowly and not reach a saturation level in the specified time period. Neighborhood stores also close.

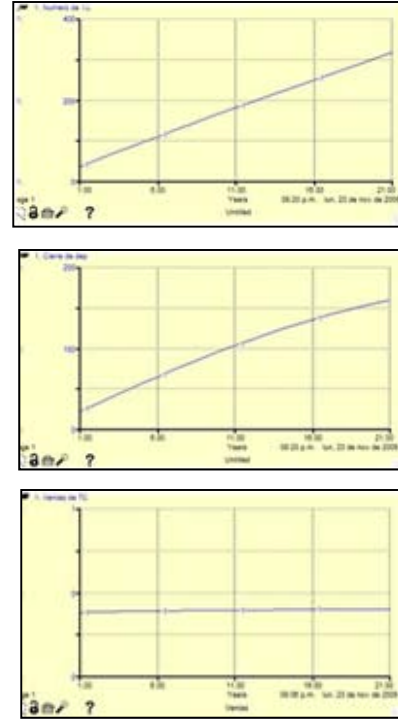


Figure 14. Scenario 4 results

How is this achieved? The table of consumer familiarization with the convenience store format, provoking rejection causing a fall in the sales growth rate.

4. CONCLUSIONS AND RECOMMENDATIONS.

The initial definition of the subject to model suffers continuous changes as it is addressed from the research and depth of established variables in the initial mental model, making the final result represent the complexity that could not be seen from the start.

The continuous feeding cycles that the model suffers produces a permanent debugging of the mental model establishing a better approximation to the representation of the real world. However as being a subjective representation of reality, the structures and the established rules of decision can be maintained and provoking errors that can be evidenced in the final results of the model.

About the actual state of the system and the suppositions. The model set to determine the growth behavior of convenience stores handles as an important supposition the determinant of market saturation given by the establishment of two stores per squared kilometer, restricting the

total of stores possible to be achieved as 3544 in the whole city.

The growth model of a new business is given by the inversion disposed to generate such advance. For the case of the proposed model, the amount destined to investment is represented by a rate from the perceived earnings by sales of the same business.

By its part, sales can be potentialized by a number of factors, in particular the power of the consumer. The degree of familiarization with the consumer in this case is set as a relationship through the years, but this can be manipulated by an investor for example, through advertising campaigns.

The time an interested investor penetrates the bogotanian market with the model of retail sales through the convenience store channel should be estimated according to the velocity of growth from such channel, the decision to compete can be given according to the behavior of the market in function of the number of existing establishments that work on the same commercial format.

The increase in the sales value in the model is determined by the opening of new convenience stores, however by existing a bigger number of stores the value of the sales per store tends to distribute.

The proposed model takes as a supposition that the opening of a convenience store in the city of Bogota will generate consumption in the inhabitants of the surroundings in a way that demand is evident for the stimulated offer.

The handling of the profit margin will allow an investor to grow in an accelerated mode and gain a better position in the bogotanian market, seeking to modify the rate of sales and a better population service coverage.

The number of stores in the model is generated as a stock level that accumulates new stores, but does not take into account exist or closing of stores for location problems or commercial cannibalism.

The territorial extension is considered given the plan of territorial ordinance existing for the city of Bogota, which determines and limits its growth.

About the proposed policies. Stepping out of the proposed policies invalidates the model and makes it lose stability, that is why for future research and dynamic modeling efforts the following is set to change the model's focus:

- Apply the problem to the development of a model for a specific chain that will allow bringing it down to a client and potentializing its operations.
- Consider competitors, from the same channel as well as substitutes, for under the proposed model convenience stores are seen as a whole market without belonging to a specific chain.
- Contemplate investment sources and funding outsider of the income by sales, for these especially foreign can represent catalyst for the development of new convenience stores.

This does not intend to invalidate the efforts made, as a complex system approximation like in this case allows its comprehension to bring it down to specific situations as mentioned, and therefore increase the model's policies that allow the creation of greater strategies that help to manipulate them.

5. REFERENCES

5.1 PUBLISHED ARTICLES, JOURNALS AND INDUSTRY PUBLICATIONS.

Jaffe, K. (2007). The economic limits of trust: the case of Latin-American urban informal commerce sector. *Journal of Developmental Entrepreneurship*. Vol. 12, No.3, p339-352.

Worsley, H. (2009). Understanding the older food consumer. Present day behaviors and future expectations. *Appetite*. Vol. 52, No. 1 pp.147-54

No author. (Q1, Q2, Q3 y Q4, 2009) Retail. *Colombia Food and Drink Report*. Date accessed: 2 de November de 2009 from: Biblioteca Digital, Business Monitor International Industry Reports.

5.2 ELECTRONIC RESOURCES

Dinero/Tendencias. Dinero.com. Cajas Tiendas Colsubsidio. Date accessed: 28 de September de 2009 from: <http://www.dinero.com/noticias-tendencias/cajas-tiendas-colsubsidio/37989.aspx>

National Association of Convenience Stores Magazine (2007). Date accessed: 28 de September

de 2009 from:

<http://www.nacsonline.com/NACS/Magazine/Pages/default.aspx>

WTO. 2007. Trade Statistics Profile. Colombia y México. Date accessed: 28 de September de 2009 from:

<http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=MX,CO>

Informe Anual (2008). FEMSA. Date accessed: 3 de November de 2009 from:

<http://ir.femsa.com/mx/annuals.cfm> y reportes de industria.

Secretaría Distrital de Planeación. Plan de ordenamiento territorial. Date accessed: 19 de November 2009 from:

<http://www.sdp.gov.co/www/section-2022.jsp>.

Centro Iberoamericano de Desarrollo Estratégico Urbano. Bogotá. Date accessed: 3 de November de 2009 from:

<http://www.cideu.org/site/content.php?id=173>

No author. (10/18/2008). Las tiendas de Bogotá, a rayos X. Revista Dinero. Date accessed: 3 de November de 2009 from:

http://www.dinero.com/on-line/tiendas-bogota-rayos_40504.aspx