The hidden impact of micro retailers' survival rate on the logistics cost of consumer packaged goods companies

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Summary: In the developing world, 40-70% of the market share of Consumer Packaged Goods (CPG) companies is driven by the power of mom-and-pop stores. The great majority of them are located in megacities, cities with over 10 million people, where features such as traffic congestion and a dense population make the last-mile delivery process more challenging. In addition, many mom-and-pop stores disappear every year due to lack of productivity, and appear due to low barrier of entry. Overall, the number is growing. We study this effect on the logistics costs of a distributor of a CPG company. We use cost-to-serve estimations and continuous approximation models for routing to show that by improving the survival rate, we may avoid loses in transportation costs up to 31%.

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KEY INSIGHTS

1. New customers increase the transportation cost up to 31% mainly due to the increase in the delivery time.
2. New customers present a lower drop-size than old customers do because they do not have yet built loyalty with their supplier.
3. The higher the survival rate the lower the decrease in earnings, which means that it is more expensive to serve new customers than old customers.

Introduction

By 2025, 600 large cities altogether will represent 62% of the global GPD. According to the United Nations, 79% of them – the so-called megacities – cities with more than 10 million people - are located in developing regions in Asia, Latin America and Africa. These cities present lots of complexities in their last-mile delivery such as traffic bottlenecks, government policies and the rise of e-commerce amongst others. Consumer Packaged Goods companies are looking for efficient ways to deliver their products in these regions. An unusual but numerous format of store serve CPGs as the main channel to sell their products to customers. These small outlets - nanostores - are powerful players in the retailing market. Individually, they are not relevant but altogether they account for up to 70% of the sales for large Consumer Packaged Goods in developing markets.

A typical nanostore is operated by the family and usually occupies less than $100m^2$, which can be placed in the garage of the owner. The nanostores' owners are usually people who lack of business practices knowledge because they may not have pursued higher education. As a result, their

business suffer of lack of productivity, which may force the proprietor to close the nanostore. Nevertheless, the number of nanostores continue rising as it is easy to open one due to the low capital investment. In this paper, we study this birth and death dynamic impact on the logistics cost of a Consumer Packaged Goods company.

For this study, we collaborated with a distributor company that supplies from Consumer Packaged Companies and distributes directly to nanostores in Mexico City.

Methodology

We use cost-to-serve estimations and continuous approximation models for routing to see the impact on the costs and earnings for serving new customers.

The cost-to-serve methodology provides a framework to calculate how much it costs to serve every nanostore. By this granularity of details, we can identify the cost drivers that differentiate the new and old customers. For the sake of simplicity, we chose the following cost drivers: ordering processing, promoters visits and transportation costs.

For the new customers, we assume that the orders processing is twice than for the old customers. This is because new customers need extra order lines of information to be filled in the system. New nanostores also incur in first-time visit done by a promoter, we assume that this cost does not exist for the old customers as they are already in the system.

Finally, we calculate the near-optimal distance of *n* points spread in an area *A* based on the one-to-many continuous approximation model. The one-to-many continuous approximation model fits the characteristics of the company's distribution model. This distance would be the ideal if all the customers were old, then we compare it with the real calculated using the Euclidean space formula. We multiply the real distance with a circuity factor k_{CF} – a scalar multiplier – to adapt topographic characteristics of the region. For Mexico, we use a k_{CF} of 1.46 with a standard deviation of 0.43. We use both distances to calculate the transportation cost using both distances.

Although we have data from August 2017 until March 2018, we perform this process for the months of September, October, November and December of 2017 because they are the ones where we can extract new and old customers. This means that in August, we do not know which customers are new and from January, February and March we do not have certainty if they really died. We assume it takes 3 months for a nanostore of not placing orders to be considered as disappeared (dead) for the company.

In figure 1, we can see that there is an increase in the transportation costs from 6% to 31% due to the existence of new customers. This is because to serve a new customer is more expensive than an old one as the company incurs in more commercial and logistics costs. During the shadowing of one route, we also noticed that the distributors employees had difficulties on find the new customers. This increased the amount of time and distance. They spent 1.4 more hours (an increase of

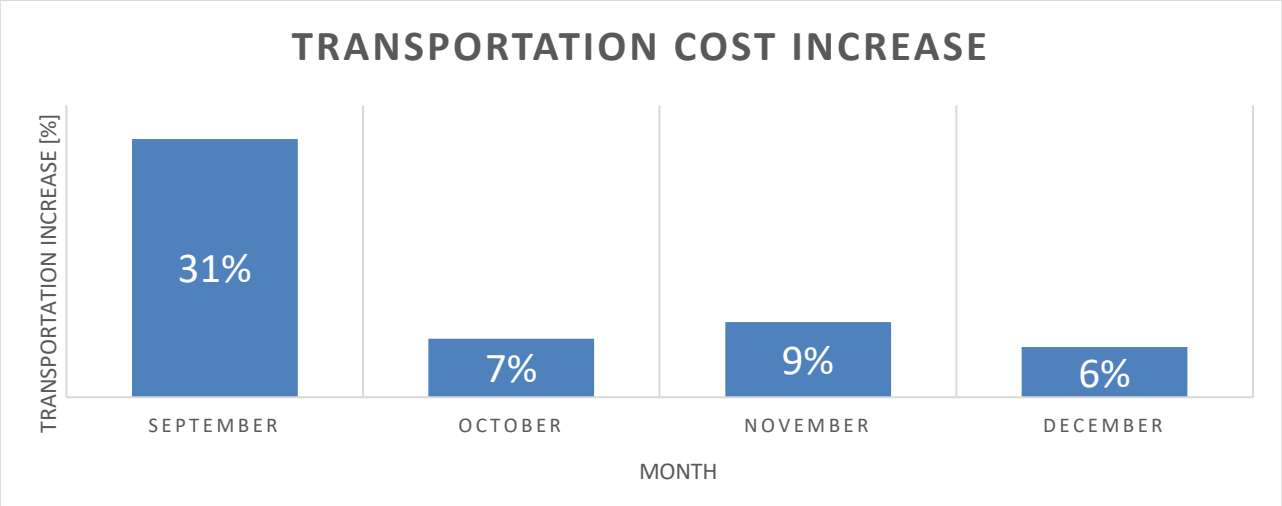

Figure 1 Transportation Cost Increase

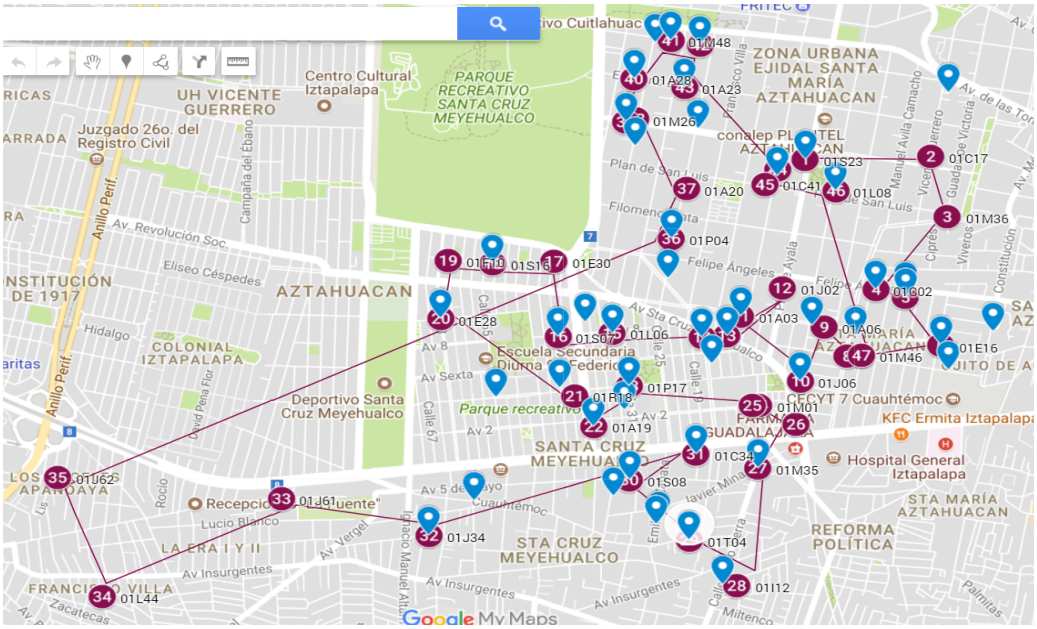

Figure 2 Variability of location of stores of two routes

135%) on route trying to find the new customers. Other challenges are stores closed, returns, time spent per store.

In figure 2, the purple and blue dots represent a route within an interval of 1-week. We can see that each week the routing changes due to new customers or the purchase frequency of nanostores. The purple route shows that the route is clearly not optimal. This is because the sequence of nanostores depends on other factors mentioned in the previous paragraph than only proximity.

The birth is greater than the death for nanostores during the 4 months, with a peak in December (difference 128) which reflects the higher commercial cost during that month.

CONCLUSION

Nanostores are key players in the retailing market, their survival rate impacts the transportation costs up to 31% and logistics costs from 5-9% for the majority of them. It is more expensive to serve a new customer and CPGs companies should keep few customers with greater volumes than more customers with low drop-sizes.