

# Finding hidden location patterns of two competitive supermarkets in Thailand

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## Abstract

**Background:** Lotus [1] and Big C [2] are the most popular supermarkets in Thailand that are convenient for customers. They come to the supermarkets not only for shopping but also enjoying other services, such as restaurant, bank, bill payment, insurance broker service. A lot of promotions are often released by these supermarkets. They take a similar strategy to compete their share of market in middle-range customers who are the highest population in Thailand. In addition, they want to expand their store more. Thai people intuitively know that “where there is Lotus there is Big C.” It is important for managers of these supermarkets to consider store allocation carefully to avoid needless battles for customer acquisition. They must find an appropriate method to expand stores efficiently.

On the other hand, for the recent advance of information communication technologies, it becomes possible to gather and analyze big data of supermarket location information through geotagged tweets using Twitter API [3]. If we analyze and find any hidden location patterns of these supermarkets, it is possible to suggest better decision to expand for managers. Human mobility patterns are often biased and they are easily predictable based on an investigation of mobility motif [4]. Are location patterns of supermarkets also biased?

**Objective:** To answer this question, in the first step, we introduce *location motif* that consists of directed edges linked between every pair of the shortest-distance neighboring supermarkets. After visualizing all the motifs in Thailand on map, we count the frequency of observed motifs to consider store allocation tend to be biased or not.

**Method:** We first gather geotagged tweets using Twitter API for six months (2015/11/28-2016/5/19). To obtain location motifs, we calculate the shortest distance between locations of the same brand and that between the different ones. Then, we visualize location motifs on map. We also calculate the histograms of shortest distances and check-in frequency.

**Results:** We calculate the histograms of those shortest distances and find that there is a typical distance between Big C and Lotus supermarket locations. We visualize all the location motifs in Thailand in Fig. 1. We are going to find hidden patterns of location motifs and their relations with check-in frequency.



Figure 1: All the location motifs in Thailand (Left) and an example of location motif on map (Right)

## References

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