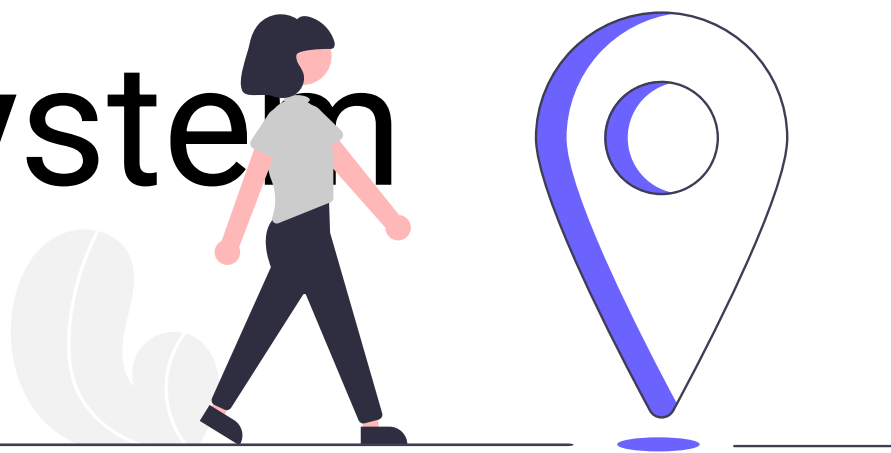


The Retail Site Location Decision System

Oleksandr Turytsia, 2024

Supervisor: Ing. Jiří Hynek, Ph.D.



Location, location, location... How was it?

What are the three most important factors in selling real estate?
Location, location and location. This is applicable not only in real estate but also retail business.

Deciding where to locate business has been always a problem that people continuously tried to solve all over the world. Throughout the time great majority of retailers would make a decision based on personal experience and instinct, regarding the process very much as an **art**. People would mainly use very subjective techniques, some of them are no more than **hunches** based upon experience [1].

What's the challenge



As information systems evolved, research procedures became more sophisticated. For retailers, this presented a challenge: without using location decision procedures to improve objectivity, they risked falling behind businesses that adopted such methodologies [1].

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Retailers must carefully select and coordinate these tools to ensure they complement each other and provide a comprehensive view of the decision at hand, otherwise, they risk making false decisions or mistakes.

Methodology

- The methodology implies two key concepts: **Geo-demand** and **Geo-competition**.
- Geo-demand is a location of potential customers, while geo-competition is the location of the competitors of a business and the delineation of their trade areas in a particular market.
- Once they these two concepts identified, areas, where commercial service is poor and population density is high, can be obtained by their joint analysis [2].
- Identified area can help decision-maker select potential locations for his outlet and define attributes for them.
- Once attributes are provided, decision-maker must define relative priority of each attribute, which serves as an input to Analytic Hierarchy Process that evaluates all the attributes on each site and output locations with their relative rating.

Trading area

Trading area can be identified using probabilistic model presented by David L. Huff:

$$P_{ij} = \frac{\frac{S_j}{T_{ij}^\lambda}}{\sum_{j=1}^n \frac{S_j}{T_{ij}^\lambda}}$$

Where P_{ij} is a probability of a consumer traveling to the outlet, S_j is a size of outlet, T_{ij} is a travel time.

Process flow diagram

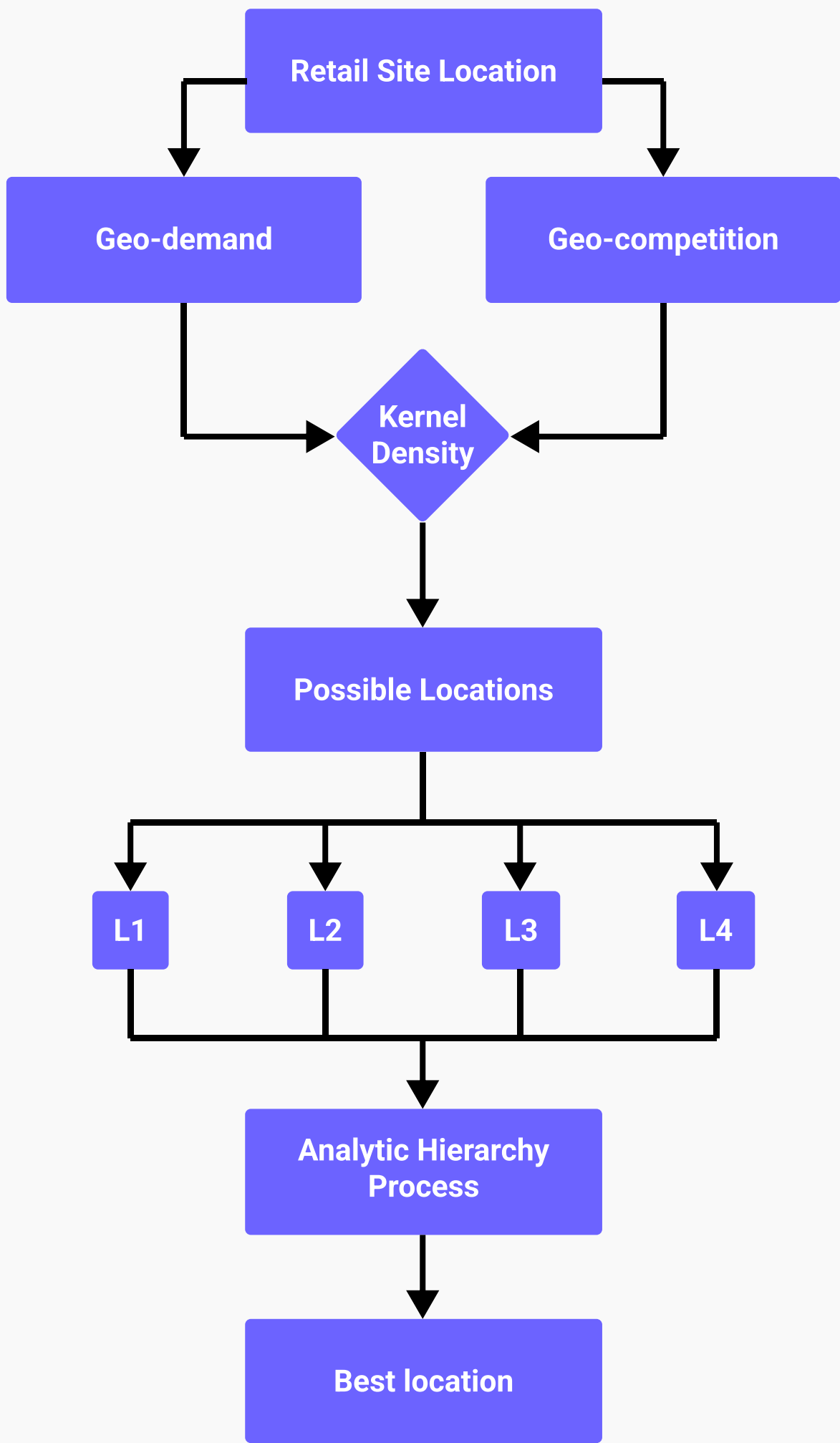


Figure 1: Process flow diagram (Adapted from [3])

Solution

A solution is to build a system to aid retailers in making informed location decisions. Such system could utilize mentioned methodology, which is designed to assist retailers in the decision-making process, particularly in identifying optimal business locations.

This procedure enables users to analyze multiple datasets, utilize GIS features for location selection, and input their preferences into the system, which makes the procedure flexible and suitable for every retailer who chooses to utilize it [3].

[1] Simon P Anderson, Jacob K Goeree, and Roald Ramer. Location, location, location. *journal of economic theory*, 77(1):102–127, 1997.
[2] Amparo Baviera-Puig, Juan Buitrago-Vera, and Francisco Mas-Verdu. Trade areas and knowledgeintensive services: the case of a technology centre. *Management decision*, 50(8):1412–1424, 2012.
[3] Norat Roig-Tierno, Amparo Baviera-Puig, Juan Buitrago-Vera, and Francisco Mas-Verdu. The retail site location decision process using gis and the analytical hierarchy process. *Applied Geography*, 40:191–198, 2013.