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Site selection in the US retailing industry

Michael Nwogugu

P.O. Box 170002, Brooklyn, NY 11217, USA

Abstract

This article critiques existing store-location models and explains the many mathematical and methodological problems inherent in these models. The key issues are that behavioral factors are completely omitted in these models, emphasis on distance in un-warranted and site-specific and retailer-specific characteristics are typically omitted in these model. The author introduces new site-selection models. The US retailing sector is used an example.

Keywords: Retail stores; Facilities location; Complexity; Corporate strategy; Risk management; Dynamical systems; Supply chain

1. Introduction

The store location decision has become perhaps the most important decision for many retailers—Internet retail sales and mail order retail sales account for less than 8% and 30% of total US retail sales respectively. Store location sometimes contributes as much to a retailer's brand value as some forms of marketing. Real estate accounts for more than 30% of retailers' operating expenses and total assets. Retailing remains the largest industry in the US – in 2005, at least 30% of US GDP was from retail sales. In 2004/2005, the US retail industry had more than 1.5 million establishments, and employed more than 20 million people (17% of the US workforce). (Standard & Poors).

1.1. The store location (site-selection) decision

Given the structural changes that occurred in the US retailing sector during the last five years, and the fact that real estate constitutes a substantial portion of retailer's assets and operating expenses, the store location decision has become probably the most important strategy decision for retailers. The literature on store site-selection is extensive, multi-disciplinary and covers various approaches in operations-research/management science, economics and marketing (See: [25,60,39,31,32,38,46,44,11,8,17,20,18,3,6,28,4,5,55,68,69,78,72,67,73,77,63,58,52,50,59,62,34,33,41,54,57,63,66,9,21,1,10,2,14,4,15,7,6,22,24,36,42,45,27,80,86,83,70,84]). However, all existing

E-mail addresses: datagh@peoplepc.com, mcn111@excite.com

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store-location models are inaccurate and some of the problems problems inherent in the existing literature are explained as follows.

1. Distance
   Existing store-location models over-emphasize and don't incorporate the distance element properly. Most models erroneously assume:
   – That distance from each community (in the trade area) to the store is constant, and remains constant for each customer, for all trips to the store, and for all time periods.
   – That all residents of each community travel the full distance between their community and the store location whenever they shop. Some models have erroneously tried to use Newton's gravity model (laws of physics) for location analysis [25,26]. However, the Newton's law is not applicable because its assumptions do not fit the reality of shopping, consumers' travel patterns, consumer's reaction to distances and retail activities.
     • That distance is not affected by any other factors (traffic jams, psychology of driving, environmental psychology, perceived value of time spent traveling to/from store, perceived value or trip (multi-purpose trips vs. single-purpose trips), etc.) and is completely determined by a physical measure. Prior site selection studies and models omitted relevant transportation psychology and environmental psychology analysis. (See: [53,51,19,47,40,29,12,71,81,85,75,76,64,65,6]). These site selection models erroneously state and assume that distance is a major element of site selection models. However, in reality, the distance between the store location and various communities does not matter (See: [52]), because:
     • Most people do not work in their immediate communities.
     • Most people shop before going to work, during lunch, after work, or on weekends.
     • Most people go to the shopping mall on their way to other destinations; and prefer malls that are on the route to destinations that they regularly go to.
     • People may have psychological attachments to specific retail brands. Kuo et al. [52] presented evidence (questionnaire results) that customers will walk/drive more than 10–30 min past certain retail stores to go shop at other retail stores.
     • Many people in most communities drive to store locations. When driving, actual distance (between the community and the store) becomes less relevant, partly because (a) the consumer has reserved time for shopping which includes the travel, and thus is less sensitive to distance, (b) the consumer is willing to travel to various locations to shop, and hence is less sensitive to distance, (c) the consumer derives utility/disutility from driving, depending on the car, characteristics of the road, traffic, etc.
     • People may be more sensitive to the psychology of traveling to a store (traffic jams, landscaping, width of roads, signs, bill boards, etc.) than they are to the actual physical distance to the store location.
     • In many instances, the differences between products in each category (and products sold by retail stores in the same trade area) are not substantial enough to warrant inclusion of distance as a factor in store location models. Many retailers purchase products from the same or very similar manufacturers and distributors.

   Hence car/pedestrian traffic-counts and consumers' psychological reactions (to distance) are better predictors of demand than actual physical distances from communities, CBDs or other locations (See: [87,82]).
2. Site-specific operating costs
   The models don't consider the effect of site-specific operating costs on the location decision (these costs include insurance, maintainance, taxes, etc.); the economics of store operations, the retailer's cost structure and leverage, the retailer's cost of capital, and the nature of the retailer's decision to close a store or to continue operations at the store location. Most models don't incorporate the customers' fixed and variable costs of shopping (See: [25]).
3. Models are based on improper probability distributions
   Some models use, or are based on specific probability distributions that often don't match real world conditions and events.