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Regionalism in US retailing

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A B S T R A C T

This paper presents a broad spatial analysis of the domestic patterns of major US retail chains. Geographic Information Systems (GIS) and statistics examine the degree to which 50 of the largest chains are deployed regionally versus nationally. We investigate whether factors such as the age of the chain, store count, or the size of the markets in which stores are located (or founded) are related to the level of regional concentration. Regional bias is found to be associated with store counts, small market deployment, and the location of the founding store, but not the age of the chain. Also, chains that started in smaller markets deploy more stores in other small markets and *vice versa* for chains that started in larger markets.

Introduction

Retailing trends are dynamic: many well-known US retailers such as Office Max and PetSmart did not exist 30 years ago, and Walmart, the largest retailer in the world, with sales exceeding those of the next five largest US retailers (Fortune, 2008), was merely a regional chain at that time. Now there is a Walmart store within five miles of more than half of all Americans and over two thirds of all other retail stores (Basker, 2007). Numerous studies have looked at the spatial patterns and diffusion processes of major retailers, but these studies have mostly been limited to a small number of particular chains and competitors (Graff, 1998; Jia, 2008; Joseph, 2010; Karande & Lombard, 2005). However, with so many national retailers vying for customers by deploying networks of stores numbering from the low hundreds to nearly 10,000, there is a need for a more comprehensive spatial analysis of the deployment of major US retail chains.

For retailers, especially publicly traded companies, continual growth is paramount. Retail companies cannot always deploy stores in their historical regions if they want to continue growing (Jones, 1981). If they do continue to expand in familiar markets, however, new stores may cannibalize the trade areas of existing stores within the chain as markets become oversaturated. The result of this trend is that many large retailers have a network of stores in a number of different markets. Joseph (2010) suggested that a retail company reaches domestic real-estate maturity when it can no longer open new stores in traditional or desired markets without significant cannibalization of existing stores. Following this line of thinking, the level of regional concentration of a retail chain may be related to its stage in the real-estate maturity process.

This paper uses Geographic Information Systems (GIS) and statistics to examine the degree to which 50 of the largest US domestic retail chains are deployed regionally versus nationally. Metrics such as spatial mean center, standard distance, and standard distance ellipse are employed to analyze the locations of these chains. Regional concentration is also evaluated using the Herfindahl–Hirschman Index (HHI), measuring the concentration of stores across major US regions. We investigate whether factors such as the age of the chain, store count, or the size of the markets in which stores (or the first store) are located are correlated with the level of regional concentration as indicated by the chain's standard distance and HHI values. Retail types are discussed both collectively and individually as the processes may vary depending on type of retailer and the associated locational requirements.

Relevant literature

This study builds on research that has focused on the process of retail contagion, or diffusion of retail stores over space. Much of this literature attempted to identify the underlying processes behind how and why retail chain networks evolve. The locations of retail stores have been explained by factors including the distances from chain headquarters or distribution centers. Regional concentration near such locations can be advantageous because of economies of scale, lower distribution costs, and higher customer awareness (Doyle & Cook, 1980; Graff, 1998). Expansion may be constrained by

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warehouse locations (Laulajainen, 1987). Further, companies that start in smaller towns may hesitate to open stores in large markets and *vice versa* (Jones & Simmons, 1987). Another important growth strategy for retailers is the acquisition of other chain store retailers, which may lead to having locations in a variety of markets (Laulajainen, 1987). Still, many chains diffuse methodically through space and time (Jones, 1981).

A number of studies have focused on particular retailers or groups of competitors. Zhu and Singh (2009) found that headquarters location was a determinant of Walmart, Target, and Kmart store locations. Walmart did not initially saturate markets because most of its early stores were located in isolated smaller towns in the Southeast. Walmart eventually expanded to urban markets, although the locations were not far removed from distribution centers, and supercenters were clustered near food distribution centers (Graff, 1998). Jia (2008) noted that Walmart was much more likely to open new stores near distribution centers than Kmart. Notwithstanding, Graff (2006) observed a concentration of standard and Super Kmart stores near their old headquarters in Michigan. Shields and Kures (2007) also identified distance to distribution centers as a factor determining which stores Kmart closed. Target has focused its store deployment in particular larger markets with its standard and supercenter formats (Graff, 2006). Joseph (2010) found that although Target and Walmart now have the most similar patterns of any time in their history (dating back to 1962), they had quite dissimilar expansion strategies, with open date and distance to first store being strongly correlated for Walmart but not Target. Much of Target's early growth was the result of acquiring properties from other chains such as Fedmart and Gemco, especially in the Western US. As Walmart saturated markets farther from its Arkansas headquarters, eventually it revisited markets closer to home for domestic new store expansion, thus reaching a point of domestic real-estate maturity (Joseph, 2010).

In summation, various theories have been postulated for how retail chains grow. Most studies have noted methodical diffusion processes due to factors such as distance to headquarters or distribution centers. However, not all chains follow these patterns and that may be related to retail type or chain heritage. Taking a static snapshot of a dynamic process, the data and methods for this paper are unique in terms of the broad scope of the study and the combination of the studied variables.

Data and methods

Data

This paper is based on all the stores in the contiguous lower 48 US states of 50 leading domestic retailers. This includes discount department stores such as Walmart and Target, "category killers" such as Office Max or Best Buy, as well as other retail types such as rental stores. The retailers are grouped according to type of retailer, based on the North American Industry Classification System (NAICS). Although there are variations in specific merchandise mix between retailers within a type, there are enough similarities that they can be considered as competitors. The general criteria for inclusion in this study were based on three factors: 1) rank of sales according to the 2008 Fortune 1000 list; 2) average store size of at least 2500 square feet; and 3) at least 100 store locations. We omit smaller stores that do not involve the same level of risk as larger stores. We also excluded grocery stores because the regional chains greatly outnumber the nationally deployed chains. Only a few of the chains had franchises (i.e. Aarons, Pet Supplies Plus, Rent-A-Center), while the vast majority had company-owned stores.

The 70,796 stores of these 50 retailers range in size from 2500 to over 150,000 square feet, with as few as 111 locations for Nordstrom to a high of 8577 for Dollar General. We limited the study to the standard, and in some cases supercenter, formats of the chains. The locational data were obtained from company websites and Environmental Systems Research Institute (ESRI), geocoded, and checked against store locator results for at least ten markets for each retailer.

Methods

The objective is to measure the level of regional clustering of 50 large US retailers and identify the factors associated with the clustering in order to understand the systematic processes behind retail contagion and future proliferation of retail stores in the US. First, we investigate whether chains that start in small markets tend to continue to locate more often in other smaller markets. A chain that seeks small market locations would, in theory, be able to maintain a high level of regional clustering because there may be opportunities for expansion in a larger number of markets. These chains could accumulate thousands of stores in desired locations before reaching a point of domestic real-estate maturity. Conversely, chains with stores only in larger markets may run out of options near the historical region sooner and need to turn to large markets in other parts of the country for expansion, even after just opening a few hundred stores.

The first store location of each retailer is assigned to one of four categories based on 2010 market size, according to the US Census (Table 1). Each store location is also assigned to one of five categories. (There is an additional division of store location markets because the number of store locations being studied far outnumbers the amount of studied chains.) Non-metro refers to locations that were not classified as metropolitan or micropolitan by the US Census Bureau. Cross-tabulating the two creates a 4×5 contingency table tested with the chi-square statistic.

The second step is to empirically analyze the patterns of studied retailers using spatial statistics for different types of retailers according to the NAICS. This includes identifying the spatial mean center (SMC) of each retailer, which is calculated as the mean of the eastings (longitude) and northings (latitude) (Lee & Wong, 2000). An SMC is calculated and plotted for each retailer and compared with the SMCs for the national population, national income, and a point file of over 7000 shopping centers, which was obtained from ESRI for the lower 48 states. The population and income SMCs were based on the centroids of 2010 US counties.

To analyze the degree to which stores are clustered or dispersed around the mean center, we calculate the standard distance (SD) in miles for each retail chain and for the 7000+ shopping centers. In spatial statistics, *standard distance* is the equivalent of standard deviation (Lee & Wong, 2000). Retailers with greater regional clustering will generally have lower SD values. To supplement the discussion, we also generate the standard distance ellipse (SDE) for the chains to capture any directional bias of the retail store locations. The components of an SDE are the angle of rotation, and the deviation along the major and minor axes (Lee & Wong, 2000; Myint, 2008).

Table 1
Store count by market type and first store market.

First store market	Store location market
Metropolitan 7 million+	Metropolitan 7 million+
Metropolitan 1–7 million	Metropolitan 1–7 million
Metropolitan < 1 million	Metropolitan < 1 million
Micropolitan or non-metro	Micropolitan 50,000–200,000
	Micropolitan <50,000 or non-metro