Literature Review

Background

Retail Location analysis research has evolved over the past sixty years. There is a critical need among retail and consumer service to understand how retail location affect business revenue. In 2016 World Retail Congress in Dubai, speakers highlighted the problems of building sustainable margins from store networks that no longer match consumer requirements, and the changing retail landscape is characterized by uncertainties affecting retail sales. So nowadays, research on how retail location can affect business become meaningful and popular trend.

Retail Location Analysis

During the past three decades, the improvement of spatial-data analysis technique makes it easier for use to tackling spatial analytic of location science(Church, 2002). According to Niti (2007), the retail business annual sales revenues are better explained by the ethnic population and median household incomes for 1-mile &2-miles distance around. He uses mainly GIS techniques and statistical analysis of Geocoding, groprocessing and regression analysis. For example, Niti first uses geocoding to converts addresses to specific point locations on the street network based on geo-coordinates, then he shows the spatial distribution of the retail store. Next step, he uses catchment area analysis to create thiessen polygons to predict the catchment boundary along a direct transact between each pair of neighboring retail business. In addition to catchment analysis, Niti also explores overlay analysis to apply weights to several inputs and combine them into a single output. In other words, this method applies a common scale of values to diverse and dissimilar input to create an integrated analysis (ArcGIS Desktop Help 9.2). After finishing the overall GIS part, he does regression analysis by using stepwise selection. Similar methods were also used by Lan& Jennifer (1995) in their research spatial decision-support systems in retail location planning. Our approach is similar to this retail location analysis on modern GIS and statistical techniques. However, the research objectives are different. This research's main objective is to analyze how various socio-economic and demographic factors with various spatial configurations affect fast food store performance(Niti, 2007). Our research objective is more focus on how these factors would affect retail shopping center performance in U.S.

Indeed, the data source of that research is gathered from Portage and Summit Counties, rather than U.S. Result must be different bases on various spatial configurations and geo-demographic.

There are also lots of researches in shopping center analysis. Mark and John(1994)'s work on evaluation of shopping center mainly reviews the major two broad areas of shopping center research: extensions of central place theory and retail agglomeration economics. They narrowly focus on consumer behavior and retailer behavior. In our research, I will explore more GIS theoretical basis to evaluate how spatial factors can affect shopping center retail sales. Although Eppli and Shilling(1996) have already done research empirically measurement of consumer utility trade-off between store location, GIS techniques and theories are not advanced at 1996.They demonstrated that by using the Lakshmanan and Hansen retail expenditure model, the customer's distance to shopping centers is of surprisingly little importance in explaining retail sales. Their research focuses on subtle forms of location: customer distance to shopping center. Modern definition of GIS location are more broad, for instance, the distance to nearest competing center, the distance to nearest major cities, the geo-demographic factors within 5 miles distance, etc. In addition, modern spatial analytics technique is more advanced. By linking GIS and spatial analysis software, proprietary GIS can be applied to improve model accuracy(Church, 2002). So in my research I will use more accurate GIS data and more advanced spatial theory as well as more broad explanation to study how location factors can affect business retail sales in the U.S.

Another business site-location feasibility research done by Pearson, Jesse on 2007 demonstrates a new method on retail location analysis. Instead of directly use GIS to do catchments analysis and other spatial analysis, it provides technological process to identify areas that have the highest market potential as well as future possibilities based off of the criteria defined in this analysis. That's because, nowadays, GIS is used not just for location and catchments analysis but also for other retail sector issues such as category management, merchandising, marketing communications and relationship marketing (O'Malley, Patterson and Evans, 1997). In my own research I will try to use the same method as Pearson - use GIS to do modern process to identify marketing potential area. Although the approaches we use are the same, we have different research objects and research goals. Pearson's research is mainly focus on retail business in Minneapolis and his research goal of site-location analysis is to provide Kowalski, which is a Country Store, with 4 or 5 possible site locations to develop future stores(Pearson, 2007). However, I will keep track of the whole U.S's retail business in my

research. With increase scale of research project, the difficulty of business site-location analysis will definitely increase.

Conclusion

The purpose of this review is to view trends and methods of retail location analysis in the past three decades. In 2007, Niti performed relative complete GIS retail business analysis and made conclusion on census tracks level. However, he defines retail as restaurants, and used the restaurants data as retail business data. I will use U.S shopping centers data to explore new findings. Although in 1994, Mark and John has done shopping center analysis, which seems similar to my shopping center location research, more technological advancement has taken place in the field of GIS in the past three decades. So not only the data accuracy, but also the model accuracy will be improve by using new data collection method and GIS modeling method. In 2007, the technique of GIS is already mature, Pearson explored new method of to identify marketing potential area before traditional spatial catchment method for business location analysis. However, his research objects are only including the retail business in a small city in U.S. I will extend his method to do research on more than 80000 shopping centers in U.S and get more complete research result.

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