



# **Business Site Selection, Location Analysis, and GIS**

Kayla M. Gordon

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Author:	Kayla M. Gordon
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Supervisor (Arcada):	Ann-Christine Sved
Commissioned by:	Kayla M. Gordon
<p>Abstract:</p> <p>Starbucks is an American coffee company and coffeehouse franchise who specialize in loose-leaf teas, espressos, café lattes, frappuccino beverages, and pastries and snacks. Dunkin' Donuts, founded in 1950, is "the world's leading baked goods and coffee chain." Both are very respectable companies and are dominating the coffee house industry with their products, from filtered coffee drinks to specialty items.</p> <p>Starbucks and Dunkin Donuts are a few of the companies that use Geographic Information System (GIS) technology to help select their new store location. GIS allows users to visualize, question, analyze, and interpret data to better understand relationships, patterns, and trends for a desired location.</p> <p>This thesis analyzed how Starbucks and Dunkin Donuts use GIS technologies, which GIS providers are being used, and the benefits of using such software. The aim of this thesis is to explore the factors used in determining business location for Starbucks and Dunkin Donuts and how customer demographics and GIS software play a role in choosing said business location.</p>	

The primary research question is: “What are some of the methods used by Starbucks and Dunkin Donuts to find a good business location?” The thesis research is limited to literature discussing GIS software, the demographics of Starbucks and Dunkin Donuts, general industry information regarding Starbucks and Dunkin Donuts, and literature regarding the usage of GIS software by Starbucks and Dunkin Donuts. The material used for the research of this thesis consists of *secondary data*. Literature discussing GIS methods, used by Starbucks and Dunkin Donuts, for location assistance and GIS software were referred to. Marketing textbooks/literature were referred for researching demographic information. The results discuss the methods used by both Starbucks and Dunkin Donuts by using ArcGIS and Tango Analytics, respectively. For more details, see the *Results* section of this thesis.

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# 1 INTRODUCTION

For a business, location is the key to successful operations and overall growth. “Location, location, location!” That’s the famous saying used to express the importance of location. A business’s success is partially, if not mostly, dependent upon the business’s location. Having the best possible location is vital.

The responsibility of the business owner is to serve customers. Most businesses determine which customers they would like to attract the most. These customers are called *target customers*. To help attract target customers, business owners use demographics. Demographics are further discussed in Chapter 2.

Some businesses have been known to use GIS software to help identify more profitable business locations. Such software can help identify traffic patterns, the local crime rate, geographical information, and much more. GIS software will be further discussed in Chapter 2.

This thesis analyzes a few methods of how successful franchise businesses have selectively placed their franchise in beneficial locations and the techniques they have used to do so.

## 1.1 Motivation

The motivation behind this thesis is the curiosity of how Starbucks and Dunkin Donuts have performed well as companies, considering only their methods of choosing a business location. Learning the techniques mentioned in this thesis may help the reader to find a successful business location.



## **1.2 Background Information**

Choosing the right commercial location at the right time can help businesses meet and exceed their business goals. The author is interested in exploring methods used by Starbucks and Dunkin Donuts, regarding how they select the best commercial location to open a franchise store. Research will include GIS, or Global Information System, software and usage to see what key factors are analyzed by companies such as Starbucks and Dunkin Donuts.

## **1.3 Research Aim**

The aim of this thesis is to explore the factors used in determining business location for Starbucks and Dunkin Donuts and how customer demographics and GIS software play a role in choosing said business location.

## **1.4 Research Question**

The primary research question is:

“What are some of the methods used by Starbucks and Dunkin Donuts to find a good business location?”

## **1.5 Research Limitations**

The thesis research is limited to literature discussing GIS software, the demographics of Starbucks and Dunkin Donuts, general industry information regarding Starbucks and Dunkin Donuts, and literature regarding the usage of GIS software by Starbucks and Dunkin Donuts.

## **2 THEORETICAL FRAMEWORK**

The theoretical framework of this thesis will discuss demographics and GIS - what they are, and how they are used - in assistance with choosing a business location. Choosing the best business location is an important for business success. Several successful companies, such as Star Bucks, have used demographics for assisting with their business location. For example, GIS (see Chapter 2 Section 7.1) include traffic pattern information, demographic data, lifestyle data, and competitive analyses. Demographics are very useful for businesses, as one can learn from this chapter. For more information regarding demographics, and what they are, please see Chapter 2 Section 2.2.

### **2.1 Location**

#### **2.1.1 Why is business location important?**

A business seeks to build, develop, and continue relationships with their customers, suppliers, employees, mentors, and investors. The quality of their environment and the people within them, may lead a business to succeed or fail. (Cohan, 2013)

One's business location is necessary for successful operations and overall growth. When choosing a business location, one must consider company needs, customers, employees and equipment needed to complete the services. (Smallbusiness.chron.com)

#### **2.1.2 Business Types**

This section discusses the different types of businesses and how their location depends on the type of business they are. Unless the business type is a local retail business, a business can be placed into one of three categories.

1. A company that requires a lot of logistics to deliver products to customers. Many traditional manufacturing companies, place themselves near an area with strong

transportation options, such as deep-water ports, extensive rail networks, or trucking companies. (Watson, 2014)

2. A small business that manufactures knowledge-based products. Market entry, and the availability of natural resources, are not as important for this type of business. As long as the location one considers has the technology to support the business's products, choose a location based on personal needs. (Watson, 2014)
3. A knowledge-based, fast growing company, that flourishes by being near to other companies in their industry. For example, a technology company should be surrounded with other companies in technology centers, such as Silicon Valley, or the Research Triangle. (Watson, 2014)

Before choosing a location, one should ask, "Can I be anywhere, or do I have special requirements (such as a dependence on natural resources or the need to be surrounded with other companies) that demand I locate to a certain region, or even a certain town?" Once this question has been answered, the company must have a clear demographic idea for the chosen regions or towns it will be placed, in order to determine which sites are best suited to the company's needs. (Watson, 2014)

### **2.1.3 What to consider when choosing your location.**

Some things to consider should be:

1. **Customer Convenience.** If one's business attracts customers to a business location, the location must be convenient for the customer. The location must be easily accessible and provide the customer with a feeling of safety. (Smallbusiness.chron.com)
2. **Parking.** Available parking is important for customers and employees. If customers are unable to find proper parking, they may choose to visit a competing business who has the same products and services, with more convenient parking. A

business also needs adequate space for employees to park at or near their work location. (Smallbusiness.chron.com)

3. **Operations and Equipment.** Businesses must have plenty of space for the necessary equipment, in order to produce their products and services. For example, if one has a manufacturing business, the business requires a lot of space for its equipment and inventory. (Smallbusiness.chron.com)
4. **Service and Sales.** A business's service and sales opportunities are greatly affected by the business' location. The chosen location should focus on the business' target customers (demographics) and should generate walk-in traffic. (Smallbusiness.chron.com)
5. **Inventory.** Any required inventory must fit comfortably in the business' location. Determine how much inventory the business will hold and calculate the needed space for displays, in addition to storage. (Smallbusiness.chron.com)

## 2.2 What are Demographics?

Demographics are “the study of population factors such as the proportion of the population who are of a given race, gender, location or occupation, and also of such general factors as population density, size of population and location.” According to Blythe (2005, pp. 31)

Businesses market products or services by using targeted approaches to various segments of the population. Demographics are the statistical factor of marketing used to identify population segments by characteristics. No matter if the business is small or large, businesses must have a targeted approach to consumers. (Sessoms, n.d.)

Demographic information includes geographic area, age, house hold income, race, gender, and educational level. Demographics also include shopping habits, marital status, the

amount of children in a house hold, and other factors about consumers. Local demographic information can provide data regarding how many people own cars or homes, how many people attend college, or what percentage of residents are internet users. (Sessoms, n.d.)

## **2.3 Demographics in Marketing**

Small business owners need demographics to identify their ideal consumer. By doing so, the business owner can develop marketing tactics such as product packaging, advertisements, business location and pricing for his products and services. If a business owner is trying to adjust his or her marketing plan to meet the country's changing demographics, he or she will find it useful to know that, Hispanic consumers spend the most money on baby items, African-American consumers purchase more fragrances and ingredients for home cooking, and Asian-Americans are most likely to eat out and shop at club stores, (Pirovano, 2010).

Because business owners cannot target their marketing to each individual consumer, demographics are the most effective way for target marketing to clusters of people with like characteristics. (Sessoms, n.d.) Knowing the age, sex, occupation, and race of the members of the target audience assists advertisers and business owners in their message design and which media sources to use.

### **2.3.1 Age**

Age is an important factor for demographics because people in different stages of life have different needs. Businesses must consider the appropriate advertising methods and select the proper medium to attract members of a specific age group. The products that a person used five or ten years ago are most likely not the same products that they use now. If you were interested in buying a car, would you be interested in the same car features as your parents? Needs and wants for products or services change over time. In countries, like the United States, age can have a direct affect on advertising. (Wells, 1999)

### **2.3.2 Gender**

When determining which customers to attract for products or services, the person's gender must be considered. There are some products which are marketed to men more than women. For example, the majority of men are not likely to purchase make up and feminine perfume, just as it is not likely for a woman to purchase a beard trimmer or after-shave. Hence advertisers, and business owners, must determine which gender their products appeal more towards and if their products can be useful to both genders.

### **2.3.3 Education**

When it comes to demographics, education is another important factor. The level of education attained by a customer can influence their behavior and purchasing decisions. Advertisers know that they must advertise differently towards better-educated individuals than to individuals with lesser education. One example is the Apple's iMac computer. The iMac computer is targeted to people with lesser education than other individuals who traditionally purchase computers. Individuals with higher educational levels are found to be more responsive towards technical and scientific devices, prefer more informative advertising, and are more capable of judging the relationship between the price and quality of the product. (Wells, 1999)

### **2.3.4 Occupation**

People often identify themselves by their occupation. Even people with no income, such as stay at home moms and students, identify themselves in this way. There has been a gradual shift from manual workers in industrial occupations to positions in office work in a professional environment. The office work occupations consist of sales and other areas, such as specializing professionally in a field, technical work, and administrative occupations. This shift has affected advertising in many ways. Most particularly, advertisements rarely portray manual workers doing manual labor anymore, and women are increasingly being portrayed more in professional roles. (Wells, 1999)

### **2.3.5 Income**

An individual is only meaningful to a marketer if they have the resources to purchase the product being advertised. This simply means that the consumer must have money and credit available. It also means that consumers must have some disposable income, which is the money available to a household after taxes and basic needs, such as food and shelter, are met and paid entirely. As the consumer's total income increases, the amount which is considered the disposable income also increases. (Wells, 1999)

Income is important because not all products can be purchased with the same amount of household income. Wallets are not *one size fits all*. Meaning, not everyone has the same amount of money or credit available. Business owners must recognize this and identify which level of household income their products belong. This will aid in advertising and customer identification.

### **2.3.6 Race & Ethnicity**

Race and ethnicity must also be considered when identifying customer demographics. Different races and ethnicities have different cultural values and also preferences when purchasing items, based on their culture and lifestyle. For example, an American will eat hamburgers made from beef, while a Hindu will not eat the beef at all, because it conflicts with their religious beliefs. While one individual has the preference for one item, another individual does not prefer the same item, but instead prefers a different item which might be used more in their culture of lifestyle. Business owners must determine if their products appeal more towards a certain race and ethnicity or if their products can be used by any individual, regardless of race and ethnicity.

## **2.4 Demographic Applications**

Demographics can help business owners to avoid pricey mistakes in their marketing plan. Demographics can prove to business owners that methods, such as placing fliers on car windshields, are not the best marketing methods for their business when they need to target small and sole proprietorship businesses. By using surveys, business owners can learn information about customer preferences that attracts customers to further attract

more customers. Business owners, for example, can also use demographics to identify subscribers of a city's largest newspaper as the ideal consumer market for a company's new magazine. A dry-cleaning business owner might have her decisions influenced on a chamber of commerce survey which displays residents of a specific income that are willing to drive at least 10 miles to their nearest dry cleaner. Lastly, the number of homeowners in a community could affect a business owner's decision about where to locate his or her hardware store. (Sessoms, n.d.)

## **2.5 How Do Demographics Affect Business?**

Who are the users of your products or services? Is it soccer moms, older citizens, middle-class African Americans, recent migrants, or people in New Hampshire? Demographics might not be at the top of an entrepreneur's daily worry list, but it is a factor often ignored at their own risk. (Spiro, 2009)

"Thinking about who your customers are and how they might be changing becomes a really, really low priority item" amongst the daily chaos of managing company sales, accounting, hiring, and IT. (Francese, 2009) But disregarding demographic changes in your geographic market "really means you are not paying attention to your future." (Francese, 2009)

Demographics are very important to business owners because they identify the business' target customers. For example, the Mountain Dew, a beverage, demographics are people from the ages of 12-30 from middle class areas. For a business to best identify his target customers, demographics must be used. Further more, demographics will help decide all the choices a business owner will make when developing his or her marketing plan. By using demographics, entrepreneurs will have a head start in understanding his or her market. (Sessoms, n.d.)



## 2.6 Geographical Information System (GIS) Software

### 2.6.1 What is GIS?

Geographic Information System (GIS) is a computer system built to capture, store, manipulate, analyze, manage, and display the various kinds of spatial or geographical data.

The “geographic” part of the acronym GIS refers to information about positions on the Earth’s surface, also known as *spatial* data, because it can be located in space and has a geographic reference. An example of spatial data, is one’s home address. While information systems, in general, are used to manipulate, summarize, query, edit, and visualize data, GIS does all of these things with spatial information. GIS also includes spatial data that does not contain a spatial reference. For example, while one’s physical home address would be considered spatial data, the fact that one owns a home, or that their home is grey, are A spatial data. By combining spatial and A spatial data in layers, one creates a holistic view of the world. That is what makes GIS so powerful. GIS allows one to examine many layers of other information. One can also perform analysis and provide valuable visual representations of data, that often reveal patterns and trends which might otherwise have gone unnoticed without the use of GIS techniques. (Esri.com)

Location is important for many different disciplines. With that, the application of GIS is limited only by the imagination of those who use it. There are numerous ways in which this technology can be used. The most common ways are

1. Aid and development, for humanitarian aid and planning,
2. Business, for site selection or market research,
3. Defense and intelligence, for military operations, such as troop deployments and mission planning using updated and real-time information,
4. Education, for archaeology research and historic documents.

There are many uses within our government. Some include land use classification, elections, and redistricting urban and regional planning, to name a few. Health and Human Services, public health, for disease control, environmental health, natural resources conservation and resource management, such as the Forestry Service, public safety 9-1-1 services, Homeland Security, and law enforcement use GIS. (Esri.com)

### **Savings Money and Increasing Efficiency**

GIS is commonly used to improve maintenance schedules and daily fleet movements. Using GIS can result in saving 10 to 30 percent in operational expenses by reducing fuel use and staff time, improving customer service, and more efficient scheduling. (Esri.com)

### **Better Decision Making**

GIS is the go-to technology for making better decisions about a location. Some examples include real estate site selection, route/corridor selection, evacuation planning, conservation, and natural resource extraction, to name a few. Making correct decisions about a location is critical to the success of an organization or business. (Esri.com)

### **Improved Communication**

In understanding situations and in storytelling, GIS based maps and visualization tools help greatly. GIS based maps, and its visualization tools, improve communication between different teams, departments, disciplines, professional fields, organizations, and the public. (Esri.com)

### **Better Record Keeping**

Many organizations have the top priority of maintaining important documents and/or records about the status and change of geography. GIS software provides a strong framework for managing these types of records with full transaction support and reporting tools. (Esri.com)

### **Managing Geography**

To get a better understanding of what is happening and what will happen in geographic space, it is essential to use GIS. Once understood, the right actions can be determined and executed. This new approach of managing geographically is transforming the way organizations operate. (Esri.com)

## 2.6.2 ArcGIS?

The ArcGIS was built by Esri to meet the evolving requirements to deliver a scalable, comprehensive GIS platform, as demonstrated in the diagram below,

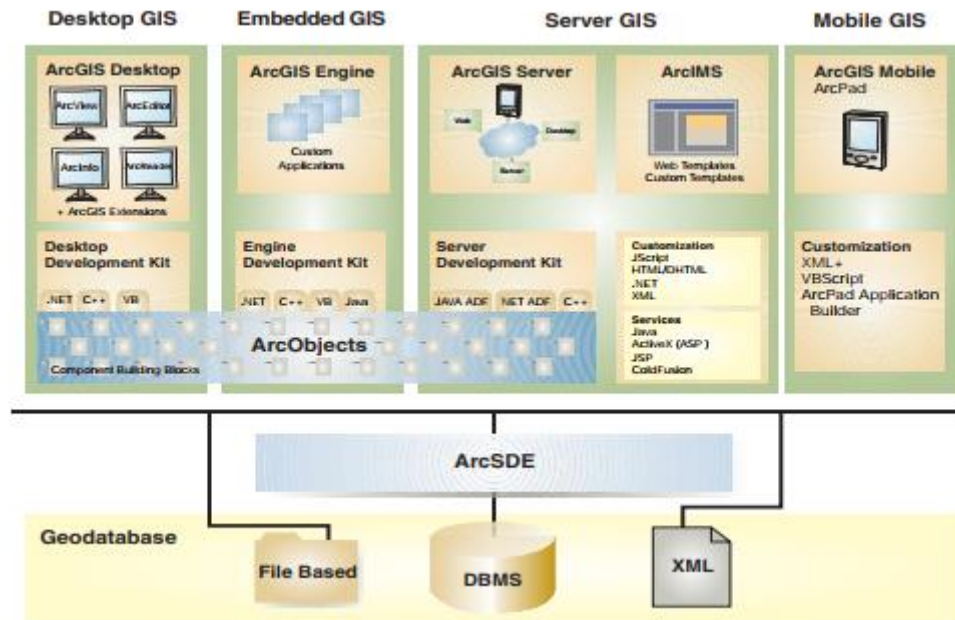


Figure 1. Use ArcGIS to meet all GIS user requirements.

ArcGIS provides a scalable framework for using GIS for a single user, or many users, on desktops, on online servers, and in the field. ArcGIS is an integrated collection of GIS software products for building a complete GIS framework. (Esri.com)

## 2.6.3 Why use GIS to find a location?

“Every single new twenty-first century data source contains location.” Simon Thompson Director, Esri Commercial Industry. Location matters, not only because of the enormous usage of smartphones, location-aware apps, or the popularity of location-based big data. Location is important because it links many businesses together and makes it possible to solve problems that had no solutions previously. It allows the ability to ask new questions and to gain awareness and understanding by analyzing traditional data such as sales, costs, profit driving services, and customer characteristics. A location has many of the new types

of information that are essential for twenty-first century businesses, such as social media, check-ins, mobile searches, online shares, and more. (Esri.com, 2013)

### 2.6.4 Retail Performance

By using GIS software, information regarding where and why a certain inventory is turning over quickly can be found. A better reading of one's competitive climate, can also be determined by looking at a specific location with GIS software. By using GIS and location analytics, retailers can explore, model, estimate, examine, and understand the localized market. GIS software will help keep inventory at the right level so one doesn't have to discount value and decrease profits. (Esri.com, 2013)

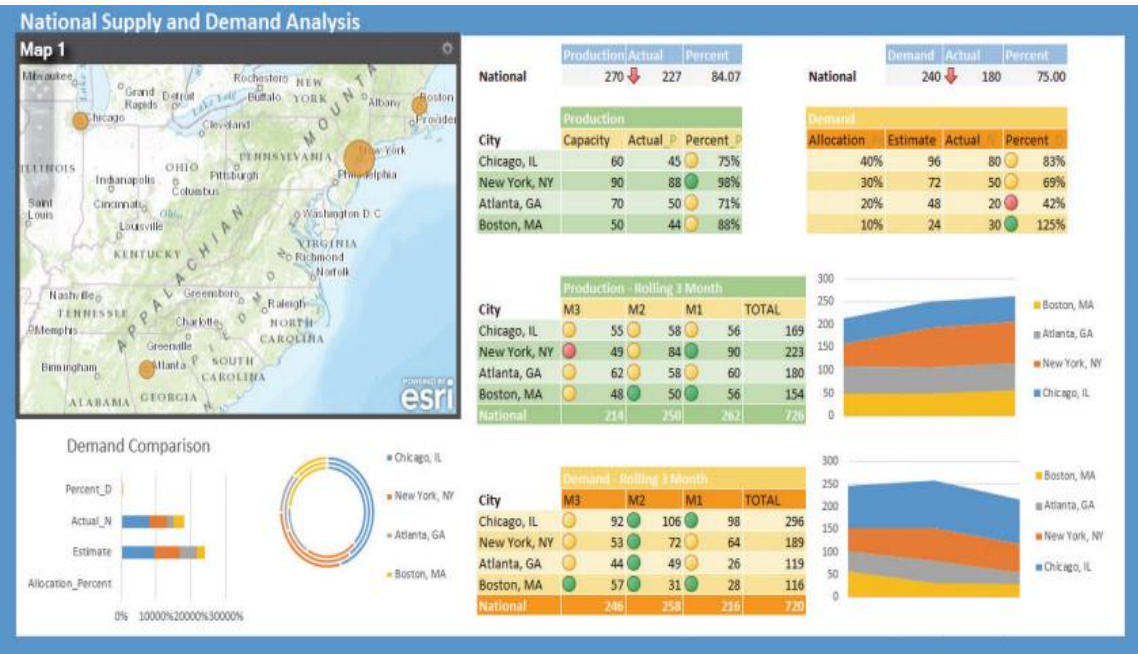


Figure 2. An example of GIS software, provided by Esri (ArcGIS software).

### 2.6.5 Brand Distinction

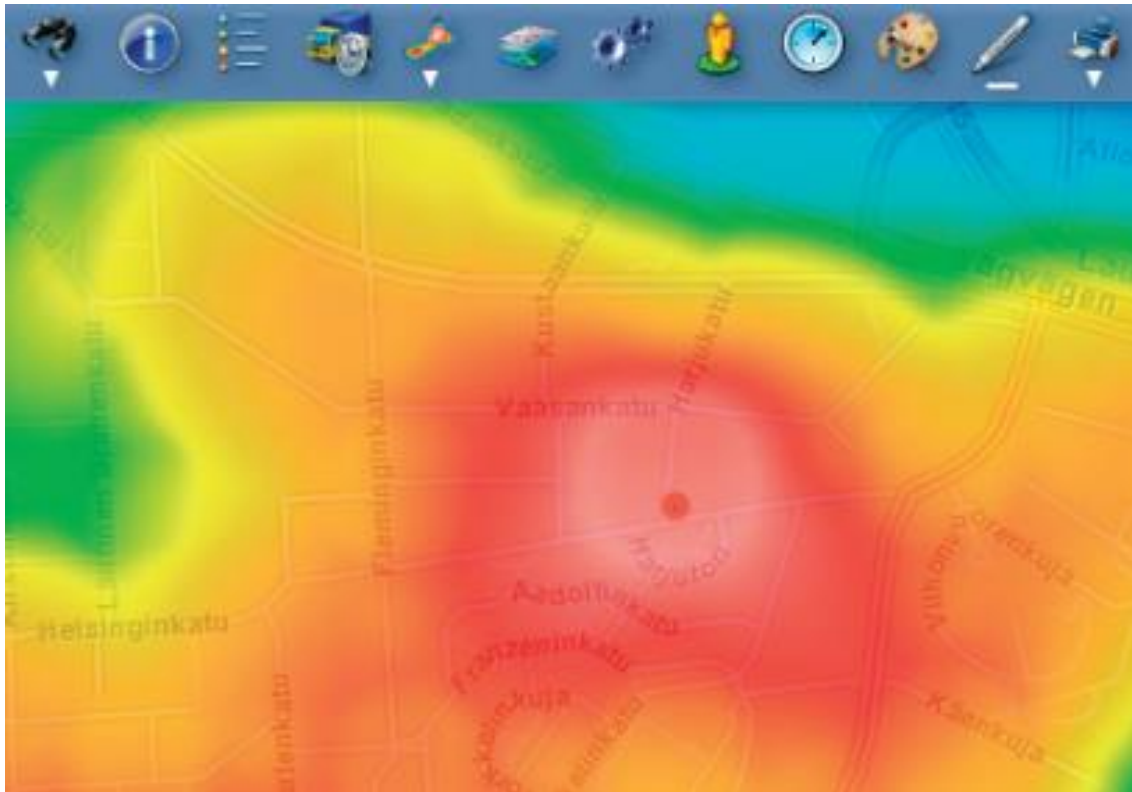
GIS software, specifically ArcGIS, enables more thorough analysis, evaluation, and understanding of the most suitable store locations based on market behavior so one can optimize their store network and maximize sales from each store location. This is a key

factor in the successful development, evolution, and advancement of a business's brand and store impact. (Esri.com, 2013)

#### **2.6.6 A More Profitable Supply Chain**

In today's world, supply chains are more global and interconnected than ever before. A typhoon in Asia can affect a business performance in Europe, while North American demands drive a business's global production performance. GIS, location analysis, and data integration services provide businesses owners the opportunity to improve supply chain visibility, reduce risk, and better accommodate production. (Esri.com, 2013)

For example, S Group is the largest retailer in Finland. Their business areas include grocery stores, service stations, utility goods, hotels, restaurants, tourism, car dealerships, and agricultural trade stores. S Group has more than 1,600 locations throughout Finland, the Baltic countries, and Russia. They use GIS software, specifically Esri's ArcGIS software and Business Analyst, to automate profiling reports for each of their 1,600 store locations. "These reports are generated automatically by combining reports from IBM Cognos with the store's area of influence, then analyzed using the ArcGIS system. SOK can assess the area of influence of any business location; forecast annual sales volumes; and improve network planning, including both opening and closing stores. ArcGIS also helps SOK's marketing division understand its customer base and better target its distribution of catalogs." (Esri.com, 2013)



*Figure 3. SOK's Internet map application makes it easy for staff to discover and analyze information for its best stores.*

### **2.6.7 Grow Strategically**

Finding a good real estate location can be intimidating and costly, if not done right. Using GIS software and location analytics, real estate companies can better apply their experience and intuition with quantified analysis and authenticated performance predictions. This reduces business costs and risks while rationalizing and improving the site selection process, allowing the entire real estate team to make more educated decisions at a much faster pace. (Esri.com, 2013)

### **2.6.8 Tango Analytics**

Tango Analytics is a GIS software. Tango Analytics collects detailed information on sales performances for existing stores, detects competitors, traffic flow, and local brand awareness, to determine the perfect location for new stores. (TangoAnalytics.com)

With a single platform, Tango Analytics' retail solutions unite customer and location predictive analytics with GIS and store development execution. Tango Analytics help companies grow a healthy franchise while protecting assets and ensuring brand awareness. By utilizing customer and location predictive analytics, Tango Analytics' software applications help both retail and restaurant businesses strategize their markets to ensure they optimize their opportunities. (Franchising.com)

### **3 METHODS**

The approach for this thesis involved researching companies that have used GIS software to assist in choosing their business location and to learn their methods for doing so. Qualitative research methods were used while researching companies using GIS software.

Research methods included:

1. Reading literature specifically mentioning GIS software used by Starbucks and Dunkin Donuts.
2. Researching ArcGIS and Tango Analytics, GIS software providers.
3. Reading literature, regarding how demographics are tied into choosing a business location with GIS software.
4. Reading literature regarding business location and why it is important.

#### **3.1 Quantitative Research VS Qualitative Research**

For reader clarity, quantitative research is “described as entailing the collection of numerical data and as exhibiting a view of the relationship between theory and research as deductive, a predilection for a natural science approach (and of positivism, in particular), and as having an objectivist conception of social reality” as written by Bryman and Bell (2011, pp. 150)

Qualitative research is more concerned with words, rather than numbers. This is the complete opposite of quantitative. According to Bryman and Bell (2011, pp. 386), “As a term, ‘qualitative research’ is sometimes taken to imply an approach to business research in which quantitative data are not collected or generated. Many writers on qualitative research are critical of such a rendition of qualitative research, because the distinctiveness of qualitative research does not reside solely in the absence of numbers.”



## 3.2 Material

The material used for the research of this thesis consists of *secondary data*. Literature discussing GIS methods, used by Starbucks and Dunkin Donuts, for location assistance and GIS software were referred to. Marketing textbooks/literature were referred for researching demographic information.

## 3.3 Data Collection

Research was performed regarding how Starbucks and Dunkin Donuts have used GIS in the past to scout potential business locations.

Answering the question, from the *Research Question* section of this thesis, assisted in knowing the methods used by Starbucks and Dunkin Donuts in choosing their business locations. How they use GIS software to analyze the surrounding areas of the potential business location and what factors are included when making the final decision. How their customer demographics were tied into their business location choice were also analyzed and researched.

## 3.4 Data Analysis

To evaluate a potential new store location, Starbucks, for example, uses data from ArcGIS (see Chapter 2 Section 6.2) developed by Esri, a GIS company. ArcGIS provides Starbucks with data on consumer demographics, population density, income levels, auto traffic patterns, public transport stops, and the types of stores or businesses in the location being evaluated. Carefully analyzing the data, Starbucks can predict foot traffic and average customer spend in each location, hence Starbucks can better determine the economic possibility of opening a store in that location. This also creates value for potential customers by providing convenient store locations.

### 3.5 Data Interpretation

The results of the analysis, mentioned in the *Data Analysis* section of this thesis, were then used to compare the location procedures performed by different companies and why they are more successful.

### 3.6 Definitions

1. **Entrepreneur:** “a person who organizes and manages any enterprise, especially a business, usually with considerable initiative and risk.” (Dictionary.com)
2. **Qualitative research:** “Qualitative research usually emphasizes words rather than quantification in the collection and analysis of data.” Bryman and Bell (2011, pp. 717)
3. **Quantitative research:** “Quantitative research usually emphasizes quantification in the collection and analysis of data.” Bryman and Bell (2011, pp. 717)
4. **Start-up:** A new, never having existed previously, business or organization which serves public or private sectors. Start-ups are started by entrepreneurs.
5. **Target customers (target audience):** “People who can be reached with a certain advertising medium and a particular message.” Wells (1999, pp. 541)
6. **GIS:** Geographical Information System (Esri.com, 2013)
7. **Revenue per share:** A ratio that computes the total revenue earned per share over a 12-month period. (Dictionary.com)

## 4 PERFORMING RESEARCH

### 4.1 Starbucks Coffee



*Figure 4. The logo for Starbucks Coffee.*

#### 4.1.1 Who are Starbucks and what do they sell?

Starbucks is an American coffee company and coffeehouse franchise. They specialize in loose-leaf teas, espressos, café lattes, frappuccino beverages, and pastries and snacks. (starbucks.com) Starbucks is a major player in the coffee and espresso industry, with new franchise locations opening at a large rate, globally. (Chicagotribune.com) Currently, Starbucks has over twenty-five thousand stores serving coffee, globally. (Statista.com)

#### 4.1.2 Starbucks Demographics

When it comes to the market share for coffee, Starbucks holds around thirty-three percent in the U.S. The bulk of Starbucks consumers are in cities or upscale suburban areas. Starbucks has been able to dominate a large share of the market by catering specifically to a well-defined target audience. (O'Farrel)

When it comes to adult consumers, Starbucks primary target market is men and women between the ages of twenty-five to forty years of age. Adults account for almost half of Starbucks total business, at forty-nine percent. Starbucks appeals to this consumer age group through hipster like contemporary design that is in line with their advertising and in store décor. Starbucks adult consumers tend to be urbanites with relatively high income

levels and professional careers. Adult consumers of Starbucks' products are growing at an annual rate of three percent. (O'Farrel)

For young adults, between the ages of eighteen to twenty-four years old, Starbucks positions itself as the place where college students can hang out, study, write reports, and meet people. Starbucks appeals to this consumer directly by introducing technology to the consumers, the moment it is available, focusing on social networking, Starbucks' mobile phone apps, and constantly attempting to appear "cool". Young adult consumers of Starbucks' products are growing at an annual rate of 4.6 percent. (O'Farrel)

Kids and teenagers are also a major part of Starbucks' target audience. Combined, customers between the age of thirteen to seventeen account for two percent of Starbucks' sales, however most items for kids are purchased by their parents or guardians. Kids go to Starbucks with their parents and both, the mother and child, for example, leave with a cup in their hand. Teenagers, however, use Starbucks as a location to hang out with their friends or study. Starbucks may not directly cater to kids, but they do produce kid-friendly products, offering child sized cups, for instance. (O'Farrel)

#### **4.1.3 Data Used by Starbucks**

Data is a very important part of location research. Using locally provided data can help with business performance expectations. One such data tool used by Starbucks is Global Safety and Security application, which is a part of ArcGIS, the market planning and business intelligence system Starbucks uses. This application is used to help protect Starbucks' partners and assets. To do contingency planning, create policies and procedures, and to protect their partners, Starbucks uses information such as the crime index for robberies, murders, and sexual assault, amongst other things to best choose the new site for their stores. In general, a business owner doesn't want to place their business store location in an area known for high crime rates such as robbery or murder. With use of the ArcGIS, Starbucks can better identify these areas. (Esri.com, 2014)

Additionally, Starbucks analyzes data for local consumer demographics, population density, the average income levels, local traffic patterns, public transportation hubs, and types of businesses in the location under consideration. This data is collected and used in a

software program called R, a statistical programming software. R then builds models based on pedestrian traffic and how much the average customer spends in that location.

(Bamb, 2016)

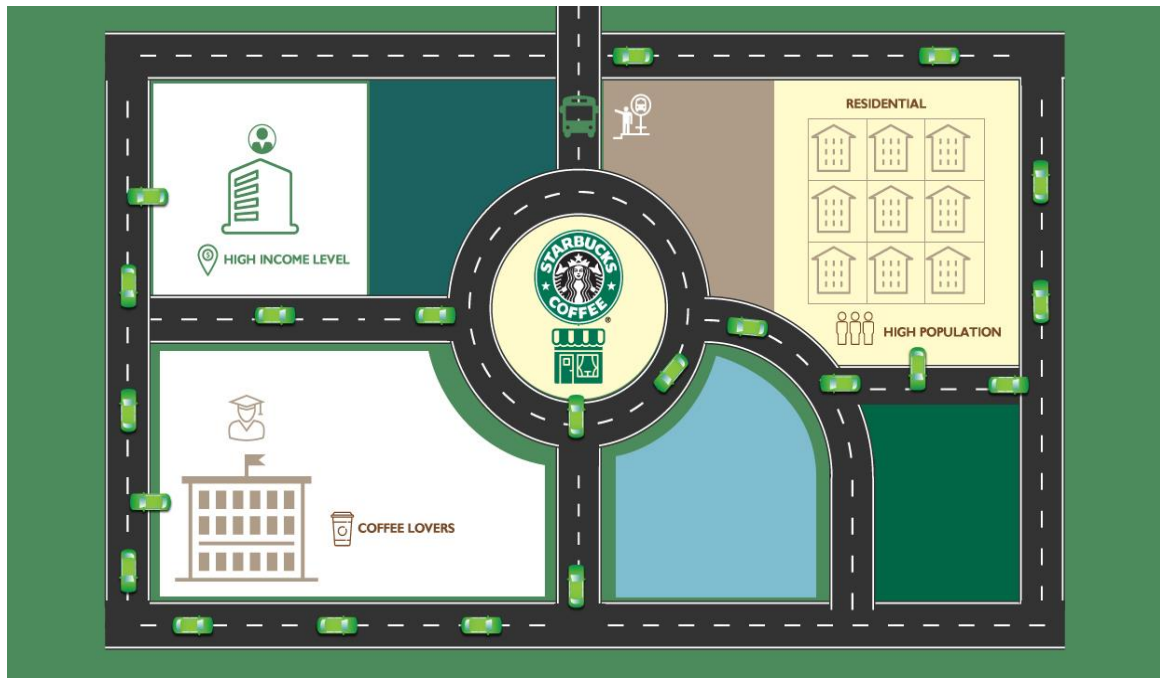


Figure 5. A visual example of the data local consumer data Starbucks analyses, when selecting a store location.

#### 4.1.4 How does Starbucks choose their business locations?

Seven hundred plus partners, or employees, in fifteen countries have started their new store journey in ArcGIS. ArcGIS is a business intelligence tool and large GIS software application that includes workflow, analysis, and store performances. New store decisions are made by local partners in the field. When looking to select a new store location, there are many layers that the partners look at, which are necessary for decision making. Things such as trade areas, retail clusters and generators, traffic and transportation nodes, and demographics. After analyzing a new market and neighborhood, ArcGIS is used to locate news for certain geographic areas. For example, in Nanning, Guangxi, China there are three new office towers in the city. After adding a new target area, near the towers, a workflow application in ArcGIS helped the progress of the new site from approval, permitting, construction, and eventually opening the Starbucks store. This is how Starbucks

starts with the idea of a new store location and brings it all the way to the cutting of the green ribbon (grand opening). (Esri.com, 2014)

## 4.2 Dunkin Donuts



Figure 6. The logo for Dunkin Donuts.

### 4.2.1 Who are Dunkin Donuts and what do they sell?

Founded in 1950, “Dunkin’ Donuts is the world's leading baked goods and coffee chain, serving more than 3 million customers each and every day. True to our name, we offer 50+ varieties of donuts, but you can also enjoy dozens of premium beverages, bagels, breakfast sandwiches and other baked goods.” (DunkinDonuts.com)

### 4.2.2 Dunkin Donuts Demographics

Dunkin Donuts has the demographics of both male and female customers, between the ages of thirty-five to sixty-five years old and up. Customers tend to be predominately white (Caucasian), with or without children, and have an annual house-hold income of \$80 000 – \$125 000 and up. Dunkin Donut customers tend to be well educated with a majority of their customers having an advanced degree from a university. (InfoScout.co)

### **4.2.3 How does Dunkin Donuts choose their business locations?**

Dunkin Donuts uses a GIS software called Tango Analytics (see 2.7.7 *Tango Analytics*). “Pranav Tyagi, president and CEO of Tango Analytics, remarked that for a retailer like Dunkin with multiple locations, finding a new location won’t take rocket science to do it. Tango Analytics is the software provider of Dunkin’. Tyagi added that Tango Analytics gathers detailed data on sales performances of existing stores, the presence of competitors, traffic flow, and local brand awareness to determine the ideal location for new stores. He added that the company is booming as 20 clients are added to its stable 150 clients this year alone.” (TangoAnalytics.com)

Tango Analytics also considers the demographic data for Dunkin Donuts’ customers. Being placed in a close proximity to one’s target audience is vital (see 4.2.2 *Dunkin Donuts Demographics*). With Tango Analytics’ GIS software, those areas can be realized and the necessary process continued to insure the location will be occupied by a Dunkin Donuts’ store.

## 5 RESULTS

Upon researching Starbucks and Dunkin Donuts GIS strategies, it is very clear that customer demographics play a major role, in combination with the GIS software. With the goal of being amongst their target audiences, the use of GIS software, whether it be ArcGIS or Tango Analytics, helped ensure the best business location was chosen by analyzing factors such as traffic flow (both foot and automotive), local crime rates, local competitors, and brand awareness.

### 5.1 Starbucks

Starbucks began using GIS technology and data in the late 1990s. “The Starbucks GIS team provides analytics and business support to its real estate section, using ArcGIS for Server solution to create data-rich applications that staff members can access from desktops, the internet, and mobile devices in the field.” (Esri.com)

By using the data tool, Global Safety and Security application (see Chapter 4 Section 1.3), Starbucks is able to find information regarding crime rates, local consumer demographics, population density, the average income levels, local traffic patterns, public transportation hubs, and types of businesses in the location under consideration. This data is collected and used in R statistical software. R then builds models based on pedestrian traffic and how much the average customer spends in that location.

New store decisions are made by local partners in the field. When looking to select a new store location, there are many layers that the partners look at, which are necessary for decision making. Things such as trade areas, retail clusters and generators, traffic and transportation nodes, and demographics. After analyzing a new market and neighborhood, ArcGIS is used to locate news for certain geographic areas.

ArcGIS has a workflow application which helps the progress of new sites, from approval, permitting, construction, and eventually opening the Starbucks store. This is how Starbucks starts with the idea of a new store location and brings it all the way to the first sale.



## 5.2 Dunkin Donuts

It is unknown how long Dunkin Donuts has been using GIS technology. The author of this thesis was not able to find any information pertaining to the start date for either Tango Analytic or any other GIS software in cooperation with Dunkin Donuts.

Within the GIS system, Tango Analytics collects detailed data on sales performances for existing stores, the presence of competitors, traffic flow, and local brand awareness to determine the ideal location for new stores. Tango Analytics also considers the demographic data for Dunkin Donuts' customers. Tango Analytics is capable of notifying Dunkin Donuts of the change in the demographics in an area where a Dunkin Donuts store is located because their store's drive-throughs attract more on-the-go coffee drinkers.

With Tango Analytics' GIS software, those areas can be realized and the necessary process (approval, permitting, construction) continued to insure the location will be occupied by a Dunkin Donuts' store.

## **6 DISCUSSION OF RESULTS**

By reading more and more about how GIS is used to provide solutions to businesses such as Starbucks and Dunkin Donuts, it is quite clear that this technology is very useful in considering the many factors needed for the ideal location. With the increasing amount of store openings, from both parties, it is obvious that GIS technology will not be going away any time soon.

The use of ArcGIS and Tango Analytics has been proven to be very valuable to businesses such as Starbucks and Dunkin Donuts, respectively. With analytical tools to determine crime rates, demographic data, traffic flow, and local brand awareness, these tools will only improve over time, proving over and over again to be a very valuable asset to have while choosing a business location for their next store.

## 7 CONCLUSION

Starbucks is an American coffee company and coffeehouse franchise who specialize in loose-leaf teas, espressos, café lattes, frappuccino beverages, and pastries and snacks. (see 4.1 *Starbucks*). Dunkin' Donuts, founded in 1950, is "the world's leading baked goods and coffee chain." (see 4.2 *Dunkin Donuts*) Both are very respectable companies and are dominating the coffee house industry with their products, from filtered coffee drinks to specialty items.

Starbucks and Dunkin Donuts are a few of the many companies that use Geographic Information System technology to help further succeed as a company. A Geographic Information System (GIS) allow users to visualize, question, analyze, and interpret data to better understand relationships, patterns, and trends. GIS benefits organizations of all sizes and industries. There is a growing interest in and awareness of the economic and strategic value of GIS. (see 2.7.1 *What is GIS?*)

This thesis analyzed how Starbucks and Dunkin Donuts use GIS technologies, which GIS providers are being used, and the benefits of using such software.

Researching GIS and how it is used with Starbucks and Dunkin Donuts, was really interesting, as a researcher. By researching, the author was reminded that behind every aspect of a business, whether it be marketing or finance, there is a method being produced to maximize efficiency, and therefore increasing a business's ROI. With GIS technology becoming more and more popular, one can assume the technology won't be going away any time soon.

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## APPENDICES