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Designing Service Location Network

Regional Examination in the City of Helsinki

Helsinki Metropolia University of Applied Sciences
Master's Degree
Industrial Management
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### Abstract

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<td>Title</td>
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Service Location Network process is one of the most important ways to increase productivity in the public sector. The efficient design of service locations enables savings in both real estate expenses and in support service expenses, as well as enables savings in other existing resources. However, even in mature regions, success of Service Location Network Design does not happen automatically. It requires a streamlined process and management of its design.

The purpose of this Thesis is to study service location network within the context of municipal services, especially for the locations of educational and day care services. The aim of this Thesis is to develop a service location process that can be applied to the design of service locations in one region in the City of Helsinki, Kaarela region. A conceptual framework for Service Location Network Design is developed based on other existing cases and used to support the proposed model of Service Location Network Design process.

As a research method, this study utilizes a case study approach based on the empirical data from real life cases. The empirical material is mostly collected from the Kaarela case, with the data coming from documentation, interviews, discussions and workshops. The interview, discussion and workshop participants were selected to get a broad perspective and include experts from different city departments and organizational levels, including senior management, project management, architects and facility managers.

The outcome of the Thesis is a proposal for a new process model for Service Location Network Design to be applied in the City of Helsinki. This Thesis revealed that the municipal Service Location Network Design is based on practice and was an unexplored research area. This Thesis aims to fulfill this gap and proposes a process model based on retail, industry and service location theory and utilizes the previous works made in the field of Service Location Network Design in Helsinki. The process model also helps to change mindset from a strictly time-bound project approach into an agile process.

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1 Introduction

This Thesis focuses on designing a process for service location network intended to be tested in Kaarela region and the widely used in the City of Helsinki. Need for this process model comes from the direct request from the Mayor of Helsinki. The process is founded on the previous experience in designing service location networks in Helsinki.

1.1 Background of the Study

The current process model applied in Helsinki is based on idea of service location network development. The model was developed after harsh criticism from political decision makers to the previous round of service location intensification. Presently, economical situation in Finnish municipalities calls for better rationalization of Service Location Network Design. The aim of this study is to utilize the best parts of existing experience and further streamline the existing process of Service Location Network Design.

Service design is receiving growing attention in the public sector as an attempt to improve cost structure and efficiency of public services. The effectiveness and efficiency of public services is vital to the success of municipal governance and is closely connected to improving customer experience. Since local authorities are responsible for providing a wide range of services, which vary from child day-care and running schools to waste management and supervising land use, they are looking for the ways to streamline these processes and improve performance and efficiency of their services to work profitably. Currently, the total number of statutory responsibilities in Finnish municipalities has reached 535 (Hiironniemi 2013: 17). Similar liabilities are a challenge for the city of Helsinki too. The Finnish local government productivity experts agree that Service Location Network Design is one of the most important ways to increase productivity (Aronen 2009: 25; 32). The efficient design of service locations network enables savings in both real estate expenses and in support service expenses as well as achieves savings on existing resources. In this context, the study addresses an im-
portant problem of designing a model that can be used to improve the process of service location design in municipal regions.

This Thesis concentrates on the challenge of planning physical locations as part of the service design process. Typically, physical locations are studied on either a micro level, such as decor, lighting, sounds and other effects, or a macro level, which implies the design of a network of service locations including accessibility and zoning. By now, location network design has been studied on a macro level mostly in retail and industry sectors, but it has also started gaining interest in the municipal service sectors, especially visible in the city of Helsinki and its regions. This study, therefore, aims to utilize this opportunity and improve the existing municipal services by suggesting a process for the design of service locations network.

1.2 Case Organization

The case organization in this study is the City of Helsinki which is the largest employer and one of the largest property owners in Finland. The unit of the case organization in this study, the Real Estate Department, manages and develops all real estate owned by the City of Helsinki. Part of this unit, the Premises Centre, is responsible for service facilities and premises, and it works towards ensuring that the City of Helsinki can provide functional, cost-effective, healthy and safe premises.

While working towards this goal, all Finnish municipalities typically utilize a budget set for a calendar year; but, bound by the Municipal Act, the municipal council needs to accept an economic plan for at least three years ahead. This economic plan should present a city's development objectives and explain how different activities and investments would be financed. In this plan, the City Council also sets the operational objectives and allots the resources necessary to implement them. (Economic and Planning Centre, 2013). Being necessary for the normal life of the city, this plan at the same time creates challenges for the city's real estate management, since all the expenses should be foreseen and carefully planned well in advance. Moreover, another regulation, the investment review, needs to be prepared for five years in advance, which means that the actual range of services, operation objectives, appropriations and revenue estimates (per each task and project) should also be planned well in advance, and
argued for in a structured, organized manner. This may be difficult without a clear model to design services and their locations.

Currently, the City of Helsinki is facing economic challenges as municipal income remains insufficient to cover a growing range of municipal services and investments. Helsinki's municipal income is significantly affected by tax revenues, but the income shortfall that occurs in recent year did not provide enough income, and the budget deficit was covered through loans. Helsinki had to seek loans totaling a further EUR 281 million, making the amount of loans per resident reaching EUR 1,989. However, this investment rate is minor compared to the needs originated from technical present value of the buildings. Moreover, since a lot of repairs are required in the city, the rates of investments into buildings maintenance in the future are going to decrease. At the same time, Helsinki has launched one of the greatest changes in urban structure in its history as new districts are being planned and built in Jätkäsaari, Kalasatama, Kruunuvuorenranta, Pasila and Östersundom. (Annual report 2010: 3) As a result, the city desperately needs improvements in its processes to operate more profitably.

The City of Helsinki Strategy Programme addresses these challenges in the focal objectives, developing targets and measures for the council term defined for 2009 - 2012. The Strategy Programme is divided into four principal items that are welfare and services, competitiveness, urban structure and housing and leadership. Objectives and critical success factors have been defined for these strategic areas. In these objectives, service locations design is seen as one of the success factors for the development of city's services. The goal for service location design is to increase service influence by developing more effective service location network. (Strategiaohjelma 2009 – 2012)

A lot of work has already been done by the City of Helsinki but Service Location Network Design is an ongoing process where the variables still need to be elaborated. One of the most recent out of the completed budget rounds in Helsinki was in 2009-2010 when all of the service networks were covered. This time, citizens were actively involved and everyone was able to participate. Citizens were given the opportunity to explore the available literature, leave comments and proposal, and take an active part in the city-citizen dialogue. In the future, the City of Helsinki plans to retain this level
of customer involvement in its processes, and the service location design process in one of these intended processes.

1.3 Research Problem, Research Question and Structure of the Study

The aim of this Thesis is to optimize the existing Service Location Network Design in the City of Helsinki. The outcome of the Thesis will provide a process model for service location design that will assist service and premises providers, and strengthen and improve the operational process of the Service Location Network Design. For other stakeholders, it will provide essential information as for service delivery challenges in municipalities.

To formulate a research question was a challenge for this study, since a good research question should be “clear, specific, answerable, substantively relevant and interconnected”. Moreover, research questions are chosen so that they are answerable within time and other resource restrictions (Robson, 2002). Taking into consideration all these requirements, the research question is formulated in this study in the following way:

**How to regionally optimize Service Location Network Design?**

The additional supportive research question is articulated as follows:

**How to build a process for designing service location network?**

The scope of this study is limited to the municipal service location design. Service Location Network Design in new districts makes a different process because the whole district is planned at the same time. Housing, services, traffic and other land use are aligned at same time. It means that the development of new districts in service location design lies outside of the scope of this research. In this study, the municipal service location design is viewed and researched as a continuous process, and a model is eventually suggested to streamline the existing practices for a continuous, ongoing service location design. The current process does not answer to the question of how exactly the Service Location Network Design should be done, and what are the factors influencing this process.
The City of Helsinki was selected for this study because its scale of service locations is largest in Finland but also due to the challenges and opportunities of the capital city. Additionally, the researcher works for the City of Helsinki which opens up an opportunity of communicating closely with experts and participants in the process. Client wise, the most important service location networks are schools, day care centers, health centers and youth centers. Especially schools and daycare centers are seen as vital elements for improving local convenience. Thus, the research emphasis was placed on inbound and outbound leasing of school and daycare premises, which also represents the real life responsibilities of the researcher.

This Thesis is divided into two parts. The first part overviews the available literature to suggest a theoretical framework based on the concepts of location network design existing in retail, industry and services sectors. The theories and best practice findings are then applied in the second part of the Thesis, which is the empirical case study, the case of service locations design being Kaarela region, located in the City of Helsinki. This part of the study also contains the final proposed process model for service locations design in the City of Helsinki. Questions for further research are proposed and an evaluation of this study is done at the end of part two.
2 Method and Material

This section describes the method and material applied in this study. It also discusses the validity and reliability of the results and addresses the generalizability of the study findings.

2.1 Research Methodology

Since the motivation of the case study was to get better understanding of service location design in the City of Helsinki, the case study approach was a natural choice of the study method. Yin (2009: 18) defines case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. According to Merriam-Webster's dictionary (2009), case study is an intensive analysis of an individual unit (a person or community) stressing developmental factors in relation to their environment.

Yin (2012: 7) divides the case study designs into four types. Cases can either be single or a multiple case studies, and a single or multiple case can be either holistic or with embedded sub-cases within an overall holistic case. The primary investigation method is that of a holistic single case study.

Figure 1 (page 10) illustrates the framework of this research. The theoretical background is explained below. The body of knowledge is derived from retail location, industrial location and service location-related literature. Finally, the developed model is applied to the actual case of this study, the case of Kaarela region in the City of Helsinki. This case was selected after consultation with representatives of the unit of this study, the Premises Centre. The researcher presented the research plan to the Premises Centre's senior management in an internal meeting and discussed it with other stakeholders. The final selection of the case was completed and validated through informal discussions with the management.
2.2 Data Collection and Analysis

Data collection for this study consists of data gathered from three main sources: workshops, interviews and participant observations, and archival records. Additional material such as internal presentations, reports and other archival databases were also examined as data in this study.

The subject groups of the interviews and workshops are the Service Location Network planners of the different departments of City of Helsinki. These persons are closely involved in the execution of Service Location Network Design in their own field of service. Most of the empirical data were gathered in semi-structured in-depth interviews and workshops conducted with representatives of Helsinki.

<table>
<thead>
<tr>
<th>Data from event</th>
<th>Participants</th>
<th>Data, duration</th>
<th>Topics, questions</th>
<th>Documents</th>
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<tbody>
<tr>
<td>Interviews, discussions</td>
<td>The case company experts (3 persons): Department Manager, Customer Service Manager, Project Manager</td>
<td>3 x 1 hour sessions</td>
<td>Appendix 1</td>
<td>Field notes, minutes</td>
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<tr>
<td>Meetings</td>
<td>The project team members (9 persons): Leading Architect, Administrative official, Planner, 4 Department Facility Manager, Project Manager, Customer Account Manager</td>
<td>4 x 2,5 hour session</td>
<td>Appendix 2</td>
<td>Field notes, minutes and PowerPoint presentations</td>
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</tbody>
</table>

Table 1. Details of the interview and discussion data.

Yin (2009: 101) identified six primary sources of evidence for case study research: documentation, archival records, interviews, direct observations, participant-observation, and physical artifacts. In this research, evidence from documentation, archival records, interviews and participant observation were used. Documentation included reports of the previous service location network projects. The most recent of documents used were available through internet search, and the previous reports were obtained from
the City of Helsinki Urban Facts library. The study also examined internal memos and discussions held in decision making.

The interview and discussion data were added with the data drawn from the relevant archival records in form of computer files and records. The archival records include the documentation describing service locations, current condition of service premises and statistical population data and population forecasts as useful in this case. These archival records were accessible because of the researcher’s current working status in the organization and were used for the current state analysis. Additionally, these data were available for the study purposes since they were collected at public expense and could be used for public benefits. The overview of the archive data and other documentation is given in Table 2.

<table>
<thead>
<tr>
<th>Archival database</th>
<th>Archival records</th>
<th>Ownership/source</th>
<th>Date</th>
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<tr>
<td>• Real Estate Asset Management system</td>
<td>current condition, repair dept, size, lease</td>
<td>Real Estate Department</td>
<td>2012</td>
</tr>
<tr>
<td>• The Service Map</td>
<td>Service location</td>
<td>Economic and Planning Centre</td>
<td>2012</td>
</tr>
<tr>
<td>• The Helsinki statistics</td>
<td>Statistical population data and population forecasts</td>
<td>Urban Facts Department, Unit for Statistics and Information Services</td>
<td>2012</td>
</tr>
</tbody>
</table>

Table 2. Details of the archival database records used in data collection.

Finally, the case study of Kaarela region was based on workshops and participant observations. Interviews, however, were one of the most important and essential sources of data in the Kaarela case study. Table 3 presents the details of data collection for the Kaarela case.
<table>
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<tr>
<th>Event</th>
<th>Participants</th>
<th>Duration</th>
<th>Topics</th>
<th>Documents</th>
</tr>
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<tr>
<td>Workshop I</td>
<td>Managers from:</td>
<td>2 hours</td>
<td>Previous models, Agenda</td>
<td>Field notes, minutes, powerpoint</td>
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<td>13.2.2012</td>
<td>- City Planning Department</td>
<td></td>
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<tr>
<td></td>
<td>- Social Service Department</td>
<td></td>
<td>Current conditions, future needs</td>
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<td>- Real Estate Department</td>
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<tr>
<td>Workshop II</td>
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<td></td>
<td>- Education Department</td>
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<td>- Health Service Department</td>
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<tr>
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<td>- City Library</td>
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<td>- Economic and Planning Department</td>
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<td>Workshop IV</td>
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Table 3. Details of the data collection in Kaarela case.

As an additional source of data, participant observation was also utilized. Participant observation a special mode of observation in which the researcher is not merely a passive observer Yin (2009: 111). Being part of the working group which were assigned to the Kaarela region Service Location Network Design, the researcher had ample opportunity for assess and collection of the data for the case study.

2.3 Research Design of the Study

This Thesis focuses on investigating the phenomenon of Service Location Network Design in City of Helsinki, focusing specifically on the service location design of schools and day care premises. The aim was to collect real-world information and suggest a model and recommendations on the service network design process for Kaarela region. To achieve this purpose, case study approach is used as the research approach in this study.

Figure 1 shows the design of this Thesis. As seen from Figure 1, the research design in this study is built around three sources of knowledge and data: Location Network De-
sign literature, case study workshops, interviews and participant observations, and the archival records.

Figure 1. Research design in this study.

The study started with identifying a research problem. To be able to fully understand the process and gather material on how the process is currently working, interviews and literature review were to be done. The first part of the study also analyzed the current Service Location Design process in the city of Helsinki (presented later in Figure 2). These preliminary interviews and discussions uncovered some dysfunctional parts of the process. The analysis of the current process revealed that Location Network Design theory on municipal services was lacking, and the search had to be widened to include benchmarks from retail, industrial and commercial services. This made the
second part of the study. The third part of the research consisted of building the conceptual framework. At the same time, the working group of Service Location Network planners was invited into workshops at the Premises Centre. Through these workshops, interviews and participant observations the researcher gathered material and developed a proposal for the Service Location Network Design process. This proposal was subsequently reviewed by the experts from various departments and organizational levels of the City of Helsinki.

2.4 Validity and Reliability

Rigour, validity and reliability are measurements of good research (Huhta 2012). Reliability includes trustworthiness and authenticity. Trustworthiness means credibility of research results and process gained through triangulation, transferability, dependability and conformability. Authenticity includes fairness, educative, catalytic and tactical authenticity. Validity includes correctness and credibility of the description, conclusion, explanation, and interpretation. It also involves accuracy and correctness of data and description. At the same time, validity encompasses understanding the perspective of the people studied and not imposing the researcher’s own framework or intention in interpretation.

As for other measures to improve validity, the benefits from the six sources of evidence can be maximized by following three principles for data collection. Using multiple sources of evidence allows addressing a broader range of historical and behavioral issues. Multiple sources of evidence reinforce data triangulation and ensure multiple measurements of same phenomenon, and strengthen construct validity. (Yin 2009: 114-116) Opportunity to use multiple sources of evidence is one of the major strengths of case study data collection.

Another measure to improve validity is the way of organizing and documenting the data collected for the case study. Documentation is considered to be strengthened if consists of two separate collections: database and report of the investigator (Yin 2009: 118-119).
Finally, reliability addresses the question: would the same findings be obtained if the research were conducted at a different point of time or by another person or by using another method (Quinton and Smallbone 2006). According to Yin (2009), to increase the reliability the researcher needs to maintain a chain of evidence. The chain of evidence can be kept up by sufficient citation of the relevant parts of the case study database; and the database should include the circumstances under which the evidence was collected. These circumstances should also be consistent with specific procedures and questions contained in study protocol (Yin 2009: 122-123). These measures are supposed to be taken in this Thesis to ensure reliability and validity of its results.
3 Factors Influencing on Service Location Network Design

This section provides an overview of the factors influencing the locations design networks and the models applied for designing service locations. Analysis of these factors and comparison of two models leads to the suggestion of a possible, initial, model for the service location network which can further be applied to the analysis of the case of this study, Kaarela region.

This section starts with a general description of the factors exercising influence on the Service Location Network Design.

Service location design is part of the municipal service planning that can be described from the perspectives of various types of locations and networks. From the process management perspectives, location network design can be covered by two managerial disciplines - supply chain management and operations management. Operations management concentrates on the systemic design, direction and control of processes that transform inputs into services and products for both internal and external customers. Supply chain management, on the other hand, concentrates on the synchronization of processes of suppliers and customers to match the flow of materials, services and information with customer demand. (Krajewski et al. 2013: 646; 650) Both management perspectives also set an aim to continuously improve performance and efficiency, and increase productivity of their processes. These are also the goals of the service network location design. For these reasons, these approached can be tried and applied to define the process of the service location design which was not specified previously.

Krajewski et al. (2007) suggest that when a firm with a network of existing facilities plans a new facility, one or two conditions should exit: either facilities operate independently or facilities interact. The independently operating facilities can be located by treating each as a separate single facility. The interacting facilities introduce a new challenge such as how to allocate work between facilities and how to determine the best capacity for each. Thus, a multiple-facility location problem seems to have three dimensions – location, allocation and capacity that must be solved simultaneously. Krajewski et al. (2007: 436) suggest that a workable solution can be identified by looking for patterns in cost, demand and capacity data.
According to Longley et al. (2001), location and allocation involve two types of decisions by the company, first, where to locate and, second, how to allocate, from the point of view of the demand for service. In terms of the Service Location Network Design, such allocation of demand is ascribed to particular sites, and these sites are controlled and distributed by a designer. A similar approach is exercised in the Service Location Network Design, as is the case of allocating school districts, for example. In such a case, if the allocation is done well, the student may have no choice of school (Longley et al. 2001: 316) because the service designer planned and provided for one school in his district. In Finland, for example, freedom to apply to a desired school mix up the demand to a considerable extent, so that any strict allocation by district is impossible.

Finally, addressing the questions of how the network should be organized, a good example can be drawn from the supply chain organization. Time and money are two most important factors of supply chain performance improvement. The standpoint is to supply quickly and inexpensively. Lee (2004) believes that supply chains effectiveness is proved by fast and cost-effective supply, with stable high volume production large volumes, which makes it economically efficient (Malik et al. 2011). Malik et al. (2011) argue that a good solution is splintering the supply chain into smaller and flexible, treating such supply chains as dynamic hedges against uncertainty. (Malik et al. 2011)

Continuing this analogy of using an effective supply chain as an example for building an effective location network design, another example can be drawn from the manner in which an effective supply chain is organized. According to Lee (2004), the only solution that can provide companies with a sustainable competitive advantage is a solution that is agile, adaptable and aligned. Agile supply chains are able to react speedily to sudden changes in demand or supply. Moreover, effective supply chains need to be able to adapt over time as market structures and strategies evolve. Finally, the interests of all companies in the supply chain network need to be aligned, so that they would maximize the chain's performance. The same logic is applicable for the Service Location Network Design, where the needs are changing and the interests of all the players need to be taken into account. In addition, as well as for the adaptable supply chains (described by Lee 2004), which need the ability to spot trends and the capability to change supply networks (Lee 2004: 104-109), the demanding tasks of the service
location network require it to be able to spot and adjust to new trends, and have the capability to change its structure to accommodate the emerging features of new services. In the end, it is these characteristics which the service locations network should possess that make this parallel with streamlining the operations and supply chain processes legitimate, and allow for the similar approaches to be applied for outlining the process of designing a service location network.

As for particular features typical of the Service Location Network Design, they can be viewed, for example, from the point of view of a range of factors, such as retail, industrial or other service location designs. In the course of the network design process, all these location factors and conditions of each subject of the network undergo a systematic analysis for the comprehensive location evaluation. These factors and other influential elements affecting the location network design need to be taken into account and provided for as the design process is carried out. The overview below discusses only the most influential ones, such as retail, industrial and service locations factors critical for the design of a service location network.

3.1 Industrial Locations Factors

A definition common for location factors and location conditions in the industry claims that location conditions are the differences among locations that exit in industries, while location factors refer to the specific importance that is attached to such differences by individual businesses when choosing locations for specific factories (Hayter 1998: 83). Location conditions and location factors, thus, define characteristics varying from place to place which directly or indirectly affect the viability of the located objects (Hayter 1998:83). Location conditions are complex in the sense that each comprises a range of multifaceted characteristics of tangible and non-tangible nature. Tangible features can be calculated in money (Hayter 1998), while intangible features can be measured, for example, by customer satisfaction or through customer experience.

A range of factors, such as favorable labor climate, proximity to markets, impact on environment, quality of life, proximity to suppliers and resources, proximity to parent company's facilities, utilities, taxes and real estate costs, are mentioned by Krajewski et al. (2012: 408-409) as dominant location factors affecting decisions for manufacturing
locations by companies. According to Hayter (1998: 84), the dominant industrial location factors are represented by a cluster of features such as transportation facilities, materials, markets, labour, external economies, energy, community infrastructure, capital, land and buildings, environment and government policy. Although both authors mention the same factors but their viewpoints are slightly different.

Hayter (1998) and McCann (2002) stress that industrial location economics concentrates on inbound and outbound transport rates, terminal costs, land cost and labor prices as the main influencing industrial location factors. While Krajewski et al. (2012) points out that the importance of industrial factors should depend on the industry. In labor-intensive industries, for example, the favorable labor climate may be the most important factor. Locations also vary in terms of accessibility to materials and markets. Finally, the transportation is needed to transport materials from a variety of sources and create products available for one or more markets (Hayter 1998).

Hayter (1998: 95) argues that land is very important for industrial location. The cost of land varies among countries, cities and regions. Zoning of land use also steers land use and governs industrial locations in specific direction. Availability, size, shape, accessibility and services have context to the costs but also to the time frame for construction time and future expansion possibilities.

Additionally, in the course of the recent decades, impact on environment has raised weight in decision making. Focus on sustainability has increased, and companies are recognizing the impact of the location on the environment (Krajewski et al. 2010: 411). One might argue that energy costs have bigger impact on overall performance, and they are the reason why some utilities have more sensitivity to location. However, in only the last 15 years the viewpoint on environmental issues has changed from resource constraint to legislation constraint and to sustainability which has become the wide society’s concern. According to Hayter (1998: 92-97), energy sources have been a significant location condition for industries but have declined in importance because of the improvements in electrical power and transmission of electricity. These improvements have increased the attraction of locations which previously had limited sources of energy. On the contrary, Hayter continues, the environmental regulations have increased their significance as a location condition because they vary in content.
and commitment but also because of the uneven legislation and the incurred cost and pressure to meet the standards.

Among other elements behind the industrial location factors are other government regulations which also impact industrial location decision on the country, regional and local level. Governments in every level have taken pro-active roles and are offering inducement and other support for investments. These actions and national government policies, taxation and customs duties have created a notion of an optimal business climate. The goal for creating a good business climate explains the attitude and actions by governments and other important interest groups aiming to support the locations development. (Hayter 1998: 97-98)

According to IBM Global Locations Trend report (2010: 6-17), the infrastructure, connectivity, skill-base and innovation support are the desirable and important location factors that regions and cities provide for corporate architectures. It is these factors that change the investment behavior to strategic optimization of global footprints, which means that global corporate architecture strives to optimally balance the requirements for markets, resources, talent and cost while being sufficiently flexible to react to changes in market conditions.

Finally, addressing the how? question for industrial factors and location decisions, the need for agility for the process needs to be stressed. In the new, more uncertain and volatile economic landscape, with unpredictable changes in technology, industries and value chains tend to quickly shift locales of economic activity around the world. Flexibility and adaptability, thus, are seen as resources which gain competitive advantage in changing economic environment (IBM Global Locations Trend report 2010: 17). Krajewski et al. (2012) also points out that flexibility can be solution for manufacturing companies. In manufacturing, smaller flexible facilities located in the countries that the firm serves for, allow it to avoid problems related to trade barriers like tariffs and quotas, and avoid the risks that changing exchange rates, for example, will adversely affect its sales and profits (Krajewski et al. 2012: 409). The same frame of logic is valid for making the decisions on service locations networks. For service locations networks, the flexibility and adaptability of the network means its long-lasting capability to serve
the needs of the customers and minimize the challenges arising from high uncertainty of the demands for services.

Finally, such characteristic as the *timeframe* is valid for the development of both, industrial locations and service location networks in city planning. In industrial location decisions, investment in a factory is always conditional, and in global business environment, considering the alternatives starts from countries and regions before finally narrowing the choice to specific sites. The same is true for designing the smaller locations, so that the investment decision always implies a choice which is factor-based, considered from different view points, and often time-consuming in both aspects, reaching the decision and implementing it.

Thus, this sub-section illustrated the logic of choosing a location on the industrial location example and stressed the importance of industrial element as the factor in designing a location network. On the other hand, it also demonstrated the *how?* part of the process on the example of timeframe and demand for agility and adaptability of choosing an industrial location. The next sub-section analyses the process of location design on the retail example and stresses the importance of retail factor in location.

### 3.2 Retail Locations Factors

Analyzing the logic behind a retail location, one can start with a common logic of a consumer for whom location is a critical factor in consumers' selection of a store. As a result, for the retail sector, location decision has great risks especially for substantial investment or long term commitment (Levy et al. 2009: 140, 141, 193), when it comes to choosing location for a store. On the other hand, a great and very sustainable competitive advantage can be gained based on location, since it is not easily duplicated or changed.

Levy et al. (2009) found that economic conditions, competition, strategic fit of the area's population with its specific retailers target market, as well as costs of operating in this specific area, are critical factors effecting the retail locations decision. Multiple stores trade-offs balancing between lower operating costs and potential cannibalization
(Levy et al. 2009: 140-141) are made each year based on the locations advantages and disadvantages.

According to Coleman (2007: 443-445), there are three other drivers in retail sector also affecting location decisions. These are, first, the environmental drives such as planning and awareness; second, the market drivers such as intensification, research analysis, comprehensive development, specialized development, regional control, bigger shops, and finally, the customer drives such as experimental, informative, user-friendly and convenient (Coleman 2007). These three groups of factors drive the retail sector location and location decisions.

Finally, retail locations should also fit the strategic development point of view and carefully consider the future. For example, the potential retail location needs to be big enough for a possible growth of the retail chain. In Finnish business environment, retail location can be seen as somewhat restrictive to competition. Land use is closely monitored by the zoning authority and building control authority and almost immune to external influences. For the company to decide to locate a store somewhere, it is strategically important to become a market leader in retail concept in this particular place; and that desire should be taken into account, and can be achieved, with the help from the retail location design. (Kautto 2005: 80-81) Thus, a total, overall attractiveness of a particular retail location makes a key location factor for the business when making a decision to enter the local markets.

Thus, this sub-section illustrated the logic of choosing a location on the retail location example. It also stressed the importance of retail element as a location factor in designing a location network. Finally, it touched upon the how part of the process on the example of considering the strategic fit and the future while choosing a location by retail businesses. The next sub-section analyses the process of location design on the example of service location factors, especially the logic of location for public services.

3.3 Service Location Factors and Municipal Service Location Factors

A major factor for any location design is the availability of services, both public and commercial. Customers are usually concerned with how close a service facility is to
their area. On the other hand, location of services is also dependent on the customers, particularly if the process requires considerable customer contact. Therefore, proximity to customers, transportation costs and proximity to markets, location of competitors and some other site-specific factors are considered the key for success of a service location. (Krajewski et al. 2012: 409-410).

However, the proximity to unspecified customers is not enough and creates no value either to customer or businesses. It is the proximity to customers who match the company’s target market and service offering that is important for service success. The same logic can be applied to the location of public services in service location networks.

For the location of services, time, labor, equipment and facilities are obvious service constrains. Certain specific services can have their own, additional characteristic constrains. For example, for the schools a typical constraint will not be the same as for restaurants, hospitals, airlines, theatres or churches. When certain features of the facility become a constraint for the recipients, there may be ways to overcome them. Among these remedies are, for example: shifting demand to match to the other existing capacity; or varying the service offering; or communicating with customers over the use of facilities; or modifying the timing, differentiating on price; or stretching the existing capacity through performing maintenance and renovations (Wilson 2008: 346). However, a considerable part of the service challenges can be overcome at the stage when the service location network is being planned, and these factors need to be taken into account in the same way, or even to a greater extent, as the industrial and retail factors since they affect a significant number of recipients.

There are few differences which separates Service Location Design in general from Municipal Service Location Design. The first and most important aspect is that many of the services provided by municipalities must, by law, be provided and controlled. For example, the Basic Education Act regulates basic education in comprehensive schools; and the legislation on Early Childhood Education and Care regulates daycare. The municipal services are, thus, obligatory services which must be provided to residents, and which are often quite expensive for the public sector. The only tool to make good use
of them is a careful planning of their use based on the overall location analysis at the stage of the service location design.

Specific features of the Finnish municipal services are most evident when comparing the biggest leaseholders of Premises Centre in the city of Helsinki, which are Education Department, Early Education and Care Department, Youth Department and Adult Education Centre, to available literature and reports on municipal service location design from other countries. While in Finland a significant emphasis is placed on the education related services, in other countries, municipal services mostly concentrate on fire stations, ambulatory services and public road network. This is the reason why typical Finnish municipal services are missing from the scarce international literature of municipal service location design (see, for example, Thiesse et al. 1983; Narasimhan et. al 2005: 166, and others).

Moreover, available publications and reports which elaborate Service Location Network Design in Finnish contexts concentrate on designing one particular service at the time, for example, schools. According to Nuiikkinen (2005: 33), the basis for the school service network plan is the municipal curriculum, values, strategies and economical plan of the municipality, the existing school service network, and the population forecast. A desirable School Service Network also takes into account the existing center of gravity in settlements, balanced with the school accessibility, and routes and trips to the school. It also supports ecological, financial, social and cultural sustainable development. The current school service network consists of the current premises, reserved lots and other facilities that serve schools (Nuiikkinen 2005: 35).

Overall, the goal of municipal service location design is to locate facilities so as to provide appropriate service levels and response times to all the neighborhoods within a defined municipality. Services such as a fire station, ambulatory services, public road network and similar facilities concentrate on the recipients and response times. Narasimhan et. al (2005: 166).
3.4 Examples of Service Location Processes on Other Municipalities

Since theory is lacking in municipal service location processes, this gap can be fixed with the help of examples from rich service location practice. The purpose of drawing from these examples is to formulate the conceptual framework suitable for municipalities based on the reinforcement from the completed similar cases from other municipalities. Two examples where selected to fulfill this need. The examples where selected so that they would be present the current practices in the field, and both would represent the examples of municipalities relatively large so that to make them comparable to the City of Helsinki. Finally, both processes were developed with help of consultants specializing in Service Location Network Design.

*Education Service Operation Network Design in Sipoo*

Sipoo is a municipality located right next to the City of Helsinki and is part of the capital region. Sipoo has developed a strategy according to which the current population of 18 000 will triple by the year 2025. Sipoo has two main population centers, Nikkilä and Söderkulla. Other residential areas include Box, Martinkylä, Talma ja Västerskog. In 2009, the City of Helsinki annexed some part of this municipality. Sipoo made service network design for the Educational Department in early 2010 with help of Audiapro Oy after trying to tackle the challenge with own workforce.

Audiapro Oy was selected to prepare a service operation review and Tilakonsultit Oy was hired to conduct survey of building condition and reparation needs. The service operation network design work had a steering group in which politicians from every party presented their views to the municipal council and officials from the Education Department. After the work was completed, the service operation network review was presented and the responsible officials were held. Parents and workers hearings were held only with some of their representatives because of the project tight schedule.

The objective of this service operation analysis was to develop a strategic plan for future expectations for the Sipoo municipality and to consider the service operation network design with more than one service discussed at the time. In Sipoo, the idea is that the immediate needs for services should be solved in an immediate supply be-
cause in the municipal decision making system it is easier to assimilate the needs in growth than in reduction.

The Education Service Operation Network Design in Sipoo was based on perspectives and viewpoints which included the views that school building should be flexible, versatile and efficient. The Education Service Operation Network should be competitive, as well as other city’s departments in the capital region. Competitiveness means that the network itself is strong and developing, and is showing high quality of operations.

The Pedagogical community from the Education Department service operation insisted that the school should not be too large but all the age groups should be accommodated separately in their own classes. Equal opportunities and good transportation and traffic connections were also mentioned as a starting point for the planning.

Perspectives from parents, land use, economy, human resources and politics were mentioned to also affect the school locations network. These viewpoints were taken into consideration through benchmarking, total cost, time span selection, service need anticipation, service network alternatives, evaluation of the current premises, investment need comparison, and operating costs analysis.

Three alternative models (with analyzing the strengths and weakness of every model) were discussed, with total costs of alternative model calculated. The first alternative model was based on the concept of bigger schools, which in Sipoo’s case means giving up schools that have under 100 pupils (based on school organizing recommendation of Finnish National Board of Education). The second alternative model was based on village school types. And the third alternative concentrated on utilizing day care facilities which will be vacant after couple of years.

Sipoo decided to continue with combination of the second and third models. It is too soon to fully assess the successfulness of Sipoo’s approach to Service Network Design for Education Operations. One significant point of the Sipoo case is that both the public servant’s proposal and the expert consultant’s suggestion did not meet the requirements of politicians which finally made the decision. There are some strong points in the Sipoo report, though. For example, the current facilities were documented and
used as one of the most important factors for producing a well-grounded current state analysis. Maps were also used coherently when the future changes were presented. These points could be taken as examples of good practice when developing the Kaarala case below.

*Service Operations Network Design in Jyväskylä*

Jyväskylä is the seventh largest municipality of Finland with the population of 131 000 people, which has risen considerably in 10 previous years. Jyväskylä is located in Central Finland, about 270 km north from Helsinki. In 2009, two municipalities (the rural municipality of Jyväskylä and Korpilahti) joined the City of Jyväskylä. Presently, Jyväskylä consists of 14 districts.

Jyväskylä developed its service network design for the Educational Department in the years 2008 and 2011 with the help of Hahtela-kehitys Oy. The steering group for the project was Jyväskylä’s own Education service network working group. Members from the Education, City Planning and Real Estate departments participated in this working group, and Health and Safety representatives also took part in the process.

The hope in 2008 was to create a transparent and well-established proposal for a wide range of needs as for the in the education property, different space requirements, locations as well as real estate investment needs. The planning time frame was over ten years. The objectives for development of school location network were divided into three categories: functional and pedagogical, economic and other. Other objectives were sustainable development and making schools into versatile activity centers. The starting point for the development was that the current school location network should function as the basis for other planning and articulating the investment needs.

As a result of the 2008 proposal, some savings on premises and maintenance square meters were achieved with respect to the number of students. Overall, the premises expenses will not go down though, because the rent will rise after investments.

After 2008, Jyväskylä has made other inquests too. In this sense, the situation in Jyväskylä is very similar to that in Helsinki. Service Operations Network Design is de-
veloping and, to make it efficient, gathering and maintaining initial data needs to be
turned into a clear sub-process with one process owner. It means Jyväskylä is expe-
riencing similar challenges as Helsinki does.

Summing up, the industrial, retail and general Service Location Network Design prin-
ciples exemplified in two municipal examples, as well as discussed in Sections 3.1.1,
3.1.2 and 3.1.3 (on the examples of industry sectors) share certain common features.
These features mostly relate to the locations factors (especially the already existing
premises and the specifics of land use) and the features of the process itself (such as
its agility, adaptability and the cost of operations). Again, all the examples generally
follow the logic of Location, Allocation and Capacity steps and basically grounded in
demand from the customers. In the complicated procedures of service location design,
these are the most typical steps that are visible in all the examples, both from munici-
palities as well as from the industry sectors.

Figure 2 combines the main steps of the location network design and shapes them into
one process which can roughly be represented by the following outlay:

![Diagram](image)

Figure 2. Principles of location network design in retail, service and industrial sectors.

As shown in Figure 2, if generalized, both municipalities and industry sectors (the retail
and industrial sectors) stress the following questions in their location network design:
what are the current premises? land use? operating costs? how agile, adaptable and
cost efficient is the process? what location, allocation and capacity represent in this
particular case? In all the examples, the current premises/locations serves as starting
point of any retail, industrial or municipal services location network designs. Land use
is also stressed as strategic development point demonstrating the main impact from government regulation. Adding the process aspects of agility, adaptability and cost finalize this approach to service location design, which logically falls into three bigger steps of location, allocation and capacity.

This common logic in service location designs is accepted as an initial framework for further analysis on a more detailed example of the Kaarela case, in the City of Helsinki.

3.5 Conceptual Framework for Municipal Decision Making

Examples from Sipoo and Jyväskylä both give further evidence to the conceptual framework first suggested based on retail and industrial location network design. If developed further, the main addition could be the addition of the time frame (the investment period) since the service location network process is part of other municipal activities and is bound by the time frame related to decision making. Another addition could be more visibility of needs and desires as for the process and its outcomes. This is especially important to the school and day care context where parents and citizens have their needs and desires towards Service Location Network Design, which should be taken into account in a consistent way. Moreover, employees and politicians needs and desires also should be been taken into notice. Thus, Figure 3 presents the enriched conceptual framework to be applied and further developed in the Kaarela case (Section 5).

The conceptual framework adopted in this study for further analysis of the service location design process is illustrated in Figure 3.
Figure 3. Developed Conceptual Framework for Service Location Network Design.

It is evident, however, that this model of the process does not fully resonate with the current service location planning in Finnish municipalities and needs to be further aligned with the current practice. Since theoretical literature covering municipal Service Location Network Design in Finnish environment and legislation is lacking, and certain service providers (such as schools) have their own location network design principles, which mostly concentrate on adding new premises in new district planning, this framework can be accepted as a starting point for further streamlining the service location design process. It is especially important because this approach stresses the shift from the project-oriented logic (when service location is considered to be a limited, immediate task) to the process-oriented mind frame (repeatable, possible to streamline, with pre-defined roles and responsibilities), which makes a new approach for Finnish municipalities.

Thus, this section illustrated the logic of choosing a service location and stressed the importance of process-oriented approach in service location design. It also suggested a framework suitable for Service Location Network Design in municipal service context. Additionally, it demonstrated the existing and competing approaches, and showed the difference between them.
4 Current Service Location Network Design: Helsinki

This section describes the development of the Service Location Network Design to the form it is uses currently. This example analyzes the approaches to the design of the service location network applied by the Finnish capital, the City of Helsinki, currently and over different periods of time.

4.1 Previous Development Projects in Helsinki

Helsinki is the capital of Finland and a medium-sized city of 603 700 people within a Greater Metropolitan area of 1,2 million (formed by the cities of Helsinki, Vantaa, Espoo, and Kauniainen). Currently, there are some 15 major development projects taking place within the City of Helsinki. In historical terms, these structural changes represent the greatest spatial development taking place in this area since the early nineteenth century. The City of Helsinki is managing these massive structural shifts into the existing city structure without eating into green areas, creating massive traffic congestion, or without letting house prices soar. All new developments are concentrated on the so called brownfield areas (areas of degradation or industrial land surplus to requirements). Gordon edit. (2007: 13)

Services provided by Finnish municipalities have developed throughout the years, still retaining its main feature, focus on education related services. The starting point for the school network design in Finland is 1898, when division into districts first occur after the government stature for the development of the municipal school system granted is 1866 (Seppälä 2002: 19-22). As a result, the schools which had previously been under the church and university supervision and administration, came under the municipal supervision. The era of municipal services planning started.

Throughout the years, however, school facilities have been a source of serious service constraint in Finland and in the city of Helsinki in particular. A rotational school system can be seen as one of the first solutions to this facility constraint. At first, in rotational school system, the teacher moved from village to village teaching in houses, taverns or vicarages. A joint use of education facilities made it possible to bring initial education closer to residents (Seppälä 2002: 19-22).
Later in the 20th century when network of school facilities was developed but the baby boomers reached the school age, the lack of facilities was solved in Helsinki by the introduction of shifts in schools. Two shifts were a widespread practice and even three shifts were occasionally used when circumstances required so. Renting facilities served as a buffer to meet the increased demand, but in many cases they proved to be unfit for the intended use and often coupled with the increase in rent reaching an uncontrolable level of expense (Somerkivi 1977: 327-357).

On the contrary, later on, overcapacity of the unused school network and premises led to a situation where school buildings were turned into locations for different other purposes for use in Helsinki. Former school buildings started serving as art center, museum, scientific center, state bureau, different educational establishments. There is evidence of the school building to be turned into a library, engineering workshop, police station, and various office premises (Koivula 1999: 9). City planners believe that this solution has worked both ways.

This example shows the importance of the role of Service Location Network Design thought-out the years. Although previously this solution to the same facility constraint proved to be efficient, currently it is safe to say that legislation or the current political atmosphere does not support using such solutions at the moment. Therefore, applying the same solution in the current situation seems all but impossible, and this factor needs to be taken into account when designing the current service location networks.

4.1.1 Service Network Investigation in two districts of Helsinki 1980

In 1980, Public Works Department made a report on service location network for two eastern neighborhoods in which the needs for services were fully covered. These regions were Vartiokylä and Mellunkylä which, at that time, covered 10% of the population in the City of Helsinki. The starting point for this research was the need to develop a model for service network in which the level of service and local needs could be fulfilled in condition of changing circumstances. The need for this kind of research arose from the fact that city planning needed the design of its services to be developed as a whole, and on the example of major districts. Service providers such as Education De-
partment and City Library did not, however, fulfill the requirements for their own service location design. In their operations they were also unable to make the service location networks equal with other departments.

As a result, the focus of service network investigations was placed on the day care centers, elementary schools, upper comprehensive schools, high schools, youth centers and public libraries. The report was prepared by Public Works Department which, at that time, was responsible for architectural planning of service premises. Other stakeholders included the City Planning Department, Child Daycare Department, Education Department, Youth Department, City Library and Urban Facts Department. The research team conducted a series of semi-structured interviews with day care center directors, school headmasters, and librarians. (Rakennusvirasto 1. 1980: 9)

Strengths and weaknesses of each service real estate location were widely discussed and evaluated and research team prepared condition assessment of premises (Rakennusvirasto 2. 1980: 11-174). A long list of location factors was checked, including such service location factors as supply of services, housing center of gravity changes, traffic evolution, new working places, updated service and premises standards, and the city zoning process transformation. All these factors were examined and recognized as long term service location planning challenges. In this case long term planning meant 5-15 years. (Rakennusvirasto 1. 1980: 10-12)

However, the Service Network Investigation report was criticized for being excessively theoretical in analysis and leaving realistically possible solutions to lesser examination. The research team also recognized the main challenge of the process, namely the constantly changing initial data such as population forecasts, zoning, land use and decisions about services supply. They made a conclusion that these constantly changing data would call for a shared information system. Their final conclusion on the results of research was that, in the future, the development of service network needs to be done in cooperation with all departments of the city of Helsinki. (Rakennusvirasto 1. 1980: 9, 187)

There is no proof, however, that either the method and process presented in the report was applied in any other region in Helsinki after the report was published.
4.1.2 Downtown Service Premises working group in 1986

To further develop the service location planning, the Executive board of the City of Helsinki set up a working group to suggest how to extend service premises capacity in the downtown of Helsinki. The assignment of the working group was to explore especially the premises of congregation and other public communities. The group focused specially on examining youth centers and day care centers. In this case, the time frame was defined as five years which coincided with the timeframe for budgeting and the planning time in municipal governments. (Lampinen et al. 1986: 3)

The members of the working group were all employees of the city of Helsinki. Three from the nine members of the working group worked for the central administration. The other six members represented the department administration. Altogether, the working group held 17 meetings in one and half years of its working time and came up with recommendations as for the basic concepts for Service Location Network Design. (Lampinen et al. 1986: 3)

Although the working group did not achieve the original goal, it concentrated on the service premises acquisition process and procedure. Their main occlusion was that departments should continue service space acquisition as they used to do before. The working group proposed eight suggestions to the Executive Board. First location needs from service department in one location. The second suggestions proposes that in planning of land use the need have to take first priority. Thirdly it was suggested that office premises must be explored for finding relocating opportunities for needed facilities for youth centers and daycare. The Executive Board accepted the recommendations of the working group but asked eight requests to clarify, investigate, compose and continue the development of the service location processes. (Lampinen et al. 1986: 1-4)

Between these two investigations, initiated by the Public Works department (in 1980) and the Working Group from the city planning departments (in 1986), the town planning division had also made a goal-directed reservation plan for land use for services in downtown area. (Lampinen et al. 1986: 1-4)
All these three examinations, although different in time and goals, pointed out in their conclusions that the service needs in the downtown area are cyclical. They also stressed that quality expectations and standards for service premises and service performance efficiency have increased over the time. (Interview MS 30.10.2012) And this created an additional challenge for both, the provision and maintenance of the service premises and for the service location design.

4.1.3 School Network in whole Helsinki in 1992

Further development of the service location can be attributed to the changes in 1992. At that time, the Manager of School Department set up a working group consisting of office managers, a school representative, a labor union representative, a student representative and representatives from the association of headmasters, teacher associations, private school union. The working group also established a follow-up group with the chief trustees from the labor unions.

The working group held ten meetings. The school boards were asked to issue a statement on planning principles, and a series of regional discussion events were held before proposal were given to the City of Helsinki’s Education Committee procedure.

In this case, the starting point was the current status of nationwide, legislative, economic changes and changes in the enrollment, as well as some schoolhouse related perspectives. The planning principles and the regional plan presented the key results and created a regional plan for seven regions for the services in basic education, upper secondary schools, remedial education, special functions, internationalization, language teaching. In that case, the Swedish education was treated separately.

The working group considered that the decisive factors influencing the physical school location network were made of: a) what type of functions is offered, and b) the social circumstances of the function (Kouluverkkojärjestelmä 1 1992: 4-5). The working group also defined the criteria for the success of the school network. They were studying the desired elective subjects, traffic conditions, feedback from school graduates and school reputation.
The working group stressed the idea that capacity analysis could be conducted from the pedagogical, educational and economic points of view. The only physical factors that were mentioned were, first, the accessibility to the location and, second, the access to other services locations. The working group also mentioned that schools should be designed to become multi-purpose facilities and give opportunity to exercising various hobbies as well. (Kouluerkkotyöryhmä 1 1992: 15-17)

In the school location network plan developed by this working group, a range of data was used. The data included the utilization rates, student forecasts for six years, the current number of students and the forecast of students for the future, the immigrant student numbers, and a list of possible special duties for every school (Kouluerkkotyöryhmä 3 1992: 1-52).

Eventually, the working group made a draft resolution to the City Council which decided to somewhat loosen the school districts. The outcome was praised in the City of Helsinki municipal report as increasing significantly the flexibility and service ability, and the service selecting possibilities. As a result, the Finnish elementary school districts decreased from 56 to 30, and the Finnish junior high school districts decreased from 39 to seven. Due to the school administrative reform going on at the same time nine other schools were dissolved. (Helsingin kaupunki 1994: 48) The only one school building was given out and sold to a privately held education institute.

4.1.4 School and Vocational Institute Location Network Plan 2006

In 2006, the City of Helsinki decided to turn to professional consultants for help in streaming this complex process. Consultants from Net Effect Oy and Vantage Consulting Oy where hired to make a development plan for the Education Department of the City of Helsinki. The development plan included a list of suggestions for the years 2008-2010 and guidelines for development in 2011-2015. The hopes behind it were that services and municipal structure would change in the next decade in the way that simply providing guidelines would be enough to streamline the process.

The consultants had a steering group and a follow-up group which consisted of managers from the Education Department and worker representatives. The starting point
for this development plan was the population forecast which showed a decreasing number of pupils and students. Also, one of the reasons for 2006 development plan was the fact that education in the City of Helsinki was most expensive in all the Finnish municipalities and real estate expenses seemed like an easy place for savings because other operational expenses were more difficult to reduce. Thus, there was a suggestion made to decrease the number of facilities in relation to the dropping student rates. Lähteenmäki et al. (2006: 7)

The development plan processed the School and Vocational Institute Location Networks on the regional level separating as different entities: the Finnish speaking primary and secondary schools, the Finnish speaking upper secondary schools, vocational schools, the Swedish speaking primary and secondary schools, and the Swedish speaking upper secondary schools. (Lähteenmäki et al. 2006: 7)

This development suggestions were based on the regional capacity, building areas, premise expenses, current users, population forecast and some qualitative factors that were not clearly defined as the main criteria for the design of service location networks. The population forecast also took into account the new area development plans. This development plan also calculated the impact from these suggestions on the premises and cash flow. These calculations specified rents, energy, cleaning, attendant and other real estate expenses. (Lähteenmäki et al. 2006: 7)

Overall, the consultants made considerable development suggestions. Since abandoning schools, or even smaller changes in the school location network, always make hard decisions to make, the idea was to get things done in one go. (Lähteenmäki et al. 2006: 40) The saving in expenses from the suggestions, if implemented, were calculated to be more than 9,5 M€ a year. (Lähteenmäki et al. 2006: 36-39)

After the plan was announced, resistance towards the consultant development suggestions was remarkable. As a result, only a few of the suggestion were put into practice. Politicians and citizens were especially offended by the fact how the preparatory stage was handled. Consultant inquest was ordered from the Education Department and the decision to order the inquest wasn’t a political decision. Also the follow-up group had no representation from political or parental communities.
4.1.5 Overview of the Previous Developments Efforts

Section 4 overviewed the transformation of the process of Service Location Network Design in the City of Helsinki. By analyzing the approaches to the design of service location network applied by Helsinki over different periods of time, it is clear that, while the authors, participants and approaches have changed throughout the years, the importance of Service Location Network Design have remained highly prominent.

Table 4 summarizes the changes in ideas towards the Service Location Network Design in the City of Helsinki. As shown in Table 4, there were three distinct periods in the Service Location Network Design in Helsinki. The first period started in 1978 and took account multiple services in regional districts. The second period started in 1992 continued for 14 years in this period service were accountable separately and whole city area where covered. The third period was devoted to regional and cross functional examination of services. The current period started in 2008 and it is characterized by taking account all services and citizen participation.

Next section (Section 4.2) describes the current Service Location Network Design process and points out the reasons why this process model needs to be further improved.
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>Public Works Department</td>
<td>Work group</td>
<td>Civil servant</td>
<td>Consultant</td>
<td>Work group</td>
<td>Work group</td>
</tr>
<tr>
<td>Subject of review</td>
<td>Multiple services</td>
<td>Multiple services</td>
<td>Schools</td>
<td>Schools</td>
<td>All services</td>
<td>All services</td>
</tr>
<tr>
<td>Participants</td>
<td>Daycare, Schools, Youth Department, Library, Urban Facts, City Planning</td>
<td>Social services, Youth Department, Health Center</td>
<td>Civil servants, employee members, pupil</td>
<td>Consultants, Principals, teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach</td>
<td>Land use planning, Changing district division</td>
<td>Acquisition of premises</td>
<td>Focusing on the basic task of schools</td>
<td>Cost analysis</td>
<td>Multifunctional use of premises and finding premises for citizen movements</td>
<td></td>
</tr>
<tr>
<td>Period</td>
<td>Five years, budget time span</td>
<td>Five + five years</td>
<td>Budget time span</td>
<td>Budget time span</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area in consideration</td>
<td>Two Districts</td>
<td>Downtown, parts of two districts</td>
<td>All districts with educational structure</td>
<td>All districts with educational structure</td>
<td>Parts of districts</td>
<td>All districts and all services</td>
</tr>
<tr>
<td>Cause</td>
<td>Theoretical, Developing model for Designing Service Location Network</td>
<td>Finding solutions</td>
<td>Finding savings</td>
<td>Efficiency in premises utilization</td>
<td>Cross functional planning, developing model where local citizen movements can participate</td>
<td></td>
</tr>
<tr>
<td>Driver</td>
<td>Equal treatment of citizens</td>
<td>Lack of premises</td>
<td>Recession</td>
<td>Decrease in demand</td>
<td>Citizen participation</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Comparison of the previous Service Location Network projects be the City of Helsinki.
4.2 The Current Service Location Network Design Process

The City of Helsinki has recognized the need for a process for Service Location Network Design already some time ago. The steps described above in Sections 4 have been taken to develop this process. In the context of this study, a special focus is placed on the role of the education related services in the Service Location Network Design and the process to handle it.

During the first stages of the process development, for example, in the School and Vocational Institute Network Development Plan introduced in 2006, certain features of the process came under severe criticism. Citizens and politician criticized the preparation process which concentrated on financial facts. Citizens yearned for the opportunity to take part in the preparation, and the commentary also pointed out that true savings to the city were not evident from the plan because the future use of the premises was unclear in some cases. This became a starting point for a development project which led to the creation of the current model for Service Location Network Design in Helsinki.

The current model was created by the cross-functional working group in 2008-2009. The working group had representatives from 11 departments of the City of Helsinki and an executive manager from Helsinki Neighborhoods Association. According to this model, the main drivers for Service Location Network Design are the operational environment changes in *demography, displacement and segregation development*, and *multiculturalism*.

Throughout the history, the city departments have autonomously planned and designed their own service operations network. The main improvement in the current model was aligning the efforts of the City of Helsinki and different administrative department interests, and creating a framework for participation system for citizens.

The current model used for service location design in the City of Helsinki is presented in Figure 4.
Figure 4. Current model of Service Location Network Design in Helsinki. (Translated from: Haverinen 2010: 75)
As seen from Figure 4, the current Service Location Network Design model is a process which is tied to the budget timeframe of the City of Helsinki. The model is divided into several sub-processes. The first two phases of the process consist of internal preparations in the departments. The first phase of the process includes updating the initial data on such location factors as the population forecast, premises data and premises strategy, and gathering proposals from the studied region to improve its services.

The main source of information is the population forecast which is prepared by the Urban Facts department. The population forecast is then linked with the current premises utilization rate. At this stage, the development ideas from the customers and citizens are taken into account. After the first phase, each department determines the need for change, and all the departments put together their preliminary vision for service location network. (Haverinen 2010: 77)

After both the internal preparation and cross-functional arrangement phases have started, the third part of the process is to find out the views of managers and align them with the views of political decision-makers. In this stage, department managers organize meeting(s) to select the regions to service location network re-design. This phase also includes the evaluation of the results from the previous year(s). (Haverinen 2010: 77)

The fourth phase of the process includes the repairing meeting with contact persons from different departments. After the managers have created their vision of the objectives for the areas being examined, the working contact persons work together before conducting a meeting with the citizens. (Haverinen 2010: 78)

Then, the citizen perspectives and cross-functional preparations regionally are taken into account at the fifth phase of process. The meaning of this cross-functional work is to collect ideas and innovative suggestions for future changes in the regional area. The Neighborhood Association organizes a citizen meeting and all available information is discussed openly. After these perspectives have been taken into account, starts the cross functional preparation for decision making. This sixth phase needs coordination
in which the ideas are prepared to all the necessary boards and committees. (Haverinen 2010: 78)

The final phase of the process concentrates on decision making. Every department starts to prepare decision proposals for their committee appointed by the municipal council. These proposals are then dealt with in the City Board and City Council. The City Council decides, for example, on the establishment and closing of educational institutions in Helsinki. These decisions lead to necessary changes in the City premises investment program. Thus, the first part of normal premises project, which is conducting the construction need analysis, can only start after the decision making process for Service Location Network Design is over.

Overall, one of the main ideas of the current Service Location Network Design model is that it is based on the economic planning and management cycle of the City of Helsinki (Haverinen 2010: 9). The working group which developed the current model recognized the main challenges of the process which are: departments have very different cultures and working ways; terminology is different, and finding mutual understanding and commitment to the cross-functional process may be quite challenging. (Haverinen 2010: 79)

The sequence and timeframe of the current model are summarized in Figure 5 below.

![Figure 5. Sequence and timeframe of the current service location network process.](image生动实战)

As seen from Figure 5, the most time consuming process include interaction, consultation and negotiations about focus area Service Location Network Design. The current process contains seven months of inter-departmental preparations and only three
months of cross-administrative interaction with many rounds of time consuming negotiations. In order to successfully re-design the current process, the inter-departmental preparation needs to become more rapid. From the Service Location Network Design perspective, the most important phase of the economic planning and management cycle of Helsinki is budgeting. Budget negotiations start in August, which explains why Service Location Network Design decisions should have been made before that time.

Other features of the current process are shown in the SWOT analysis table in Figure 6 below. Table 6 summarized the results of the interviews conducted with the specialists and experts involved in the current service location network process in the City of Helsinki (see details in Appendix 1).

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Vast preparation team</td>
<td>-Real Estate perspective missing</td>
</tr>
<tr>
<td>-Citizen perspective visible</td>
<td>-Timeframe of the process infeasible</td>
</tr>
<tr>
<td>-Link to budgetary planning</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Support from politicians</td>
<td>-Results are lacking</td>
</tr>
<tr>
<td></td>
<td>-Budget limitations</td>
</tr>
<tr>
<td></td>
<td>-Financing the citizen perspective</td>
</tr>
</tbody>
</table>

Figure 6. SWOT analysis of the current service location network process.

As seen from Table 6, the strengths of the current process include a versatile preparation team, visible citizen interaction and links to the budgetary planning. As the respondents indicated, the preparation phase for the current process was quite comprehensive. Most of the departments were involved in the preparation. Citizen interaction, which was criticized, for example, in the 2006 School and Vocation Institute Network Development Plan and was mentioned to be part of the process also in Jyväskylä and Sipoo examples, is visible in the current Helsinki process. Visible citizen interaction was
mentioned to be one of the main reasons for politicians' support for the current process. Interviewees also mentioned that a straight link to the departmental budgetary planning is a definite strength of the current process. The link to the budget is done through the timetable. When the current process ends, the budget negotiations starts.

The weaknesses of the current process include a missing real estate perspective and an unfeasible timeframe. As the interviewees indicated, location conditions, for example, were forgotten and disregarded. Most of the project team members identified that the timeframe for cross-functional interaction is also hardly possible. One of the working group members mentioned that the original idea was that there would be a person in charge of the process compared to the current practice where everyone participates in addition to other duties. Adding new resources to Service Location Network Design is difficult or even impossible in the current economic situation, and that is why the unfeasible timeframe precisely describes the weakness of the current process.

The threats of the current process include all but missing results from the current process, severe budget limitations and lack of financing for the citizen perspective. The very first interviewee pointed out that biggest weakness in the current process is that: "In most cases in process other hand is giving away as a sponsorship the saved expenses and no actual savings are gained." As the interviewees indicated, the preparation of the current process was done simultaneously with the regional case examples, but the results from these case examples are still missing after three years.

Finally, the opportunities of the current process include support from politicians. As the respondents indicated, support to the process form politicians is vital for the success of any desired result in the municipal decision making system. This opportunity may be further developed to improve the process and is vital to retain in further development of the process.

Summing up, the SWOT analysis summarizes the challenges of the current process based on the interviews, workshops, meetings and discussions, as well as process observations, as presented in Figure 6 above. The overall conclusion is that the current Service Location Network Design process needs renewal, especially in terms of timeframe for cross-functional interaction, budget limitations and real estate perspective. In
order to do that, the analysis of the current service location network process should start with the views towards the future and be re-thought to include the most important, but selected, factors, such as the current premises, operating cost and needs and desires from different participating sides.
5 Case: Service Network Design for Kaarela Region

This section analyses the case of Kaarela region in the City of Helsinki. It examines the process of service location network in this region and reflects of the stages and content of this process. At the end, the section presents the process model for Service Location Network Design applied in Kaarela region.

5.1 Case Background

Being a European capital, the most influential factor, and the one difficult to predict, is the population forecast for the City of Helsinki. Currently, this is also the factor that exerts the most influence on service location design (also according to most of the analyzed models in Section 3).

Currently, in the City of Helsinki, population forecasts fall into the responsibility of the Urban Facts department of the City of Helsinki. To deal with this influential location factor, three alternative forecasts were produced, also called projections: basic, fast, slow scenarios based on different viewpoints on the economic development of the Greater Helsinki region. The services departments of the city of Helsinki use the basic projection for planning service regionally. The forecasts used time series with uniform continuity for developing the projections which utilize birth rate, mortality rate and migration data.

The three alternative projections are made annually for Helsinki and the other 13 municipalities in the Helsinki region, producing the basic alternative, the rapid growth alternative and the slow growth alternative for the city planners. These alternatives are based on different assumptions about the regional economy. The projections for the cities of Helsinki, Espoo and Vantaa are drawn up by the statistical authority of each municipality.

Besides the long-term population projections for each municipality, some projections include a ten-year forecast for the 300 sub-districts of the Greater Metropolitan area. In terms of population growth, Helsinki is clearly more influenced than the other muni-
cipated by fluctuations in migration, for which reason alternative projections are also drawn separately for the city of Helsinki. (Laakso & Vuori 2009: 5-8)

**Basic Alternative**

The basic alternative is the one used as a basis for projections for Helsinki sub-districts. The basic alternative was based on the assumption that the economic downturn that Helsinki and the rest of Finland went into in 2008 will return to clear growth in 2011. According to this projection, the Helsinki Region stays a reasonably competitive and attractive city region retaining its present strengths and capable of handling the worst international and national threats. In the long term, however, production growth will eventually slow down as labour becomes in short supply as a result of population ageing. (Laakso & Vuori 2009: 5-8)

**Slow Growth Alternative**

The slow growth alternative assumes that some of the most obvious threats to the Helsinki Region reach a point where they affect the economic growth of the region. The crucial export sectors such as, primarily, ICT, get into long-lasting difficulties due to fierce competition and flagged-out production. Any new growth sectors which could potentially compensate for lost ones hardly appear. These trends would lead to a slower economic growth, where the Helsinki Region and the rest of Finland go into a long period of stagnation. (Laakso & Vuori 2009: 5-8)

**Rapid Growth Alternative**

The rapid growth alternative assumes that the global economy will fairly soon emerge from the current downturn. The crucial export sectors for the Helsinki Region remain competitive, and the Helsinki Region manages to attract international investment. A goal set in a common programme of land use, housing and transport for the 14 municipalities of the Helsinki Region was to build around 13,000 dwellings a year. The city of Helsinki would get 5,000 new dwellings a year and the rest of the Helsinki Metropolitan Area 4,500 a year. This goal has not been achieved of late due to the economic downturn, but production is expected to approach the desired level after 2011.
For this scenario, an annual production of 13,000 dwellings is probably a realistic maximum. If growth remains strong in the Helsinki Region, the availability of building land will start limiting its growth potential in the 2020s. At that stage, new areas that are not earmarked in the current master plan will have to be earmarked for housing – besides the areas incorporated from Sipoo and Vantaa – to enable population growth in Helsinki.

Population Growth So Far

By now, the Helsinki Region has grown quite fast. In the early 1900s, it had 150,000 inhabitants, of which 100,000 in today’s Inner Helsinki. Half a million was reached in 1948, and one million in 1985. Today, the region has 1.32 million inhabitants. Over the past 20 years, the population figure has risen by 1.2 per cent annually. These past few years have seen a faster population growth again after a slower spell in the early 2000s. After 2005, population growth in the Helsinki Region has largely been based on a migration surplus from abroad, apart from the stable natural population growth. It should be noted that the region receives a surplus of foreign nationals from other parts of Finland, too – almost as many as the Finnish citizens moving in. (Laakso & Vuori 2009: 5-8)

If the basic alternative projection is taken as a basis for further development, the population figure is expected to rise from 1.32 million today to 1.5 million by 2022, and 1.67 million by 2040. The fast growth estimate suggests a projection of 40,000 people more, and the slow growth estimates the growth at 76,000 people fewer than the basic alternative. (Laakso & Vuori 2009: 5-8)

These projections make a solid foundation for further planning and other service location factors to come into play. Ideally, all of them are taken into account through a comprehensive Service Location Network Design Process.
5.2 Stage I: Gathering Initial Data for Kaarela Region

In the City of Helsinki, Kaarela was a pure countryside location until the construction of the Kannelmäki suburb in the late 1950s. In the middle 1970s, due to the completion of the local railway up to Martinlaakso, the number of dwellings in Kannelmäki doubled within a few years. Kaarela had become a popular destination, and the region is still developing. Subsequently, in the 1980s, a new type of residential area also rose in the fields of Malminkartano, one of the sub-areas of Kaarela. Its urban structure is relatively dense, with a medley of dwellings and working places. On the other side, the detached and terraced houses areas of Maununneva and Hakuninmaa border on the Keskuspuisto central park. In the north-eastern part of Kaarela, a new development called Kuninkaantammi is being built which consists of mostly detached and terraced housing. (City of Helsinki Urban Facts 2011: 72) These areas mark the borders of Kaarela region.

Thus, Kaarela consists of four sub-areas, Kannelmäki, Maununneva, Malminkartano and Hakuninmaa. The south border of Kaarela is marked by Ring road 1; the eastern border is formed by the Keskuspuisto central park; the western border is shaped by the Konala industrial area, and the northern border is made by the City of Vantaa, the neighboring city boundary.
Figure 7. Position of Kaarela region in City of Helsinki (Wikipedia)

Kaarela region has two commuter train stops, one in Malminkartano and other in Kannelmäki. Good traffic connections also include Highway 3 (Hämeenlinnanväylä), which is part of Trans-European Road Network, and a popular local Road 120 (Vihdintie).

According to the population forecast (Population forecast 28.11.2011), the population of Kaarela region will grow 7% by the end of 2021. Total increase is expected to amount to about 1 900 people.

Thus, changes in Kaarela region population distribution are evident. For example, the school attending ages from seven to seventeen, which are currently showing a downward trend (see Figure 8 below), will slow down by the end of the forecasting period. The forecasting period also shows a minor increase in the daycare clients, children from zero to six. However, the overall service need for daycares will be even less than the expected figure of 500 children, since only 54.6% of children attend daycare in the region (City of Helsinki Urban Facts 2011: 75). On the contrary, the number of elderly will be following a strong growth trend.
Figure 8 illustrates the population forecast for Kaarela region.

![Kaarela population forecast](image)


Taking a closer look at the population forecast shown in Figure 8 gives a clear view about the future service needs, especially for the neighborhood services of Kaarela region. In Hakuninmaa and Maununeva, for example, the changes are expected to be slower. Malminkartano and Kuninkaantammi are assumed to become growth engines of the area. Population of Malminkartano will grow by more than 1100 people, and it is supposed that Kuninkaantammi will add more than 2 700 habitants in addition to what this district has now. As seen from Figure 9, the population of Kannelmäki, on the contrary, is expected to fall by more than 1 500.
Figure 9. Population forecast for sub-areas of Kaarela region (adopted from City of Helsinki Urban Facts 2011).

As shown in the previous sections, population forecast is important for explaining the future service demand. These forecasts are transferred to specific service needs by the departments which are responsible for each service. The Education Department, for example, summarizes that there expects to be a shortage of place for more than 300 pupils, in comparison to the current premises. The Early Education and Daycare Unit announced that there is already an immediate shortage of about 450 m² of premises, and that they are forced to use premise in Vetelitie which is in poor condition. Social services are also searching for a premise of about 1 100 m²; in this case, however, it does not have to be located in Kaarela region because it serves a wider area.

Thus, the phase of gathering the initial data tells how the service needs will look like in the future. In the next section, the current service location network in Kaarela region will be explained, and it will be analyzed how the service needs of this region are covered presently.
5.3 Stage II: Current State Analysis of Kaarela Region Service Network Design

Locations of service facilities are presented in Figure 10 below.

![Figure 10. Current Service Location Network in Kaarela (Urban Facts 2011).](image)

As seen from Figure 10, *accessibility* to most of the Service Locations is good. However, some locations are less favorably situated. For example, the working group mentioned in the workshop that the current location of Pelimanni school and day care center is challenging. It is located on the border of the region, right on the edge of Kehä I ring road. At the same time, Pelimanni is a very large property so that the location may not be the optimal one, with residents having difficulties in reaching it.

*Adaptability* and *agility* in the current Service Location Network in Kaarela region is also lacking. The school locations especially suffer from this lack. They are meant to be built more efficiently and use the economics of scale. Presently, combining the schools and day care centers can be a possibility to improve adaptability and agility, especially for the primary school services, which in the normal case in organized day care centers. Such centers can be easily moved to the school locations, if a more regular day care is needed. Long term leases and self-owned real estates in Kaarela region also complicate the agility of service location design.
Presently, most of the current (education-related) service premises in Kaarela region are owned by the City of Helsinki, with only a few rentals coming from other property owners. Therefore, rental dismissals are a possibility to save on the expenses. In Kaarela case, all three rentals are arguable, even if own property were available. Furthermore, partnership concept in Vellikellontie Malminkartano tightens the service operations to the current location.

Most of the premises owned by the City of Helsinki are buildings with own lot. Some of the premises are part of housing cooperatives. Presently, there is 66 000 square meters in 54 locations owned in Kaarela region (full list of the location is given in Appendix B). In Helsinki, the repair debt is calculated in a way that the repair debt starts accumulating when the current condition is less than 75 % of new building. In Kaarela region at the moment, the repair debt is very small comparing to other regions because modernization projects to large school buildings have just been finished. It is planned that the day care building in Vetelintie which at the moment has the highest repair debt will be demolished. Thus, it will rationalize the day care network and reduce the repair debt.

In Kaarela region, there is one area that is being planned as a new area which needs to be handled in different process. In Kuninkaantammi, neighborhood services such as daycare and school are planned to be provided in the village house. At the moment, there are only some recreational services in the area, but such plan aim to resolve the challenging situation in this neighborhood.

As for the leisure facilities, there is at the moment only traffic, indoor ice rink and park related zoning projects in Kaarela region. Rebirth of the Suburbs plan developed in 2008 focused on supplementary development in the suburbs. Kannelmäki and neighborhood areas such as Lassila and Pohjois-Haaga were mentioned as the primary area of interest for this development, and a principal plan stated that the Kannelmäki train station area is being studied as such a supplementary development area. All supplementary development and development areas in Kaarela region are visible in Appendix 4.
Land use can also be investigated as a possibility to expand the current buildings and demolish some of the dysfunctional ones or those which repair cost would be equal to building a new facility. The study of the existing expanding possibilities can be found from the lot use plan that shows the zone permitted for the building space, which should be bigger than the present building space. In the Kaarela case, the most interesting possibilities to expand were in lots that have used the permitted building volume. To proceed in such a situation, the lot use plan is vital to study. In Appendix D, a possible lot use plan for the daycare center in Vanhainen is presented as an example. This lot use plan almost doubles the current building area which makes the unit more in spite of the important outdoor yard being too small.

The operating cost analysis was not possible to present for the Kaarela case due to the lack of available operating costs in the Kaarela region.

5.4 Stage III: Change Management in Kaarela Region Service Network Design

Service Location Network Design of Kaarela region presented in Section 5 demonstrated the stages of the service location network process and prepared this case for decision making in spring 2013. Workshops and negotiations as part for the Gathering and Maintaining the Initial Data (Stage I) led to a decision where the Education Department gave up space in two locations to be used by the Early Education and Child Care. As a results of the Current State Analysis (Stage II), repairs planned for two Day Care Centers were revised, and the day care service location network in Malminkartano was decided to be re-examined considering the possibilities to expand it (described in Section 5.5). The case is thus ready for Stage III (Change), and the whole process of service location design will be considered again, from the process point of view, in Section 6 below.
6 Development of the Service Location Network Design Process Model

This section overviews the development of the process model and reports on the results of the validation round with the experts from the case organization.

6.1 Process Model for Service Location Network Design in Kaarela Region

Service Location Network Design has been gaining interest in Finland and many of the biggest municipalities in population have done some analysis in this field. Absent theory related to the topic of Service Location Network Design called for the investigation of similar approaches (in supply chain management and operations management, Section 3) and scrutinizing a benchmark of the Service Location Network Design in the City of Helsinki (Section 4). This led to the outlines of the initial process for the service locations design (Section 4.5) which was subsequently applied to and extended on the example of Kaarela region.

Based on the readings and analysis of the Helsinki example, there were certain parts indicated that could be distinguished and taken into account in the service location design process. These parts, first indicated in the Helsinki example and then analyzed in Kaarela case, include: 1) Gathering and Maintaining Initial Data, 2) Current State Analysis, and 3) Change Management. These three stages (or sub-processes) were distinguished to clarify the approach to Service Location Network Design process.

Stage I, Gathering initial data, is the first phase of Service Location Network Design process. In the current model (Section 4.2), the importance of this sub-process is visible, for example, through the fact that in most cases (judging by the example of Helsinki) it takes almost half of the overall process time. The suggestion is to separate this phase into a separate sub-process devoted to gathering and maintaining initial data –phase. The initial data is then updated according to its own schedule, which could be done in a shorter and more compressed manner, time and effort wise.

Stage II, Current State Analysis, includes the cross-administrative work that is vital to the successfullness of the results. The contact persons from different departments hold
meetings and discussions about the needs of different stakeholders involved in the process. These meetings and interactions are needed regardless of the future information or further improvements related to the first stage.

Stage III, *Change Management*, merges and puts into action the needs and desires of the concerned political, parents and board members.

The whole service location network process is shown in Figure 11 below.

![Diagram](image)

Figure 11. Proposed Service Location Network process, main phases.

These three main stages of the service location network process, illustrated in Figure 11, have their sub-processes presented in more detail in Appendix 5. The round of validation with the experts from the case company made an addition of one stage to the three stages of the initially proposed process.

### 6.2 Validation of the Process with the Case Organization Experts

The validation meeting with the experts (Project Manager of Service Location Network for Kaarela region and Process Owner of the Premises Centre, in July 2012) brought some changes to the three stages initially proposed for the service location network process. The final process model was presented and discussed in detail (in Finnish, see the account in Appendix 5).

Based on their experiences, the experts suggested that the Change Management part (Stage III) of the process should be divided into two parts, the Change Management Plan and the Change Management Execution. The argumentation was that it would better reflect the municipal decision making process. Dividing the Change Management process step into two steps, Change Management Plan and Change Management Execution, can also simplify the process. As a result, in addition to the clearer Planning stage, Change Management Execution will take into account the Finnish municipal de-
cision making system where the committees appointed by the Municipal Council have big authority and responsibility.

6.3 Revised Model for Service Location Network Design Process

After the validation session, the revised process for Service Location Network Design consists of four phases. The first phase is *Gathering and maintaining initial data*. The second phase is *Current state analysis*. The third phase is *Change management plan*, and the fourth phase is *Change management execution*. The final model for the process of Service Location Network Design is visualized in Figure 12 below.

![Diagram of the revised process](image)

Figure 12. Revised process for Service Location Network Design.

In the revised process model, Gathering and Maintaining Initial Data holds the biggest change to the current model currently executed in the City of Helsinki (as described in Section 4.2, Figure 4).

In addition to the four stage structure, the new process also has some additional changes to the original procedure. For example, *Gathering and Maintaining Initial Data* should be done as an ongoing sub-process, with a clear process owner, as pointed out by the interviewees and the Jyväskylä example. Making this sub-process the responsibility of one department, compared to the current situation where it is spread to every relevant department, makes it easier to start the process when needed. It will also make the whole process leaner if the first phase does not take five months. Following that, changing needs are then promptly checked and visible in the Current State Analysis phase, too.

Another new feature is that the revised process makes *Current State Analysis* expectations clearly distinct, from various stakeholders. *Change Management Execution* is added to enhance the management visibility and better tracking of the process.
Overall, the revised process model improves and presents the approach to service location network design as a process. There are also fewer steps making the model easier to use. Most importantly, it addresses the factors needed in Service Location Network Design including the initial data requirements; and enhances the Change Management responsibilities including their execution. Next subsections cover the sub-processes in more detail.

6.3.1 Gathering and Maintaining Initial Data

The First sub-process of Service Location Network Design is *Gathering and maintaining initial data*.

![Diagram of the Process Model]

Figure 13. Gathering and Maintaining Initial Data.

The initial data for Design Service Location Networks include zoning reserve, population forecast, capacity utilization, capacity dimensioning, real estate valuation, and service cost structure. These parts reflect the key elements of logic of this sub-process distinguished in the cases and literature, and made visible in the conceptual framework (shown in Figure 3). Population forecast, utilization rate and service cost structure work as the *demand* part of the framework. Utilization rate, service cost structure and land & lot use reserve work as *land use* part of the framework. Real estate valuation, real estate condition assessment and investment plan reflect the *current premises* part of the framework.
Zoning marks the starts of this sub-process since location possibilities in Finnish municipalities are controlled by zoning. In the City of Helsinki, Planning Department controls its zoning reserve, and this information is vital to the Service Location Network process.

This step is followed by examining the population forecasting. The population forecast data is easy to access and open to analysis. Understanding the population forecast when designing Service Location Networks regionally is crucial for making well-grounded prognosis for the area development and forecasting the needs and possible changes in these needs in the region.

When approved for putting into practice, many of service locations are checked by officials. For examples, officials approve the maximum capacity for the premises. The maximum capacity constraint can be, for example, number of lavatories, square meters or air condition. Service departments can only make judgments on the current capacity utilization.

6.3.2 Current State Analysis

The *Current State Analysis* sub-process examines how adaptable and agile Service Location Network Design is, based on the initial data gathered from the selected region.

Figure 14 below shows the approach to the Current State Analysis sub-process in the proposed service location network design.
The Current State Analysis sub-process allows for the changes in demand which can intensify regionally. For example, In Kaarela case, almost all of the increasing demand comes from Kuninkaantammi sub-area (as discussed in Section 5). The current structure of the service location network design, which distinguishes the agile, adaptable and cost aspects, allows to take than into account. In Kaarela case, these and similar challenges could be answered in two possible ways. For taking into account the current premises, the current premises condition must be analyzed (done through the Current State Analysis). Technical values of the owned premises are available in Haltia-database; and in case of poor condition, it can be safely forecast that there are expected investments in future. The other way is to take into account the current land use information. Recognizing lots for additional construction is essential when comparing alternatives to future repairs.

6.3.3 Change Management Plan

*Change Management Plan* gathers the *Initial data gathering* and *Current state analysis* together and, based on the analysis, makes a plan for the service location network in the region. These solutions are subject to *location, capacity or allocation.*
Figure 15. Change Management Plan.

Change Management Plan is a visual presentation which explains in detail the current service location network and presents the changes needed to make it efficient and optimal. Change management plan translates the changes into investments, also taking into account the investment timeframe. These changes presented in the plan can be location changes, allocation changes or capacity changes.

6.3.4 Change Management Execution

The *Change Execution* sub-process utilizes the current investment and decision making processes, as was demonstrated on the example of the City of Helsinki.

Figure 16. Change Management Execution.

In the validation session, the experts pointed out that the previous Service Location Network analysis did not lead to the desired results, and that it was unclear which department is responsible for the next steps of the process. It was especially stressed that the decision making process could be clearer and have fewer levels. But streamlining the decision making process lies outside of scope of this Thesis since it belongs to a different party, decision makers, not the service location responsibility *per se*. 
Service Location Network changes are political decisions. Based on Change Management Plan, public servants propose the Service Location Network changes with justifications to the committee appointed by the municipal council which makes the decision. In this phase, the needs and desires of politicians and often parents, are formally heard. Consequential steps, such as closing a school, are taken by the municipal council after hearing the committee. The Change Management Execution sub-process follows the feedback from the former process (described in Section 4.2, SWOT analysis) by making the execution more significant rather than just decision making, in the overall process framework.
7 Discussion and Conclusions

This section presents the summary, managerial implications and recommendation for the proposal for the new service location design process to be put into practice. It also overview reliability and validity issue and evaluates the study against the objectives set at the beginning of this research project.

7.1 Summary

The purpose of this Thesis was to study service location network within the context of municipal services, especially educational and day care services. The aim of this Thesis was to develop a service location network process that could be applied to the design of service locations in one region in the City of Helsinki, Kaarela region.

The case organization of this study is the City of Helsinki which by now has implemented a wide range of various Service Location Network Design projects and has the current process for it. The current process, however, was not completely satisfactory especially to the financial and real estate sectors of the City of Helsinki which are currently in charge of the Service Location Network Design process.

The focus of Thesis was placed on the analysis of how the Service Location Network Design is done in Helsinki and evaluation of one real case when this process was applied for service location design in Kaarela region. The Thesis also overviewed some particular location factors, based on the experience in the neighboring sectors, such as industrial, retail and service location sectors.

The study started with a literature review of location network design in retail, industry and service location sectors. These findings were then reinforced with the examples from Finnish municipalities Sipoo and Jyväskylä. Secondly, some previous Service Location Network Design projects and the current model applied in the City of Helsinki were analyzed. After this, the Kaarela case was presented. On the grounds laid by this analysis, the process model was proposed and subsequently validated by the city experts. The expert opinions were then incorporated into the final proposal for the service location design process.
The process development was carried out in several workshops conducted in the case organization. The initial proposal and final proposed model combined the researcher’s’ ideas and responsibilities and the team efforts in further development of the process. Subject matter experts on Service Location Network Design and key stakeholders were closely involved in the development, and the final proposed process relies considerably on their suggestions and expertise. The process development, thus, included two rounds of development and the validation round with the experts.

The outcome of the Thesis will provide a process model for service location design that will assist the effort of service and premises providers, and strengthen and improve the operational process of Service Location Network Design. The process model consists of four phases (sub-processes) was presented in the previous section (in Figure 12, with Figures 13-16 specifying the content of each sub-process).

The main elements of the proposed model include: Gathering and Maintaining Initial Data, Current State Analysis Change Management Plan and Change Management Execution. The proposed process model is lean and simpler than the previous model. The proposed process model helps to change mindset from a project approach into a process. The change is making Service Location Network Design work less time bound and more agile. Service Location Network process is one of the most important ways to increase productivity in the public sector. The efficient design of service locations enables savings in both real estate expenses and in support service expenses, as well as enables savings in other existing resources. Municipal Service Location Network Design in Helsinki has been based on practice and was an unexplored research area. This Thesis fulfill this gap and proposes a process model based on retail, industry and service location theory and utilizes the previous works made in the field of Service Location Network Design in Helsinki.

7.2 Managerial Implications and Recommendations

While this study aims to fulfill the academic requirements for the Master’s thesis, it also hopes to have some practical relevance for the managers of the City of Helsinki and possibly other municipalities too. Practitioners may also benefit from the examples presented for the service location comparison because they can provide some ideas for
the development of Service Location Network Design of their own regions and municipalities.

The process described in Section 6.3 can be put into practice for which several issues need to be stress. First and foremost, the important point in this model is that it treats service location design as a process rather than a project, which was traditionally done. Service Location Network Design is not a new idea in Helsinki. It has been done regionally and with citizen participation for many years. However, all of the previous Service Location Network Design cases have been done as projects. These implemented Service Location Network Design projects had many good aspects but they typically lacked continuity and process improvement ideas. In the researcher's opinion, changing the concept of Service Location Network Design as a project into a process could improve the efficiency and permanent results of the location design work.

Based on the finding from this Thesis, the researcher could suggest that, in order to succeed in the Service Location Network Design process, the role of the process owner also needs to be established. The ownership of the process cannot be a part time responsibility. To manage all the needs arising, and often overflowing, in various aspects of Service Location Network Design, this role could be extremely useful for increasing the overall efficiency of the process.

Some additional steps could also be considered by the managers of the City of Helsinki to make the process of Service Location Network Design more efficient, namely:

1. Initial data gathering could be made into an ongoing process (with a clear process owner).
2. Since the citizen hearing procedure currently varies and is not clearly defined, establishing a clear procedure could significantly facilitate the Service Location Design process.
3. Decision-making process with fewer levels would definitely benefit the process agility.

To further enhance the Service Location Network process, future research should be conducted which would concentrate on establishing and applying come key perfor-
mance indicators for the process. These factors could play a major role in further development of the Service Location Network Design process and help to measure and improve the process results. Surveys and other quantitative data will also be necessary to conduct to suggest further improvement to the process and its practices.

7.3 Evaluation of this Study

This Thesis proposed a new model using the service location processes from industrial, retail and service location sectors as its basis, combined with the elements from the existing processes already in place in the City of Helsinki. One of the successes of the Thesis is that the new model was validated and approved for use as a starting point for further development in real service location design in the City of Helsinki. These further developments will take a longer period of time and, thus, lie outside the scope of this study. So far, the proposed model helped the project team to develop the initial version of the Service Location Network Design model. Along this way, the project team recognized three basic sub-processes of Service Location Network Design in the City of Helsinki and was able to streamline the process in one of these processes even further. Finally, the Mayor of Helsinki approved of the same group further working on the shared KPIs for different departments of the City of Helsinki. Thus, in the practical terms, this Thesis made an impact on the existing process, even though it may not sound as a great breakthrough if evaluated from the outside.

Overall, the proposed new process model was well received by the city of Helsinki and by department management and process experts. The process model was appreciated especially in part of its swim line which clearly indicates the responsibilities of the project teams. After validation of the proposal, swim line process maps were decided to be refined and carried out further by the project team members responsible for different parts of the process.

The most important discovery of this study was the mindset change from the project to the process mode. The traditional approach always started from zero. The proposed model utilizes the previous experience, especially in the data gathering and maintaining initial data phase, which leaves more time on cross-functional interactions and helps the process gets started and developed more smoothly.
An interesting result from the literature search was that, in the existing examples and benchmarks, the municipal Service Location Network Design is primarily done by one branch of service at a time. In Helsinki, on the contrary, a combined regional approach to Service Location Network Design is appreciated. Thus, further research on the Nordic capitals would be interesting to conduct to draw more detailed information and learn from their experiences, especially concerning the Service Location Network Design processes in bigger cities.

Another topic for the future is the improvement of the economic aspects of the service location design process. The Thesis briefly touched upon complexity of it, especially in terms of property issues within the field. The thesis pointed to this problem and it is for the future research to determine how the Service Location Network Design could aim at better economic efficiency without compromising the needs of the citizens.

Finally, the scope of this study was limited to the municipal Service Location Network Design only, concentrating mostly on the school and day care premises in the existing regions. Service Location Network Design in new districts makes a different process because the whole district, its housing, services, traffic and other land use are planned and aligned at the same time. Therefore, these two processes have a clear difference in their procedures. The current process model proposed in this study helps to regionally optimize Service Location Network Design in the existing regions, and it hoped to be useful especially for the Service Location Network Design of the school and day care premises.

7.4 Reliability and Validity in this Study

The methodology chosen for this study was an explorative case study. The internal validity of the Thesis was measured, first, by checking whether the research question was answered. The research question for the Thesis was: "How to regionally optimize Service Location Network Design?" The additional research question was articulated as: "How to build a process for designing service location network?" Looking at the proposed model and summary of the Thesis, the researcher can conclude that the research question was addressed, and the research objective was also met.
The research also remained within the limitations set at the beginning of the project. These limitations were indicated because the study analyzed the Service Location Network Design in a rather small geographical area of Helsinki and, due to the specifics of the case, concentrating on the Kaarela region daycare and school services. The empirical Kaarela case and the data used from the case of the City of Helsinki and its service location network project (from the period of December 2011 – April 2012) were selected to be one of the many cross-functional profit sharing criteria, with other criteria left outside of its scope to be studied separately in the future.

Finally, the results of the study have been produced to be utilized in a particular context, and this has to be taken into account in evaluating the generalizability of the findings. More exact evaluation of validity and reliability of this research cannot be provided due to the nature of this research. However, by providing detailed information on the research design, process, data and measures to ensure validity and reliability, the researcher hopes that the results of the study could be considered as reliable and valid and provide some feasibility value for the case organization.

As an additional effort to increase reliability and validity, detailed records on quantitative raw data were used for the analysis, so that to avoid any possible bias and impact on the accuracy of the results. Using multiple sources of evidence was given special emphasis in this study, which is described in detail in the case study, method and data section. The case study field notes are records produced for all interviews and observations; and internal documents cited in the study were selected in such a manner that other persons can retrieve them.
References


Koulouverkkowyöryhmän muistio osa 1 lähtökohdat Helsinki : Helsingin kaupungin opetusvirasto, 1994 Helsingin kaupungin kouluviraston julkaisusarja B, ISSN 1235-0990 ; 11:1992


2010-luvun palveluverkko: joustavat palvelukeskittymät ja sähköiset verkkopalvelut
17.12.2009
Appendix 1.

Interviews and Discussion

Interviews were conducted personally, in face-to-face meetings, in open discussion sessions, in the different workshops, and separately appointed with the experts.

The following questionnaire was used as a catalyst for discussion both in the interviews and workshops.

Discussions were documented in the department minutes and used for the process model creation.

Background information
- Name
- Department
- Role in Service Location Network Design

Beginning
- Reasons for Service Location Network Design
- Has Service Location Network Design changed over the years
- How does your department decide Service Location Network Design
- How does your department needs change
- What are your criteria used to find locations

Process
- Why is a change needed
- Who should be responsible of the Service Location Network Design process
- Who should be responsible of the citizen hearing
- What should be presented to citizen in citizen hearing
- What have been the problems in current process
- What expectations do you have for the new model
- How do you communicate the changes in Service Location Network Design
- Service Location Network Design once a year or else
- How to make the Service Location Network Design quicker
- What viewpoints should be taking notice when Service Location Network Design
- Official / unofficial practices
- What should be the end result of Service Location Network Design
- Are there any legislative constraints

Future prospects in Service Location Network Design

What essential questions have not been asked
Appendix 2. Workshop II

Example of Topics covered in working group workshop. Translated from Finnish

Q1. Which sub processes of the current model are tight to the one year time frame and how exactly?
Q2. How should the premises owners long term view be tight to the current model?
Q3. Who do you think should be responsible for the collecting of inhabitants views?
Q4. What other strategic means (beside Service Location Network Design) to streamline usage of facilities does your department have?
Q5. What are your departments metrics on usage of facilities?
Q6. In Your Departments point of view which metrics could be mutual with other departments?
Q7. How openly are you willing to share department metrics?

Process Brainstorming.
## Appendix 3. Kaarela locations

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Appendix 4. Kaarela development areas
Appendix 5. Detailed Proposal of Service Location Network process

Actual notes of one of participants from validation meeting