ISTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL OF SCIENCE ENGINEERING AND TECHNOLOGY

EXPLORING THE SPATIAL DETERMINANTS IN DIFFERENT TYPES OF RETAIL CLUSTERS
THE CASE STUDY OF ÜSKÜDAR

M.Sc. THESIS

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ISTANBUL TEKNİK ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

FARKLI TİCARET KÜMELERİNE ETKİ EDEN MEKANSAL FAKTÖRLERİN İNCELENMESİ
ÜSKÜDAR ÖRNEĞİ

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Cansın AKBAŞ, a M.Sc. student of İTU Graduate School of Science Engineering and Technology student ID 519151005, successfully defended the thesis entitled "EXPLORING THE SPATIAL DETERMINANTS IN DIFFERENT TYPES OF RETAIL CLUSTERS: THE CASE STUDY OF ÜSKÜDAR", which she prepared after fulfilling the requirements specified in the associated legislations, before the jury whose signatures are below.

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To my family ,

FOREWORD

I could not have finished this study easily without a strong support of my beloved ones. First of all, I have endless thanks to my parents Nurten AKBAŞ and Coşkun AKBAŞ who have supported me with love, patience and full of understanding through all my life. And secondly, my precious and unwavering childhood friends Miray ŞENER, Melodi ÖZGÜÇ, Buse ÖZTÜRK, Hazal ARIMAN and my boyfriend Batuhan SITKI have helped me whenever I need, I owe them a lot. Sena ARTAR also helped me with her solution oriented ideas.Besides that, spatial thanks to my thesis advisor Ayşe Sema KUBAT who have always supported and guided me. Thank you all.

May 03

Cansın AKBAŞ
City and Regional Planner

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EXPLORING THE SPATIAL DETERMINANTS IN DIFFERENT TYPES OF RETAIL CLUSTERS
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SUMMARY

Especially since early 1900, agglomeration of economic activities has been one of the most discussed topic in the literature of economy. As being a primary source in this field, Marshall (1890)’s agglomeration economies has created a breaking point for related theories about the spatial dynamics of urban and regional economics. Depending on that agglomeration tendencies of firms in a specific locations, localization of industries have been studied and gained strength in the literature of economy since that years. As a result, today's cluster theories are been shaped by such studies on localization and agglomeration of industries. Depending on these issues, there is an improved literature on cluster theory supported by various approaches of different theoricians today, yet it has seen that almost all the theories on clusters framed and investigated in the field of economy. In this point it is important to say that clusters are the dynamic organisms which have both economic and spatial aspects, but in economic theory space is not a much studied concept.

Most of the studies on clusters have been conducted in urban, regional, national or global scales. Even there are cluster studies conducted in smaller scales, high percentage of those narrow-scoped studies are aimed and researched the regional or national returns of those clusters. On the other hand, it is known that clusters also occur in some local scales by including small-scaled businesses such as restaurants, car dealers and antique shops. For these type of clusters, spatial aspects and social reflections of those spatialities are as important as the economic returns.

Moreover, generally most of the studies on clusters have been adjusted to all types of industries or they only involved manufacture industries while forming their hypothesis. Yet, it is rational to say that different sectors have different dynamics and they should have been affected by different factors while clustering. For this reason comprehensive approaches on clustering applicable to all sectors is maybe acceptable for regional or bigger scaled studies, but for certain information about clustering dynamics of different sectors; literature should be filled by different cluster methodologies implemented according to internal dynamics of different sectors.

At this point, as being different than all other sectors in terms of significant spatial reflections in urban structure and life, clusters of retail sector and their inner dynamics is chosen as a topic to be analysed. By chosing this topic it is also taken into consideration that within the literature of cluster, there is almost no study researching clusters of retail sector in the field of urbanism with the city centre or neighborhood scale.

Due to the all of the facts explained above, a unique methodology to explore the determinants of retail clusters and the spatial factors of clustering tendencies of

different retail types in urban centers are detected as deficiencies in the literature. In this study, it has tried to describe the determinants affecting the locations and structures of retail clusters in urban centers. By doing so, it has aimed to understand that how spatial interventions and physical transformations in urban centers can trigger the formation or decline of specific retail clusters which can change the operation of city centers and pedestrian acvitivities.

Throughout this study, firstly, according to literature research, substructure of analyse procedure is prepared. To reach out the possible spatial determinants of retail clusters; according the literature review, contributing factors in emergence of clusters in comprehensive and retail specific studies are collected together and listed. Again depending on the literature research on the structure of retail sector, an internationally approved retail classification system is used to define different retail groups in the retail sector.

Secondly, a method is presented to detect the geographical clusters of different retail groups and applicated the field study. In the field study, all retail types are named according to NACE system, classified and grouped according to specific similarities among them.Then, all of the ground floor retail groups in the field study area are attached to the geographical information systems. By using Arcmap Kernel point density (KD) function of ArcGIS spatial density of each retail group is estimated. According to the spatial agglomeration levels of each retail groups, retail cluster borders were detected.

Thirdly, analyse procedure is conducted to estimate the influence of different spatial determinants on detected geographical retail clusters. In first step, clusters of three retail groups were selected to execute the analyse process. Under the title of Measurement of retail cluster determinants, contributing factors in emergence of clusters found in literature review organized as a questionnaire to understand the effects of cluster determinants in different type of retial groups. Questionnaires were conducted with the retailers of selected retail clusters. They are asked to choose the effect of each determinant while selecting a location from one to five.

In second step, to measure the effect of accessibility determinant in clusters, space syntax analyses are conducted. To obtain that correlations between kernel point density values obtained from ArcGİS and integration values of segments produced by Depthmap Map were measured for each retail groups.

In third step, pedestrian counts are conducted in 34 different points of the study area. Countings are executed in three different time period of a weekend.By using the data obtained from this study, pedestrian volume analyses has been implemented as a pilot study to understand how space syntax analyse findings are supported by the pedestrian flows in the study area and how much retail clusters associate with the pedestrian volumes.

On the contrary to common studies treating retail sector with a holistic approach, in this thesis; inner dynamics and sub-groups of retail sector, then spatial determinants and spatial reflections of retail clusters have been most concentrated terms. Even all the analyses of this thesis has been conducted upon the only three subgroups of retail sector, it has seen that every subretail group with similar services and products has their own requirements from a place. Depending on those requirements, their locations and site selection criteria change. Therefore, it is inevitable that stores with similar services and needs, create clusters in definite spaces which provide their spatial requirements. Moreover, those clusters originate unique spatial identities for places and even for streets that create various space perceptions users. As a result of that, to protect and develop urban and street identities developed through the history, it is significant to detect different retail patterns and their clustering determinants before implementing any planning and designing decisions especially for historical urban centers. Parallel to that, by taking into account the detailed findings of the this thesis, series of recommendations are presented. With implementation of them, it is claimed that it will be possible to maintain the spatial identities and perceptions of place users' developed through the history.

FARKLI TİCARET KÜMELERİNE ETKİ EDEN MEKANSAL FAKTÖRLERİN İNCELENMESİ ÜSKÜDAR ÖRNEĞİ

ÖZET

Özellikle 1900'lü yıllardan itibaren, ekonomik aktivitelerde yığılma ekonomi literaturünde çokça tartışılan konulardan biri olmuştur. Bu konuda ana bir kaynak olarak, Marschall'ın yığılma ekonomileri (1890) kentsel ve bölgesel ekonomilerin mekansal dinamikleri üzerine teorilerde bir kırılma noktası oluşturmuş. Bu çalışmanın literatürde yarattığı etki de göz önünde bulundurularak, firmaların spesifik konumlarda yığılma eğilimleri ve yığılma endüstrileri üzerine yapılan çalışmalar 1900'lü yıllardan itibaren ekonomi literatürünü giderek geliştirmiştir. Sonuç olarak, bugünün kümelenme teorileri; firmaların ve endüstrilerin yığılma ve yerleşimleri üzerine yapılan bu çalışmalar sonucu şekillenmiştir. Günümüzde farklı teorisyenlerin farklı bakış açıları sonucu gelişmiş bir kümelenme literatürü bulunmasına rağmen, bu konudaki çalışmaların çok büyük bir çoğunluğunun ekonomi alanı çerçevesinde şekillendirildiği görülmektedir. Bu noktada şunu belirtmek gerekir ki kümeler sadece ekonomik değil aynı zamanda mekansal boyutu da bulunan dinamik yapılardır, fakat ekonomik teorilerde mekansal boyut çok fazla incelenen bir konu değildir.

Kümelenme konusundaki çalışmaların büyük bir çoğunluğu kentsel, bölgesel, ulusal ve global ölçeklerde gerçekleştirilmektedir. Literatürde yakın ölçeklerde gerçekleştirilen kümelenme çalışmaları da bulunmasına rağmen, bu çalışmaların da büyük bir çoğunluğunun bu kümelenmelerin bölgesel getirilerin tespiti amacıyla yapıldığı görülmektedir. Diğer yandan, kümelenmelerin aynı zamanda yerel ve yerleşim merkezleri ölçeğinde, kafeler, araç kiralama ofisleri gibi küçük ölçekli işletmeleri içerecek şekilde de oluştuğu bilinmektedir. Özellikle bu tip kümeler için ekonomik boyutunun yanı sıra bu kümelenmlerin mekansal boyutu ve bu mekansallığın sosyal yaşama yansımaları da oldukça önem arz etmektedir.

Öte yandan, kümelenme konusundaki çalışmaların büyük bir çoğunluğu tüm endüstrileri kapsayacak şekilde veya sadece üretim endüstrileri ve sanayi sektörünü kapsayacak şekilde hipotezlerini oluşturmuştur. Fakat şunu söylemek doğru olacaktır ki farklı sektörler farklı içsel dinamiklere sahiptir ve bu nedenle kümelenirken farklı faktörlerden etkilenmeleri makul bir sonuçtur.Bu nedenle bölgesel ve büyük ölçekli kümelenme çalışmaları için tüm sektörlere uygulanabilen kapsamlı yaklaşımların geliştirilmesi uygun görülmekle beraber; yakın ölçekli çalışmalarda farklı sektörlerin kümelenme dinamiklerinin daha doğru tespit edilebilmesi için, literatürün farklı sektörlere yönelik içsel dinamikleri göz önünde bulunduran detaylı metodolojiler dahilinde geliştirilmesi gerektiği düşünülmüştür.

Bu noktaya gelindiğinde, mekansal boyutları ile kentsel oluşum ve kentsel yaşam üzerindeki yarattığı etkiler sebebiyle diğer sektörlerden farklılaşan ticaret sektörü kümelenmeleri ve bu kümelenmelerin içsel dinamikleri bu tezin konusunu oluşturmuştur. Bu konunun seçilmesinde literatürde ticaret sektörü kümelenmelerini

kentsel tasarım ve planlama alanında ele alan, yakın ölçekli çalışmaların oldukça nadir olarak bulunması da etkili olmuştur.

Açıkanan tüm bu konulara istinaden, ticaret sektörü ve farklı ticaret gruplarının kümelenmelerini etkileyen faktörlerin tespit edilebilmesine yönelik spesifik bir metodolojinin bulunmayışı literatürdeki bir eksiklik olarak tespit edilmiştir. Bu çalışmada, kentsel merkezlerdeki ticaret kümelenmelerinin yer seçimlerini etkileyen faktörler tanımlanmaya çalışılmıştır. Böylelikle, mekansal müdahaleler ve fizikser değişimler ile; kentsel merkezlerdeki ticaret kümelenmelerinin ne derece geliştirilebileceğinin veya yokoluşuna sebebiyet verebileceğinin anlaşılması amaçlanmıştır. Bu değişimlerin aynı zamanda kentsel merkezlerdeki işleyişi ve yaya aktivitelerini önemli bir ölçüde etkileyeceği düşünülmüştür.

Çalışma süresince, öncelikle literatür araştırmasına dayanarak analiz çalışmasının temeli oluşturulmuştur. Öncelikle, ticaret kümelerini etkileyen potansiyel faktörlerin tespit edilebilmesi için literatürdeki kapsamlı çalışmalar ve ticaret sektörü odaklı çalışmalar taranmış, bu çalışmalardan elde edilen kümenmelerin oluşumunu destekleyen faktörler bir araya getirilmiş ve listelenmiştir. Aynı zamanda literatür araştırmaları sonucu, uluslararası kullanılan bir ticaret sektörü işkolları kodlama sistemi, bu sektör içerisindeki farklı ticaret iş kollarının gruplandırılması için kullanılmıştır.

İkincil olarak, farklı ticaret gruplarının mekansal kümelerinin tespit edilebilmesi için bir method oluşturulmuş ve alan çalışması üzerinde uygulanmıştır. Alan çalışması içerisinde,öncelikle alan içerisinde yer alan tüm ticari sınıflar NACE sistemine göre isimlendirilmiş ve benzerliklerine göre gruplandırılmıştır. Bu bilgiler ışığında alan içerisindeki tüm giriş kat ticari sınıflar coğrafi bilgi sistemlerine girilmiştir. ArcGIS içerisindeki kernel nokta yoğunluğu fonksiyonu kullanılarak; benzer ticari sınıfların gruplandırılmasından elde edilen her bir ticari grubun yoğunlaşma alanları tespit edilmiş, bu grupların kümelenme alanları belirlenmiştir.

Üçüncü olarak, farklı mekansal faktörlerin farklı coğrafi ticaret kümeleri üzerindeki etkilerinin tespit edilebilmesi için analiz prosedürü uygulanmıştır. İlk aşamada üç farklı ticari grup kümelenme analizlerinin gerçekleşmesi için seçilmiştir. Arz yönlü analizler başlığı altında literatür çalışmasında elde edilen, kümelerin oluşumunu destekleyen faktörler bir anket şeklinde organize edilmiştir. Bu anketler, seçilmiş ticari gruplarda yer alan işletmecilere her bir faktörün etki derecesini 1 ile 5 arasında derecelendirmeleri istenecek şekilde uygulanmış, böylece farklı ticaret gruplarının kümelenmelerini etkileyen faktörler ağırlıklandırılarak tespit edilmeye çalışılmıştır.

İkinci aşamada, kentsel organizasyon ve kümeleri konumları arasındaki ilişkinin ortaya konması ve erişilebilirlik değişkeninin kümelenmedeki etkisinin belirlenebilmesi için mekan dizim (space syntax) yaklaşımı kullanılmıştır. Bu doğrultuda, seçilen her bir ticari grup için; coğrafi bilgi sistemleri kullanılarak gerçekleştirilen mekansal kernel nokta yoğunluk değerleri ile mekan dizim (space syntax) yöntemlerinden elde edilen yol segmentlerinin entegrasyon değerleri arasındaki korelasyonlar hesaplanmıştır.

Üçüncü aşamada, çalışma alanındaki 34 farklı noktada yaya sayımları gerçekleştirilmiştir. Sayımlar bir hafta sonunda üç farklı zaman diliminde ve 5 dakikalık periyotlar halinde gerçekleştirilmiştir. Bu çalışmadan elde edilen veriler, mekan dizim yöntemlerinden elde edilen bulguların yaya yoğunlukları ile ne kadar desteklendiği gösterilerek mekan dizim yönteminin geçerliliğinin ispatlanması ve yaya yoğunlukları ile ticari kümelenmeler arasındaki paralelliğin incelenmesi için kullanılmıştır.

Ticaret sektörüne bütüncül bir bakışla yaklaşan çoğu çalışmanın aksine, bu tez içerisinde ticaret sektörünün iç dinamikleri ve alt grupları kullanılarak farklı ticari grupların kümelenmelerinin mekansal belirleyenleri ve mekansal etkileri üzerine yoğunlaşılmıştır. Bu çalışmada sadece belirlenmiş üç farklı ticaret grubunun kümeleri analiz edilmiş olsa da, farklı ticaret gruplarının bir mekandan kendilerine özgü beklentileri olduğu görülmüştür. Bu beklentilere bağlı olarak da farklı grupların yer seçme kriterleri değişkenlik göstermektedir. Benzer servisleri sağlayan ve benzer mekansal beklentileri olan ticari grupların mekansal olarak kendilerine uygun belirli alanlarda kümelenme göstermeleri de beklenen bir sonuç olarak karşımıza çıkmaktadır. Bu kümelenmeler de farklı mekanlar ve hatta sokaklar için özgün ticari ve tarihi kimlikler oluşmasına katkı sağlamakta, böylelikle kullanıcıların belleğinde yer edinerek kullanıcıların mekan algılarını da şekillendirmektedir. Sonuç olarak tarih boyunca şekillenerek gelişen bu mekan ve sokak kimliklerini koruyarak geliştirmek için, herhangi bir planlama veya tasarım çalışması öncesinde mevcut durumda var olan farklı ticari dokuların tespit edilmesi ve bunların kümelenmeleri etkileyen faktörlerin belirlenmesi önem arz etmektedir. Bu tezde elde edilen bilgiler ve bulgular ışığında, bu doğrultuda uygulanabilecek bir dizi ön planlama ve tasarım aşaması önerisi sunulmaktadır. Böylelikle, tasarım ve planlama çalışmaları sonucunda, mevcut durumda mekansal kimliğe katkı sağlayan kümelenme alanlarındaki özelliklerin korunacağı ve kullanıcı mekansal algılarının zarar görmeyeceği iddaa edilmektedir.

1. INTRODUCTION

Agglomeration of economic activities in a specific environment and their effects on developments of urban economics have been one of the most discussed topic in literature. In the field of economy, as being a primary source, Marshall's agglemeration economies have triggered related theories about spatial dynamics of urban and regional economics, which are mainly agglomeration tendencies of firms in a specific location, localization of industries or cluster theory (Marschall, 1890). All these studies on agglomeration have been discussed and developed by different theoreticians, since early 1900. It is important to note that, before Marshall, Hotelling (1929)'s model of spatial competition and Weber (1929)'s Localization of Industries have been another important sources of inspiration for a great amount of literature which also enhanced agglomeration theories. Still first so called agglomeration theory has been stated and analyzed in detail by Marshall and it has been developed and underpinned cluster theories of today.

Despite the fact that we have an enhanced literature on cluster theory supported by different perspectives of theoricians today, it is right to say that the theories on clusters framed and investigated almost in no field but the field of economy. In economic theory, space is not a much-anayzed concept. On the other hand, clusters as being a geographic concentration of firms have to include some determinants related with space and have effects on space itself.

In addition to that, generally it has also seen that most of the studies on clusters have been adjusted only to manufacture industries or they involved all types of industries while forming their hypothesis. As a matter of fact, different sectors have different dynamics. It is rational to think that different sectors such as retail and industrial sectors should have different determinants with different proximity of dominance while clustering. For this reason, forming a comprehensive approach on clustering applicable to all sectors; is maybe acceptable for big scale studies, but for further and realistic information about clustering factors of different sectors; different methodologies should be produced according to internal dynamics of each sector. For example, as being subject of this study and different from industrial sector; retail sector has a continuous and dynamic relation with costumer and urban geography, it has a social and spatial dimensions as well. In most general sense, movements of people and their way of using places in relation to the urban formations, urban pattern, functions and activities have impact on generation of retail agglomerations in the specific nodes of the cities. In fact, it can be said that it shapes and shaped by urban dynamics. Even for these reasons only, it is inevitable to generate a methodology to research retail clusters with differentapproach than the other sectors' clusters.

Examining the literature on sectoral clusters from another perspective shows that clusters are mostly held in urban, regional, national or even in global scales. In some of the studies of Porter (1998, 2000) he addresses local scale clusters, yet, the description of this scale is formed as boundary of a city or a district which is still a wide boundary to examine certain type of clusters which can be seen in the settlement centers. In fact, in all cases obtained from the literature review, it is seen that remarkably high percentage of the cluster studies aimed and investigated regional returns of clusters even the scale of a study is local.

Lastly, as being related to focus of this study, clusters occur in some local industries such as restaurants, car dealers and antique shops etc. as part of a retail sector (Porter, 2000, p.4). Considering all the literature research, it is seen that the limited literature related with retail sector have different clustering methodologies and factors than in other studies such as pedestrian flows, customer preferences, spatial dynamics and identity of place.

Because of the all of the issues explained here, a unique methodology to search for the determinants of retail clusters and highlighting the importance of spatial factors on clustering tendencies of different retail types in urban centers are regarded as deficiencies in the literature. Owing to this study, being aware of the factors leading and affecting the retail structure in urban centers will provide a consciousness about how spatial interventions and physical transformations can trigger the formation or decline of specific retail clusters and can change the operation of city centers.

1.1 Aim of The Study

Research on clustershave shown that there are some general approaches for the multi sectoral clusters which are shaping the literature mostly in the field of economy. Such studies are conducted in city or regional scale and mostly included the organisations of industry sector and related institutions. On the other hand, there are some studies on retail clusters in smaller scales but the scope of these studies and sources for such studies are limited. Because the created knowledge in literature of clusters is not suitable and specific enough to be integrated in retail cluster studies.

Unlike the most comprehensive studies conducted in the field of cluster and agglomerations, firstly, this study is carried out to reveal the differences of the retail clusters from the other sectoral clusters in terms of the determinants leading them to locate together.

Secondly, this study tries to find out the inner determinants of retail store clusters and how the effects of such determinants are changing due to the type of retailing such as cafes and souvenirs.

By doing so, final argument is shaped through defining the spatial features of urban design projects that can trigger the formation of specific retail clusters and the physical urban renewal interventions can affect the cluster developments or cause a decline of a specific clusters.

In brief, this thesis aims to highlight the determinants of spatial distribution and clustering criterias of different kind of retail sectors in central urban fields by investigating their relation with people, place and the location choice of the firms. By doing so, this research tries to reveal that which urban design and urban renewal interventions can affect the retail structure of central district and character of urban centers, and what kind of physical interventions can create suitable environment for the development of typical retail clusters such as cafes, restaurant, market and groceries, jewelleries etc.

1.2 Methodology

Since the created knowledge in literature of clusters is not suitable enough to be integrated in retail cluster studies; there are rare studies on retail clusters in smaller scale and sources for such studies are limited. Moreover, unlike this study, there is almost any study using specific attitudes for clustering determinants of different retail types. Under this title, the steps followed during the preparation of this thesis is explained briefly.

Methodology of this study is formed different than the most cluster studies in literature. As it is seen from the Figure 1.1, Methodology of this study is established on three main phases. Respectively, these are *literature research and preparing a substructure of analyse procedure, detection of geographical clusters* and *analyses of cluster determinants of geographical clusters*.

First phase includes two different main researches on cluster literature.In this phase, firstly, the determinants or factors of *clusters* defined in *comprehensive studies* and the determinants of *retail clusters* identified in *retail specific studies* has tried to be found. By scanning all of the findings obtained from these two different research, it is aimed to reach out the possible spatial determinants of retail clusters mentioned in all type of cluster studies.

Secondly, the structure of retail sector and internationally approved retail classification systems has been researched. Findings have been aimed to be used to classify sub-retail types in the case study.

As a result of these two main researches in the literature, under the title of overall assesment of findings in Theoretical background, possible determinants of retail clusters and classification method of retail sector are decided. They are prepared to be used in analyse procedure.

Second phase was done to *detection of geographical clusters*. To make an analysis searching for determinants of clusters, firstly clusters should be defined geographically. Accordingly, Üsküdar central district is selected to define geographical retail clusters and conduct the analyses procedure of this thesis. Reasons of selection of this specific area is explained under the title of the Case study: Üsküdar. As a result of the field study, firstly locations of the ground floor retail stores in the case study area were attached to the geographical information systems. Job titles of each ground floor retail stores were assigned to them according to the North American Classification system which is found in the Literature research and preparing a substructure of analyse procedure. 81 type of retail types defined in NACE system were classified under 17 sub-retail types according to the functional and spatial similarities of different retail types.

As a result, geographical cluster analyses of 17 different retail group were conducted according to the spatial agglomeration levels of them in the study area. Then three of them were selected to be analysed. Detailed information about the tecniques of cluster analyse is represented under the title of Application of the methodology.

Third phase of the methodology includes *analyses of clustering determinants* of geographically defined retail clusters. As it is mentioned above, to make a detailed analyse, clusters of three retail groups were selected to execute the analyse process. This process was formed in three steps.

First of all, under the title of measurement of retail cluster determinants, all of the cluster determinant found in literature review was listed and organized as a questionnaire. To reveal the effects of each cluster determinants in three selected retail clusters, questionnaires were conducted with the retailers of these groups. It has thought that spatial tendencies of shop owners or managers are the most reliable source to measure the effects of each determinant of clusters.

Secondly, under the title of Measurement of accessibility space syntax analyses was conducted to measure the relation between the urban configuration and geographic clusters. To obtain that correlations between geographical clustering data and integration paramater of space syntax is used.

Thirdly, pedestrian volume analyses are conducted. Throughout the analyses, at first,correlation between the data obtained from pedestrian counts and space syntax analyses is measured to show how much space syntax analyses coherent with the pedestrian counts is displayed. Then, spatial relation between clusters of each retail groups and pedestrian volumes in and around these clusters are examined.

Detailed information about the tecniques of cluster analyses is represented under the title of Application of the methodology.

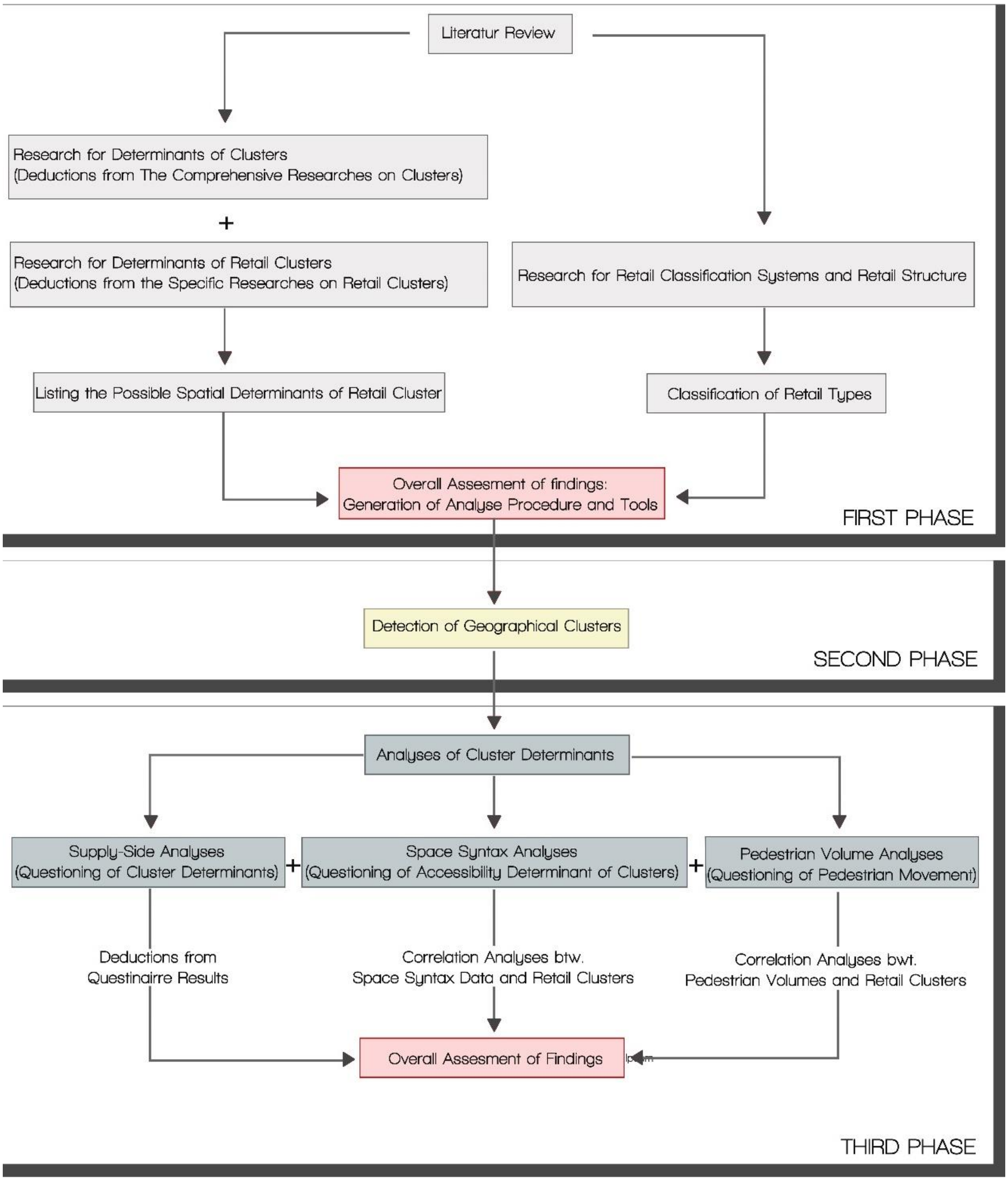


Figure 1.1 : Methodology of the study.

2. CLUSTER THEORY AND RETAIL CLUSTERS

This chapter is carried out in two broad title. Firstly, formation and evoluation of cluster theory is researched. Under this title, respectively, lead theoreticians who mostly shaped the literature, definitions of clusters from different perspectives on literature, features of clusters considering the scale, scope and attributes of different theoreticians and contributing factors in emergence of clusters are studied.

Secondly, under the title of theoretical background of retail sector it is aimed to reach where retail sector is stand in the literature of cluster, how the clustering dynamics differentiate from other sectors and how much information could be reached for retail clusters from the works on cluster theory. For this reason, respectively, dynamics of retail sector: People and Space, Structure of Retail Sector, Retail Clusters in the Literature and contributing factors in emergence of Retail Clusters are analyzed in detail.

2.1 Formation and Evolution of Cluster Theory

Clusters can be defined as a type of relationship among firms in a specific environment supported by some regional companies or related institutions. Scale of these relations ranges from city-wide to country-wide, even in accordance with the definitions of 'cluster' in the literature it can be observed in continent scale. Mostly, clusters include firms serving for end products, supplier products and services, financial companies and industrial companies. These companies and firms are supplemented in a cluster by the entities giving specialized education, technical support, consultancy and research and development services. Literature on clusters have been shaped by the works of agglomeration theoreticians since early 1900s. Since that time, approaches in the agglomeration theories have changed according to different theoreticians and in most cases it turned into a different term named as cluster theory. Thus, in this part of the study it is aimed to explain transition from agglomeration theories to cluster theories by explaining the changing approaches of different theoreticians.

From the early agglomeration studies in literature, urbanization economies, localization economies and agglomeration economies are the considerably most discussed and defined terms among theoreticians.(Weber, 1929; Parr, 2002; Gordon and McCann, 2000). Due to the aim of this study, debates on localization and urbanization economies are not so concerned issues here. For this reason, giving general ideas about these terms and explaining agglomeration theories more detailly will be the logical approach to define cluster theory and its scope.

According to Parr (2002), localization economies is one of the agglomeration economies that provide access to specialized inputs and services and easier transfer of know-how with horizontal connections. In localization economies, firms from same sectors localize in an area by taking advantage of sharing and developing knowledge, technology, common infrastructure and specialized workforce. On the other hand, urbanization economies grow out of more than agglomeration of one sector in a location, but it also grows out from advantages of city which holds different sectors, different dynamics with lots of opportunities in it. Besides localization economies, urbanization economies includes both horizontal and vertical connections (Parr, 2002).

Beside advantages of agglomeration for firms, first agglomeration theoreticians put effort to define outcomes of agglomeration on the spatial patterns of economic structure. For example, Weber (1929) used agglomeration economy in location theory. He suggested that agglomeration of firms is a key factor of studies on location of economic activities in cities which attempt to reduce the cost of transportation and production, distances, having cheap labor and also by doing these minimizing risks (Jackson, 2006, as cited in Dicken and Lloyd 1990). Even though there are lots of discussions about these issues, still, economic advantage is not enough to explain existence of agglomerations and spatial aspect of it. Because, in some cases they may occur in relation with the natural advantages such as climate or topographic suitability, proximity to raw materials, and locations with access to natural or manmade transportation routes (Dicken and Lloyd, 1990; Gordon and McCann, 2000). Similar to this, they can naturally evolve in smaller specific locations in which there is a high number of consumers in need or where specific type of consumers live.

Drawing upon classical approach of early agglomeration theoreticians, later studies on agglomeration or clusters concentrated on not only spatial concentrations of firms, but also they have brought attention to the linkages that exist between industries such as production, service, and marketing linkages. Regional scientists have developed both theoretical and methodological approaches to agglomeration economies that deal with the transmission of external economies via direct and indirect linkages to firms (Jackson and Bekele, cited in Sonis, Hewing and GUO, 2010). During the 1960s-1970s system of linkages between firms in all scales has been a central focus to find out and to use for economic development policies. Drawing upon all of the studies since early 1900s, Porter (1990) has developed a new concept on agglomeration literature which he called as cluster theory. He argued that clusters are strategical development tools from local to regional scales to trigger competitiveness by doing so creating innovativeness among firms (Porter, 1980; Porter, 2003). Because of the fact that all these theoreticians and theories still affects the development of cluster literature, it is important to research the ideas of lead theoreticians.

2.1.1 Lead theoreticians in cluster theory

It is important to research the studies of lead theoreticians who made breakthrough and shaped the literature to create an acceptable approach on cluster study. First intellectual information about clusters was introduced by Alfred Marshall, at the end of nineteenth century (Marschall, 1890). He is the first one who defined the agglomeration economies in detail. He defined agglomeration economies as a result of concentration of economic activities in a specific location with reduced production costs (as cited in Müderrisoğlu, 2016).

It is important to note that, before Marshall, Hotelling (1929)'s model of spatial competition and Weber (1929)'s Localization of Industries have been another important sources of inspiration for a great amount of literature which also enhanced agglomeration theories. In localization of Industries Weber created a location theory of firms localizing in a specific field. He claimed that there are some determinants in site selection of firms such as minimizing transportation, labour and knowledge costs to maximize their profit, for this reason firms with similar products and customers have similar criteria to locate tend to place together in specific locations (Weber, 1929). Also, Hotelling created a model to specify locations to be chosen by competitive firms to gain maximum profit in a defined area (Hotelling, 1929).

Marschall's work created the intellectual basis of cluster theory. In 'Principle of Economics' he developed an inquisitive approach to explain the reasons behind *concentration* of specialized industries in particular localities that has created the base line of the cluster theory we have today. (Marschall, 1890, p.222).

Marshall first made a statement about history of civilization and the way people lived. In the first ages of civilization every living place was dependent to its own sources for most of the heavy goods if they did not have a proper tecniques to use water carriage. In time, attitudes of people chanced slowly, they created a new way of producing and selling goods. Producers started to meet the needs of people from far distances with whom they had less communication. On the other hand, with the developing transportation opportunities, consumers with different income could get few expensive goods from a far distant. Some specific or more precious goods for rich class and also basic goods (e.g. metal implements) for all class of societies, started to be produced in definite places. After productions phase of these goods; producer or seller travelled from Asia for miles to distribute them to Europe. Sellers brought the certain classes of goods to satisfy the needs of purchasers from certain location far away. Moreover, at fairs they showed other new products to consumers from different lands, by doing this they created new demands among consumers. Thus, these production areas called as industries which is developed, concentrated in definite locations and served in distant places defined as ‘localized industry’ by Marschall (Marschall, 1890, p.220-230).

According to Marschall, there are two main reasons behind localization of industries. First and most important one is physical conditions which can be exemplified by accessibility of area by land or water, condition of soil and climate, existence of row materials linked to the product. Other reason is patronage of court. Rich and ruler segment of society creates a great demand for commodities with high quality or some specialized products that attracts talented workforce from far places to have better works and also to take education to be specialized. In most cases ruler class invites artisans and allocate them as a group to develop specialized industry. Besides that, this type of demands of ruler class or economically high class people also causes interest of immigrants to have a job there and implementing their conventional way of producing and goods. At the end, specialized workers and the people who are willing to have a job travel and gathers in such defined places that triggers the evolution of agglomeration (Marschall, 1890, p.223).

He refers to today's Cluster Theory with these sentences:

> The causes which determine the economic progress of nations belong to the study of international trade and therefore lie outside of our present view. But for the present we must turn aside from these broader movements of the localization of industry, and follow the fortunes of groups of skilled workers who are gathered within the narrow boundaries of a manufacturing town or a thickly peopled industrial district (Marschall, 1890, p.223).

Besides that, Marschall (as cited in Müderrisoğlu, 2016) defines the advantages of localized industries referring to cluster theory of today such as specialized labour pool, reduced costs by savings on transport costs, shared infrastructure, specialized inputs and services and easier transfer of know-how. Thus he implies that, saving the costs of moving goods, people, and ideas can be reduced by industrial agglomeration.

Drawing upon Marshall (1890)'s emphasis on localized industries within the scope of agglomeration economics, Ohlin (1933) and Hoover (1937, 1948) underlined the spatial clusters of economic activities as agglomeration economies where advantages of firms situated. Similar to Marschall, Hover (1948) brought spatial relation into prominence in literature of economics. Ohlin (1933) and Hoover (1948) also made a distinction between urbanization and localization economies in terms of the scale of the area, variety of economic activities carried out and economic benefits which briefly explained under the title of Formation and Evolution of Cluster Theory. (as cited in Jackson, 2006)

As Marshall, Porter is also one of the most important theoretician who developed more comprehensive perspective to analyse clusters. In he's perspective, cluster is a major factor in business strategy that strengthens regional economies by competing. The main difference of the cluster concept suggested by Porter is competitive power of clusters which is claimed as more effective than the cost reduction potential of clusters in regional economy (Porter, 1990). In his article named Clusters and the new economics of Competition, he explained why clusters are crutial to compete by using these words:

> Modern competition depends on productivity not on access to inputs or the scale of individual enterprises. Productivity rests on how companies compete, not on the particular fields they compete in (Porter, 1998, p.80).

He suggest that clusters influence competition first by increasing the productivity of companies based in the area; second by driving the pace of innovation which promotes future productivity growth and third, by stimulating the generation of new businesses by which cluster strengthens itself (Porter, 1998).

From the Porter's point of view; in bigger scales of economic activity spatial border of clusters does not clearly exist anymore and clusters does not have to be in small scale. He asserts that, due to the age we live in, the term 'distance' has lost its previous mean and expanded its content. In classical agglomeration theory clusters were perceived as geographically agglomerated organisms in which distance among firms was mostly determinative. On the other hand Porter states the opposite in the "Location, Competition, and Economic Development: Local Clusters in a Global Economy" by stating "the geographical scope of cluster relates to the distance over which informational, transactional, incentive, and other efficiencies occur" (Porter, 2000, p.16).

Moreover, in the "Competitive Advantage of Nations" Porter (1990) stated that competitiveness and economic development of nation is depend on not only the macro-economic stability and suitability on legal conditions but more importantly development in micro-economic base of competitiveness on clusters. For this reason, he developed a model named 'diamond' which includes main factors effecting improvement and emergence of clusters, by doing so creating competitive advantage of clusters (Porter, 2000, p.19). This model has mostly been used in lots of studies to detect and analyse clusters in local scale. To define local scale clusters he says that; Clusters occur in many types of industries, in smaller fields, and even in some local industries such as restaurants, car dealers, and antique shops. They are present in large and small economies, in rural and urban areas, and at several geographic levels (e.g., nations, states, metropolitan regions, cities). Clusters occur in both advanced and developing economies, although clusters in advanced economies tend to be far more developed (Porter, 1998; Porter, 2000).

Porter claimed that respectively firm strategy and interaction, endowment of the region with relevant factors, local demand conditions, and related service industries are the main factors causing and effecting formation and development of clusters, by doing so, strengthening competitive power of clusters. In the 'Location, Competition, and Economic Development Local Clusters in a Global Economy' Porter claimed that a cluster is the manifestation of the diamond at work (Porter, 2000, p.21). Schema of the diamond model is shown in Figure 2.1. below.

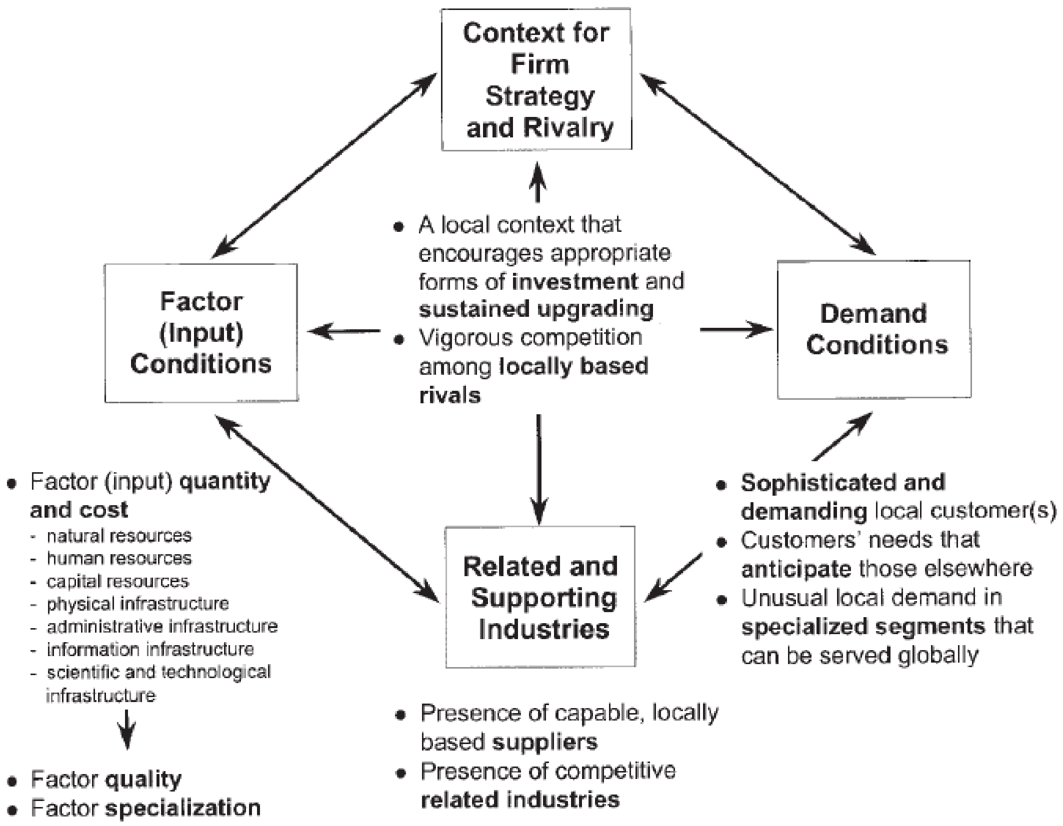


Figure 2.1: Sources of locational competitive advantage (Porter, 2000).

The main hypothesis that model was settled on is that even if the competition among international trade is global, basis of competitive advantage is still arises from the local conditions and is affected by the domestic conditions. Porter tried to prove that local conditions shaped by these four factors reveal themselves within a cluster and support national trade to be advantageous in international market (Porter, 2003). Other factors provided by Porter will be discussed detailly under the title of Contributing Factors in Emergence of Clusters with regard to their applicability to local scaled retail clusters.

Porter also made a differentiation among the type of industries in terms of the patterns of spatial competition and different drivers of locational behavior. The first and most related type with this thesis is local industries. For this reason it will be more accurate to explain it with his words. According to him in local industries:

‘‘Employment that is evenly distributed across all regions – that is, employment is roughly proportional to regional population. Local industries provide goods and services to the local market, or the region in which the employment is located. Such industries compete in only a limited way with other regions. Most are including local health services, most utilities, retailing and many types of construction. A few goods producing industries are revealed as local, including bottled and canned soft drinks, newspapers, concrete products and ready-mixed concrete’’ (Porter, 2003, p.559).

Resource dependent industries is the second type of industries. Employment of these industries locates around the natural resource. This type of industries such as logging, beet sugar compete with other domestic locations.

Third type of industry named traded industries serve in regional scale by selling products and services among countries and not depending on resources. These industries have upper scaled competitive considerations such as aircraft engines, engine parts, motion picture and videotape production (Porter,2003).

Even Porter give a hint about advantages of the local scale clusters in national and international market, and factors supporting clusters, he does not clarify the advantages and causes of clusters in small scales in terms of not only economic but also spatial, social aspects of clusters.

Up to here, it is seen that literature about clusters has been shaped around some specifics terms such as production industries as a sectors, agglomeration as a form, economy as a field and local to regional as a scale. It is hardly find a study using the terms respectively retail as a sector, urbanism as a field and city centre or neighborhood as a scale.

2.1.2 Definitions of clusters

Clustering concept has created much more discussions in recent years. Yet, it is acceptable to claim that there is no well accepted definition or comprehensive theoretical framework shaped from these discussions in all scales and different type of sectors. In this section, it is aimed to understand the tendencies and common grounds, then, detect the deficient or possible approaches in literature of cluster theory, by searching of definitions made by different theoreticians. For this reason definitions from different publishings are compiled and interpreted here to have better understanding on which perceptions can be reference to gain transformable data for this study. In appendix table A.1., nineteen different definitions from the literature are set to pinpoint the emphasis of every one of that definitions. It should be kept in mind that in early studies on clustering the term called agglomeration or localized industries were used. For this reason, definitions of agglomeration or localized industries provided by early agglomeration theoreticians are also included.

First of all, as seen in Appendix A., even it has tried to find many kind of definitions with different perspectives, nearly five exact definition specific to retail clusters could be reached among all the definitions examined. Moreover, almost all the definitions obtained from the literature review is made by the theoreticians or institutions specialized in the field of economy. For that reason it is right to say that this subject is not well discussed in other related disciplines such as urbanism and geography. To find out the most concerned subject in literature of cluster, examining common emphasis in definitions of different theoreticians is one of the ways. In parallel with this assumption, emphasis of definitions showed in table 2.1, grouped together and sorted according to the number of emphasis.

Table 2.1: Common emphasis of cluster definitions in the literature

Main Emphasis in Definition	Number of Repetition	Way of Expression in the definition (Number of usage)
Localization/ Concentration	10	Local Concentration(2) Geographic Concentration(4) Urban Concentration (1) Localization(1) Being Nearby(1) Mass of Firms(1) Groups of objects(1)
Economy	7	Economic Performance(1) Economics of urban concentration(1) increasing returns(1) Economic clusters, Economics of scale(1) wealth creation (1) Increased efficiency and productivity(1) Benefits for retailers(1)
Cooperation	7	Interconnected companies(2) Interdependencies(1) Cooperation(1) Inter-relation(1) network of connected businesses(1) transformations among firms(1)
Customer Side	5	customer demands(1) costumer bases,better serving customers(1) costomer behavior patterns(2) Benefits for consumers(1)
Innovation	4	knowledge creation and innovation(1) Science and Technology base /Culture conducive to innovation and entrepreneurship(1) Innovation(1) Knowledge and Research (1)
Spatiality	7	Certain Localities(1) Particular Field (2) Particular Location(1) Specific Field(1) Specific Geographic Locale(1) Clearly Defined Spatial Area(1)

Table 2.1 (continued): Common emphasis of cluster definitions in the literature

Main Emphasis in Definition	Number of Repetition	Way of Expression in the definition (Number of usage)
Competition	3	Competition(3)
Specification of Firms	4	High similarities of firms(1) Firms in same or similar branch(1) Defined Group Of Firms And Supporting Institutions(1) Common characteristics(1)
Labor	1	Specialized and trained labor supply (1)
Transfer Nodes	1	Transfer Nodes(1)

According to the table above, firstly, as being a basis of the cluster approaches, more than the half of the definitions have main expression indicated as"*concentration/localization of firms*" by using phrases with different scales or without scales such as local concentration, mass of firms, geographic concentrations and etc.

Secondly, seven of the all definitions of clustering have main expressions related with *economy*and *cooperation*.Similarly, seven of them have *spatial* definition phrases.

It has already seen from the literature review that clusters are the organisms that improve economic performances of firms by doing so they improve the economic performance of cities, regions or even nations. On the other hand, besides the high proximity of *localization/concentration and economic based* phrases in definitions, in the considerable amount of the definitions phrases including *specific or certain locations* aredetectedunder the *spatial* emphasis.

As being parallel to the aim of this study, this fact raises the question of which determinants lead firms to cluster in specific locations and with which determinants they chose the specific location of their stores. On the other hand, while *cooperation* among firms seem one of the other main aspect of clusters; importance of the *customer, competition* and *innovation* related explanations seem depends on the scope of the studies or perspective of the theoreticians.

2.1.3 Scale, scope and diversity of clusters

A major part of the cluster studies obtained from the literature review is made by the theoreticians or institutions specialized in field of urban and regional economy.

Before the contributing causes of clusters are examined in Section 2.1.4., main aspects of clusters are examined under this title which are scale, scope and diversity. Depending upon the evolutionary stages of the clusters which is based on their economic capacity, know-how, innovation and capital size; their size and scope is defined. The size or geographical scale of a cluster is one of the most obvious feature that can be measured from the geographic concentration of similar and integrated sectors.

By considering the prominent differences between the size and scope of clusters, Omelyanenko (2014, p.144) made a diagram to show different types of clusters. According to him, clusters have gone through different phases before they interlace and become an international.

As the scope of clusters extends with the addition of different type of interactions, cooperations and the arrangements with different firms and institutions, their size and capacity enlarges. At the end of this process, some of them may become international. The schema showing the scope and types of clusters created by Omelyanenko (2014) and redrawn for this thesis is presented below (Figure 2.2).

At this point, first two stages namely ‘‘hidden clusters’’ and ‘‘integrated groups’’ are considered as the main focus of this study. Hidden clusters as a first stage can be described as geographically agglomerated organisms which take advantages of such synergy without any clusters strategy implementation by any authority on them and function aotunomously. Parallel to this definition, local scaled evolved agglomerations suggested by Teller & Elms (2010), often lack centralized management, are not planned, have limited control and grow organically. Because of the natural formation and limited dependence of local authorities, most evolved agglomerations in local scales can be defined as ‘‘hidden clusters’’.

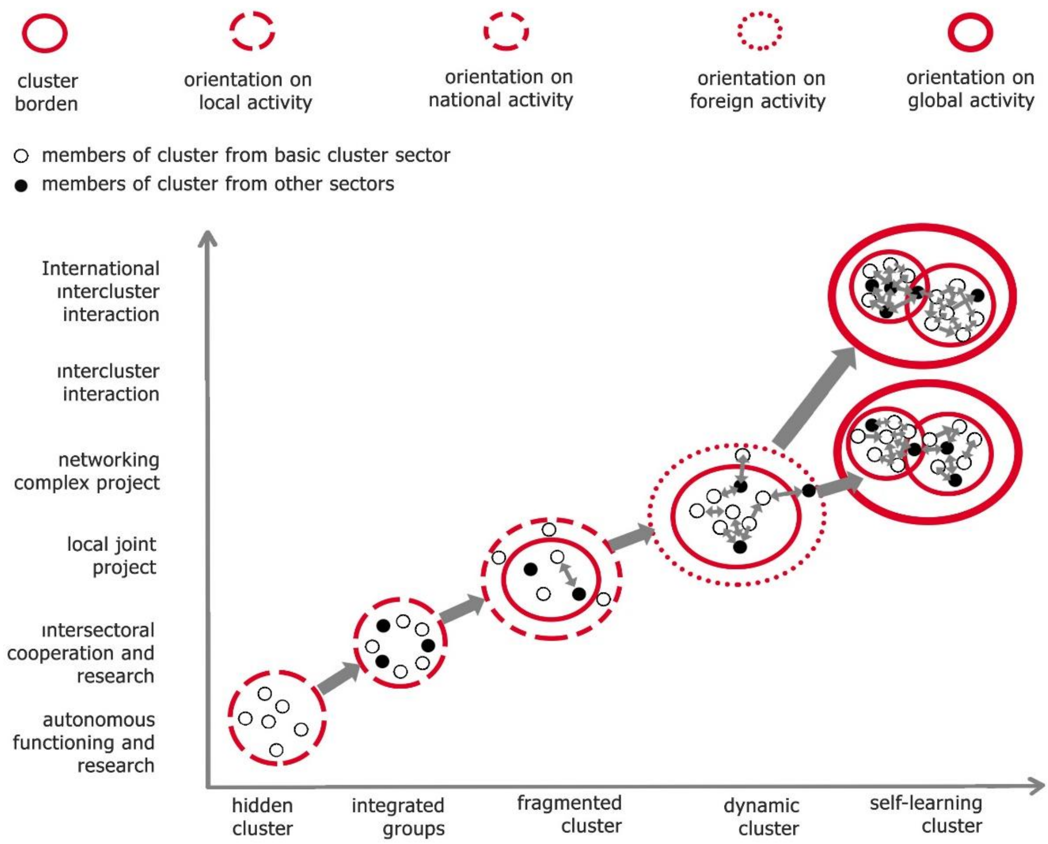


Figure 2.2: Scope and types of clusters (adaptated from Omelyanenko, 2014).

Different from hidden clusters, second stage of clusters includes different types of integrated firms. This type of clusters also orientate in the local scale where intersectoral cooperation occurs. Similar to hidden clusters, in integrated groups any clustering strategies are implemented by governmental agencies and only local arrangements take place among firms. Thus, such clusters can be defined as more developed evolved agglomerations having naturally developed interactions among firms.

Rosenthal & Strange (2004) made a different theoretical approach to explain the scope of agglomerations in which they classified three types of scope of agglomerations respectively industrial, geographical and temporal. Industrial scope is basically related with the diversity in cluster which is one of the main features of it. The extend between the huge variety of proximate industries and industrial specialization of limited firms in specific locations identifies the industrial scope of the clusters are promotes innovation and growth. Glaeser et al.(1992) and Jacobs (1969) believes that while increase in the number and variety of related industries promotes innovation and growth, the industrial specialization and monopolization may restrict the development of clusters and the urban environment. Secondly, geographic scope of agglomerations which also means size of a cluster, refers to the extent of the agglomeration in terms of the geographic distance. Lastly, temporal scope arises from the temporal changes in the cluster dynamics such as the current results of previous interactions between agents or firms.

Glaeser et al (1992) found that diversity encourages growth. Rosenthal and Strange (2004) asserted that diversity encourages births. In this point it is important to remark that generation of such diversity in clusters also generate diversity in places. Figure 2.3 exemplifies two different districts, one with dominance of giftstores (A) and the other having restaurants (B). These retail concentrations can create different identical synergy in their urban environment. On the other hand, the intersection area that includes mainly the giftstores and food stores (A and B) create different kind of urban experience where food stores intentionally located themselves to take advantage of customers who needs quick snacking while gift shopping. Thus, the diversity in clusters lead to diversity in urban places by creating diversity in the character of the districts (Figure 2.3).

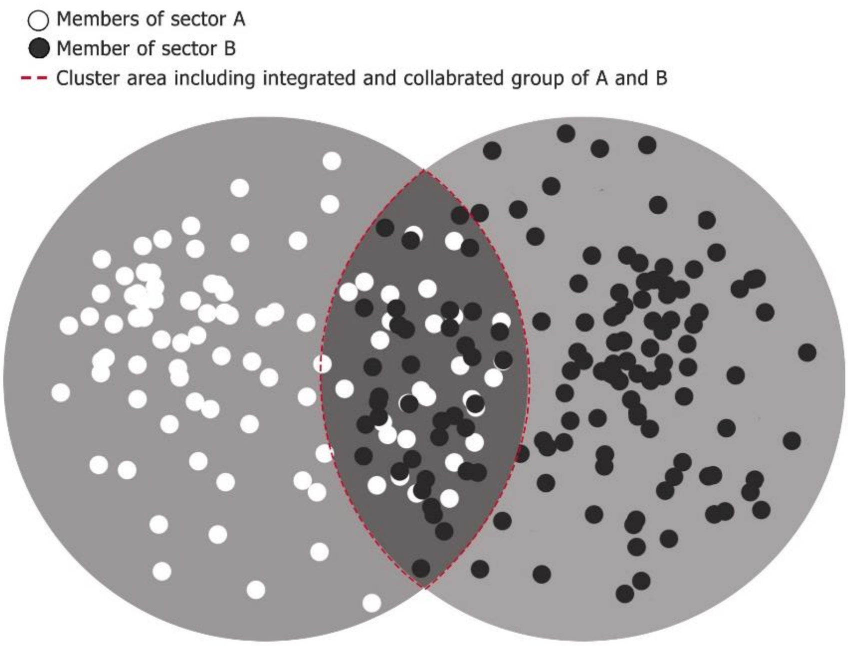


Figure 2.3: Integrated Clusters.

2.1.4 Contributing factors in emergence of clusters

Early agglomeration and later cluster theoreticians has put forward different kind of factors to clarify what causes or strengthen clusters. Determinant factors of clusters can differ according to locations in which the member companies compete and the strategies they employ. According to the levels of aggregation in a specific location or the type of a sector, clusters also can be examined at various scales with various methodologies.For this reason, it may be challenging to get a clear picture as to why clusters emerge or how they are formed.

This section explores the factors that vary according to scale, scope, concepts and assumptions of the studies' depending on theoreticians' point of view and how the causes and prerequisites of clusters changes according to industries. With this section, it is aimed to gain some methodological support and literature back up to create accurate methodology and analyse for small scaled local retail cluster and deductions.

First of all, After Porter introduced his diamond model, it is seen that literature has mostly tended to analyze formation and development potentials of clusters according to mainly four factors that Porter (2000) claimed were important which are firm strategy and interaction, endowment of the region with relevant factors, local demand conditions, and related and service industries. In the 'Location, Competition, and Economic Development: Local Clusters in a Global Economy' Porter (2000) presented three broader and ten narrower factors which expand the cluster or support to generation of it. Therefore, all the factors Porter claimed as an important in local scale clusters is represented below in Table 2.2.

Table 2.2: Important determinants of local scale clusters (Porter, 2000).

Productivity	Explanation
Access to specialized inputs and employees	Locating in a cluster can allow lower cost to reach specialized inputs such as machinery, services and basic needs. Besides, it is not only increases the demand for inputs but also raises their supply. The accessibility to specialized labor, services and the entitities creating them give firms competitive advantages(Porter, 2000)
Access to information	Locating in a cluster provides firms to increase their productivity and allow them to differantiate in the market by easy access to the technical and specialized informations with lower costs. (Porter, 2000)

Table 2.2 (continued): Important determinants of local scale clusters (Porter, 2000).

Productivity	**Explanation**
Complementarities	*Complementary products for the buyer:* The visiters experience is affected both environmental quality and activities(e.g., seaside, historical areas) and quality of retail firms serving for pleasure of customers (e.g., hotels, reataurants, souvenirs). Because of the experiences of visitors or customers affect by whole not by the individual stores, these firms are seen as mutually dependent to gain more profit. This type of co-location of firms and industries within a cluster creates product-service coordination and creates internal pressures for quality improvement of stores.With the quality and service development of whole, the values of products and stores increases their efficiency(Porter, 2000).
	Marketing complementarities: Locating as a group of related firms and industries in a specific area presents efficiencies in joint marketing such as trade fairs, trade magazines, trade guidances or marketing delegations that can improve the reputation of the area and add them value. In terms of buyers this fact provide them to see multiple firms in a single visit which reduce perceived buying risk because they can see the multisource to buy and switch vendors if there is a need(Porter, 2000).
	Complementarities due to a better alignment of activities among cluster participants: Being in a clusters creates relations among suppliers, channels, and firms. Correspondingly, tools to create better coordination to develop cluster standards and measures can be used when firms located together and develop their efficiency(Porter, 2000).
Access to institutions and public goods	By being close to specialized infrastructure, experts in local institutions, employees already trained in local training programs eliminates the cost of infrastructure, advisors and internal training. Indeed, access to the institutions or public good ease the facilitation of the firms(Porter, 2000).
Incentives and performance measurement	Clusters are consist of local rivals have similar features such as labor cost, access to local market, cost of product. For this reason, to shine amongst others firms use incentives and performance measurements gain. Aim of the firms to look good in the local community motivate them to attempt to be better than other by using incentives and trigger them to upgrade their business,make their quality and value higher(Porter, 2000).
Innovation	
Perceive new buyer needs	Locating in a clusters make firms to perceive buyer needs more easily and give change to create new formation of product according to the changes of the buyer needs rapidly. These firms also take benefit from the concentration of firms in terms of buyer knowledge and relationships created in there(Porter, 2000).

Table 2.2 (continued): Important determinants of local scale clusters (Porter, 2000).

Productivity	**Explanation**
perceiving new technological, operating, or delivery possibilities	Being in a cluster also have benefits to reach new technological, operating or distribution opportunities easily. Continuous relationships with other entities including education institution facilitates the learning of new way of production, operation, sales opportunities and most importantly knowledge transformation by face-to- face relations or direct observations among firms(Porter, 2000).
New Business Formation	‘‘Many new businesses such as head quarters are formed in existing clusters rather than in isolated locations’’ (Porter,2000,p.x). The impulse to create new business is mostly higher within the cluster due to the better and open information about possibilities. Being in a cluster or locating near it, individual entrepreneur can easily understand the new gaps in products, services, or suppliers with this insight he/she can aim to fill the perceived gaps. Moreover, the clusters have the advantages of availability of employees, assets, skills, inputs, and supportive firms in cluster location to set a new firms(Porter, 2000).

In other respects, it is important to look for different possible causes of cluster formations. For this purpose, Brenner and Mühlig (2009) conducted a meta-study to find out what really causes the emergence of local industrial clusters, in consideration of different dynamics of clustering in different countries, scales, sectors and points in time. To obtain comprehensive knowledge about all the possible factors, study was based on a different theories and discussions about the emergence of clusters in the literature. To achieve this goal, a total of 183 publications from different theoreticians and regions were studied and 159 local industrial clusters analyze researched which are described in that publications.

As a result of overall literature review, 35 factors causing and affecting clusters were obtained and classified in three phase in accordance with Brenner’ previous work (Brenner, 2013). With reference to that work; all the 35 factors were categorized by local factors that are present before the localized industrial cluster emerges and function, specific events that trigger the emergence of clusters and the factors that are involved in a self-augmenting process during emergence which are respectively named as prerequisites, triggering events and self-augmenting processes in the analysis. As shown in table 2.3, the factors that contribute to clustering accumulates mainly in the prerequisite phase. Thus, it can be concluded that the causing factors in prerequisite phase are studied more in depth in the literature, while the causing factors in self-augmenting processes are in a secondary position and the causing factors in triggering events find little place in the studies. While in the first phase, there are 17 factors that contribute to clustering such as qualified labor, networks, geographical location and quality of life, 6 factors in second and 12 factor in the third phase.Considering the scale, scope and the subject of this study, among all the factors listed above; networks, tradition and historical conditions, culture, geographical location, local demand, transportation infrastructure and quality of life in prerequisite phase; historical events and founding of leading firms in triggering events phase; and choice of co-location with other firms, accumulation of human capital in the self-augmentation phase are seen directly related to retail sector. These factors that can affect retail clusters are planned to be used as a measured data in the methodology of this study because they are not depended on scale, scope and subject, thus, they can be adjusted and analysed in any related studies.

Table 2.3: Factors effecting cluster in three phases (adopted from Brenner and Mühlig, 2009).

Prerequisites Factors *Relevant factors and features before cluster emerges*	**Triggering events** *Actions trigger a development in the region*	**Self-augmenting processes** *İncreasing in activities in an industry and a region*
Qualified labour	Promoting activities	Buyer-supplier relations
Networks	Specific policy measures	Choice of co-location with other firms
Universities and public research	Historical events	Cooperation among firms
Tradition and historical preconditions	Specific innovations	Interaction with public education and research
Industrial structure	Founding of leading firms	Accumulation of local human capital
Local policies	Chance	Interaction with local public opinion
Geographical location		Interaction with local venture capitalists
Culture		Interaction with local policy makers
Local demand		Inter-industrial spillovers

Table 2.3 (continued): Factors effecting cluster in three phases (adopted from Brenner and Mühlig, 2009).

Prerequisites Factors *Relevant factors and features before cluster emerges*	**Triggering events** *Actions trigger a development in the region*	**Self-augmenting processes** *İncreasing in activities in an industry and a region*
National policies		Intra-industrial spillovers
Suppliers		Spin-offs
Transportation infrastructure		Support of start-ups by firms
Quality of life		
Local capital market		
Wages		
Type of region		
Technology parks		

Table 2.4 shows that the number of studies that each factor is defined as important or effective for clustering. Accumulation of local human capital, Qualified labour (LABOUR) are expressed as an important factors leading to clustering, in more than half of the studies,while Cooperation among firms, Choice of co-location with other firms, Intra-industrial spillovers, Networks (NET) Universities and public research (UNI/RES), Tradition and historical preconditions (TRAD), Interaction with public education and research, Founding of leading firms and Spin-offs are mentioned in a significant amount.

These factors found from literature review are investigated in terms of the aspect of retail clusters in the chapter named analyses of retail clusters to measure the effect of spatial determinants.

Table 2.4: Clustering factors and number of studies they were mentioned (Brenner and Mühlig, 2009).

Factor	Factor's Phase	Number Of Study Factor Defined As İmportant
Accumulation of local human capital	Prerequisites Factors	116
Qualified labour (LABOUR)	Prerequisites Factors	105
Cooperation among firms	Self-augmenting processes	87
Choice of co-location with other firms	Self-augmenting processes	83
Intra-industrial spillovers	Self-augmenting processes	81
Networks (NET)	Prerequisites Factors	78
Universities and public research (UNI/RES)	Prerequisites Factors	70
Tradition and historical preconditions (TRAD)	Prerequisites Factors	66
Interaction with public education and research	Self-augmenting processes	66
Founding of leading firms	Triggering events	62
Industrial structure (IND)	Prerequisites Factors	61
Spin-offs	Self-augmenting processes	60
Local policies (LOC-POL)	Prerequisites Factors	56
Specific policy measures	Triggering events	53
Culture (CULT)	Prerequisites Factors	52
Transportation infrastructure	Prerequisites Factors	52
Historical events	Prerequisites Factors	52
Geographical location (GEOGR)	Prerequisites Factors	51
Local demand (DEMAND)	Prerequisites Factors	49

Table 2.4 (continued): Clustering factors and number of studies they were mentioned (Brenner and Mühlig, 2009).

Factor	**Factor's Phase**	**Number Of Study Factor Defined As İmportant**
Interaction with local policy makers	Self-augmenting processes	49
National policies (NAT-POL)	Prerequisites Factors	47
Inter-industrial spillovers	Self-augmenting processes	46
Interaction with local public opinion	Self-augmenting processes	44
Suppliers (SUPP)	Prerequisites Factors	43
Interaction with local venture capitalists	Self-augmenting processes	35
Quality of life	Prerequisites Factors	31
Support of start-ups by firms	Self-augmenting processes	31
Local capital market	Prerequisites Factors	30
Buyer-supplier relations	Self-augmenting processes	30
Wages	Prerequisites Factors	23
Promoting activities	Triggering events	22
Type of region	Prerequisites Factors	21
Technology parks	Prerequisites Factors	21
Specific innovations	Triggering events	15
Chance	Triggering events	14

Finally, as a result of the examination of 187 articles related to this subject, the prerequisites factors that contribute to clustering are discussed more in the literature (Table 2.3). Furthermore, these factors are given more importance in such studies as shown in Table 2.4 (Brenner and Mühlig ,2009). These findings showing that in literature, prerequisites phase is regarded as more significant as an effect of clustering. This fact strengthens the baseline of this thesis since this study will only focus on the determinants that are effective in the prerequisite phase of clustering.

2.2 Theoritical Background of Retail Clusters

In the literature there is a limited source directly concerning with retail clusters. It has seen that the concept of retail clusters is mostly discussed under the literatures of Retail Allocation, Commercial or Shopping Centers, Shopping Behaviour of People and etc. These themes have been undertaken by marketing researchers, geographers or even in some cases urbanists. Unlike the common cluster approaches in literature, rare studies on retail clustering in small territories such as district centers show that there is obvious differentiation between the treatment of such clusters and all other clusters studies found in literature. Moreover, it has seen that studies on such clusters have different concerns and different priorities. To exemplify, customer behaviours and movements get higher importance than the other factors when the smaller scaled studies in retail sector is analyzed. Because of the these type of differences, under this title, it is aimed to gain more methodological support from the specific studies on retail cluster and to detect the methodological gaps by comparing them with the factors and important points deducted from the theoritical background of cluster part of this thesis. To achieve this, it is essential to understand the main dynamics and structure of retail sector.

2.2.1 Dynamics of retail: people and the space

Retail agglomerations are ubiquitous element of every urban environment in both developed and developing nations as a product of a place and producer of a place (Teller & Elms, 2010, p.2). Urban areas cohere to the retail concentrations in it and live because of the people who lived in. Literature review on retail sector has shown that most related notions accentuated are firstly the people as being consumers and retailers, then, secondly the place as being affected by and initiator of such clusters. According to Hospers, to understand the retail clusters in urban environment it is important to understand the identitiy and characteristics of place and different place user groups inhabit it (Hospers, 2006). Madsen (1992) pointed out that formation of retail is a formation of a place which should be focused on specific place user groups. Parallel to that, Teller et al., (2008) asserts that consumers both attract and are attracted by the site-related retail agglomerations and retailers gain benefits from the synergetic effects of consumer and place interaction. Such agglomerations creates not only a competitions amongst urban places and gain strength by them, but also they act as a trigger mechanism for different place users such as visitors, consumers, travelers, tourists and locals (Teller, Christoph, Reutterer & Thomas, 2008, p.2).

Similarly, according to Aiesha (2006), as being a place productions process, marketing place allocation and strategies has to be focused on the place user groups to ensure a living area with commercial success(cited in Passaro, Salomone & Petruzzellis, 2016).

In terms of the people dynamic of retail sector; Consumers's satisfaction which is comparison between with the expectation of them and the perceived performance of the product, has been considered one of the most crucial aspects of retail clusters.

From a consumer's perspective, retail agglomeration is a way to make multi purpose trips. Owing to retail agglomeration, people can meet their different kind of needs at definite place, and also ''they are provided an opportunity to spending their leisure time (eating, drinking and entertainment), meeting or visiting other people who live there or using other services offered by banks, non retail businesses or even the council administration. All the mentioned retail related attributes of urban retail agglomerations underpin the attractiveness of such places for consumers'' (Passaro et al., 2016, p.10).

Correspondingly, Teller and Elms (2010) stated that people who are the customers have preferences towards specific locations of commercial activities, should be the major concern of place marketers for three reasons. Firstly, it is harder to persuade and more expensive to attract new customers than sustaining they had already. Secondly, customers can also be thought as a promoters of a cluster with regard to 'word of mouth'. Lastly, customers living in such areas have a trust and easy judgment skills due to antecedent attractiveness of that place.

Teller et al. (2010) state that "regardless of a place marketing strategy's target audience, message and communication forms, its primary role is to promote the location that it is representing" (p.6). The image and distinctiveness of retail clusters help to the development of image of cities and attractiveness of places.In terms of the place or location dynamic of retail sector; urban areas and functioning of cities cohere to the retail concentrations in it. Retail sector has various impact on spatial dynamics of cities, districts or neighbors. For example, the literature of geography and urbanism, accessibility to retail and service stores by walk from the settlement centers or working areas has gained importance in terms of achieving environmentally, socially, and economically sustainable urban environment in. Such retail agglomerations including shops, restaurants, and cafes or services close to the working zones or residences creates more attractive use for pedestrians, helps to minimize the urban energy consumption caused by automobiles and support attractiveness and quality of urban environment. Moreover, local retail agglomeration create development in local employment (Sevtsuk, 2014).

As a result this transitive relation between people place and the retail sector has an impact on formation and functioning of cities and hence it affects the social structure as well. Retail agglomerations in local districts accessible by walk promotes social cohesion by creating public character and social interactions and builds a community (Jacops, 1961).

2.2.2 Structure of retail sector

As it is stated in previous section, probably the most important feature of retail sector which makes it different from other sectors is probably the direct connection with the customers and the place. Sorescu et al. (2011) define retailing activities as acquiring, stocking, displaying and exchanging goods and services to fulfill the customer experience. It includes all stores beginning from buffets, snack bars and small groceries to supermarket chains and malls that serve people for personal, household or different use.

According to Teller and Reutterer (2008), in terms of the formation and structure, broadly, retail sector in centers of cities or districts can be classified into two which are created agglomerations and evolved agglomerations. Created agglomerations emerge as a result of a planning and design process such as shopping centres or shopping malls being created mostly in the new settlement areas or in the outskirts of cities. Evolved agglomerations including all kind of stores defining streets as the complementary part of a urban areas has been shaped along with the urban development by the changing dynamics of cities through history (Teller & Reutterer, 2008, p.2).

Teller and Elms (2010) stated that most of the literature on retail agglomerations has focused on the created agglomerations -more obviously shopping malls- and studied in terms of their preferableness and the consumer behaviors in such areas. Contrary to this, evolved agglomerations specifically within the fabric of urban retail centers, which include different type of retail stores and their dynamics in terms of satisfying the needs of varied consumer groups, have been investigated by very few authors.

With regard to the structural distinctness of evolved retail agglomerations which is having supplementary and complementary interdependent sub-agglomerations based on the store types in one center, it should be further investigated (Teller & Elms, 2010, p.3) As they said, there are a sub-agglomerations of evolved retail clusters in the city or the district centers. For example, the evolved retail agglomerations in city centers, sub agglomerations such as streets full of bars and cafes, concentrated areas with restaurants, the hardware and furnishing stores clusters and etc can be seen. This fact makes retail a multivariate sector which has different types of commercial activities affecting and being affected by different social, spatial, economic determinants.

This structural feature of retail sector which is having various retail types also creates need to examine retail clusters in accordance with the probable sub-clusters emerging from the agglomeration of the different types. In everyday life, it is quite easily possible to experience the clusters of various retail sectors as a pedestrian in walking distances. Mostly in the city centers, sub-agglomerations of restaurants, cloathing even coffee shops create an easy perception for people and also creates a place in people’s mind. This structural diversity creates both identity for the specific regions of city centers and a memory in the pedestrian minds.

To understand sub-agglomerations in the retail clusters it is important to look for well accepted and current classification methods of retail structure in literature and the institutions. For this reason, as a result of the academic and institutional research, a system named NAICS (North Amerıcan Industry Classıfıcatıon System)which makes statistical classification of different economic activities in European Union is found as the most accurate and widely used classification model (Executıve Offıce Of The Presıdent Offıce Of Management And Budget, 2017). Besides that, this system is the classification model used by the İstanbul Chamber Of Commerce (İTO) for the Turkish Retail Structure by being customized (Istanbul Chamber Of Commerce (İTO) , n.d).

To keep the NAICS classification system valid according to the changes in economic activities since 1997, the countries have cooperated to produce revisions applicable to different countries. The classification methodology for NAICS has provided data to measure productivity, unit labor costs, and the capital intensity of production, estimating employments, constructing input-output tables and etc. Executive Office of The President Office of Management and Budget clarifies NAICS with these sentences:

> The North American Industry Classification System (NAICS) is unique among industry classifications in that it is constructed within a single conceptual framework. Economic units that have similar production processes are classified in the same industry, and the lines drawn between industries demarcate, to the extent practicable, differences in production processes (Executıve Offıce Of The Presıdent Offıce Of Management And Budget, 2017, p. 3)

Occupational groups of retail sector created from the adoption of NAICS by the İstanbul Chamber Of Commerce (İTO) is regarded as most appropriate method to define sub-retail groups which will be used to analyze sub-agglomerations of retail sector groups. Table 2.5 shows the titles of each occupational group and profession codes given by İTO in which 81 types of retail activities are classified by generating job classes according to the similarities of their economic activities.

The most important fact inferred from the table 2.5 is that contrary to popular perception, retail activities in city centers are more than the restaurants, markets, cafes and such daily consumption units. Presence of each kind of occupational group in definite locations of city centers creates additional values and different features to the identity of them (İstanbul Chamber of Commerce, n.d.). Thus, having such variety in a place support its usage by pulling different kind of visitors having different kind of needs.This fact is one of the most important features of central business districts in which we can observe agglomerations of different kind of retail gorups and their physical reflections.

Table 2.5: Retail types generated by istanbul chamber of commerce (İstanbul Chamber of Commerce, n.d.).

O.G. No (Occupational group)	Title of occupational group (O.G.)	O.G.	Title of occupational group (O.G.)
1	Retail Trade	41	Karpet, Rug And Floor Covering
2	Wholesale And Foreign Trade	42	Textile Subsidiary Industry Products
3	Bijouterie, Toy And Souvenirs	43	Textile Finishing
4	Jewellery	44	Infrastructure Construction
5	Information Technologies	45	Housing Construction
6	Paper And Stationery	46	Construction Contract
7	Cosmetics	47	Restoration And Isolation
8	Medicine And Medical Device	48	Construction Materials
9	Wholesale Of Food And Cleaning Products	49	Products Of The Soil
10	Glass And Glass Products	50	Mechanical And Natural Gas Installation
11	Landscape, Horticulture And Flowering	51	Shoes And Subsidiary Shoe Industry Products
12	Breed And Baked Goods	52	Land Vehicles, Auxiliary Equipments
13	Fruit And Vegetable	53	Sales Of Motor Vehicle And Services
14	Animal Origin Foods	54	Motor Vehicle Repair, Maintenance And Production
15	Education	55	Iron And Steel
16	Accommodation	56	Non-Ferrous Metals
17	Food Services And Drinking Places	57	Casting Finishing And Metal Working
18	Financial Institution	58	Metal pruduct and kitchen equipments
19	Public accountant company	59	Machine and equipments
20	Insurance	60	Machine tools andautomatisation
21	Real Estate Developer	61	Hardwares(Hırdavat)
22	Intracity Passenger Transportation	62	Marble cutting and coal miner
23	Travel Agency	63	Energy

Table 2.5 (continued): Retail types generated by istanbul chamber of commerce (İstanbul Chamber of Commerce, n.d.).

O.G. No (Occupational group)	Title of occupational group (O.G.)	O.G.	Title of occupational group (O.G.)
24	Transportation and logistic services	64	Electrical equipments
25	Customs Consultancy	65	Illumination
26	Traffic Consultancy	66	Electrical household appliances
27	Fuel	67	Telecommunication
28	Business/operation support services	68	Plastic and rubber
29	Architecture and Engineering	69	Chemical Agent
30	Data Processing and media	70	Forest products
31	Culture and sport	71	Furniture
32	Press	72	Baklava, cake and sugared products
33	health care services	73	Opticianry and clockmaking
34	Leather, fur and leathercraft	74	Meat and meat products
35	Yarn and grain products	75	Carog, post and storage
36	Jersey, Socks and tricotage	76	Lpg, liquefied and compressed gasses
37	Cloth	77	Weaving
38	Ready wear and garment industry	78	Dried legumes, cereal, dried fruits and dried nuts
39	Underwear and accesories	79	Photography
40	Home textile	80	Glassware
		81	Natural and treated solid fuel

In The North American Industry Classification system, different business types, which are located under the title each occupational group, are clarified and systematically coded (U.S. Economic Classification Policy Committee (ECPC), Statistics Canada, & Mexico's Instituto Nacional de Estadistica y Geografia, 2017). According to the data obtained from the official website of İstanbul Chamber Of Commerce (n.d.) under the title of 81 occupational group of retail sectors, number of 2206 different business description has been found. To illustrate, glassware group which are 80th of the occupational groups include 8 different job descriptions which are shown in Table 2.6.

Table 2.6: Job Descriptions under occupational groups (İstanbul Chamber of Commerce, n.d.).

O.G. Code	Title of occupational group (O.G.)	NAICS Code	Description of NAICS/Job Description
80	Glassware	16.29.01	Manufacture of Wooden Kitchen products(Spoon, Ladle, Spatula, Glass, Mortar, Havan Eli, Tray.)
80	Glassware	16.29.03	Mother of pearl Inlaid production, fancy wooden goods, Cutlery for jewellery purposes, wooden bibelot, wooden boxex, and manufacture of other adornments.
80	Glassware	23.13.01	Bottle of glass, jar and other preservation boxes, production of basic kitchen items from glass
80	Glassware	23.13.02	Production of Glass and crystal wares used for Toilet, Bath, office and interior decoration such as trinket, beads(except small glass wares)
80	Glassware	23.41.01	Dinner set produced by ceramic or porcelain (Dish, Glass, Cup) andproduction of house wares and toiletry (except tile, sanitary products).
80	Glassware	46.44.01	Whosale trade of products made by Porcelain, glassware, soil and ceramic (vase, tray)
80	Glassware	47.59.01	Retail trade of not electrical housewares, cutlery, dishware, glasswares, porcelain products in stores dedicated for specific products
80	Glassware	47.59.04	Retail trade of wooden, cork and straw products in stores dedicated for specific products

2.2.3 Retail clusters in literature

The spatial distribution of retail has been widely studied by scholars of the city (Sevtsuk, 2014), yet these studies conducted with a narrow scope to understand the location choice dynamics of specific type of retailers mostly the grocery industry (Teller, & Reutterer, 2008, p.3). Thus, these studies could not have been integrated with the literature of cluster. Quite easily it can be said that there is a lack of more comprehensive factors in the studies of retail clustering which include different retail types. For these reasons, the findings gained from the literature of retail agglomeration should be collated with the more comprehensive findings gained from the review of

Formation and Evolation of Cluster Theory to create methodology which both comprehensive by taking advantage of literature review and suitable for the specific features of retail sector.

First initiations to explain the spatial behavior of retailers started with the Christaller's central place theory in the mid-1930s. To explain the relationship between the retail location and the measure of the distance to there, he created a theoretical model in which customers make trips to the nearest shopping center with a single-purpose (as cited in Mulligan,1984). To better clarify the agglomeration of dissimilar retail stores in definite locations, other theoreticians put emphasis on a multi-purposed shopping behavior of customers who combine purchase of several items in each retail trip. Following studies has revealed that concentration of stores in one location decreases the shopping costs from the consumer side. Still, the explanation of this theory had some deficiencies. Several years before the Christaller's theory, Hotelling(1929) developed a theory to explain the reasons why not only different but also the similar types of retail stores agglomerate. He recognized that when there is a spatial separation among firms, both price and transportations costs get higher for the consumers. As a result, he concluded that firms will tend to be concentrated together in the most efficient location according to the customer types, accessibility opportunities, worker repository and etc. to obtain better economic performance. Correspondingly, he tried to find a most efficient location choice for the firms which is so called Nash Equalibrium years after.

Especially, after Hotelling (1929)'s studies, different retail location models have been built for retailers mostly postulating that store owners are expected to locate at points of maximal demand. In the same direction, Stahl (1987) said that retailer should locate "as closely as possible to the consumers demanding their commodity bundle; and to retailers who, by supplying complementary commodity bundles, attract the desired clientele" (Stahl, 1987, p.759).

Hotelling (as cited in Eppli and Benjamin, 1994, p. 6-7) made an emphasis that small decrease in prices among the similar type of retails does not create market instability and drive competitors having less higher prices out of business. Because, according to him these firms more importantly compete on lots of non-price factors which can make them preferable for different reasons. This fact prevent lower price retailers from turning into a monopolist.

Recently the literature of retail clustering has evolved toward the study of retail demand externalities. Supporters of retail demand externalities believe that in large shopping centers, retailers serving low-order good or smaller scale firms obtains demand externalities from the additional pedestrian flow that is generated by high order lead firms which called as anchor retailers. Thanks to this, when an anchor tenant retailer is present in a cluster, the sales rate of smaller stores increases (Sparks, Findlay, 2002, p.260). According to this approach in the literature, the retail image of the anchor tenant has been detected as an important factor for the economic progress of smaller non-anchor retailers as so the accomplishment of the cluster. Leading firm or anchor stated here could be the higher budget firm whose brand is well-known by the public, the firm which has a historical mean by serving for people for a long time. Yet, deciding the image of different types of retailers is seen often difficult.On the other hand, comparison shopping is one of the other subject which is mostly placed in the recent studies of retail agglomeration.

Until recent, comparison shopping behavior of consumers has not been the part of clearly formulated economic theory (Sparks, Findlay, 2002, p.258). According to the 'comparison shopping' concept, consumers are willing to travel to more distant shopping centers to comparison shop at a shopping center, thus reducing their search costs and the risk of not finding a desired good. These assumption also support the baseline of shopping mall concept.

It has seen that, in the literature there are various approaches and concept towards retail clusters which are differentiate from the conprehensive literature of cluster theory with their scope, aim, consumer and place oriented methodologies. Depending on that, to achieve absolute study, it is important to investigate specifically contributing factors in emergence of retail clusters additive to contributing factors in emergence of clusters in comprehensive literature.

2.2.4. Contributing factors in emergence of retail clusters

As a result of extensive research on literature, it is clearly seen that most studies are carried out in consideration of production industries and bigger scales. More recently, even the literature developing with the dominance of Porter's ideology includes local scale studies in some cases, still their aim is based on regional advantages. There are limited sources about clustering dynamics of the retail sector and small scaled areas such as neighborhoods. Similarly, as Sevtsuk (2014, p.1) said, little is known about the factors that explain the spatial distribution of commerce in urban settings.

Furthermore, another important subject for retail executives is agglomeration which protects scale in the business and this leads to consumers reaching their specific preferences in a specific place much more easily. This is a way for store owners and tenants to explore how they can differentiate themselves from similar type of businesses nearby and benefit from it as well as providing same-store sales growth (Passaro, Salomone & Petruzzellis, 2016, p.126-127) In so far, as is known, retail store clusters within urban places generate agglomeration effects. Since the synergistic effects caused by the stores that are in close proximity to each other create advantages for both retailers and consumers (Teller & Elms, 2010).

People tend to look for different alternatives in terms of price information and quality of products along with entertainment and fun while shopping. These needs or demands of customers lead firms to develop commonly used location strategies which is placing their stores near their competitors. Furthermore, this is an answer to the issue of limiting search costs for customers at the same time offering consumer exchange among nearby firms. (Passaro et al., 2016, p.126-127)

According to the study conducted by Wilson Perumal& Company's (2013) clusters choose their location according to the social and physical structure of the areas. In that study retail clustering defined as a simple form of localization that groups together stores with similar costumer bases with the goal of tailoring each cluster to better serve those customers.

Even a small percentage of the literature includes studies of cluster concept of similar retail sectors in urban scale, still, there is a missing approach which has to be filled by the urbanization studies; importance, causes and results of retail clustering with stores having similar or complementary products in urban structure.

This section explores how the contributing causes and factors of clusters defined in the studies related with retail agglomeration, retail clusters and locational choice factors of retailers. It is aimed to gain more methodological support and specific literature back up to collect possible determinants of retail clusters to analyse. In the 'Application of Methodology to Retail Cluster Analyses ın Uskudar to Measure The Effect of Spatial Dynamics' chapter, such collected determinants will be measured and weighted by questionnaires.

The tablo seen below shows the eight different selected study conducted in the field of retail clusters. These studies have been scanned and the factors for retail clustering used in them classified as main factors and sub factors (Table 2.7).

Table 2.7: Determinants of retail clusters reached from literature review.

A Simple Approach to Retail Clustering. Wilson Perumal & Company's Vantage Point (Wilson Perumal & Company, 2013).

	Factors For Clustering	**Sub-Factors**	
1	Store	-Size -Profitability	-Revenue
2	Costumer	-Demographics	-Purchase History
3	Local Area	-Climate -Demography	-Phsical Features
4	Location	-Nearby Competitors -Co-Located Stores	-Geography -Area Type

Location and Agglomeration: The Distribution of Retail and Food Businesses in Dense Urban Environments (Sevtsuk,2014).

	Factors For Clustering	**Sub-Factors**	
1	Other Retailers' Location	-Number Of Retailers	-Betweenness
2	Landuse	-Landuse Types	
3	Urban Form	-Parcel Type -Building Footprint Area -Built Volume	-Road Width -Side Witdh

Table 2.7 (continued): Determinants of retail clusters reached from literature review.

	Factors For Clustering	**Sub-Factors**	
4	Transportation characteristics	-Bus Stops	-Subway Stations
5	Other Factors(Demographic)	-Residents -Employees	-Family İncome, -Age, renter-owner, nationality

Managing the Attractiveness of Evolved and Created Retail Agglomerations Formats (Teller & Elms, 2010).

	Factors For Clustering	Sub-Factors	
1	Demand Side Factors	-Accessibility -Parking conditions -Tenant Mix	-Product range, merchandise value and sales personnel -Atmosphere -Orientation and infrastructural facilities

Astoria Downtown Historic District Association (Astoria Downtown Historic District Association, B.F. Strategic Services, Main Street National Trust for Historic Preservation, Dunning, & Mico, 2017).

	Analyze of Cluster	**Sub-Factors**	
1	Area Definition	-Boundary Of Commercial District	-Character Of Commercial District
2	Demand-Side Analyses	-Demography -Spending Potentials -Consumer Segments	-Income -Suggestions Of Consumers For Purchasing
3	Supply-Side Analyses	-Identification Of Business Types And Groups -Identification Groups Of Stores Having Development Potential	-Which Type Of Business Addresses Which Type Of Costumers -Missing Business in Clusters
4	Sales- Gap Analyses	-Comparison With Consumer Expenditures And Extimated Trade	
5	Recommendations And Strategies	-Retail Development Strategies -Experience Enhancement Strategy	-Market Development Strategies

Retail Concentration: The Shopping Streets (Passaro, P, Salomone & Petruzzellis, 2016).

	Factors For Clustering	**Sub-Factors**	
1	The Firm/Supply Side	-Location -Service -Price Strategies -Quality -Store Ambience -Sunshine(as cited in Lovemark, 1972) -Stylish Environment -Easy Access -Consumer Needs -Complementary Sectors	-Physical Features (Layout, Colors, Music) and Crowding(as cited in Paulins And Geistfeld 2003) -İmage Of Place -Consumer Perception on Place -Visibility -Street's Collective İmage -Shop's Specific İmage
2	The Consumer/Demand Side		

Table 2.7 (continued): Determinants of retail clusters reached from literature review.

	Factors For Clustering	Sub-Factors	
Why Do Certain Retail Stores Cluster Together?(Steif, 2013)			
	Factors For Clustering	**Sub-Factors**	
1	The Firm/Supply Side	-Hotelling's Law	-Walter Christaller Central Place Theory: Take Advantage Of Potential Customers Who Come Great Distances To Shop
2	The Consumer/Demand Side		
Clustering The Grocery Retail Market (International Scientific Comittee, 2012).			
	Factors For Clustering	**Sub-Factors**	
1	Consumer Groups	-Consumer Needs -Consumer Preferences	-Consumption Patterns -Consumer Expectations
2	Demographic, Sociologic, Geographic Structure		
3	Market Situation*	-Assess Attractiveness Intensity Of Competition	-Barriers Against Market Penetrate -Degree Of Product Innovation

As a result, these retail cluster determinants obtained from the scanning of seven retail specific studies are put together with the contributing factors founded from the comprehensive literature, then, renamed and listed under the title of overall assesment of theoritical research of cluster theory.

2.3 Overall Assesment of Theoritical Research of Cluster Theory

As it was mentioned before, unlike the comprehensive studies conducted in the literature, this study has been carried out to detect the differences of the retail clusters from the other sectoral clusters and it has tried to find that what are the inner determinants of retail store clusters are and how the effects of such determinants are changing due to the type of retailing such as clusters of cafes, souvenirs. As a result, it has aimed to find which spatial features of urban design projects can trigger the formation of specific retail clusters and which physical urban renewal interventions can affect the cluster development or cause a decline of a specific clusters.

Following the searches on literature; geographical agglomeration of specific businesses or sectors in definite locations is seen as primary factor to define a cluster.

Depending on that, it has seen that to achieve a practical cluster analyse of retail sector in small scale, retail types should be classified according to the line of business and the products they serve. In pursuit of this classification, their geographical distributions should be investigated to describe the clusters in conformity with the literature.

In literature review, internationally approved business classification system named NAICS (Nomenclature générale des Activités économiques dans les Communautés Européennes) is found as very useful system to define different retail types in this study. This method is thought as suitable and certain source because this system is also used as a classification model for the Turkish Retail Structure by the İstanbul Chamber Of Commerce (İTO) (Türkiye İstatistik Kurumu, 2013). To estimate the agglomeration intensity of such retail type, it is decided to use geographic information systems.

It is seen that a unique methodology to search for the determinants of retail clusters and highlighting the importance of spatial factors on clustering tendencies of different retail types is the deficiency in the literature. It has observed that little is known about the factors that explain the spatial distribution of different commerce types in urban settings. For this reason,*Contributing Factors in Emergence of Clusters* in comprehensive and basic cluster literature and *Contributing Factors in Emergence of Retail Clusters* inferenced from related literatures were collected together.

As a result of these searches a list including potential determinants of retail clusters is prepared. Possible determinant list of retail clusters inferenced from the literature research is seen in Table 2.8.

Table 2.8: Potential cluster determinants deducted from literature review.

Potential Cluster Determinants
Business Structure
Working days
Working hours
Rental value
Desired Users
Physical Features of Space
Placing in Corner/Junction point
Width of walkway
Continuation of walkway
Frontage usage
Double facade usage
Aligning beside/front the square
Aligning beside/front the park
Aligning in the main arterial
Locating in the coastal strip
Having scenery
Slope of the street
Getting sunlight
Urban furnitures
Quality of Space
Quality of urban furnitures
Quality of paving
Green-field organization along walkways
Quality of facades/Renewal of facades
History and İdentity Features
Having monumental structures and image elements
Locating around/in the historical structures
Historical retail identity of a location
Distance to Urban functions
Close proximity to public institutions
Close proximity to touristic and historical centers
Close proximity to open green spaces(parks, picnic areas)
Close proximity to parking areas
Close proximity to other private sectors except retail sector
Close proximity to other sub sectors in retail sector
Close proximity to same sub sector
Market Potential
Desired age group
Desired income group
Accessibility
Accessibility to transfer points and stations
Accessibility of neighbourhood residents
Car Traffic
Pedestrian Traffic
Type of Transportation (pedestrian only/ pedestrian and car)
Accessibility to product dealer

When literature reviewed on retail sector, it has seen that most related notions accentuated are firstly the *people* as being consumers and retailers, then, secondly the *place* as being affected by and initiator of such clusters. Besides that, as being a factor affecting space organizations and movements of people, *accessibility* of place is detected as other most important subject which has also seen as a contributing factors of clustering in both comprehensive cluster literature and retail specific literature.For these reason, it is decided to examine people and place organization aspects of retail sector in detail. Except the chapter searching for the effects of potential determinants of retail clusters and led them create a cluster among specific environment, different chapters is needed to analyse the effects of accessibility as a place organization parameter and pedestrian volumes.

Thus, as being missing approach in the literature, measurement of spatial and structural determinants leading and affecting the retail clusters in urban centers is tried to be implemented. Owing to this study, implementation of such measurements will provide a consciousness about how spatial interventions and physical transformations can trigger the formation or decline of specific retail clusters. By doing this, extending the perspectives and attitude of cluster literature is also aimed.

3. APPLICATION OF THE METHODOLOGY

In this chapter, the methodology of the thesis is detaily explained. In other words, all phases of analyses are defined with the tools decided to be used. Structure of the methodology, data gathering and producing techniques, all the instruments in the analyses and the way of interpretation of the analyse results is described.

As it is mentioned in the introduction chapter, methodology of this study is formed different than the most cluster studies in literature. Figure 3.1 shows the different instruments used in three different phases of the methodology.

Figure 3.1: Techniques used in specific phases.

3.1 Literature research and preparing a substructure of analyse procedure

To prepare a substructure for analyses, literature was scanned from two different aspect. One of them is done to find potential determinants of clusters. Other one is done to find a basis to classifying retail types.To find potential determinants of clusters; firstly the determinants leading *clusters* defined in *comprehensive studies* with *different scales and scopes* and secondly the determinants of *retail clusters* identified in *retail specific studies* with *micro scales* have tried to be found. By scanning all of the findings obtained from these two different research, it is aimed to reach out the possible spatial determinants of retail clusters mentioned in all type of cluster studies.

To make accurate retail classification; the *structure of retail sector* and internationally approved *retail classification systems* has been researched. Findings have been aimed to be used to classify sub-retail types in the case study. As a result of the academic and institutional research, a system named NAICS (North Amerıcan Industry Classıficatıon System) which provides data collection and statistical classification of different economic activities in European Union is found as most accurate and widely used classification model (Executıve office of the presıdent office of management and budget, 2017). According to the methodology of NAICS, all types of firms have their own private NAICS codes, similar ones among all the firms are gathered under the title of Occupational Groups. Each occupational groups are named due to the most common products they serve and coded. In this thesis, occupational groups of retail sector created from the adoption of NAICS by the İstanbul Chamber Of Commerce (İTO) is used to analyze sub-agglomerations of retail sector in the case study area.

3.2 Detection of geographical clusters

Second phase was done to detection of geographical clusters. Firstly, in the field study, all of the ground floor retail stores were attached to the geographical information systems as points by using Arcmap. Job titles of each were assigned to that points according to the their occupational groups found in NAICS. 81 type of occupational group defined in NACE system were narrowed down and classified under 17 sub-retail groups according to the functional and spatial similarities among them (Table 3.1).

Table 3.1: Retail groups.

Occupational groups	Title of occupational group (O.G.)	Group No-Group Name
1	Retail Trade	1-groceries
17	Food Services And Drinking Places	2-cafes/pubs/restaurants
8	Medicine And Medical Devices	3-health
33	Health care services	
34	Leather, fur and leathercraft	4-outer wear underwear and accessories
36	Jersey, Socks and tricotage	
37	Cloth	
38	Ready wear and garment industry	
39	Underwear and accesories	
42	Textile Subsidiary Industry Products	
43	Textile Finishing	
51	Shoes And Subsidiary Shoe Industry Products	
73	Opticianry and clockmaking	
9	Wholesale Of Food And Cleaning Products	5-technical equipments and services for house
10	Glass And Glass Products	
50	Mechanical And Natural Gas Installation	
61	Hardwares(Hırdavat)	
64	lectrical equipments	
68	Plastic and rubber	
80	Glassware	
40	Home textile	6-home textile,electrical home appliance and furnitures
41	Karpet, Rug And Floor Covering	
58	Metal pruducts and kitchen equipments	
62	Marble cutting	
65	Illumination	
66	Electrical household appliances	
70	Forest products	
71	Furniture	
12	Breed And Baked Goods	7-specific food and nutrients
13	Fruit And Vegetable	
14	Animal Origin Foods	
72	Baklava, cake and sugared products	
74	Meat and meat products	
78	Dried legumes, cereal, dried fruits and dried nuts	

Table 3.1 (continued): Retail groups.

Occupational groups	Title of occupational group (O.G.)	Group No-Group Name
21	Real Estate Developer	8-building design, construction, restoration and real estate
28	Business/operation support services	
29	Architecture and Engineering	
45	Housing Construction	
47	Restoration And Isolation	
48	Construction Materials	
19	Public accountant company	
4	Jewellery	9-finance related stores
18	Financial Institution (mostly exchange bureaus)	
20	Insurance	
52	Land Vehicles, Auxiliary Equipments	10-motor vehicle machines and their services
54	Motor Vehicle Repair, Maintenance And Production	
59	Machine and equipments	
60	Machine tools andautomatisation	
22	Intracity Passenger Transportation	11-lojistik and transportation
23	Travel Agency	
24	Transportation and logistic services	
75	Cargo, post and storage	
5	Information Technologies	12-press and stationery
6	Paper And Stationery	
30	Data Processing and media	
31	Culture	
79	Photography	
63	Energy	13-energy
81	Natural and treated solid fuel	
67	Telecommunication	14-telecommunication
7	Cosmetics	15-cosmetic
3	Bijouterie, Toy And Souvenirs	16-toys and giftstores
11	Landscape, Horticulture And Flowering	17-landscape and flower-seller

As a results, these group names were assigned to points. To make agglomeration analyse to define clusters in the study area; kernel point density (KD) function of ArcGİS were used. It is used as a tool to estimate the density distribution of 17 retail groups across a study area.

‘‘The Point Density tool calculates the density of point features around each output raster cell. Conceptually, a neighborhood is defined around each raster cell center, and the number of points that fall within the neighborhood is totaled and divided by the area of the neighborhood’’ (Silverman, B. W., 1986). In kernel point density (KD) analyses; study area is divided into cells and point data of each retail stores in the study area are used as input features. Automatically created output cell size is used in calculation of input features’ density distribution. Automatically created output cell size is the shorter of the width or height of the output extent in the output spatial reference, divided by 250. Figure 3.2 show the input point features and output raster of the analyse. Output rasters are transformed into polygon data and densities are classified into ten class and first three circles which has higher density values are selected as a cluster areas.

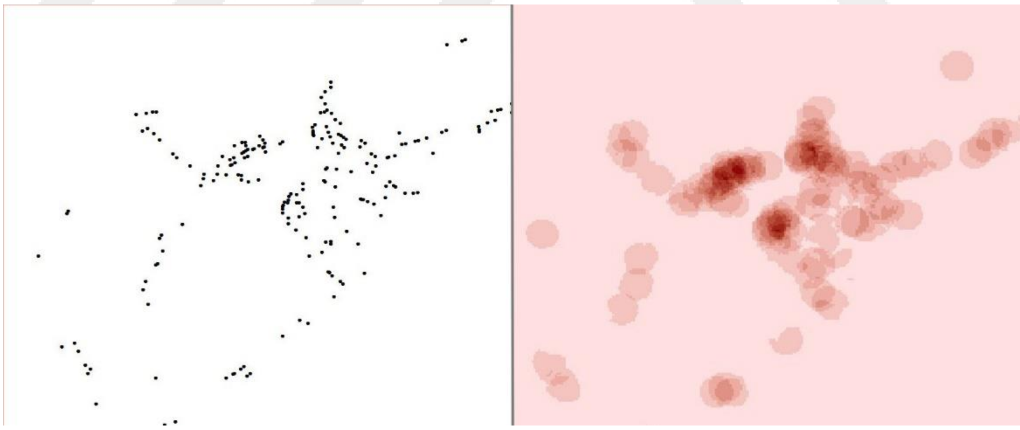


Figure 3.2: Example of input point features and output point density raster.

3.3 Analyses of Retail Clusters

Third phase of methodology includes analyses of geographically defined retail clusters. To make a detailed analyse, clusters of three of the seventeen retail groups were selected to execute the analyse process. This process was formed in three steps explained below.

3.3.1 Measurement of retail cluster determinants

Under this title, it is aimed to reveal definite determinants of each cluster from the retailer's point of view. It has thought that spatial tendencies of shop owners or managers are important as much as users' in terms of shaping the urban environment. For this reason series of questions were asked to shop owners or managers of each retail groups to reveal their tendencies while selecting a site. By doing so, common determinants affecting their locational decisions and led them create a cluster among specific environment which has desired features were tried to obtain.

Questionnaires were conducted in exact locations where three selected retail groups has their own unique clusters. As being made number of 10 questionnaires for each retail groups, total number of 30 questionnaires was conducted under this title of analyse.Questionnaires formed in two different part. As is seen from the example table below first part of the questionnaires were made to define scale of the business and detect general features of them (Table 3.2).

Table 3.2: Questionnaires part 1: scale and structure of businesses.

Group Name	**………………………..**			
Year of Start	2006			
Number of Workers	3 worker			
Size of a enterprize	20 m^2			
Number of working days	6 days			
Working hours	08:00-19:00			
Rental value	Lower -5000 TL	5000 T -10.000 TL	10.000 TL - Higher	
Desired Users	Residents of Neighborhood	District Community	Residents of İstanbul	Tourists

Second part of the questionnaires were made to reveal clustering tendencies of selected retail groups and different determinants of clusters for these retail groups.

Firstly, to understand clustering tendencies of selected groups; *Close proximity to other sub sectors in retail sector*, *Close proximity to same sub sector* parameters were asked to the participants. If they state that these parameter has an impact on their locational choices, then *'the degree of impact from one to five'* has requested them to state.

Secondly, all of the determinants conceived from the literature research was tried to be grouped according to the similarities of them and main determinants are created. Also, all the determinants under main determinants examined one by one. As a result of the grouping strategy of different determinants; number of seven main determinant group and 37 different sub determinant of retail clusters were listed. Respectively, main determinants identified as *Business Structure, Physical Features of Space, Quality of Space, History and İdentity Features, Distance to Urban functions, Market Potential and Accessibility.* As it can be seen from the example questionnaire below, for each determinant it has asked to store owners or managers that '*whether the determinant has an impact on locate a business or not* ' and if they stated as *'yes'*, then *'the degree of impact from one to five'* has requested them to state (Table 3.3). By doing so, it has aimed to examine the effects of each determinant comperatively.

Table 3.3: Questionnaires part 2: determinants of clusters.

Clustering Tendency	**Impact /No Impact**			**If YES: Degree of Impact**				
Close proximity to <u>other sub sectors in retail sector</u>	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Close proximity to <u>same sub sector</u>	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Cluster Determinant	**Impact /No Impact**			**If YES: Degree of Impact**				
Business Structure								
Working days	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Working hours	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Rental value	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Desired Users	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Physical Features of Space								
Placing in Corner/Junction point	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Width of walkway	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Continuation of walkway	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Frontage usage	Does the determinant has an impact?	Yes	No	1	2	3	4	5

Table 3.3 (continued): Questionnaires part 2: determinants of clusters.

Cluster Determinant	Impact /No Impact			If YES: Degree of Impact				
Physical Features of Space								
Double facade usage	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Aligning beside/front the square	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Aligning beside/front the park	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Aligning in the main arterial	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Locating in the coastal strip	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Having scenery	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Slope of the street	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Getting sunlight	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Urban furnitures	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Quality of Space								
Quality of urban furnitures	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Quality of paving	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Green-field organization along walkways	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Quality of facades/Renewal of facades	Does the determinant has an impact?	Yes	No	1	2	3	4	5
History and İdentity Features								
Having monumental structures and image elements	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Locating around/in the historical structures	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Historical retail identity of a location	Does the determinant has an impact?	Yes	No	1	2	3	4	5

Table 3.3 (continued): Questionnaires part 2: determinants of clusters.

Cluster Determinant	Impact /No Impact			If YES: Degree of Impact				
Distance to Urban functions								
Close proximity to public institutions	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Close proximity to touristic and historical centers	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Close proximity to open green spaces(parks, picnic areas)	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Close proximity to parking areas	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Close proximity to other private sectors except retail sector	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Market Potential								
Desired age group	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Desired income group	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Accessibility								
Accessibility to transfer points and stations	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Accessibility of neighbourhood residents	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Car Traffic	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Pedestrian Traffic	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Type of Transportation (pedestrian only/ pedestrian and car)	Does the determinant has an impact?	Yes	No	1	2	3	4	5
Accessibility to product dealer	Does the determinant has an impact?	Yes	No	1	2	3	4	5

3.3.2 Measurement of accessibility (Space syntax analyses)

Under the title of Measurement of accessibility; to measure the features of each network in terms of accessibility; depth map tool of space syntax methodology is used. Findings of the space syntax analyses is used to find out that whether the *accessibility* has an effect on retail clustering or not and if it has, how much it affects the clusters.

Cities are complex collection of built places and unbuilt spaces connecting by a complex organization of networks, activities, movements and interactions. Understanding the organization of networks depending on their physical form and their interaction with activities and movements provides a framework to understand how a city form functions. Most urban theoreticians have used attitudes to explain how cities function by analyzing the activities and the zones they appeared. Since cities have been seen as set of zones, they have tried to predict and measure the interaction between zones as an activity hubs to explain the system of urban environment. For this reason in this approach the spatial form of the city having complex networks is seen as an outcome of location of activity zones and interactions among them. On the other hand, Space syntax methodology reverse this approach and first examines network of space including roads, alleys, boulevards, boulevards, squares which is one of the most important thing in physical and social organization of cities. In recent studies, mutual interaction of activity areas called as zones and network systems are both subjects to solve organizational determinant of cities. Thus they have been accepted as outcomes of each other's. (Hillier & Stonner, 2010)

Parallel to the recent approaches in urban theories, in this thesis, both approach is used together to detect retail sector's agglomeration determinants and how it is affected by the system of city organization. To achieve that both land uses or zones and street networks are examined.

Theory of Space syntax first introduced to the literature as an physical aspect of social life by Hillier and Hanson (1984) and published by Cambridge University. Now this theory have been improved and become widely approved and used as analytical tools by the researchers from different fields of literature such as urbanists, architects, geographers, statisticians, social scientists. (Hillier, 1996)

To understand how the space syntax methodology is worked with the network of cities and pedestrian movements, it is important to explain basic analysing approach of the methodology to urban areas. Figure 3.3 shows how urban area is perceived through the analyse steps of space syntax methodology.

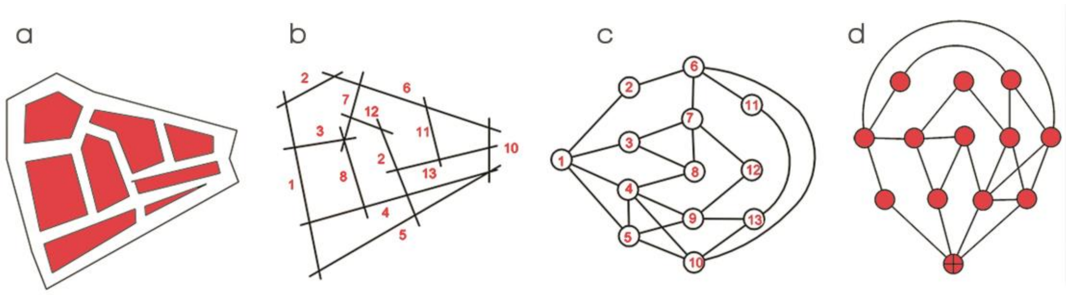


Figure 3.3: Procedure of space syntax analyses (Jiang and Claramunt, 2002).

Source of Figure 3.3 taken from Jiang and Claramunt (2002) and redrawn. It presents the basic steps of space syntax analyses which are defining open space configuration (a); segment map derived from open space configuration (b); connectivity graph created depending to configuration of segments(c) and justified graph(d).

Analyses derived by space syntax methodology consider space as a 2D layout model. Process is start with separating elements of spatial configuration as solids and voids by involving all the visibility obstacles. Voids such as squares, green fields, streets, rooms, etc. defines spaces. Boundaries of that spaces are limited according to the obstacles restraining pedestrian movements such as walls, fences and other visual barriers (Claramunt and Jiang, 2002). As a result, this defined open spaces where people can move through are the data to start a space syntax analyse (Figure 3.3.a).

Second step is drawing all of the possible longest line of sights of movement within the open space configuration which is the process of drawing an axial map. Each longest line of sights is called as axial lines (Figure 3.3.b). ‘‘In the conventional application of space-syntax, a single axial line can express a straight road, whilst a curved road may need more axial lines to represent it’’(Asami and Kubat, 2003, p.3).

Thirdly,The number of immediate neighbors that are directly connected to a node is a local measure of *connectivity* (Dettlaff, n.d.) Connectivity graph (Figure 3.3.c) is generated by the axial map which displays the relationships between all axial lines in a graph. Each axial line are represented here as nodes which are numbered according to the numbers on the axial lines in figure 3.2.b. All nodes are connected to each other by lines which clearly shows the number of intersections each axial line have (Figure 3.2.c).

Lastly, a justified graph is prepared by taking the considered space at the bottom (Figure 3.3.d). Considered space is named as the root space. All possible ways one, two or more step away are placed respectively. This graphs provides a visual representation of overall depth of a layout model seen from one of the lines (Figure 3.3.d).

As a result of axial map calculations; a spatial accessibility maps or spatial integration maps, connectivity, choice and depth maps are obtained (Dettlaff, n.d.). Brief explanations of the parameters used in this thesis are presented below.

Integration

How close each segment is to all others under different types of distance and at different scale, this is known as “to-movement”. Integration describes how easy it is to get one segment from all other segments. In practical terms this would mean that pedestrians would end up to such a space more often and with less effort. This spatial attribute can then define the type of land use that would fit best in this space. (Hillier & Iida, 2005) (Charalambous and Mavridou, 2012).

Integration, also called availability, is a variable that refers to how a space is connectedwith other spaces in its surroundings. This is the key parameter leading to the understanding of the relationships that exist between users and the urban space and it is a global measure. It can be used to predict the potential of meetings in the space, because it is directly linked to the presence of people in a given location. The greater integration of the space, the more people will appear in it. For this reason, integration is sometimes called accessibility by SSA researchers (Dettlaff, n.d.).

Global integration

It is a measure of integration, measured throughout the system. It takes into account the distance from the starting point to all points in the system (Hillier and Hanson, 1984). A correlation was found between integration values and human appearance in the space. The more integrated the space is, the more people will appear in that space. The relationship between the global availability of space (global integration), and the local availability of space (local integration) is the clarity and readability of the space (intelligibility). The better the correlation between these measures, the better user moving along a given axis is oriented in space and knows where they are in the context of the entire city (Szczepanska, 2011). Spatial representation is constructed in a way that allows it to be used and processed in different computer programs such as: Axman, depthmapX, and many others. Syntactic measures and numerical results give a chance to draw conclusions about how the space functions.

Local integration

It is a measure of local integration, which shows the scale of the pedestrian movement. Its calculation takes into account the elements of the degree of distant depth equal to 3. Distance can also be taken as a ray anchored at the starting point of about 1250 m. For local integration measurements shall be taken at a distance of up to 5 syntactic steps.

Choice

How much movement is likely to pass through each segment on trips between all other segments, again using different types of distance and different radii. Choice describes how likely you are to pass through the segment on trips, and so it's potential as a route, from all segments to all others. Again, this spatial attribute can define the type of land use that would fit best in this space, possibly certain land uses would require spaces with a high integration value (Charalambous and Mavridou, 2012).

In this thesis, integration and analyses are executed to reach accessibility values of street as one of the questioned spatial determinants of retail clustering. Therefore, the correlation graphs between values obtained from the space syntax analyses and values of geographical cluster analyses are made to measure the relationship between the different retail clusters and accessibility of places.

Correlation analyses between spatial integrations (accessibility) values and kernel density values

To support the findings quantitatively, correlation analyses were done between kernel density values and accessibility values of each street. Street maps showing the results of *space syntax analyses* overlapped with the maps including *kernel density values in each streets*. Then the correlations were calculated by using *spatial integrations (accessibility) values* and *kernel density values* of the streets.

Pearson correlation coefficient is preferred to calculate correlations because it is the most commonly used method, although it is very sensitive to outliers. Pearson correlation coefficient (The Pearson product-moment correlation coefficient) measures the strength of a linear association among two different variables and is denoted by r. When *‘r’value* gets higher (especially above 0.5), relation among two variables gets stronger and is stated as more important.

Statistical significance or *p-value* is the another important indicator which indicates how incompatible the data are with a specified statistical model. The idea of testing the significance is developed by Ronald Fisher in 1920 and he described p-value as an index to measure unconformity between the data and the null hypothesis (Fisher, 1920). Most authors refer to statistically significant as $P < 0.05$ and statistically highly significant as $P < 0.001$. Parallel to that in all correlation analyses, P values are detected as statistically significant ($P < 0.05$). Thus, the results of correlation analyses is stated as confidential.

R-squared (r^2) is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination. In some fields, it is entirely expected that your R-squared values will be low. For example, any field that attempts to predict human behavior, such as psychology, typically has R-squared values lower than 50%. Parallel to that in all correlation analyses, R-squared values are detected as under 50%.

3.3.3 Measurement of pedestrian volume

Pedestrian counts were conducted three times in a weekend with five minutes periods. Pedestrian counts of five minutes periods were implemented in morning between 08:00- 10:00 pm, in midday between 12:00- 14:00 pm and in afternoon between 18:00-20:00 pm. Counts were conducted in 34 streets with different syntax integration values. Pedestrian volume analyses are conducted as a pilot study to support the findings of this thesis. Throughout the analyses, firstly, correlation with data obtained from pedestrian counts and space syntax analyses is measured and how much space syntax analyses coherent with the pedestrian counts is displayed. Moreover, spatial relation between clusters of each retail groups and pedestrian volumes in and around these clusters are examined.

Correlation Analyses between spatial integrations (accessibility) values and pedestrian counts

As it is mentioned before, to support the findings quantitatively, correlation analyses were done to interpret how space syntax analyse results are supported by the pedestrian flows in the study area. Correlations were calculated by using different *spatial integrations (accessibility) values* and *pedestrian counts* of the streets. Under the Spatial integrations (accessibility) values; global integration, local integration, choice and choice (r=3 metric) values are used. One by one correlation results between these four parameters and pedestrian counts were examined.

Correlations between choice parameters and pedestrian counts resulted with low r values. Because of the *low r values under 0.5,* it is seen that choice parameter of space syntax is not right parameter to read the organization of space by taking account of the pedestrian flows for this study (Table 5.11). It is the reason why choice parameters are not used to interpret the relation between retail clusters and accessibility, in space syntax analyses chapter.

4. CASE AREA: USKUDAR

Üsküdar is a very distinctive and important county depending on its' strong historical past, strategic location, transportation opportunities and user varieties. Everyday excessive amount of people come to Üsküdar center from different districts of İstanbul via waterway, underway and highway transportations. This fact is shaped Üsküdar as living and dense urban center hosting variety of consumers. As a result, it has many kind of retail stores and businesses specialized to serve and sell various products as a result of those multiple features it has.

According to the 1/100000 Scaled Environmental Plan of İstanbul approved by the İstanbul Metropolitan Municipality on 13.02.2009 with the the decision numbered 103, Üsküdar has been positioned in central business district (MİA). Furthermore, it has also been specifically defined with two important central function which are retail, tourism, culture and housing center (Mtk) and tourism center (Tk). In addition to this, it has seen that strong relation is planned with the Tratidional Center (Historical Peninsula which has been symbolised with Mg in the environmental plan) in terms of the developed subway systems, water transportation systems, functional and historical common grounds between them (Figure 4.1). All of these planning decisions shows that Üsküdar is locate in a vital position in the urban organization and functioning of İstanbul. In addition to those planning decisions, Üsküdar's strategic importance is strengthen with the introduction of new transportation systems such as Marmaray which is implemented concurrently with the pedestrianization and urban design projects in the county center.

In other respects, most of the urban morphology, urban formation and historical retail identity studies concerning central business district is conducted on the traditional center (historical peninsula). With these studies, historical urban pattern has been analysed, specific retail nodes and agglomerations have been tried to be developed to protect the cultural values and develop tourism. Moreover, there are lots of studies conducted with the space syntax methodology to understand the urban formation, urban organization and pedestrian movements in this district.

Yet, as being locating the central business district, having strategical importance and retail agglomerations evolved through history, it has thought that Üsküdar center should also be analysed no less than the traditional center. Besides, similar to the traditional center (historical peninsula), locations of the retail stores in Üsküdar center and their agglomeration zones evolved independent from the upper scale interventions through history such as planning decisions. Thus, sub retail agglomerations in there which are the clusters of different retail types come into existance indigenously by the locational choices of retailer and tendecies of customers.

Due to the reasons explained above, ever-growing Üsküdar central district is found as appropriate area in terms of the historical retail center features, various transportation developments, distinctive spatial features, high pedestrian usages and organically evolved sub retail concentrations it has. These type of distinctive features of Üsküdar is explained under the titles below.

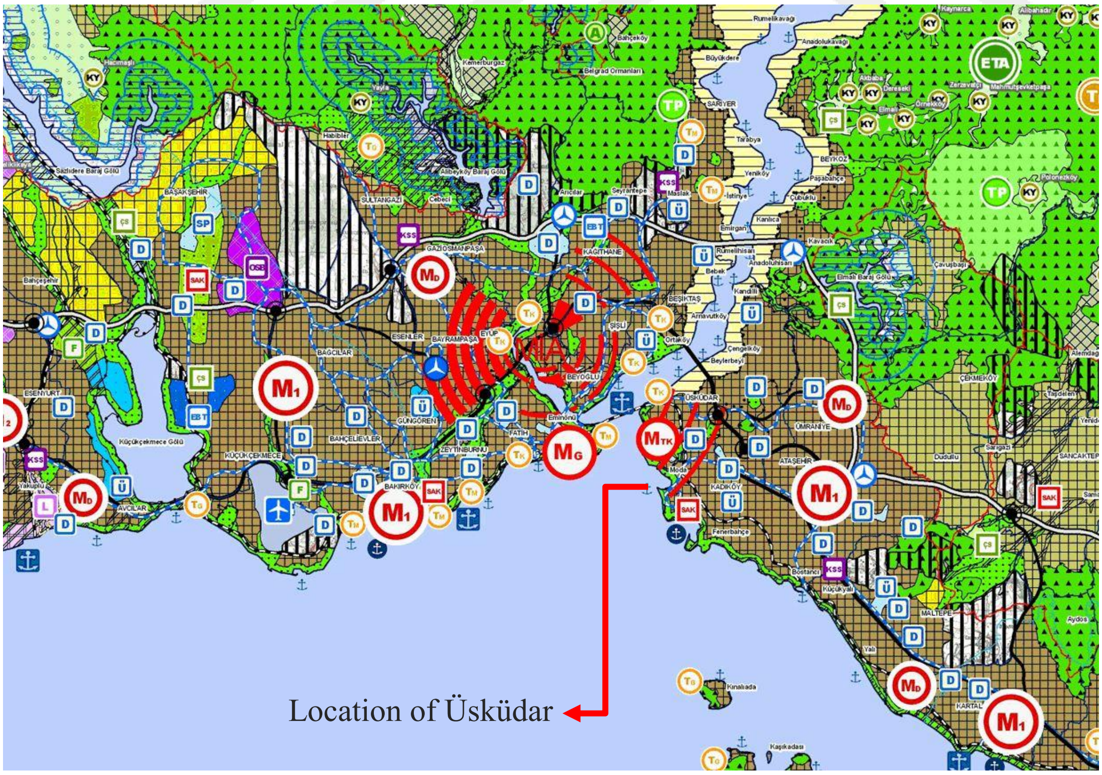


Figure 4.1: 1/100.000 scaled environmental plan of istanbul (İstanbul Metropolitan Municipality, 2009).

4.1 General Features of Üskudar Central District

Under this title, location of Üsküdar, transportation infrastructure of the county and the history which shaped to formation of the setlements and daily life is explained. This upper scale studies have been done to express the strategical and historical meaning of Üsküdar in İstanbul.

4.1.1 Location

Üsküdar is located in front of the historical peninsula of İstanbul as the beginning of the Asian lands. It has one of the most broader panaroma of İstanbul due to its coastal strip which has sight both to european and asian side of İstanbul (Figure 4.2).

Figure 4.2: Location of Üsküdar.

The quarter located between Paşalimanı and Salacak on the Anatolian shore of the Bosphorus that constitutes the center and the historical nucleus of the Üsküdar district. First settlements of Üsküdar has established in a landwith wide valley viewing the sea and fronted with hills at the intersection node of Marmara Sea and Bosphorus. By locating on the bosphorus, it gained a strategic advantage in terms of water transportion with ferry stations.Moreover,Üsküdar hasstrategically important subway transportation system called as 'Marmaray' carrying passengers among Asian and European part of İstanbul.

As being a settlement has been established and transformed for centuries in a very strategic location, it has always got attention of Turkish population to live and tourists to experience. Depending upon a historical urban character, opportunities for accessibility, connection with the sea, wide scenery and closeness to most populated districts such as Historical Peninsula, Beşiktaş, Kadıköy and Moda, it is one of the most populated counties in İstanbul (Figure 4.3).

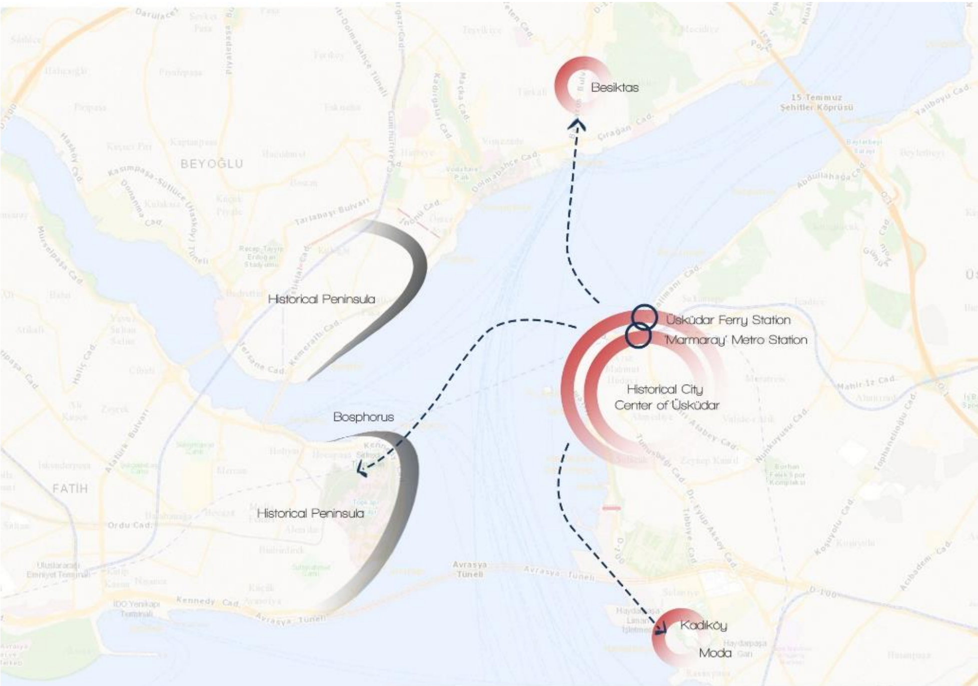


Figure 4.3: Strategic advantage of location of Üsküdar.

4.1.2 Transportation ınfrastructure

As it was mentioned before, Üsküdar locates in the transition area between the Anatolian and European side of İstanbul. Placing in the intersection node of the Eminönü, Beşiktaş, Ortaköy and Eyüp Sea Transportation Routes among the two continentsand Çengelköy, Anadolu Kavağı Routes in the Anatolian side of İstanbul; makes Üsküdar a key location in water transportation of İstanbul. By virtue of having the main arterials connecting Boğaziçi Bridge between two part of the city and other important arterials spreading perpendicularly from the city center to the other most populated counties such as Kadıköy and Ümraniye, it gains great importance for the road transportation of İstanbul.

On the other hand, with the improvements of subway and rail systems in recent years, Üsküdar center has become one of the most advantageous district of İstanbul in terms of the transportation opportunities. Most importantly Marmaray Rail System provides connection between the Anatolian and European side of Üsküdar by reaching transfer stations of other metro lines in both side of İstanbul. Besides that, at the end of the 2018, new subway system named as Üsküdar- Çekmeköy Metro line has began to operate in between the dense settlement nodes such as Ümraniye and Yamanevler locating in Anatolian side of the city. Both metro lines intersects in the main station and locate at the heart of the Üsküdar center from where it is possible to tranfer bus or sea transportation routes as well. For this reason, it is possible to reach many districts of İstanbul with minimum time periods and different tranportation opportunities (Figure 4.4).

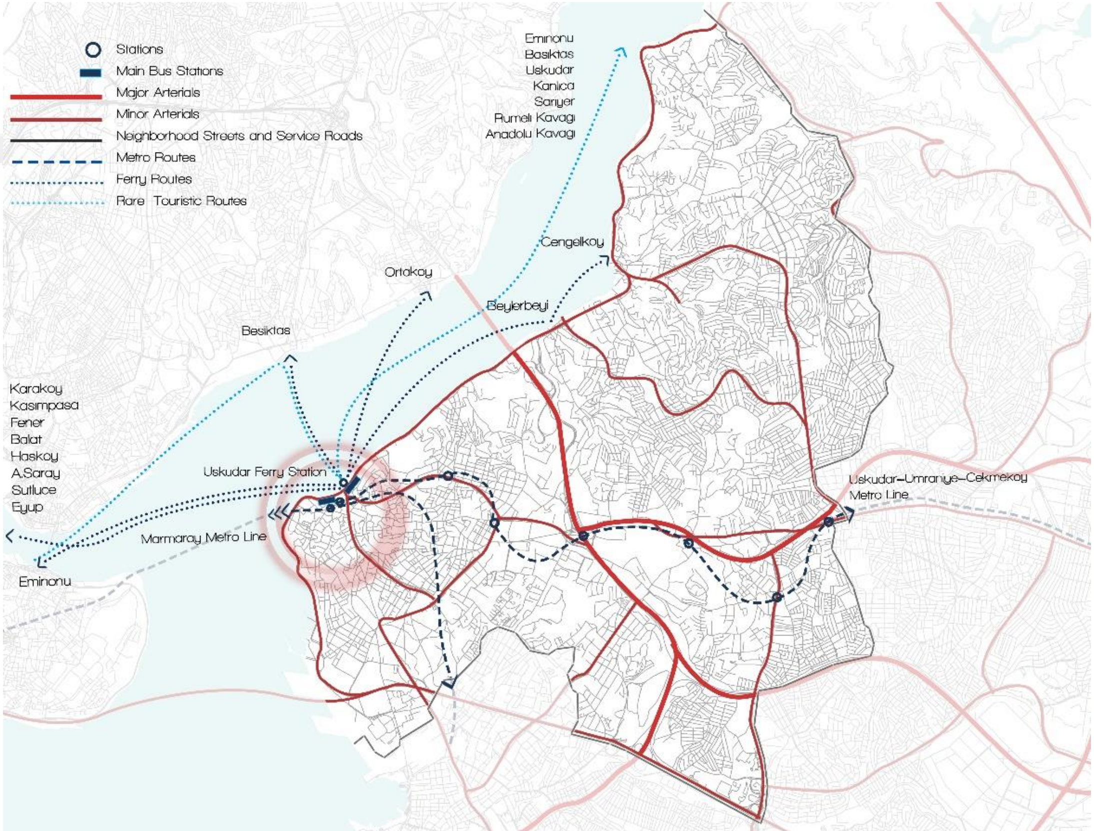


Figure 4.4: Transportation ınfrastructure of Üsküdar (produced from the data obtained from İstanbul Metropolitan Municipality, 2018).

On the other hand, there are other studies to enhance the pedestrian access in Üsküdar Center. Due to the integrated system of main public transportation routes in an exact area and a broad pedestrianized area around it, Üsküdar center is one of the most active area in the city in terms of pedestrian flows. At this point it is important to mention that pedestrianization projects including the intersection area of water, bus and subway transportation routes, have been implemented to enlarge Üsküdar Square and it’s coastline.

4.1.3 History

Üsküdar has come under the domination of Turks almost one and a half century ago, and from that day on, it has naturally developed according to traditional Turkish urban settlement patterns by even partially preserving the traces of remnants from other civilizations. Because of the strategic location, it has always been an attractive place for habitants of the ruler government and for the intruders which affects the formation of the city.

The remnants of amphoras and potterys which been found during the excavations of Marmaray Subway System showed that the history of Üsküdar could be associated to 600 B.C. Now, it is known that the history of Üsküdar city dates back to years around 1000 B.C. and it should have been home to more civilizations than we know so far (Çelik, n.d.).

Early stage development of Üsküdar starts with the establishment of two harbor cities by Phoenicians in Kalkedion (Kadıkoy) and Moda. In those ages, phonecians created a mole by using big stones in Salacak Coast placing in center of Üsküdar and they built dockyard and commercial ports there. Nearly after 300 years, under the domination of Acheans, because of the opportunities it had, Üskudar has turned into a permanent settlement for the temporal visitors who came from Anatolia. Since that time, because of the domination of different civilizations such as Athenians or Romans has continued in Üsküdar in ancient time, it has gained many different historical elements and identities which still can be observed by their remnants today. The most long-lasting hegemony is hold by Romans. In 395 B.C., after the split of Roman Empire, domination of east Roman Empire called as Byzantine started in Üsküdar. That era was one of the breaking point of Üsküdar’s identity as being a commercial and accommodation center, correspondingly, center of attraction. Due to the strategic location of the city, that identity continue to exist by getting stronger and city developed faster, on the other hand, this feature of the city caused so many invasions of different kingdom who were trying to conquer the İstanbul. For example, Iran at 609, Arabians at 710, Harun Reşid (Khalife of Abbasid) at 782, crusaders at 1102, French King VII. Louis at 1147 and German Emperor Konrad at 1203 attempted to conquer the İstanbul by passing from the Üsküdar. Especially, during the invasion of crusedars most damage has given to the city and some historical built areas demolished (Üsküdar Municipality, 2014).

Permenant Turkish settlements in Üsküdar starts with the Malazgirt War in 1071 after that with the concuer of İznik in 1078, early age of Turkish settlements begin to spread in the city by individual attempts. In the Ottoman period till 1453, by the virtue of its military security and transportation facilities, Üsküdar was traditionally used by the Emperors as a passage to Rumeli, where Güzelcehisar Citadel maded by Yıldırım Bayezid located(Haskan, 2001).

After the concuer of İstanbul by Fatih Sultan Mehmet, urbanization period starts to be more apparent in Üsküdar. In his period, it was virtually re-established and turned to an actual city from an anatolian town. He had a masjid built in the Salacak which locates in the center of Üsküdar and created Turkish bazaar in port square. Than Anatolian people settled around them and enhanced the commercial activities. The identity and city shape which Üsküdar has today have been structured most importantly since 16th century, thanks to the development of traditional Ottoman city pattern with attractive and narrow retail streets, in parallel with the improving urban environment where mosques, masjids, dervish monasteries, bathhouses, caravensaries, alms houses, madrasah, fuontains, hospitals(darüsşifa), piers, children schools, libraries, public fountains, mansions and pavilions(köşkler) built one after another. (Üsküdar Municipality, 2014)

In the sixteenth century, according to the Tufantoz (2003), the rising of the number of neighbourhoods from eight to eighteen demonstrates that Üsküdar has started to achieve a significant urban development in this period. Moreover, Hammer (1822) states that it outdistanced all other neighbourhoods with the number and the size of social facilities it had (as cited in Mirasyedi, 2006). Mazlum(1993-1994) stated that in the seventeen century city center has spreaded mainly in two directions. Firstly it has grown dispersedly along the line of Doğancılar- Tunusbağı in parallel with the spatial retail growth of the city. Then, after the establishment of Selimiye neighborhood as a result of the construction of Selimiye Barrack for military purposes of III.Selim, second growth of the city moved towards to Haydarpaşa district (as cited in Mirasyedi, 2006). (Figure 4.5).

Figure 4.5:Spatial development of Üsküdar between 17th century and 19th century, retrieved from Carte de Constantinople, Levee par I. Kauffer et J.B. Lechevalier (1815) and Ernest Maumbory Tourist's Guide (1925).

18th century started with the small spatial changes but the considerable amount of population growth. In this period, density of the population increased and central borders of the city reached to the Bağlarbaşı ve Nuhkapısı districts. On the other hand, new transportation oppurtunities have been developed especially for Üsküdar because of the population growth occurred until the end of 18th century, thus first ferry service has started to work between Kabataş and Üsküdar. According to the historical maps showed above, it is understood that city borders has been spreaded remarkably paralel with the development of transportation routes after the mid 1800s. All of the new main roads has been shaped with the concern to reach main transportation hub including the ferry station and retail center of Üsküdar.

On the other hand, in the beginning 19th century Üsküdar experienced an urban recession with the effects of great fire in 1921 and construction of Haydarpaşa terminal in Kadıköy district. It has lost some part of its the strategical importance as being only retail connection center between Asian bazaar and İstanbul with the presence of Haydarpaşa Terminal which also cost it financial lost (Mirasyedi, 2006).

4.2 Study Area

In this chapter of the thesis, main features of the study area as a guide for cluster analyses is examined. Respectively, border of the area is described here and then land use pattern, identity structures, transportation Infrastructure and Pedestrian Accessibility and then retail structure of the area are presented below.

Study area locates in the central district of Üsküdar and covers 105 hectare area (Figure 4.6). As it is seen in the literature review part, density of various retail activities, urban functions, transportation routes, pedestrian circulations and historical structure are some of the most common subjects of the papers related to retail agglomerations or retail clusters. For this reason analyzing an area including variations of such factors can provide suitable environment for determination of contributing factors of different type of retail clusters. Correspondingly, by the reason of the fact that central district of Üsküdar includes all those features, it has been chosen as an area for the application of methodology explained in Chapter 3.

Figure 4.6:Boundary of study area (Produced from data obtained from Üsküdar Municipality, 2018).

4.2.1 Landuse Pattern

Study area has an idiosyncratic urban pattern. When settlement formation is observed, it is seen that there is quite large unbuilt area extending across the coast and through the settlements which is surrounded by highly dense built environment around it. Unbuilt part of the study area include green spaces, stations of bus, metro and water transportation routes and large urban square where all the pedestrian flow comes from the stations intersects. Because the boundaries of the area is mostly surrounded by the retail activities and includes all the main transportation stations, it can be called as central hub.On the other hand, the other part of the study area named as built area emerge from dense urban settlement including housing, public and retail units where it is hard to find well designed open spaces. This clear differentiation between two different urban pattern, make central area more perceptible and used space by the pedestrians (Figure 4.7).

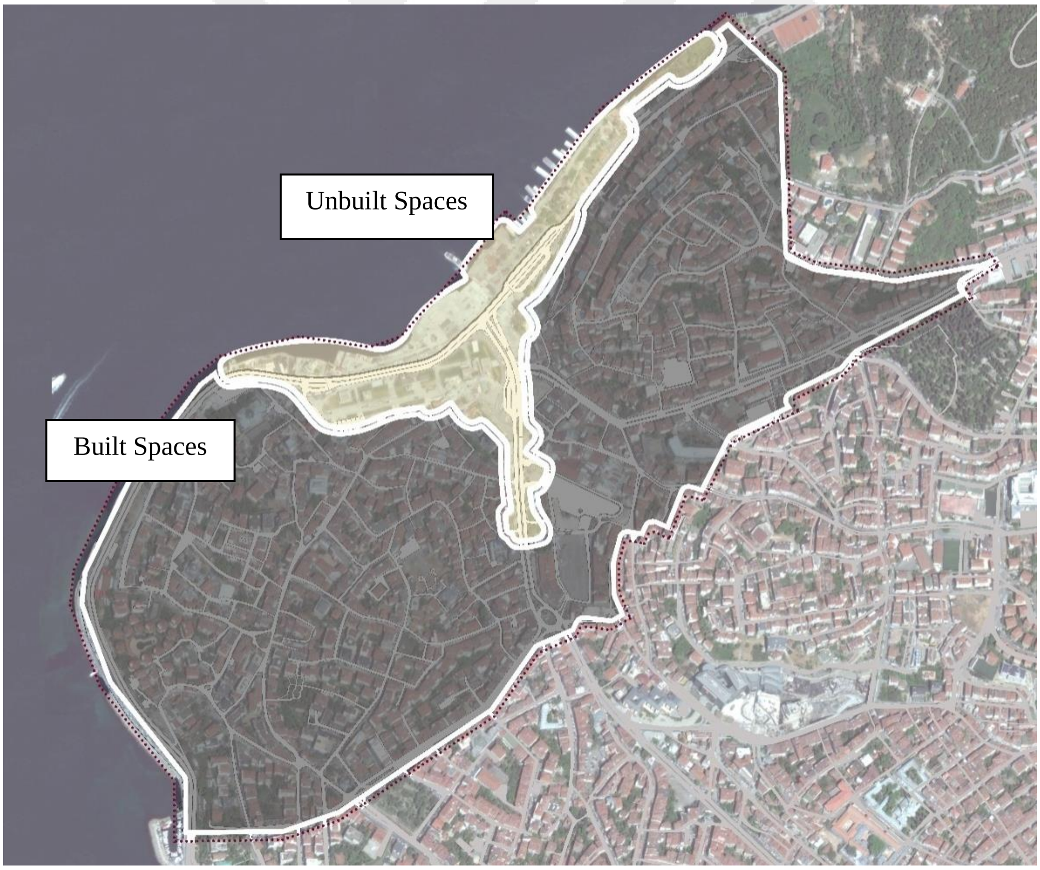


Figure 4.7: Built and unbuilt spaces in the study area (produced from data obtained from Üsküdar Municipality, 2018)

As it is seen from the Table 4.1, while total surface size of open areas including squares, pedestrian routes and roads comprises 56 ha and 53 percentage of the total study area, total size of built structure is 41ha and includes 40 percentage of total study area.

Table 4.1: Ratio and size of built and unbuilt spaces (Üsküdar Municipality, 2018).

Type	Size (m^2)	Size (Km^2)	%
Study Area	1055000	1055	100.00
Built Area	421804	422	39.98
Green Spaces(Active And Passive Usages)	70202	70	6.65
Open Areas(Roads And Squares)	562994	563	53.36

According to the structural use data obtained from Municipality of Üsküdar, it is calculated that while %83.5 areal usage of structures is housing, only %3 is retail (Figure 4.8). It is important to note that figure 4.8 shows the general structural usages, therefore, it may lead to misinterpretation about daily use of the area because structural usage and ground floor usages are considerably different in Üsküdar, especially for the retailing activities. Ground floor retail distributions will be presented under the retail structure of the study area title.

Besides that, structural usage data is beneficial to examine distribution of public enterprises, educational institutions, religious institutions, historical structures and open green spaces. It is seen from the figure below, most of the such structures and institutions are located on main roads and along the coast line. In more detail, Hakimiyet-i Milliye road starting with a coastline intersection and vertically continuing, Üsküdar-Harem coast road and Selmanipak Road are seen as main activity arterials in terms of education, religion, public and historical structure visiting. The correlation between this spatial concentration and different retail clusters will be examined under the 'Application of Methodology to Retail Cluster Analyse in Uskudar to Measure the Effect of Spatial Dynamics' chapter.

Figure 4.8: Landuse pattern of study area (produced from data obtained from Üsküdar Municipality, 2018).

4.2.2 Structural landmarks

Üsküdar with its long history, is an important, rich, and historical settlement on the Anatolian Side of Istanbul. Particularly the Pier Square has been an important junction point for the empires in the past to reach their lands in Asia. After Istanbul was conquered by the Ottoman Empre; inns, public baths, covered bazaars, fountains, tombs and mosques were constructed around the square, which built up the current historical identity of the city center.

Because of the dominant Ottoman cultural background of the area, mosques, shrines, Turkish baths and mansions are most obvious identity structures. As it is seen from the figure 4.9, these most identical religious structures having wide areal usage are located by defining squares and large pedestrian axis. They are influential factors of pulling pedestrians flow to squares. Besides that, pedestrian axis extending along the coast line with good panorama of İstanbul and accessing to the Maiden's Tower by moving close to the historical structures; contribute to the identity of the area in terms of touristic and recreational identity. As it is seen from the Figure 4.8, besides the religious and related structures, bazaars and traditional market places also locates close to the main squares and along the main arterials namely Hakimiyet-I Milliye and Selmanipak Streets.

Field study has shown that while main arterials having juxtaposed and various identical structures defined with larger pedestrian axis triggering pedestrian flows and creating lively environment, inner streets with definite identical structures can not take the benefit of having such structures. For this reason, even there are a lot of historical structures in the boundary of the study area, it has seen that only the visible and more accessible ones from the main square could create perceptible identity for the people experiencing the area (Figure 4.9).

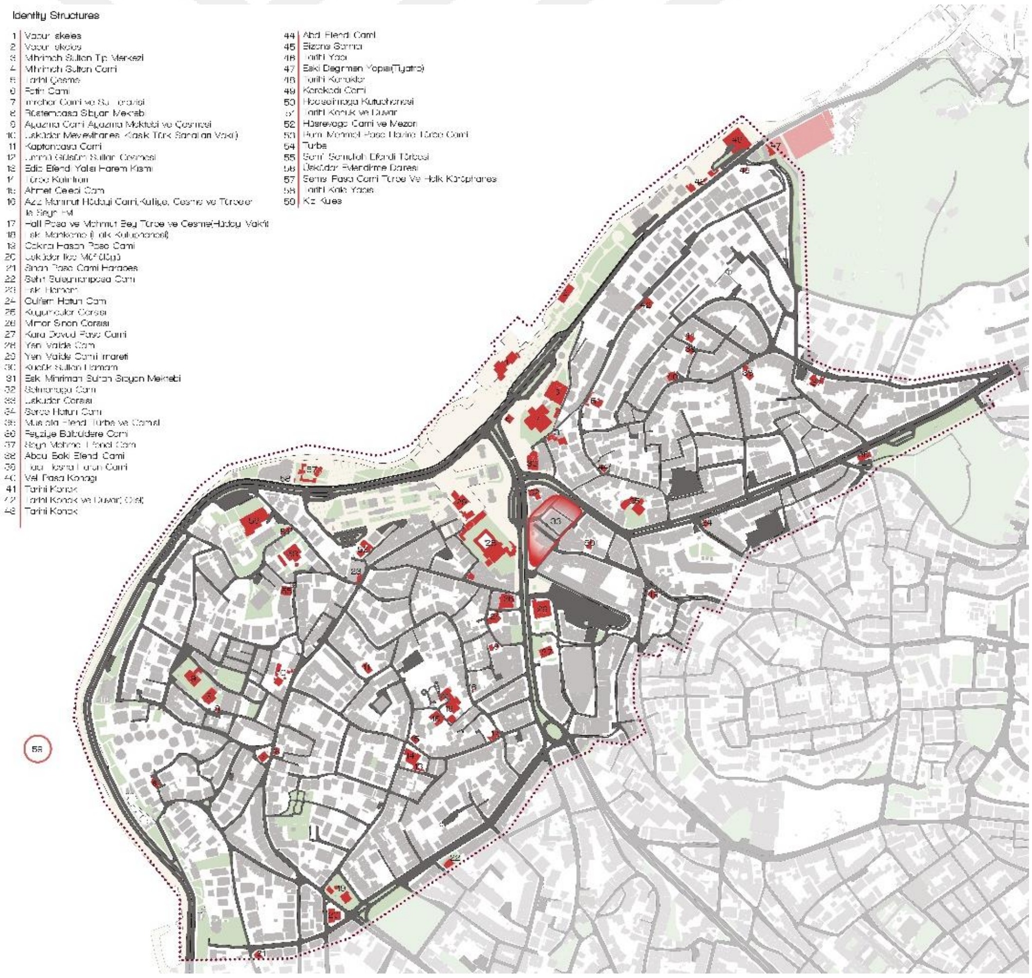


Figure 4.9: Identity structures of study area (produced from data obtained from İstanbul Metropolitan Municipality, 2018).

4.2.3 Transportation infrastructure and pedestrial accessibility

Since beginning of permanent settlements in Üsküdar dates back to the centuries ago, urban pattern of the study area reflect the traditional urban pattern of historical Turkish cities. First of all organically growed narrow and multangular streets, cul de sacs and sloped lines are some of the unique feature of the settlement here. Within the boundary of the study area, six main arterials are defined due to the broad roadways and wide side walks they had and high volume of car traffic and pedestrian movement they carried. Üsküdar Harem Coastal Raod and Paşalimanı Street showed in the figure 4.10 with sembols 1 and 2, provide horizontal connection between coasts from Kadıköy and Harem to Çengelköy and Küçüksu districts by moving across with pedestrian walkway which has great visual landscape and create chance to experience historical structures and recreational areas.

On the other hand, roads numbered 3(Hakimiyet-, Milliye Street) and 4(Selmani Pak Street) are the busiest streets with car and pedestrian traffic due to the compact urban facilities they pass around and dense settlement they provide access. In fact, as being most important feature, these streets start from central square of Üsküdar which is main transfer node btw road, sea and underground transportations and supply vertical connection from centre to inner settlements. Moreover, they accompany with the densely used pedestrian walkways due to the retail and public structures upon there. Other main arterials showed with sembols 5(Doğancılar Street) and 6(Halk Street) operates as a supportive axis to provide connection between retail center and housing areas (Figure 4.10).

Thus, the roads touching to the main square and transfer node of public transportation hub are detected as most important arterials in terms of both pedestrian and vehicle movement in the study area.

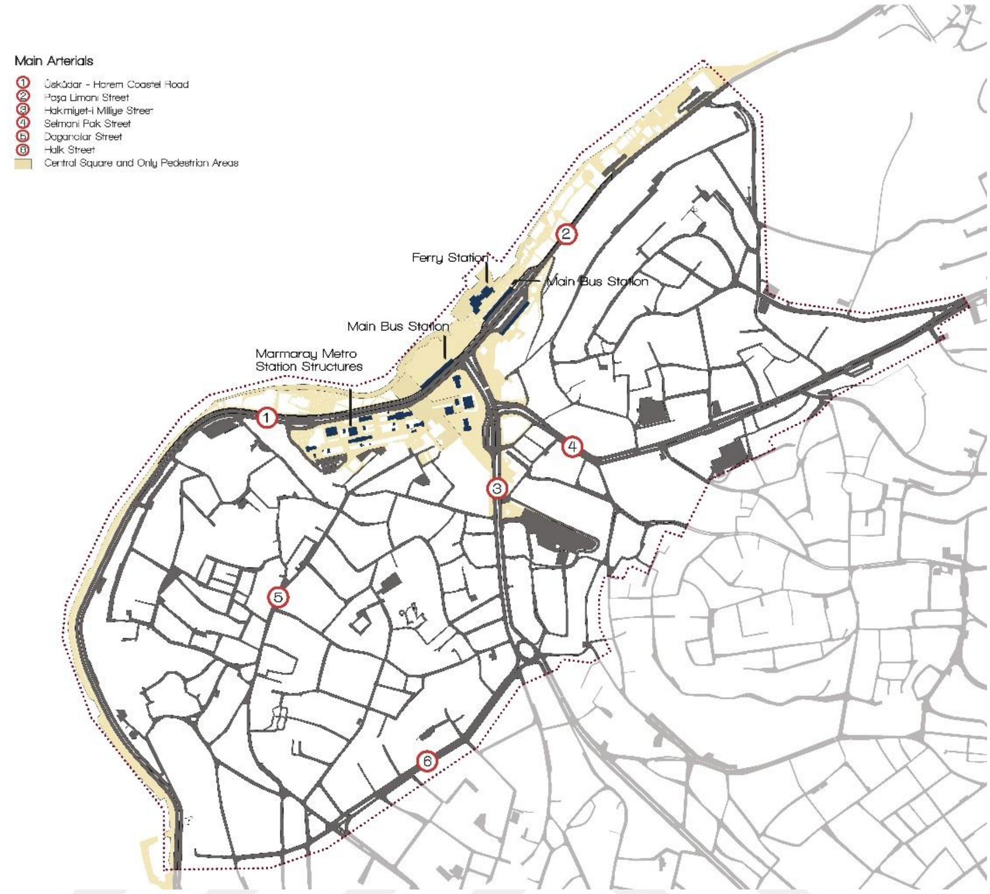


Figure 4.10: Transportation ınfrastructure of study area (produced from data obtained from Üsküdar Municipality,2018).

4.2.4 Retail structure

In Üsküdar, particularly the Pier Square has been an important junction point for the empires in the past to reach their lands in Asia. After Istanbul was conquered, inns, public baths, covered bazaars, fountains, tombs and mosques were constructed around the square, which built up the current historical identity of it.

The zoning decisions that were taken to meet the needs such as increasing population, urbanization and transportation had important effects both on Üsküdar and its identity. After the Ministry of Transportation and Istanbul Metropolitan Municipality have accepted Üsküdar Square as a transportation transfer center and transportation junction point of Anatolian side in Istanbul. As a result of this decision,the Historical Bazaar Square of Üsküdar central district triggered the interest of more retailers even more tourists, and supported by the public entities.

Now, due to close interests of both public entities and private entrepreneurs to Üsküdar and the urban renewal projects in Üsküdar, this study will provide a knowledge for retailers and designers about; which spatial features of urban design projects can trigger the formation of specific retail clusters and which physical urban renewal interventions can affect the cluster developments. Current retail structure of Üsküdar is represented in Figure 4.11. It is seen retail stores are located along the main arterials which are radiating from the central square and pedestrianized area where retail concentration gets higher in lineer and compact forms.

Figure 4.11: Ground floor Retail Distribution in the Study Area (produced from field study and the data obtained from Üsküdar Municipality,2018).

5. ANALYSES OF RETAIL CLUSTERS TO MEASURE THE EFFECT OF SPATIAL DYNAMICS

5.1 Detection of Geographical Agglomerations of Retail Sector

As it is mentioned in the methodology of the study, grouping different retail entities and detecting the sub-agglomeretion of different retail groups due to the similarities among them is first step to analyse clustering determinants of different types of retail sector. As a result of the field work which was practised to specify that groups , number of 64 retail types were recorded in the study area and named by using the NAICS adoption of the İstanbul Chamber Of Commerce (İTO). Table 5.1 below shows the groups created according to the similarities among products they serve and the services they provide.

Table 5.1: Retail groups.

Group No	Group Name
1	groceries
2	cafes/pubs/restaurants
3	health
4	outer wear underwear and accessories
5	Technical equipments and services for house
6	home textile,electrical home appliance and furnitures
7	specific food and nutrients
8	building design, construction, restoration and real estate
9	finance related stores
10	motor vehicle machines and their services
11	lojistik and transportation
12	press and stationery
13	energy
14	telecommunication
15	cosmetic
16	toys and giftstores
17	landscape and flower-seller

In the field study it has seen that there is significantly complex and high retail concentration along the main axis showed in figure 5.1 as Hakimiyet-, Milliye Street(3), Selmani Pak Street(4), Doğancılar Street(5) and Halk Street(6). On the other hand, other main axis named as Üsküdar Harem Coastal Road(1) and Paşalimanı Street

(2) has considerably less retail density which can be explained with the vertically increasing slope along that axis which restrain structuring in the frontages of land.

Besides that, parallel streets to main roads and streets connected or close to the main squares have also considerable amount of retail stores. Moreover what is different in such streets is specializations of retail stores. For example specific foods and nutritient shops are concentrated in street parallel to Hakimiyet-i Milliye road or transportation and lojistic firms concentrated in a street connected to the square (Figure 5.1).

Figure 5.1: Distribution of retail groups (ground floor) in the study area.

Number of 1031 ground floored retail stores were detected in the study area. When examined the total number of retail stores and the number of group members comparatively, it is seen the almost %21 of the retail stores are the member of *'cafes, pubs and restaurants'* group which makes it the dominant group of the study area. Following that, members of *specific food and nutrients* by having %13.1 and also *outerwear, underwear and accessories* group having %12.2 are the secondary dominant groups.

Fifth group namely *Technical equipments and services for house* and the sixth one namely *home textile, electrical home appliance and furnitures* are decided to considerate as one group. Because, while fifth group serving for household equipments, fixing and services, sixth group sells the main house hold equipments wares which can be fixed, repaired or upgraded by the fifth group. Also it has seen that stores of fifth and sixth group locate in same areas. Thus, these two groups as one group have total number of 136 stores which spatially locates together. They have %13.1 share of total retail stores.

Furthermore, while members of *groceries,building design, construction, restoration and real estate*, *finance related stores*, *press and stationery*, *cosmetic* and *health* groups create considerable amount of retail structures in the study area, *motor vehicle machines and their services*, *lojistik and transportation firms*, *energy*, *telecommunication*, *toys and giftstores* and *landscape and flower-seller* are rarely seen groups which are under the %5 of the whole retail structures (Table 5.2).

Table 5.2: Number of stores in each retail groups.

Group No	Name of the Group	Number of Stores	Percentage (%)
1	groceries	76	% 7.37
2	cafes/pubs/restaurants	207	% 20.08
3	health	39	% 3.78
4	outerwear underwear and accessories	126	% 12.22
5	technical equipments and services for house (analysed together with the group 6)	66	% 6.40 (total 12.19 with group 6)
6	home textile,electrical home appliance and furnitures (analysed togerher with the group 5)	70	% 6.79 (total 12.19 with group 5)
7	specific food and nutrients	135	% 13.09
8	building design, construction, restoration and real estate	51	% 4.95
9	Finance related stores	60	% 5.82
10	motor vehicle machines and their services	8	% 0.78
11	lojistik and transportation firms	13	% 1.26
12	press and stationery	60	% 5.82
13	energy	4	% 0.39
14	telecommunication	33	% 3.20
15	cosmetic	58	% 5.63
16	toys and giftstores	20	% 1.94
17	landscape and flower-seller	5	% 48
TOTAL		1031	%100

5.1.1 Geographic cluster analysis of selected retail groups

As an outcome of the field study carried out to detect retail groups and their spatial agglomerations, spatial distribution maps of each group have been generated (see Appendix A).When comparatively observed, it has seen that there are some groups become prominent to be analysed owing to the reasons such as having huge number or locational differentiation in terms of clustering. For this reason it is important to state that selection of the analyse groups are made according not only to percentage based but also the spatial differantiations among groups. By doing this it is aimed to find what are the different determinants leading definite groups to cluster in exact places. To conduct a comperative study, three groups having different clustering patterns were selected which are cafes, pubs and restaurants(2), finance related businesses(9) and technical equipments, household goods and services for house(5-6). It is important to remind that fifth and sixth groups analysed as one group due to serving for similar needs of customers and having spatially close relation (Appendix B).

5.1.1.1 Cafes, pubs and restaurants

There are number of 207 members of this group. By using the kernel point density (KD) function three cluster were detected in the study area. Figure 5.2 shows the locations of stores and clusters. It is seen that almost all the members have a tendency to align across the main axis and squares and number of stores in such axis increases when they get closer to the main square. In detail, in each junction point of main square and three main streets namely Doğancılar , Hakimiyet-I Milliye and Selmani Pak there are clear agglomerations of restaurants and cafes. Moreover these three clusters can be seen as connected parts of a bigger cluster because they are in close proximity to each other and they all related to the urban square. What are the physical determinants effecting the locations of these clusters will be examined in detail with the determinant measurements obtained as a result of questionairres, space syntax analyses and pedestrian counts.

Figure 5.2: Clusters of cafes, pubs and restaurants.

5.1.1.2 Technical equipments, household goods and services for house

There are number of 136 members in this group. One cluster having two connected sub-clusters was detected by using the kernel point density (KD) function. Figure 5.3 shows the locations of the members of this group and the clusters. It is seen that there is no strong tendency to locate in the main axis but in exact streets. Moreover, spatially not dispersed structure of this group promotes considerations about the reasons why they occur in only exact streets and cluster in only one exact location. The cluster of this group situates as facing the Uncular Street which is the connector of two main axis namely Hakimiyet-I Milliye and Doğancılar Streets. Clustering in a secondary axis without direct connection to the square is a significant difference from the cluster structure of group 2.

What are the physical conditions effecting the locations of these clusters as being different than other groups will be examined by using the determinant measurements obtained as a result of questionairres, space syntax analyses and pedestrian counts.

Figure 5.3: Clusters of technical equipments, household goods and services for house.

5.1.1.3 Finance related stores (Jeweller and exchance offices)

There are number of 60 members of this group. By using the kernel point density (KD) function one cluster was detected. Figure 5.4 shows the location of the cluster. It is seen that even the number of members is nearly half of the Technical Equipments, Household Goods And Services For House group and one quarter of the Cafes, Pubs and Restaurants group, the cluster of this group is as significant as other groups' clusters. Cluster of this group includes the stores facing the Hakimiyet-i Milliye Street and other stores out of the cluster continue along the connected ways. It is seen that there is a strong tendency to align across one of the exact main axis namely Hakimiyet-I Milliye Street. What is behind this exact agglomeration will be analysed and compared with other groups' clusters by using the determinant measurements obtained as a result of questionairres, space syntax analyses and pedestrian counts.

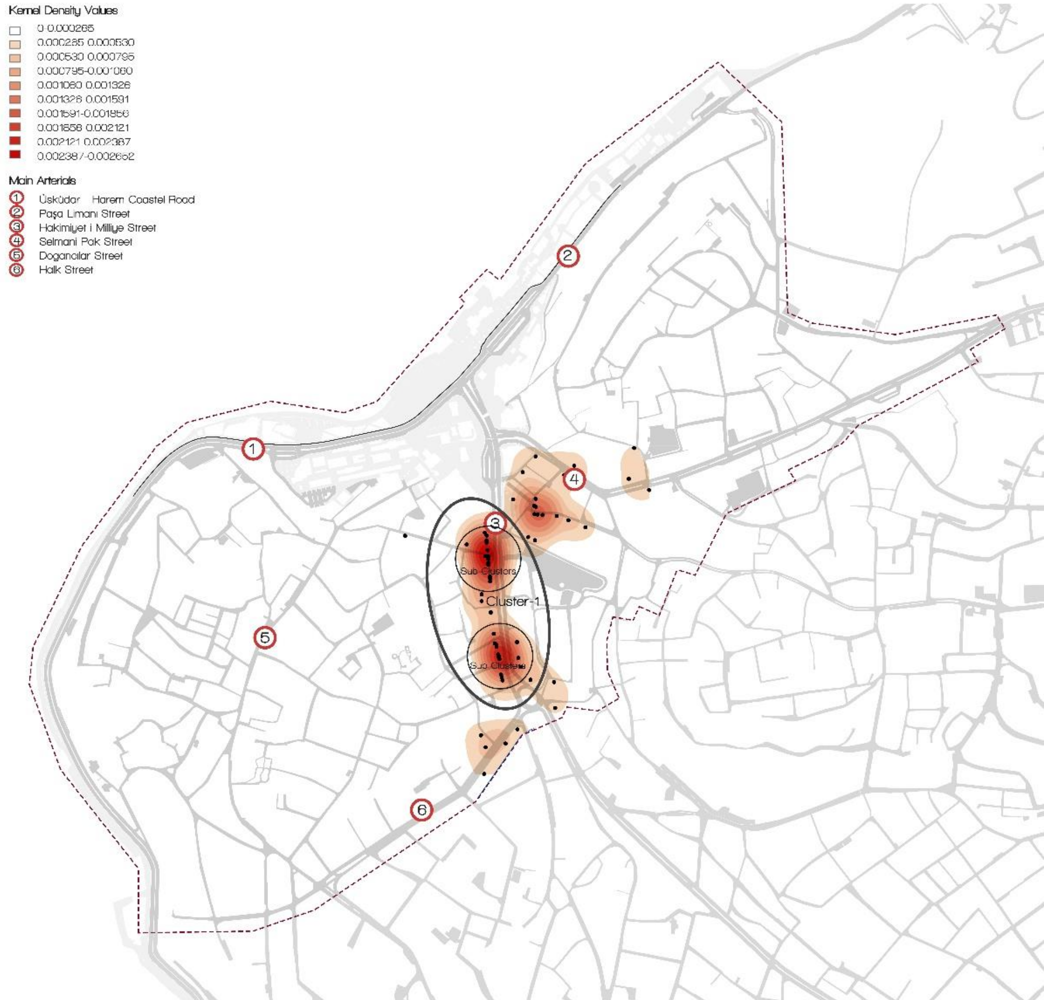


Figure 5.4: Clusters of finance related stores

5.2 Measurement of retail cluster determinants

Under this title, it is aimed to reveal definite determinants of each cluster from the retailer's point of view. It has thought that spatial tendencies of shop owners or managers are important as much as users' in terms of shaping the urban environment. For this reason series of questions were asked to shop owners or managers of each retail groups to reveal their tendencies while selecting a site. By doing so, common determinants affecting their locational decisions and led them create a cluster among specific environment which has desired features were tried to obtain.

5.2.1 Implementation of questionnaires with retailers

As a result of questionnaires it is revealed that impact of cluster determinants are changing according to the type of clusters. Under this title, questionnaires conducted on three different groups namely Cafes, Pubs and Restaurants, Technical Equipments, Household Goods And Services For House and Finance related stores (jeweller and exchance offices) are analysed one by one and compared according to the findings.

At first, *clustering tendencies* of each selected groups are measured. Then the determinants affecting clusters are explored.

Analyse results of cluster deteminants were interpreted according to the *average main determinant scores* and *average each sub determinant scores* of questionnaires. Respectively, degrees of impact (average scores) for each determinant classified as *Low Impact(0-1), Middle-Low İmpact(1-2), Middle Impact(2-3), Middle High Impact(3-4) and High Impact(4-5).*

Each of the seven main determinants includes at least two *(such as Market Potential)* and at most thirteen*(such as Physical Features of Space)* different sub determinants within their scope. When all the sub determinants in questionnaires examined individually, it has seen that interpreting the results of surveys in regard to main determinant average scores is unsatifying and misleading approach. Because even a *main determinant* has some high impact sub determinants, having one or some more low impact or no impact sub-determinants in its scope can reduces the average score of that main determinant. For this reason, individual average impact scores of each sub determinants is regarded as more plausible data to make comparison between cluster determinants of different retail groups.

5.2.1.1 Cafes, pubs and restaurants

Under this title, all of the questionnaires that performed with the store owners or managers of the Cafes, Pubs and Restaurants are analysed together. How much this group have a tendency to cluster and reasons of why some determinants are regarded as more significant than others while clustering is discussed.

Firstly, it has seen from the rank of *Close proximity to same sub sector* determinant (ranked as 4.4) that this group have a strong tendency to cluster. Retailers of this group give importance to locate in an area where lots of Cafes, Pubs and Restaurants placed (Table 5.3). Parallel to that there are a lot of desired spatial features in such areas which are examined with questionnaires and presented below (Table 5.4 and Table 5.5).

Table 5.3: Clustering tendency of cafes, pubs and restaurants.

Clustering Tendencies	Total Score	Total Given Score	Total Avarage Score
Close proximity to other sub sectors in retail sector (complementary stores)	50	33	3.3
Close proximity to same sub sector (rival competition)	50	44	4.4

Firstly, it has seen that all of the main determinants have at least middle impact on Cafes, Pubs and Restaurants clusters, which shows that external influences have a lot of impact on locational choices of these retail shops. Especially,three main determinants are mostly high graded by almost all retailers. In order of importance these are:*quality of space*, *physical features of space* and *history and identity features*. Almost all of the physical feature determinants of the place except aligning beside/front the park is scored as middle-high import or high impact (Table 5.4).

It is not so surprising that these three factors have higher values. Because, such retail shops are not only responsible for meeting the food or drink requirements of people, but also they have recreational purposes to hold customer's attention. All of such retailers compete by trying not only to serve quality of food but also quality of space and time experiences. This aspect of cafes/restaurants led them to present an environment for costumers to spend a quality time. For these reasons, in all questionnaires store owners remarked that suitability of physical features, having quality of space and placing among identical or historical features are the features that pull pedestrian flows and make them shine amongst others.

Table 5.4: Main determinant scores of cafes,restaurants and pubs.

Cafes/Restaurants				
Determinant		Total score (Maximum)	Total Given Score	Total Avarage Score (1-5)
1-Business Structure		200	143	3.6
2-Physical Features of Space		650	552	4.2
3-Quality of Space		200	170	4.3
4-History and Identity Features		150	126	4.2
5-Distance to Urban functions		350	243	3.3
6-Market Potential		100	48	2.4
7-Accessibility		300	215	3.6
Score Ranges				
0-1:Low Impact	1-2: Middle-Low İmpact	2-3:Middle Impact	3-4:Middle High Impact	4-5:High Impact

When all the determinants in questionnaires examined individually, it has seen that interpreting the results of surveys in regard to main determinant scores is unsatisfiying. It is important to look for least impact and most impact determinants (Table 5.5).

As a matter of fact, for restaurants and cafes, *Aligning beside/front the square*, *Double facade usage opportunities*, *Placing in corner*, *Width of walkway*,*Quality of facades/Renewal of facades*, *Historical retail identity of a location*, *Accessibility to transfer points and stations*,*and Pedestrian traffic* are detected as most effective determinants which are scored as 5 by almost every retailers.

On the other hand, *Aligning beside/front the park, Close proximity to open green spaces(parks, picnic areas), Close proximity to other private sectors except retail sector,Accessibility to product dealer* are seen as least effective determinants for restaurants and cafes. It is important to note that, according to the questionnaires there is no low impact (0-1) determinant for such clusters.

Furthermore, environmental variables regarded as more important then the business structure and market potential by the retailers of this group. Because there is no sub determinant ranked more than 4.0 in those main determinants (Table 5.5).

Table 5.5:whole determinant scores of cafes,restaurants and pubs.

Determinants	Total Score	Total Given Score	Total Avarage Score
Business Structure	200	143	3.6
Working days	50	33	3.3
Working hours	50	32	3.2
Rental value	50	39	3.9
Desired Users(all city users/country users/'inhabitants of district /tourists)	50	39	3.9
Physical Features of Space	650	552	4.2
Placing in Corner/Junction point	50	49	4.9
Width of walkway	50	49	4.9
Continuation of walkway	50	40	4.0
Frontage usage	50	46	4.6
Double facade usage	50	50	5.0
Aligning beside/front the square	50	50	5.0
Aligning beside/front the park	50	18	1.8
Aligning in the main arterial	50	43	4.3
Locating in the coastal strip	50	44	4.4
Having scenery	50	46	4.6
Slope of the street	50	39	3.9
Urban furnitures	50	35	3.5
Getting Sunlight	50	43	4.3
Quality of Space	200	170	4.3
Quality of urban furnitures	50	42	4.2
Quality of paving	50	39	3.9
Green-field organization along walkways	50	40	4.0
Quality of facades/Renewal of facades	50	49	4.9
History and Identity Features	150	126	4.2
Having monumental structures and image elements	50	32	3.2
Locating around/in the historical structures	50	46	4.6
Historical retail identity of a location	50	48	4.8
Distance to Urban functions	250	166	3.3
Close proximity to public institutions	50	33	3.3
Close proximity to touristic and historical centers	50	45	4.5
Close proximity to open green spaces(parks, picnic areas)	50	27	2.7
Close proximity to parking areas	50	44	4.4
Close proximity to other private sectors except retail sector	50	17	1.7

Table 5.5 (continued):whole determinant scores of cafes,restaurants and pubs.

Determinants		Total Score	Total Given Score	Total Avarage Score
Market Potential		100	48	2.4
Desired age group		50	20	2.0
Desired income group		50	28	2.8
Accessibility		300	215	3.6
Accessibility to transfer points and stations		50	49	4.9
Accessibility of neighbourhood residents		50	37	3.7
Pedestrian traffic		50	50	5.0
Car traffic		50	24	2.4
Type of Transportation (pedestrian only/ pedestrian and car)		50	42	4.2
Accessibility to product dealer		50	13	1.3
Score Ranges:				
0-1:Low Impact	1-2:Middle-Low İmpact	2-3:Middle Impact	3-4:Middle High Impact	4-5:High Impact

5.2.1.2 Equipments, household goods and services for house

Firstly, it has seen from the rank of *Close proximity to same sub sector* determinant (ranked as 4.8) that this group have highly strong tendency to cluster. Because they don't supply any product of daily need, they desire to locate in an area which can be remembered with what is served there,by all consumers in such specific needs. Consumers both attracts and attracted by the such site-related clusters with specific products. Thus, retailers gain benefits from this mutual interaction among consumer and place interaction and also stores of same sub-groups take benefit of the competition among them. They try to shine amongst others by enhancing their services, improving the product qualities and most importantly being creative in carring a business.

Being close to the complementary stores is also seen as preferred features by this retail group because they want to make use of consumers with related needs by serving their complementary product and services (Table 5.6). Parallel to that there are a lot of desired spatial features in such areas which are examined with questionnaires and presented in Table 5.7.

Table 5.6: Clustering tendency of equipments, household goods and services for house.

Clustering Tendencies	Total Score	Total Given Score	Total Avarage Score
Close proximity to other sub sectors in retail sector (complementary stores)	50	40	4.0
Close proximity to same sub sector (rival competition)	50	48	4.8

When all of the questionnaires that conducted with the store owners or managers of the *Equipments, Household Goods And Services For House* group is analysed, it has seen that there is no high effective main determinant for such clusters. In comparison with the ranks given by the retailers of cafes pubs and restaurants, lower ranks are given to main determinants by this group. It can be said that this group is give high importance to locate close to the same sub sector but they less affected by the environmental and structural parameters while selecting a site.

Only three main determinants are scored close to 4 which are *Accessibility, Quality of Space and Market Potential*. That results shows that not general but some more specific determinants should have an impact on locational choices of this group (Table 5.7).

During the questionnaires, it was possible to have a conversation with store owners. In parallel with the results, they indicated that some Physical Features of Space are not much preferred by them. For example, even they desire *wide walkways*, they don't prefer so much *urban furnitures* like benches and *organization of green areas* above walkways, because this type of stores also make removal and moving of wares or furnitures by taking advantages of the open spaces shopfront.

They also highly care about the wide walkways to exhibit their products in front of the shops. These type of business differences make this cluster's main determinant scores different than other groups.

Table 5.6: Main determinant scores of equipments, household goods and services for house.

Equipments, Household Goods And Services For House				
Determinant		Total score	Given Score	Total Avarage Score
1-Business Structure		200	101	2.5
2-Physical Features of Space		650	407	3.1
3-Quality of Space		200	140	3.5
4-History and Identity Features		150	82	2.7
5-Distance to Urban functions		250	122	2.4
6-Market Potential		100	71	3.6
7-Accessibility		300	226	3.8
Score Range:				
0-1:Low Impact	1-2:Middle-Low İmpact	2-3:Middle Impact	3-4:Middle High Impact	4-5:High Impact

When all the determinants in questionnaires examined individually, it has seen that in each main determinants there are some prominent sub determinants highly cared by participants. It is important to detect those most impact determinants and least impact ones.

When examining such determinants for Equipments, Household Goods And Services For House group, it is seen that; *Accessibility to transfer points and stations,Historical retail identiy of a location, Pedestrian traffic, Close proximity to* *<u>same sub sector</u>* are detected as most effective determinants which are scored as 5 by almost every retailers. Moreover, *Frontage usage, Double facade usage* determinants are scored as 5 by seven participants and 4 by only three participants (Table 5.8).

On the other hand, Working days and hours, Aligning beside/front the park, Locating in the coastal strip, Having scenery and Having monumental structures and image elements close are seen as almost no impact determinants for this group and scored among 0 to1. Moreover, other middle-low impact determinants are detected as Close proximity to open green spaces(parks, picnic areas, Urban furnitures, Close proximity to other private sectors except retail sector and Accessibility to product dealer.

Table 5.7: Whole determinant scores of equipments, household goods and services for house.

Determinants	Total Score	Total Given Score	Total Avarage Score
Business Structure	200	100	2.5
Working days	50	9	0.9
Working hours	50	10	1.0
Rental value	50	42	4.2
Desired Users(all city users/country users/'inhabitants of district /tourists)	50	39	3.9
Physical Features of Space	650	407	3.1
Placing in Corner/Junction point	50	44	4.4
Width of walkway	50	45	4.5
Continuation of walkway	50	42	4.2
Frontage usage	50	47	4.7
Double facade usage	50	47	4.7
Aligning beside/front the square	50	32	3.2
Aligning beside/front the park	50	5	0.5
Aligning in the main arterial	50	41	4.1
Locating in the coastal strip	50	6	0.6
Having scenery	50	1	0.1
Slope of the street	50	44	4.4
Urban furnitures	50	20	2.0
Getting Sunlight	50	33	3.3
Quality of Space	200	140	3.5
Quality of urban furnitures	50	29	2.9
Quality of paving	50	39	3.9
Green-field organization along walkways	50	26	2.6
Quality of facades/Renewal of facades	50	46	4.6
History and Identity Features	150	82	2.7
Having monumental structures and image elements	50	8	0.8
Locating around/in the historical structures	50	25	2.5
Historical retail identity of a location	50	49	4.9
Distance to Urban functions	250	122	2.4
Close proximity to public institutions	50	25	2.5
Close proximity to touristic and historical centers	50	27	2.7
Close proximity to open green spaces(parks, picnic areas)	50	12	1.2
Close proximity to parking areas	50	46	4.6
Close proximity to other private sectors except retail sector	50	12	1.2

Table 5.7 (continued): Whole determinant scores of equipments, household goods and services for house.

Determinants		Total Score	Total Given Score	Total Avarage Score
Market Potential		100	71	3.6
Desired age group		50	31	3.1
Desired income group		50	40	4.0
Accessibility		300	227	3.8
Accessibility to transfer points and stations		50	49	4.9
Accessibility of neighbourhood residents		50	32	3.2
Pedestrian traffic		50	48	4.8
Car traffic		50	35	3.5
Type of Transportation (pedestrian only/ pedestrian and car)		50	45	4.5
Accessibility to product dealer		50	18	1.8
Score Ranges:				
0-1:Low Impact	1-2:Middle-Low İmpact	2-3:Middle Impact	3-4:Middle High Impact	4-5:High Impact

5.2.1.3 Finance related stores (Jeweller and exchance offices)

Firstly, it has seen from the rank of *Close proximity to same sub sector* determinant ranked as 4.8. This group have highly strong tendency to cluster because of the same reasons stated for second retail group. Being close to the complementary stores is seen as not much preferred feature by this retail group because they sell unique products or objects and there is almost no complementary products sold by other sub-sectors.

Table 5.8: Clustering tendency of finance related stores.

Clustering Tendencies	Total Score	Total Given Score	Total Avarage Score
Close proximity to other sub sectors in retail sector (complementary stores)	50	35	3.5
Close proximity to same sub sector (rival competition)	50	48	4.8

According to the questionnaires, it has found that all of the main determinants have at least middle high impact on finance related clusters which shows that in the scope of every main determinant there are some highly effective factors for locational preferences of this businesses. Specifically, *Market Potential* is graded as high impact determinant by almost all such retailers. Moreover,*Quality of Space* is detected as secondary effective determinant with 3.8 total average score (Table 5.10).

As it is mentioned before, during the questionnaires, it was possible to ask about the reasons of grades given by store owners. On the contrary to other group's retailers opinions; it is stated that some*Physical Features of Space* related with high volume of pedestrian flowsuch as *Aligning beside/front of the square or Aligning beside/front the park*arenot important factors for finance related stores. Because, according to them not to volume of pedestrians but the volume of specific type of users are important. For this reasons they all cared about the age and income of the customers. Specific determinants is discussed according to the Table 5.11.

Table 5.9: Main determinant scores of finance related stores.

Finance related stores (Jeweller and exchance offices)			
Determinant	Total score	Given Score	Total Avarage Score
1-Business Structure	200	124	3.1
2-Physical Features of Space	650	439	3.4
3-Quality of Space	200	153	3.8
4-History and Identity Features	150	102	3.4
5-Distance to Urban functions	350	224	3.2
6-Market Potential	100	89	4.5
7-Accessibility	300	190	3.2
Score Range:			

0-1:Low Impact	1-2:Middle-Low İmpact	2-3:Middle Impact	3-4:Middle High Impact	4-5:High Impact

When all the determinants in questionnaires examined individually, it has seen that interpreting the results of surveys in regard to main determinant scores is unsatisfiying. It is important to look for least impact and most impact determinants.Moreover, *Desired Users,Close proximity to touristic and historical centers and Double facade usage*determinants are scored as 5 by seven participants and 4 by only three participants (Table 5.8).

On the other hand, *Working hours, Aligning beside/front the square, Aligning beside/front the park, Locating in the coastal strip, Having scenery and Close proximity to other private sectors except retail sector* are seen as least effective determinants for restaurants and cafes. It is important to note that, according to the questionnaires *aligning beside/front the park* and *Locating in the coastal strip*determinants have almost no impact for such clusters.

Table 5.10: Whole determinant scores of finance related stores.

Determinants	Total Score	Total Given Score	Total Avarage Score
Business Structure	200	124	3.1
Working days	50	20	2.0
Working hours	50	18	1.8
Rental value	50	39	3.9
Desired Users (all city users/country users/'inhabitants of district /tourists/specific users)	50	47	4.7
Physical Features of Space	650	439	3.4
Placing in Corner/Junction point	50	45	4.5
Width of walkway	50	45	4.5
Continuation of walkway	50	44	4.4
Frontage usage	50	44	4.4
Double facade usage	50	46	4.6
Aligning beside/front the square	50	18	1.8
Aligning beside/front the park	50	9	0.9
Aligning in the main arterial	50	44	4.4
Locating in the coastal strip	50	9	0.9
Having scenery	50	13	1.3
Slope of the street	50	44	4.4
Urban furnitures	50	35	3.5
Getting Sunlight	50	43	4.3
Quality of Space	200	153	3.8
Quality of urban furnitures	50	36	3.6
Quality of paving	50	44	4.4
Green-field organization along walkways	50	27	2.7
Quality of facades/Renewal of facades	50	46	4.6
History and Identity Features	150	102	3.4
Having monumental structures and image elements	50	21	2.1
Locating around/in the historical structures	50	33	3.3
Historical retail identity of a location	50	48	4.8
Distance to Urban functions	250	141	2.8
Close proximity to public institutions	50	20	2.0
Close proximity to touristic and historical centers	50	45	4.5
Close proximity to open green spaces(parks, picnic areas)	50	21	2.1
Close proximity to parking areas	50	39	3.9
Close proximity to other private sectors except retail sector	50	16	1.6

Table 5.10 (continued): Whole determinant scores of finance related stores.

Determinants	Total Score	Total Given Score	Total Avarage Score
Market Potential	100	89	4.5
Desired age group	50	40	4.0
Desired income group	50	49	4.9
Accessibility	300	190	3.2
Accessibility to transfer points and stations	50	38	3.8
Accessibility of neighbourhood residents	50	21	2.1
Pedestrian traffic	50	49	4.9
Car traffic	50	24	2.4
Type of Transportation (pedestrian only/ pedestrian and car)	50	38	3.8
Accessibility to product dealer	50	20	2.0
Score Ranges:			
0-1:Low Impact; 1-2:Middle-Low İmpact	2-3:Middle Impact	3-4:Middle High Impact	4-5:High Impact

Outcomes of Findings

When entire questionnairres analysed together, it has seen that all of the selected groups have a clustering tendency.Yet, more importantly, stores selling goods not for daily but for specific needs have more tendency to cluster.

Six of the thirteen Physical Features of Space namely; *Double facade usage*, *Width of walkway, Placing in Corner, Frontage usage, Aligning in the main arterial, Continuation of walkway* have significant influence on all of the three groups. On the contrary to restaurants/cafes group, *Having scenery* and *Locating in the coastal strip* features detected as almost no impact factors of finance related stores and Equipments, Household Goods And Services For House groups.

Quality of facades/renewal of facades was stated as highly important factor for their businesses by all participants of three group.

All of the participants emphasized the importance of *Historical retail identity of a location* and scored that determinant as high impact. Furthermore, different participants from all three group mentioned about their businesses' retail history in immediate environment. They stated that retail identities of such areas developed within years, creates a tendency for consumers to go such areas when they needed something specific they sell. For these reason again, in all of the questionnaires *Close proximity to same sub sector* graded as high impact determinant because it is thought as one of the most important factor to create an identity in a place and a tendency for customers (Table 5.12).

Table 5.11: Determinants ranked above 4.0 by three retail groups.

Main Determinant No	Determinants	Total Avarage Score(Cafes)	Total Avarage Score(Housing)	Total Avarage Score(Finance Related)
7	Pedestrian traffic	5.0	4.8	4.9
2	Double facade usage	5.0	4.7	4.6
2	Width of walkway	4.9	4.5	4.5
2	Placing in Corner/Junction point	4.9	4.4	4.5
3	Quality of facades/Renewal of facades	4.9	4.6	4.6
4	Historical retail identity of a location	4.8	4.9	4.8
2	Frontage usage	4.6	4.7	4.4
2	Aligning in the main arterial	4.3	4.1	4.4
2	Continuation of walkway	4.0	4.2	4.4
7	Accessibility to transfer points and stations	4.9	4.9	
5	Close proximity to parking areas	4.4	4.6	
7	Type of Transportation (pedestrian only/ pedestrian and car)	4.2	4.5	
6	Desired income group		4.0	4.9
2	Slope of the street		4.4	4.4
5	Close proximity to touristic and historical centers	4.5		4.5
2	Getting Sunlight	4.3		4.3
2	Aligning beside/front the square	5.0		
4	Locating around/in the historical structures	4.6		
2	Having scenery	4.6		
2	Locating in the coastal strip	4.4		
3	Quality of urban furnitures	4.2		
3	Green-field organization along walkways	4.0		
1	Rental value		4.2	
1	Desired Users			4.7
3	Quality of paving			4.4
6	Desired age group			4.0

Aligning beside/front the park, Close proximity to other private sectors except retail sector and Accessibility to product dealer determinants are defined as not important factor for all selected retail groups. Also; having scenery, locating in the coastal strip ,working days, working hours, having monumental structures and image elements, close proximity to open green spaces, urban furnitures, aligning, beside/front the square, close proximity to public institutions determinants low ranked for second and third group. Yet, these determinants ranked as moderately or highly important for cafes, pubs and restaurants (Table 5.13).

Table 5.12: Determinants ranked below 2.0 by three retail groups.

Main Determinants	Determinants	Total Avarage Score(Cafes)	Total Avarage Score(Housing)	Total Avarage Score(Finance Related)
2	Aligning beside/front the park	1.8	0.5	0.9
5	Close proximity to other private sectors except retail sector	1.7	1.2	1.6
7	Accessibility to product dealer	1.3	1.8	2.0
2	Having scenery		0.1	1.3
2	Locating in the coastal strip		0.6	0.9
1	Working days		0.9	2.0
1	Working hours		1.0	1.8
4	Having monumental structures and image elements		0.8	
5	Close proximity to open green spaces(parks, picnic areas)		1.2	
2	Urban furnitures		2.0	
2	Aligning beside/front the square			1.8
5	Close proximity to public institutions			2.0
6	Desired age group	2.0		

5.3 Measurement of Accessibility

The urban spatial accessibility of the study area is studied by using space syntax methodology. In the space syntax analysis, the spatial organization of urban environment is represented as simplified axial map of road topology network. In this point, Integration parameter derived from the axial line map is one of the most significant parameter for urban pattern analysis which is used for the detection of where the best connected locations are and indicates the principal centers of settlements.

According to Space Syntax methodology, the relationship among spaces is explained with the how much integrated the axial line connecting them. Based on the value of depth used, the integration value can bemeasured as Local Integration and Global Integration. The Local Integration analysis contains the area up to a definite steps away for each axial line which is matched the local depth. Mostly, three steps away for each axial line are used for local integration analyses. On the other hand, Global integration parameter considers all the area by calculating all steps away for each line. In other words,The Global integration value of one specific axial line reflects the route complexity from it to all others in the road network. The higher value represents higher syntax accessibility in global scale. Depending upon the differences in calculation methods, Local Integration and Global Integration parameters demonstrates the differences on the accessibility of networks in different spatial scale.

Normally, local integration (n=3) is used to show integration values in local scale which indicates walking distance of pedestrians with three steps. But in this study area, except the main roads, all the axis are considerably short and every steps are highly close to each other. For this reason, local integration (n=3) analyses seems too local and less logical to interpret the study area's accessibility.It is possible to calculate bigger scale local analyses like local integration (n=5,n=7), but it is thought that it is important to see the limits of integration of each segment from global to most local scale.

The calculation and representation of local integration values for each axial line with the depth of three step away and global integration values for each axial line with the number of total steps away is made by using Depth Map programme. The global and local integration values of each axial linesare obtained by using the natural break method and values are classified into five from high to low.In quantity, the top class which has global integration value higher than 740, includes main roads explained in Chapter 4, namely; Üsküdar Harem Coastal Road and Paşalimanı Street, Hakimiyet-, Milliye Street and Selmani Pak Street, Halk Street. Secondary most integrated road is the another main road which named as Doğancılar Street (Figure 5.5).

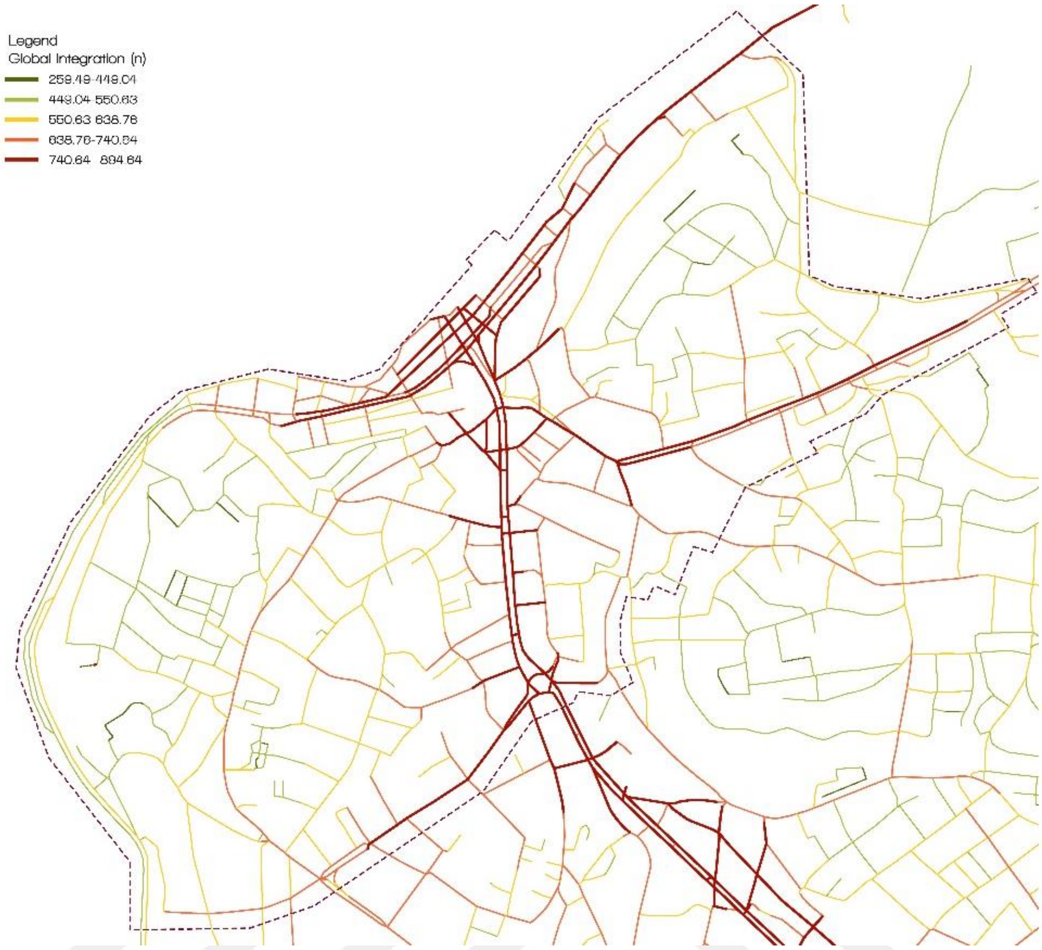


Figure 5.5: Global ıntegration (n) values.

According to the local integration calculation, Hakimiyet-I Milliye Street and coastal axis crossing it are the most integrated arterials in bigger pedestrian scale (Figure 5.6).

When space syntax maps prepared, they are overlapped with the cluster maps and the correlation between spatial integrations (accessibility) and retail agglomerations of each groups were calculated. Correlations between the syntax analyses and the agglomeration of each retail group is discussed below in detail. Pearson correlation coefficient is preferred to calculate correlations because it is the most commonly used method, although it is very sensitive to outliers.

It is important to note that, because of the size of the area, all the streets are walkable distance to each other. For these reason global integration parameter is regarded as highly plausible method to calculate integration values of each axial lines by involving all the steps which are in walking distance.

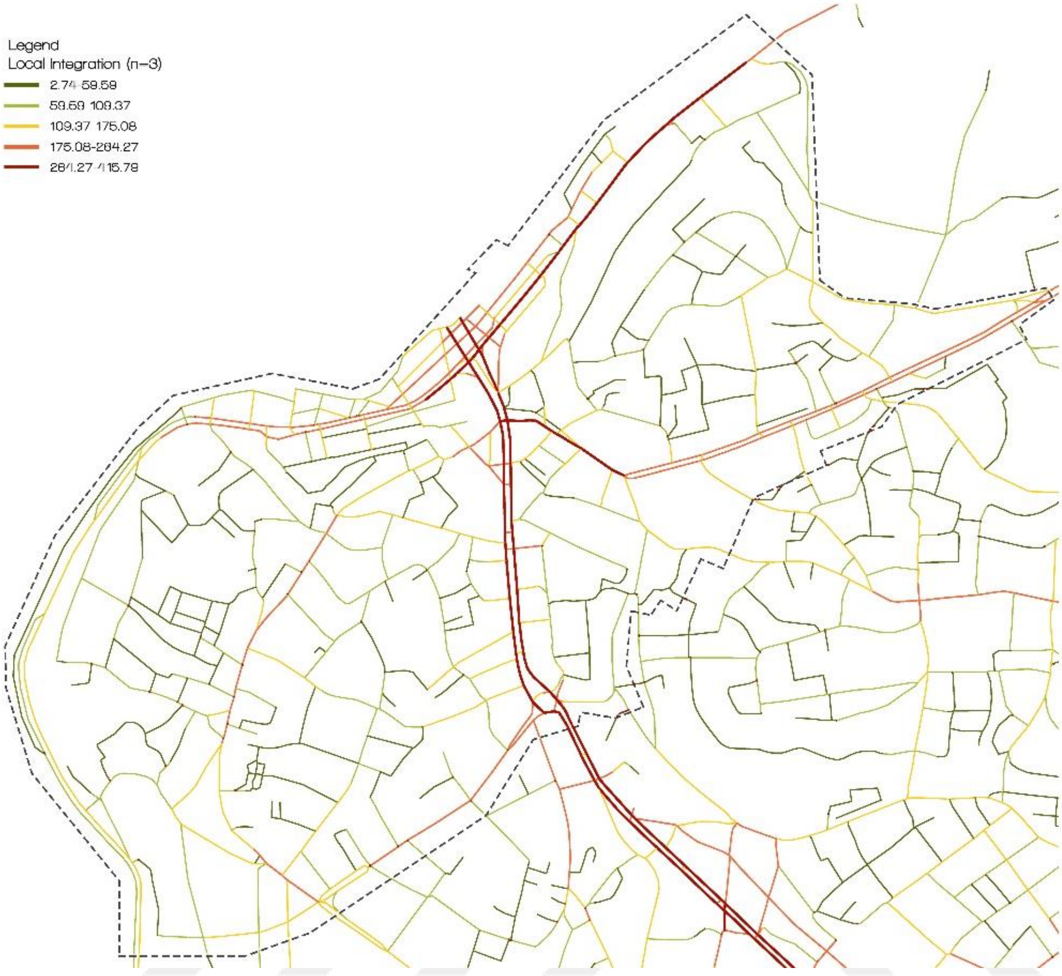


Figure 5.6: Local ıntegration (r=3) values.

5.3.1.1 Cafes, pubs and restaurants

Through observation on the result map, it has seen that agglomeration of Cafes, Pubs and Restaurants have a tendency to locate among most integrated lines. The border drawn on the figure below, shows the unbuilt spaces like squares, wide walking spaces, public transportation stations where it is not possible to locate a store. The high integrated arterials placing there and impossibility to place a store there create a situation which can make the correlation values pull down. For this reason, integration values of segments locate in that area leaved out of the correlation analysis between cluster weight of stores and integration values of segments. Besides, correlation analyses are limited to the border of the study area.

In figure 5.7, it is seen that there is a clear congruity between the agglomeration of Cafes, Pubs and Restaurants and the most integrated segments of global integration and local integration values.

Figure 5.7: Overlapping map of global ıntegration and kernel densities of cafes, restaurant and pubs.

As it is mentioned above, local integration (n=3) is used to show integration values in local scale which indicates walking distance of pedestrians with three steps, yet, in this study most of the streets are considerably short and every steps are highly close to each other. As a result of that, local integration (n=3) analyses seems too local. It is thought as important to see the streets which are integrated in all scales (Figure 5.8).

Figure 5.8: Overlapping map of local ıntegration and kernel densities of cafes, restaurant and pubs.

As a result, the areas have maximum kernel store density values were detected around the main squares and stations. To make a valid and simple correlation analysis, areal kernel density values were classified into thirty classes. Then, such areal kernel density values were assigned to the each segments locate on them.

As a result, a segment table including both the integration values and kernel density values of each segments are created. Thus, the correlation between global integration and kernel densities of Cafes and Restaurant Clusters is found significantly high which has a values above the number of 0.5 (Figure 5.9).

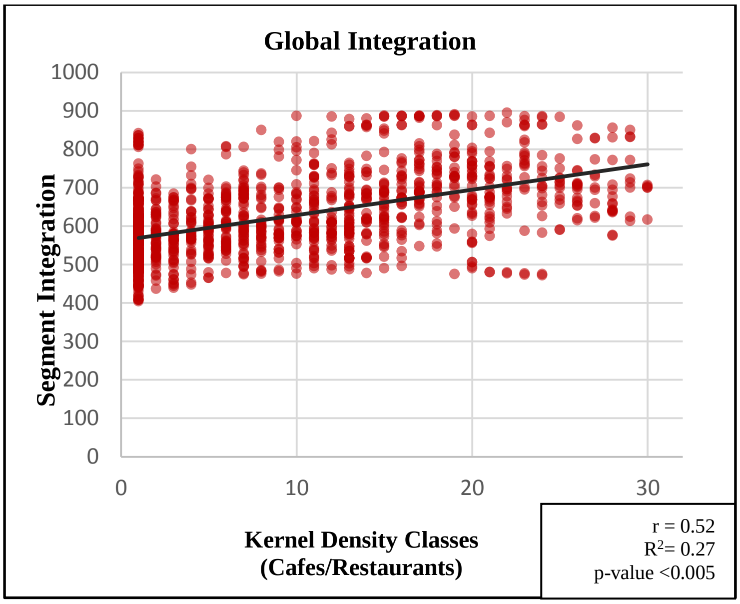


Figure 5.9: Correlation between global ıntegration values and kernel density classes of cafes, restaurant and pubs.

On the other hand, correlation analysis between the local integration and kernel density values get lower, but still in important range. It is seen that, relatively high correlation in this scale take its source from the most integrated arterials which are Hakimiyet-i Milliye Street and Selmani Pak Street and the highest kernel density values around them. Correlation graphs are represented below (Figure 5.10).

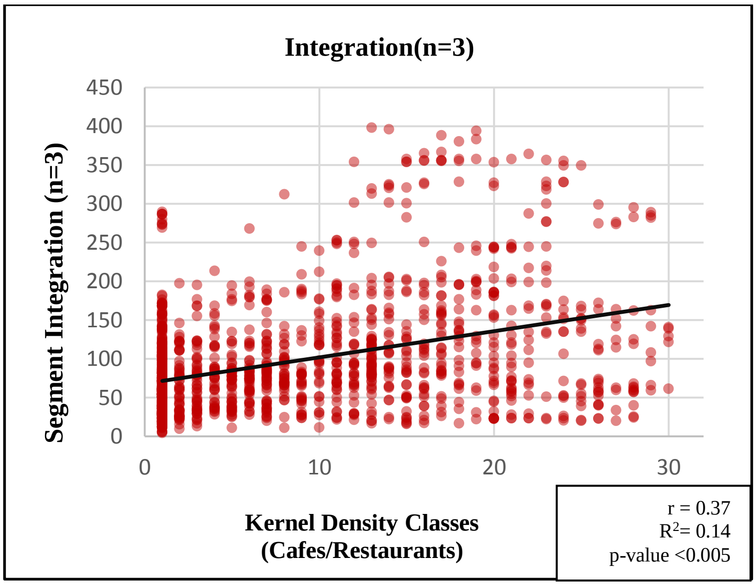


Figure 5.10: Correlation between local ıntegration values and kernel density classes of cafes, restaurant and pubs.

5.3.1.2 Equipments, household goods and services for house

Through observation on the result map, it has seen that agglomeration of Equipments, Household Goods and Services for House have no strong tendency to locate among most integrated lines. According to the Figure 5.11 and Figure 5.12, it is seen that there is a weak congruity between the agglomeration of Equipments, Household Goods And Services For House and the most integrated segments of global integration and local integration values.

Figure 5.11: Overlapping map of global ıntegration and kernel densities of equipments, household goods and services for house.

As it is mentioned before, local integration (n=3) analyse is thought as important to see the streets which are most integrated in all scales. Depending on that issue, even the cluster of this store locates along the moderately high integrated arterial, it is important to note that the axis having higher kernel density values of Equipments, Household Goods and Services for House Group is the Uncular Street which have a direct connection with the most integrated road named as Hakimiyet-i Milliye near the Marmaray Station Square (Figure 5.12).

Figure 5.12: Overlapping map of local ıntegration and kernel densities of equipments, household goods and services for house.

As a result, the areas have maximum kernel store density values were detected in moderately high integrated axis named Uncular Street. Low correlation is found between integration values and kernel densities of Equipments, Household Goods And Services For HouseClusters. Correlation values. Correlation weight are detected as 0.21 by using global integration (Figure 5.13).

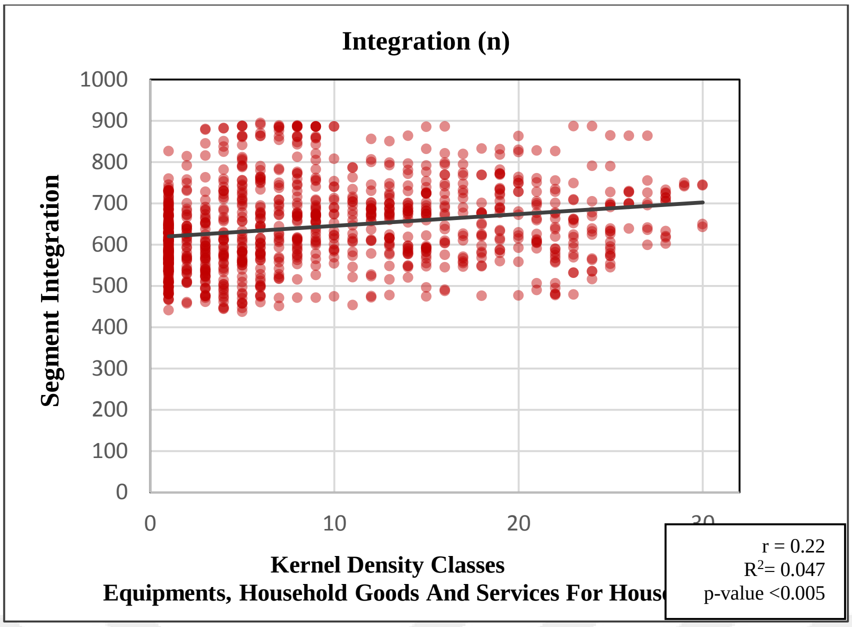


Figure 5.13: Correlation between global ıntegration values and kernel density classes of equipments, household goods and services for house.

Correlation weight are detected as 0.12 by using local integration (n=3) (Figure 5.14). It is thought that determinants scored as extremely important in questionnaires like *Historical retail identity of a location* and *close proximity to same sub sector* are more prominent factors for this retail group to cluster.

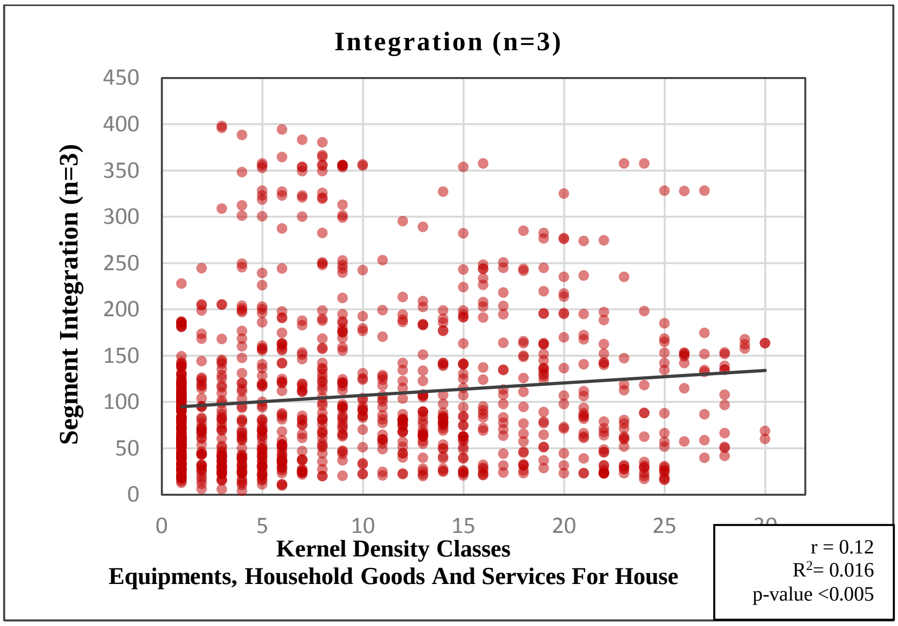


Figure 5.14: Correlation between local ıntegration values and kernel density classes of equipments, household goods and services for house.

5.3.1.3 Finance related stores (Jeweller and exchance offices)

Through observation on the result map, it has seen that agglomeration of finance related stores have a tendency to locate along a definite road named Hakimiyet-i Milliye. Because of being few in number and having compact structure in definite space, it is easier to observe the condition that finance related stores have spatial tendeny to locate in most integrated arterial (Figure 5.15).

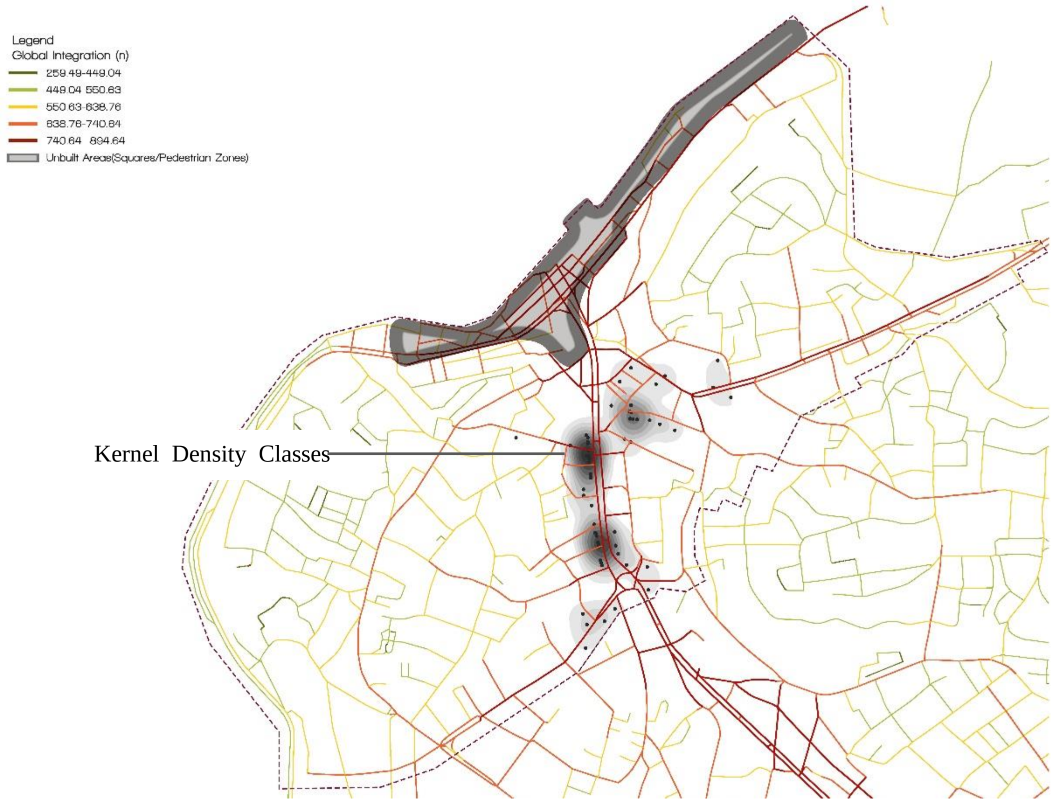


Figure 5.15: Overlapping map of global ıntegration and kernel densities of finance related stores.

To better understand the congruity between spatial agglomeration and accessibility of space, it is important to detect most integrated streets even in highly local scale. For these reason, as it is mentioned before, integration (n=3) analyse is thought as important to detect the streets which are most integrated in all scales.As a result of overlapping map study, it is proved that the integration value of Hakimiyet-i Milliye Street should have an effect on the clustering structure of finance related stores (Figure 5.16).

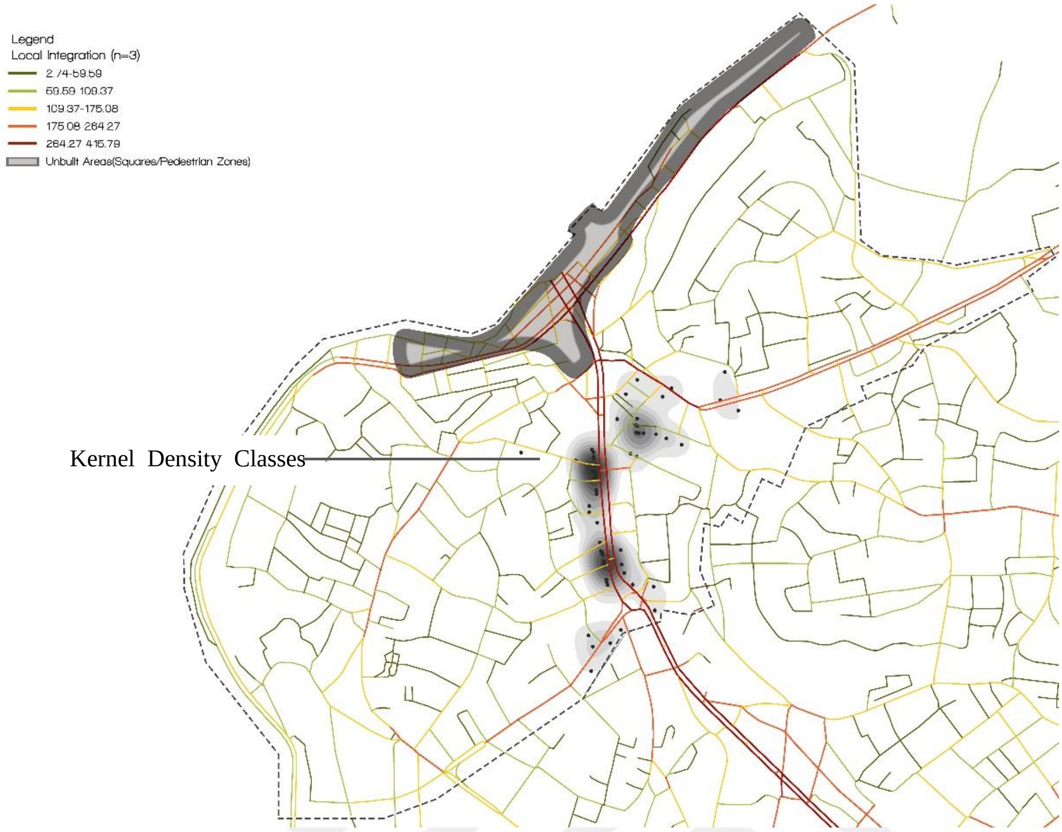


Figure 5.16: Overlapping map of local ıntegration and kernel densities of finance related stores.

As a result of this study, the areas have maximum kernel store density values were detected in highest integrated axis named Hakimiyet-i Milliye Street. Considerably high correlation is found between integration values and kernel densities of Finance Related Stores' Cluster. Correlation weight are detected really high as 0.52 by using global integration (Figure 5.17)

Correlation graphs presenting the relations between integration values and cluster values are represented below.Clearly, high correlation is found between kernel density values and both local and global integrations.

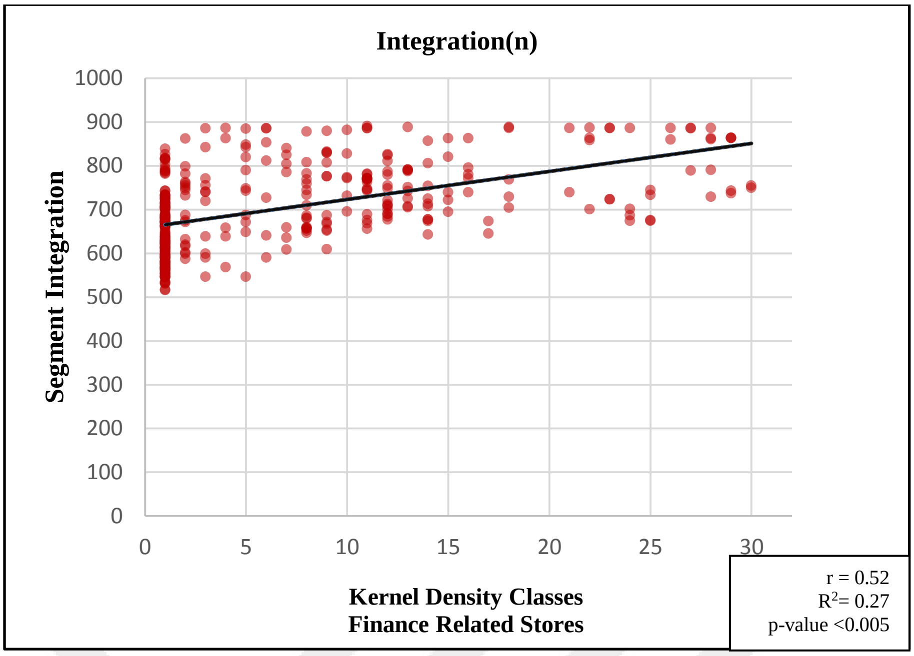


Figure 5.17: Correlation between global ıntegration values and kernel density classes of finance related stores.

Correlation weight are detected as 0.47 by using local integration (Figure 5.18). It is seen that accessibility feature of space is one of the most important factor for locational choices of finance related stores.

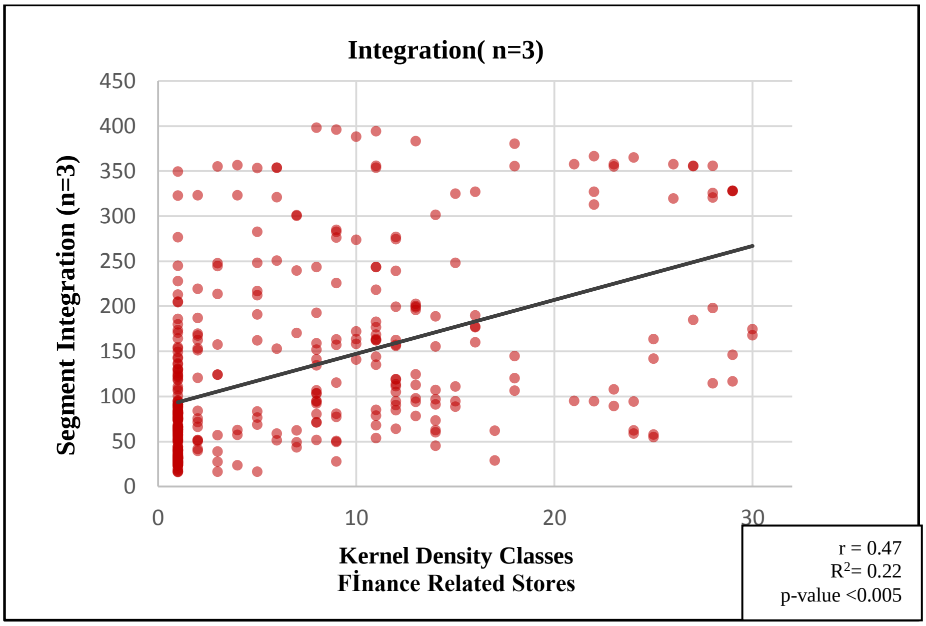


Figure 5.18: Correlation between local ıntegration values and kernel density classes of finance related stores.

5.4 Measurement of Pedestrian Volumes

Pedestrian volume analyses has been implemented as a pilot study to interpret how space syntax analyse results are supported by the pedestrian flows in the study area and how much retail clusters associate with the pedestrian volumes. Detailed information about the way of conducting the pedestrian counting is explained under the title of the methodology.

5.4.1 Correlations between pedestrian volumes and space syntax analyses

By space syntax theoreticians, space syntax parameters are seen as designative elements to see how urban areas operates. They claim that there is high correlation between integration values and human appearance in the space. Superposition of total pedestrian counts and space syntax analyses are displayed below. For detailed look, bigger representations of these superposition maps presented in Appendix C.

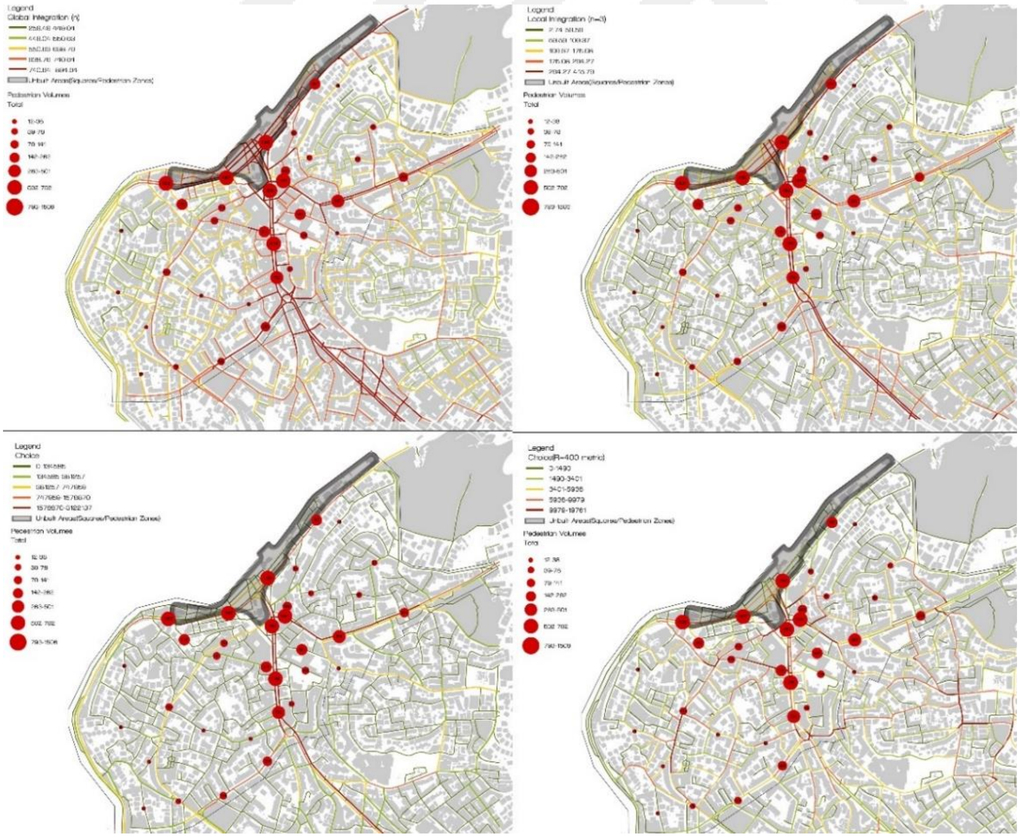


Figure 5.19: Correlations between total pedestrian volumes and space syntax analyses.

As it is mentioned before, global integration is measured throughout the system which takes into account the all steps from the starting point to all points in the system.Besides, local integration shows the scale of the pedestrian movement which takes into account the three stepsaway which is the degree of distant depth equal to 3. When correlation between total pedestrian volume and syntax values are examined in the boundary of study area, firstly, highest correlation is detected between the *Global Integration* in which the value of R is *0.65* with the coefficient of determination (R^2)= 0.42.

Secondly, 0.7 correlation value is detected between the local integration(n=3) and total pedestrian volume with the coefficient of determination (R^2)= 0.48. Clearly, TheseR values which are above the 0.5, shows that integration pattern of study area gives reference to the pedestrian movement in study area. Thus, that integration values are really efficient tools to read the accessibility and functioning of the study area (Table 5.14).

On the other hand, by using different types of distance and different radii, choice values of space syntax refers to how much movement is likely to pass through each segment on trip. It showsthe potential of segments as a route, by counting how likely a person may pass through from each segments. When correlation between pedestrian counts and choice values are examined in the boundary of study area, low correlations is found. Correlation value between the *Choice(metric)* and pedestrian volume is *0.22* with the coefficient of determination (R^2)= 0.04. Moreover, correlation value is detected as 0.39 between the metric choice (400m) and pedestrian volumes with the coefficient of determination (R^2)= 0.15. Because of the low R values under 0.5, it can be said that choice parameter of space syntax is not suitable to read the organization of space by taking account of the pedestrian flows for this study (Table 5.14).

Table 5.13: Values of space syntax analyses and pedestrian counts.

Total Pedestrian Count	Global Integration (n)	Local Integration (n=3)	Choice (metric)	Choice (metric=400m)	Correlation Values
1506	873	338.8	397005	9653	Total Pedestrian Counts and
1300	780	245.6	103286	3690	Global Integration:
1198	883	342.2	580411	9656	
1037	735.9	212.9	566223	17474	The value of R is 0.6481
1020	730.1	185.6	264244	8481	
1007	774.85	213.25	355472	5819	the coefficient of
792	874.25	340.65	550755	6687	determination (R^2)= 0.42
695	757.9	262.25	387913	5335	P- value < 0.05
501	673.5	60.4	320113	3428	Total Pedestrian Counts and
367	828.06	295.5	398591	1857	Local Integration (r=3):
316	566.4	60	18218	3731	
311	744.8	167.6	383	12932	The value of R is 0.6977
262	662.2	52.6	72721	1798	
214	742.98	221.45	289541	5800	the coefficient of
200	818.9	246	575213	6778	determination (R^2)= 0.48
141	704.3	143.15	533600	8277	P- value < 0.05
133	689.5	197.8	558898	10930	Total Pedestrian Counts and
128	793.7	202.9	695084	5163	Choice (metric):
116	706.8	93.1	26522	2538	
114	700.35	138.9	534834	8277	The value of R is 0.2228
78	683.9	194.4	556653	9377	
66	566.5	39.9	37143	1780	the coefficient of
65	671.2	83.1	370130	4275	determination (R^2)= 0.04
65	687	95	69038	3498	P- value < 0.05
61	571.2	60	263271	6048	
57	591	114.5	190122	4661	Total Pedestrian Counts and
38	552	74.9	43633	1921	Choice (metric=400m):
38	495.6	54.5	70733	4782	
36	584.2	54.1	68366	664	The value of R is 0.3938
32	729.7	125	409696	7131	
32	701.1	130.3	590086	6696	the coefficient of
31	653.7	104.5	250185	4057	determination(R^2)= 0.15
27	606.4	74.5	13299	1118	P- value < 0.05
12	626.5	120	44053	4691	

5.4.2 Spatial Relations between pedestrian volumes and retail clusters

After the correlation analyses between space syntax values and pedestrian counts, spatial relations between pedestrian volumes of five minutes periods in a day and clustering zones of three selected groups is examined under the subtitles below.As it is mentioned before, pedestrian counts of five minutes periods were implemented in morning between 08:00- 10:00 pm, in midday between 12:00- 14:00 pm and in afternoon between 18:00-20:00 pm.Counts were conducted in 34 streets with different syntax integration values.

First of all, it has seen that there is almost the same density distribution of pedestrians in three times of counting during a day. For this reason it is rational to interpret the spatial relation between pedestrian volumes and clusters on the basis of total pedestrian count map.

Secondly, points which have highest pedestrian volumes in three periods of counting, are located in the main arterials defined in Chapter 4 (under the title of Transportation Infrastructure and Pedestrian Accessibility) and named as Hakimiyet-i Milliye Street, Selmani Pak Street and Coastal Roads(direction from Üsküdar-Harem Road to Paşalimanı Street). In this point it is important to remind that those streets also have highest integration values.

As it mentioned before, because of the coastal roads are located in between the huge unbuilt spaces such as squares, bus stations, metro stations, green spaces, mosque courtyards, it is not possible for retailers to cluster along that streets and take benefit from the huge pedestrian volumes there. For this reason, interpretations of relations between pedestrian volumes and retail clustersare made upon the other counted points.

5.4.2.1 Cafes, pubs and restaurants

Four different superposition maps are prepared including the three different pedestrian counts and total pedestrian volume maps with kernel density maps (Figure 5.20). Except the pedestrian count values in unbuilt space boundaries, maximum pedestrian volumes are seen in the streets where Cafes, Pubs and Restaurants have clustered. In questionnaires, it was seen all kind of users are aimed to pull almost regardless of the social group of customers *(Market Potential)* for Cafes, Pubs and Restaurants. It is important to remind that Market Potential main determinant was ranked as 'Middle Impact' (with avarage of 2.4 point) and age group sub-determinant was ranked as 'Middle-Low Impact' in questionnaires done with Cafes, Pubs and Restaurants. On the other hand desired users(all city users/country users/neighbourers/tourists) determinant was ranked as 'Middle High Impact', and defined as 'all city users' and 'tourists' by the retailers of this group.As a result, superposition maps and the knowledge acquired from the questionnaires show that Cafes, Pubs and Restaurant clusters select site to reach almost all kind of users as many as possible. To achieve that they locate close to the stations and squares and in main arterials where the most pedestrian flow occurs.

For detailed look bigger representations of the superposition map of total pedestrian count and kernel density classes presented in Appendix D.

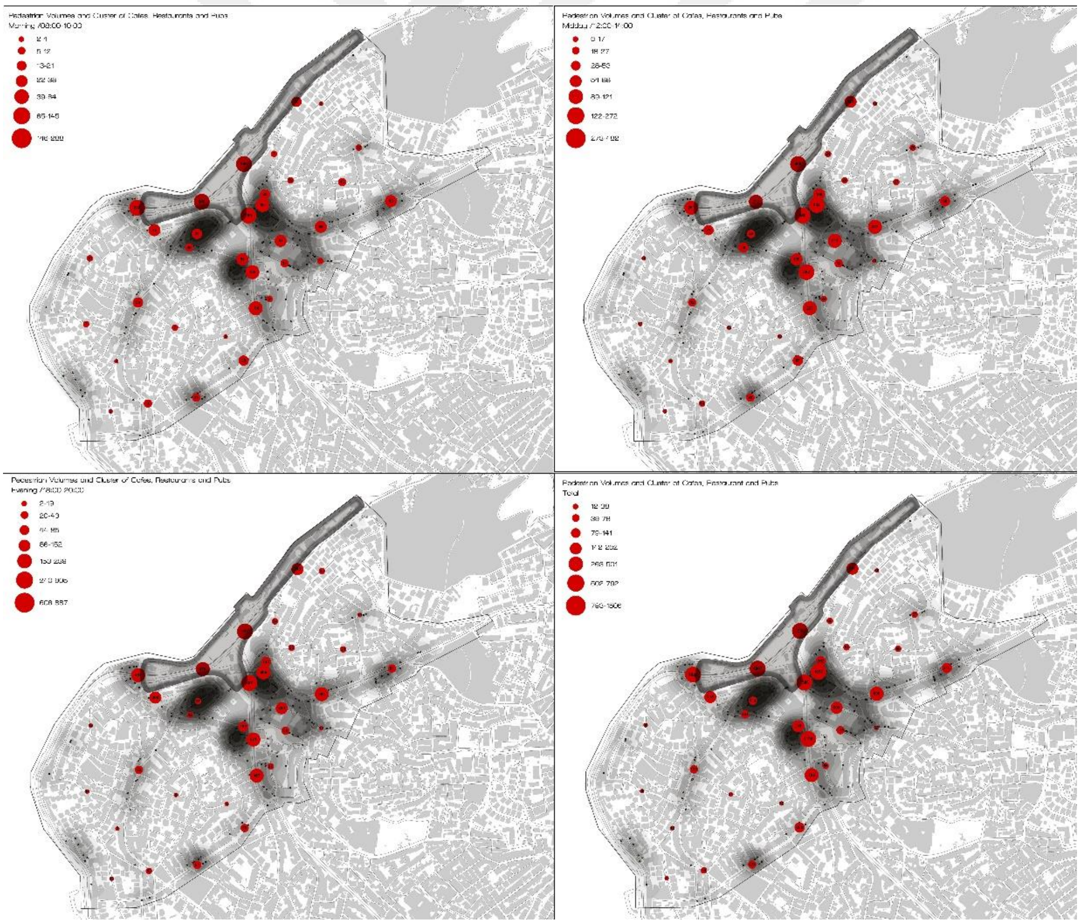


Figure 5.20: Spatial relation between kernel classes of cafes/restaurants/pubs and pedestrian volumes.

5.4.2.2 Equipments, household goods and services for house

As similar, four superposition maps of Equipments, Household Goods And Services Group is prepared including the three different pedestrian counts and total pedestrian volume maps with kernel density maps (Figure 5.21). In all the maps including pedestrian volumes of different periods and total volumes; average and low pedestrian counting are seen where Cafes, Pubs and Restaurants have clustered.

In questionnaires conducted with the 'Equipments, Household Goods And Services For House' group, it was seen that mostly definite kind of users are aimed to pull in relation to the social group of customers *(Market Potential)*. It is important to remind that Market Potential main determinant was ranked as 'Middle High Impact'(with avarage of 3.6 point) and 'income group' sub-determinant was ranked as 'High Impact' in questionnaires. Besides that, desired users(all city users/country users/'inhabitants of district/tourists) determinant was ranked as 'Middle High Impact', and defined as 'all city users' and mostly as 'inhabitants of district' by the retailers of this group. On the other hand, rent values are ranked as higly important by the retailers of this group.

As a result, superposition maps and the knowledge acquired from the questionnaires show that Equipments, Household Goods And Services For House clusters mostly does not select a site to reach all kind of users. They aims pull the social groups in need of what they serve. To achieve this, by locating together they create a sense or perception for inhabitants of district who at least few times pass from there while living there. This perception ensure this retailers to be remembered by inhabitants when they in need something specific which direct them to the location of 'Equipments, Household Goods And Services For House' clusters. For this reason, it is seen that, this group does not have to prefer the most integrated and highest rented streets. It is enough to locate in city center and connect to the integrated and much-used streets.

For detailed look, bigger representations of the superposition map of total pedestrian count and kernel density classes presented in the Appendix D.

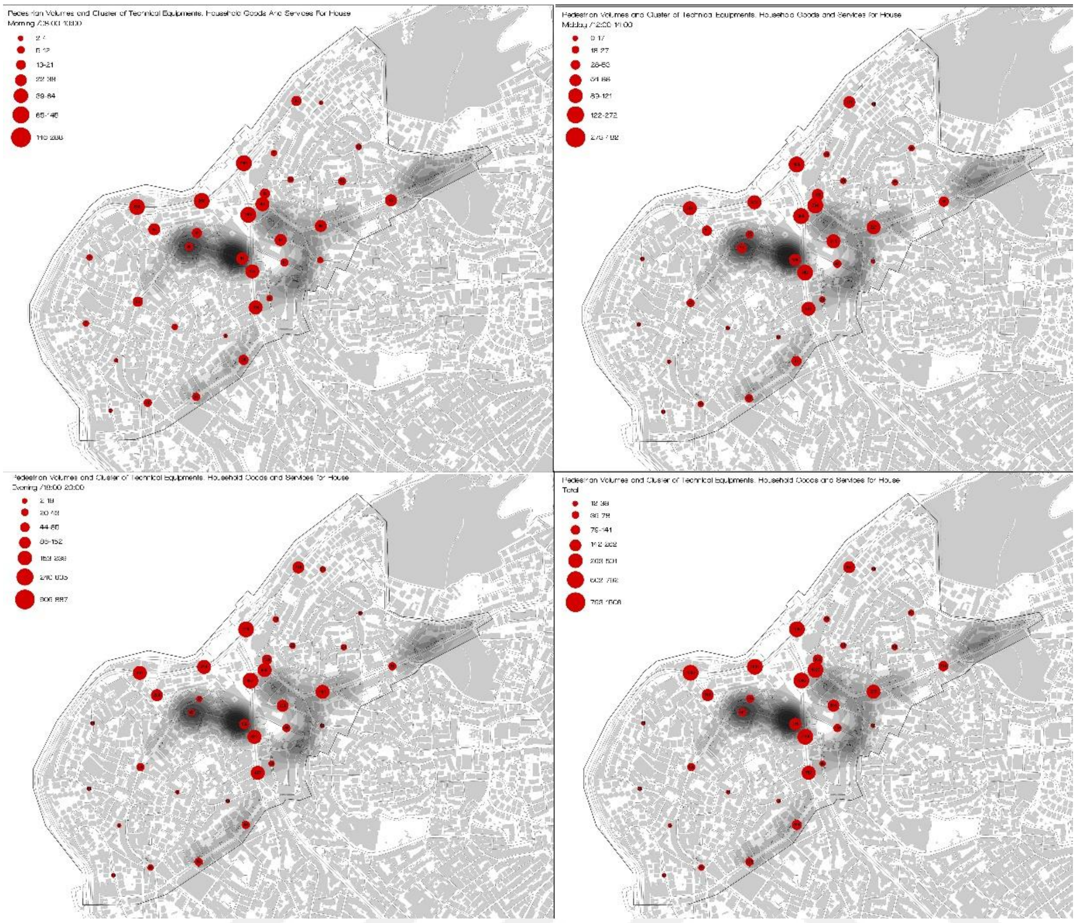


Figure 5.21: Spatial relation between kernel classes of equipments, household goods and services for house and pedestrian volumes.

5.4.2.3 Finance related stores (Jeweller and exchance offices)

In all the maps including pedestrian volumes of different periods and total volumes with kernel density maps; only highest pedestrian counting are seen where Finance related stores have clustered (Figure 5.22). As being different than other groups studied in this thesis, almost all Finance Related Stores located along the Hakimiyet-i Milliye Road which is most integrated and one of the most used arterial of the study area. Moreover, it has highest choice values.

In questionnaires conducted with theFinance Related Stores', it was seen that *Market Potential (*social group of customers) is regarded as very important. It is important to remind that *Market Potenti*al main determinant was ranked as ' High Impact'(with avarage of 4 point) and 'income group' sub-determinant was ranked as 'High Impact'(with avarage of 4.9 point) in questionnaires. Besides that, desired users (all city users/country users/'inhabitants of district/tourists) determinant was ranked as

'High Impact'(with avarage of 4.9 point), and defined as 'all city users' and mostly as 'tourists' by the retailers of this group. When these results are thought together, it can be said that to catch more people with the desired income and age, and the tourists, they prefer locating in most used and most integrated arterials. Also, in questionnaires it is detected and expressed by the participants that retailers of this group place spatial emphasis on visibility of their shop front. For this reason, they prefer to extend across a line which strengthen their observability and noticeability while passing through. Due to the same reason, they do not prefer to locate around the squares having public transportation stations on top, because the crowd including all kind of people with or without shopping purposes can block their observability and noticeability by target group.For detailed look, bigger representations of the superposition map of total pedestrian count and kernel density classes presented in the Appendix D.

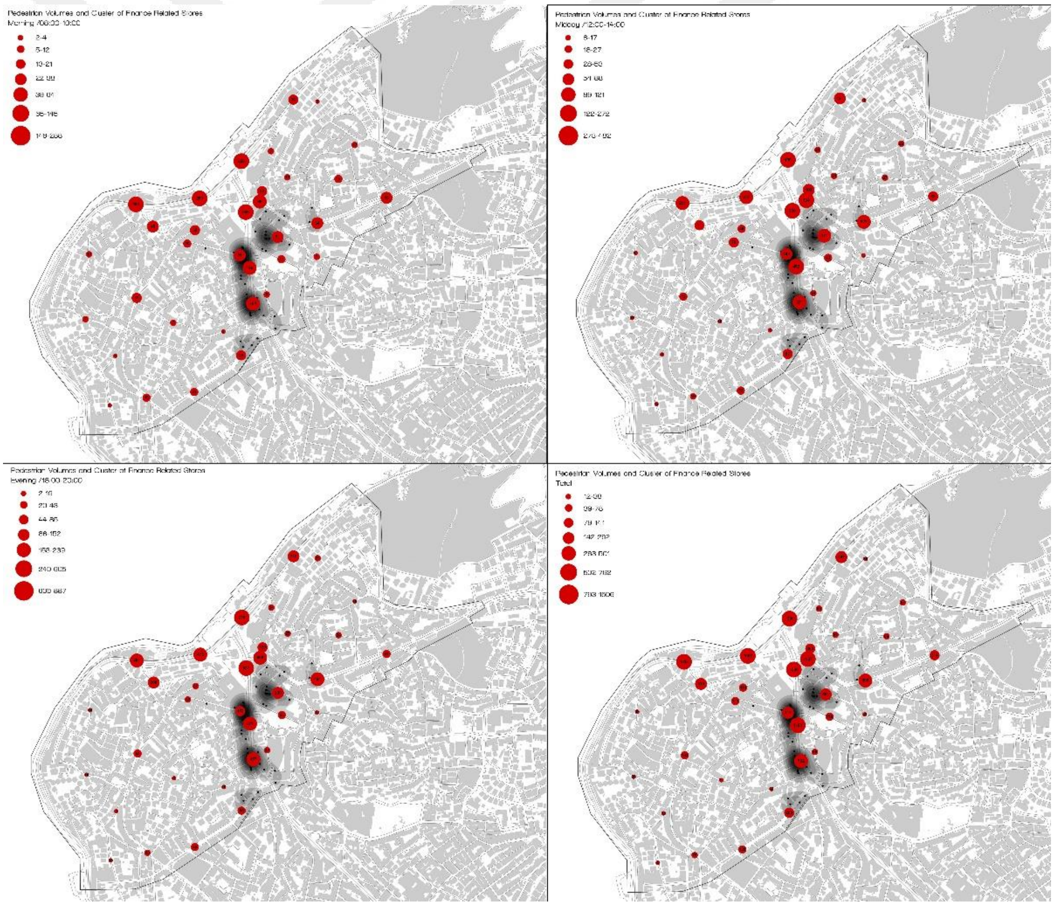


Figure 5.22: Spatial relation between kernel classes of equipments, household goods and services for house and pedestrian volumes.

5.5 Overall Assesement of Findings

In this chapter all of the tangible data derived from the analyses in chapter 5 (Application of Methodology to Retail Cluster Analyses to Measure the Effect of Spatial Dynamics) combined and commentated. Results of the each analyses performed under the chapters namely; Detection of Geographical Agglomerations of Retail Sector in Üsküdar Center (Chapter 5.1), Measurement of retail cluster determinants (Chapter 5.2), Measurement of accessibility (Chapter 5.3), Measurement of pedestrian volumes (Chapter 5.4) and correlation analyses organized and presented (Table 5.15).

Table 5.14: Overall assesment of findings.

Cafes/Pubs/Restaurants	Equipments, Household Goods and Services For House	Finance Related Stores (Jeweller and exchance offices)
Number Of Stores	Number Of Stores	Number Of Stores
207	136	60
Form of Clusters	Form of Clusters	Form of Clusters
Both Linear and Compact	Linear	Linear
Location of Clusters	Location of Clusters	Location of Clusters
-Defining Squares	-Not Defining Squares	-Not Defining Squares
-Located around the Transfer Points of Public Transportations	-Located close to Transfer Points of Public Transportations	-Located close to Transfer Points of Public Transportations
-Along and between the main Arterials	-Along the street has intersection with main arterial	-Along the most used main Arterial
Desired Users	Desired Users	Desired Users
✓ Residents of Neighbours	✓ Residents of Neighbours	Residents of Neighbours
✓ District Community	✓ District Community	✓ District Community
✓ Residents of Istanbul	Residents of Istanbul	✓ Residents of Istanbul
✓ Tourists	Tourists	✓ Tourists
Correlations Between Cluster Densities and Space Integration	Correlations Between Cluster Densities and Space Integration	Correlations Between Cluster Densities and Space Integration
-High Correlation btw.Global Integration and Kernel Densities: R=0.52	-Low Correlation btw.Global Integration and Kernel Densities: R=0.21	-High Correlation btw.Global Integration and Kernel Densities: R=0.48
-Relatively High Correlation btw.Local Integration and Kernel Densities: R=0.37	-Low Correlation btw. Local Integration and Kernel Densities: R=0.12	H-igh Correlation btw. Local Integration and Kernel Densities: R=0.52

Table 5.14 (continued): Overall assesment of findings.

Cafes/Pubs/Restaurants		Equipments, Household Goods and Services For House		Finance Related Stores (Jeweller and exchance offices)	
Pedestrian Volumes of Clusters		Pedestrian Volumes of Clusters		Pedestrian Volumes of Clusters	
Highest and Middle-High Pedestrian Volumes is seen in different parts of Clusters		Middle-Low Pedestrian Volumes is seen		Highest Pedestrian Volumes is seen	
Determinants Ranked above 4.0	Avg. Score	Determinants Ranked above 4.0	Avg. Scor e	Determinants Ranked above 4.0	Avg. Score
Pedestrian Traffic	5	Pedestrian Traffic	4.8	Pedestrian Traffic	4.9
Double facade usage	5	Double facade usage	4.7	Double facade usage	4.6
Width of walkway	4.9	Width of walkway	4.5	Width of walkway	4.5
Placing in Corner/Junction point	4.9	Placing in Corner/Junction point	4.4	Placing in Corner/Junction point	4.5
Quality of facades	4.9	Quality of facades	4.6	Quality of facades	4.6
Historical retail identity of a location	4.8	Historical retail identity of a location	4.9	Historical retail identity of a location	4.8
Frontage usage	4.6	Frontage usage	4.7	Frontage usage	4.4
Aligning in the main arterial	4.3	Aligning in the main arterial	4.1	Aligning in the main arterial	4.4
Continuation of walkway	4	Continuation of walkway	4.2	Continuation of walkway	4.4
Accessibility to transfer points and stations	4.9	Accessibility to transfer points and stations	4.9	Hitap Edilen Gelir Grubu	4.9
Close proximity to parking areas	4.4	Close proximity to parking areas	4.6	Slope of the street	4.4
Type of Transportation (pedestrian only/ pedestrian and car)	4.2	Type of Transportation (pedestrian only/ pedestrian and car)	4.5	Close proximity to touristic and historical centers	4.5
Close proximity to touristic and historical centers	4.5	Desired income group	4	Getting sunlight	4.3
Getting sunlight	4.3	Slope of the street	4.4	Desired Users	4.7
Aligning beside/front the square	5	Rental value	4.2	Quality of paving	4.4
Locating around/in the historical structures	4.6	Rank of Determinants below 2.0 (unimportant Determinants)	Avg. Scor e	Desired age group	4
Having scenery	4.6	Aligning beside/front the park	0.5	Rank of Determinants below 2.0 (unimportant Determinants)	Avg. Score
Locating in the coastal strip	4.4	Close proximity to <u>other private sectors except retail sector</u>	1.2	Aligning beside/front the park	“0.9

Table 5.14 (continued): Overall assesment of findings.

Cafes/Pubs/Restaurants		Equipments, Household Goods and Services For House		Finance Related Stores (Jeweller and exchance offices)	
Determinants Ranked above 4.0	Avg. Score	Rank of Determinants below 2.0 (unimportant Determinants)	Avg. Score	Rank of Determinants below 2.0 (unimportant Determinants)	Avg. Score
Quality of urban furnitures	4.2	Accessibility to product dealer	1.8	Close proximity to other private sectors except retail sector	1.6
Green-field organization along walkways	4	Having scenery	0.1	Accessibility to product dealer	2
Rank of Determinants below 2.0 (unimportant Determinants)	Avg. Score	Locating in the coastal strip	0.6	Having scenery	1.3
Aligning beside/front the park	1.8	Working days	0.9	Locating in the coastal strip	0.9
Close proximity to other private sectors except retail sector	1.7	Working hours	1	Working days	2
Accessibility to product dealer	1.3	Having monumental structures and image elements	0.8	Working hours	1.8
Desired age group	2	Close proximity to open green spaces(parks, picnic areas)	1.2	Aligning beside/front the square	1.8
		Urban furnitures	2	Close proximity to public institutions	2

Number of each groups

The number of each group in the study area is presented in the table 5.2. Because cafe, restaurants and pubs group serves for daily needs of people in every hour of a day and has recreational aspect as well, it is not surprising result that cafes, restaurants and pubs are the most common retail type in the study areaamong all types of retail structures. For the same reason, besides the clusters of this group, it is possible to reach this type of retail sector in every streets of the study area. On the other hand, due to the serving for specific needs which occur sometimes, finance related stores and stores of Equipments, Household Goods And Services For House are fewer and locate in definite areas of the study area.

Form of Clusters

Secondly, as a result of the detection of Geographical Agglomerations of Retail Sector in Üsküdar Center, it has seen that different retail groups can create different cluster forms. While clusters of Finance related stores and Equipments, Household Goods And Services For House clusters have exact lineer form; clusters of cafes, restaurants and pubs have compact form emerging from the combination of lineer extentions around the urban square and stations.

As it is explained in Finance related stores part of Spatial Relations between Pedestrian Volumes and Retail Clusters (Chapter 5.4.2) finance related stores place spatial emphasis on visibility of their shop front, correspondingly they create lineer agglomerations which strengthen their observability and noticeability by people while passing through. Due to the same reason, they do not prefer to locate around the squares having public transportation stations on top, because the crowd including all kind of people with or without shopping purposes can block their observability and noticeability by the target group.

Location of Clusters

It is very clear that clusters of cafes, restaurants and pubs have a strong tendency to select site in nucleus of the urban centers. They locate in most active places of urban life which are around the squares, around the Transfer Points of Public Transportations and along the main Arterials.

On the other hand, Equipments, Household Goods And Services For House clusters does not locate in most active areas. They aims pull the specific consumers in need of what they serve. To achieve this, by locating together they create a sense or perception in users to be remembered when they in need. Thus, mostly, instead of locating around squares or main arterials by paying high rents, they prefer to locate in streets has connection to the integrated and much-used streets.

Because of the same reasons explained in Form of Clusters, clusters of finance related stores are not willing to place in or around the squares and stations, but they locate close to transfer points of Public Transportations and they align in the most used main arterial which carry high pedestrian flow.

Desired Users

According to the questionnaries presented under the title of Suppy-Side Analyses-Measurement of Retail Cluster (Chapter 5), it has seen that different retail groups have different target customers. While cafes, restaurants and pubs have bigger scope in terms of desired customers, finance related stores and stores of Equipments, Household Goods And Services For House target more definite groups and this feature effect their site selections and areas of their clusters.For cafes, restaurants and pubs's owners all of the users are seen as target customers, they put an emphasis on residents of Istanbul and Tourists.

According to the questionnaires conducted with owners or managers of Equipment, Household Goods And Services stores, it is seen that they target neighborhood community and users from immediate environment who knows where such stores locate when they need something specific.

For finance related stores, district community, residents of İstanbul and tourists are stated as main target groups.

Correlations Between Cluster Densities and Space Integration

It has seen that integration values of streets have highly positive relation with clusters of cafes, restaurants and pubs and finance related stores. In the analyses conducted on those retail types; high correlations between integration values and kernel densities is found. Thus, formation of urban structure and integration values of streets are detected as one of the most important factors affect the clusters of two retail groups. For further information; correlations between spatial distribution of the other retail groups in the study area and integration values of streets in different scales can be calculated.

Pedestrian Volumes of Clusters

Except the pedestrian count values in unbuilt space boundaries which are leave out of the interpretation; maximum pedestrian volumes are seen in the streets where Cafes, Pubs and Restaurants have clustered. It is learned from the questionnaires that all kind of users are aimed to pull almost regardless of the social group and age range of customers(*Market Potential)* for Cafes, Pubs and Restaurants. Desired users are defined as all city users and tourists including neighbors and district community. Thus, those stores locate close to the stations and squares and in main arterials to reach almost all kind of users where the most pedestrian flow occurs.

It is learned from the questionnaires that 'Equipments, Household Goods And Services For House' group aims to pull mostly definite kind of users which are residents of neighbor and district community. For these reason mostly they do not need to locate in main arterials with highest pedestrian volumes. Middle-Low Pedestrian Volumes is seen in the location of 'Equipments, Household Goods And Services For House clusters.

As being different than other groups, almost all Finance Related Stores locate along the most integrated arterial of the study area where highest volume of pedestrian count occurs. Because the social group of customers(*Market Potential)* is regarded as very important, it is thought that to catch more people with the desired income and age, and also the tourists, those stores prefer locating in most used streets.

Determinants Ranked Above 4.0

First of all, within the 39 determinants, number of 21 of those are remarked as highly important (ranked above 4.0) for Cafes, Pubs and Restaurants. Besides that total number of 17 determinants are remarked as highly important for both Equipments, Household Goods and Services for House clusters and finance related stores. This data can be interpreted as Cafes, Pubs and Restaurants have more critical variables highly affecting their locational choices and clusters.

Being affected by same physical features while selecting a site, similar retail groups create clusters voluntarily or involuntarily. To understand spatial reflections of highly important determinants ranked above 4.0 on the three selected retail groups, *Spatial Model of Three Retail Groups* (Figure 5.23) and *Desired Street Models of Three Retail Groups*(Figure 5.24) are produced. Spatial Model of Three Retail Groups is prepared according to the determinants ranked above 4.0 and related with locational choices of three groups. Other determinants which are ranked above 4.0 and specific to street structure are represented in *Desired Street Models of Three Retail Groups.*

In Spatial Model of Three Retail Groups (Figure 5.23), firstly cafes,restaurants and pubs are placed*beside/front of the square*because itis the most important factor for this group (ranked as 5.0) and not desired factor for other groups. *Locating in the coastal strip* and *Having scenery* are the other determinants ranked as 'high impact' for cafes,restaurants,pubs and unimportant for other groups. For these reason,cafes,restaurants are also placed in the coastal line.

Participants of cafes,restaurants,pubs and finance related stores are ranked the *Aligning in the main arterial* higher than the participants of Equipments, Household Goods and Services for House. Moreover, participants of Household Goods and Services for House are stated that *rental value* is also highly important determinant for their locational choices. It is known that highest rental values are seen in the main arterials.For these reason, they prefer not to choose main arterials to locate but to choose secondary arterials which has direct connection with main roads. These findings are also parallel with the space syntax analyses of each group. Thus, cafes,restaurants,pubs and finance related stores are placed in main arterial and Stores of Equipments, Household Goods and Services for House are placed in secondary arterial has direct connection to main arterial.

Close proximity to touristic and historical areas is the another determinant stated as highly important for finance related stores and cafes,restaurants,pubs. Thus, in spatial model those groups are placed close to such areas.

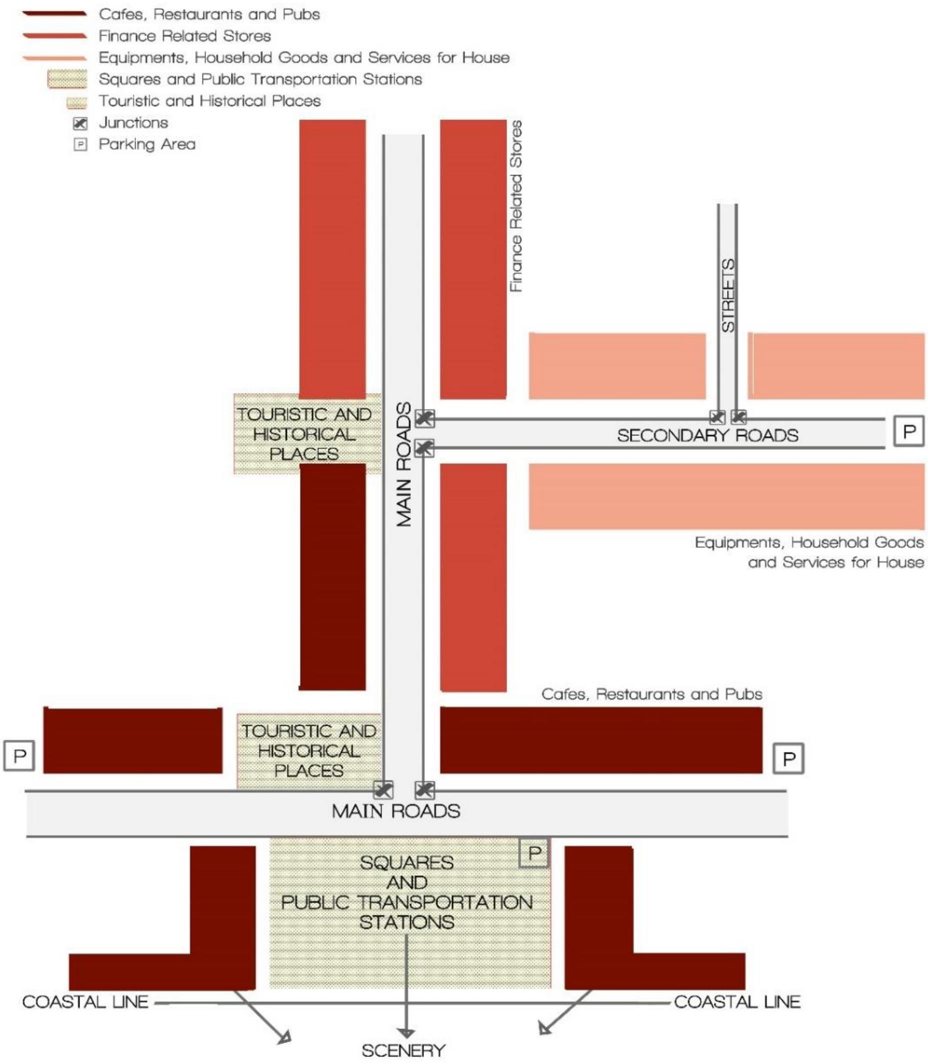
Close proximity of parking areas are detected as highly important for cafes,restaurants,pubs and Stores of Equipments, Household Goods and Services for House.Depending on this parking areas are placed schematically to the spatial model of three selected group.

Moreover,*placing in junctions* which is defines as highly important determinant for all retail groups are marked in the spatial model.

In terms of the detection of clustering tendencies *Close proximity to <u>same sub sector</u>* is defined as higly important factor for all selected retail groups.This factor assets the clustering tendency of different retail groups. Depending on this, each retail groups are placed as compact entities.

As a result, when examining the spatial model of three selected group, it is clearly seen that different retail groups have different locational tendencies while selecting a site and they are willing to locate with same sub sectors. This spatial differantiation of different retail types trigger the development of different urban structures and identities (Figure 5.23)

Figure 5.23: Spatial model of three retail groups produced depending on the determinants ranked above 4.0.



Desired Street Models of Three Retail Groups (Figure 5.24) shows the spatial reflections of other most influental determinants in site selection of three selected retail groups.This model only includes the determinants associated with the street pattern and ranked as average of 4.0 and above for each retail groups.

First of all, it has seen that width of walkway, continuity of walkway and pedestrian traffic determinants are highly important determinants for all retail groups.It is clear that features of walkway are some of the most important features of streets which are the providers for carrying huge pedestrian flows.

As it is represented in figure 5.24, opportunity of double facade usage is seen as one of the most desired feature of three retail groups.Especially, it is ranked as 5.0 in all questionnaires conducted with the owners or managers of cafes,restaurants and pubs. Moreover,it has seen that renewal of facades is highly important feature desired to be seen in streets by all retail gorups.Usage of frontages is another important feature of a street which is received at least 4.6 points in average in each questionnaires' results.

It is an interesting finding that quality of urban furnitures is averagelly ranked higher thanpresence of urban furnitures in three questionnaire results.It shows that selected three retail groups give more importance to quality of urban furnitures than presence of urban furnitures. Moreover, as it is seen from the *Desired Street Models of Three Retail Groups* quality of urban furnitures is ranked 4.2 in average by cafes,pubs and restaurans' owners or managers.

Having green field is another important determinant which is ranked as 4.0 in only the questionnaires conducted with cafes, pubs and restaurants.On the other hand it is not much diserable feature for finance related stores and stores of equipments,household goods and services for house.Because,stores of equipments,household goods and services for house prefer to have open and usable frontages to transportation of goods and equipments. Besides that finance related stores prefer to be visible and noticeble as much as possible.

Even all of the groups give high prioriry to pedestrian traffic, stores of equipments,household goods and services for house, cafes pubs and restaurants also wants roads for vehicle. Because, stores of equipments,household goods and services for house need service roads to receive and deliver the household goods and equipments. Moreover, both cafes pubs and restaurants and stores of equipments,household goods and services for house want to take benefit from the customers with vehicle.

Both finance related stores and stores of equipments,household goods and services for house pay attention to slope of street. Especially, managers of equipments,household goods and services for house stores statethat they prefer flat streets to use the frontages easily to represent household goods and to loading the goodseasier to deliver.

Getting sunlight is another important feature of streets which is mostly desired by cafes,restaurants and pubs and finance related stores. In addition to that, on the contrary to other groups, having scenery and locating in the coastal line are the highly ranked features by cafes, restaurants and pubs.

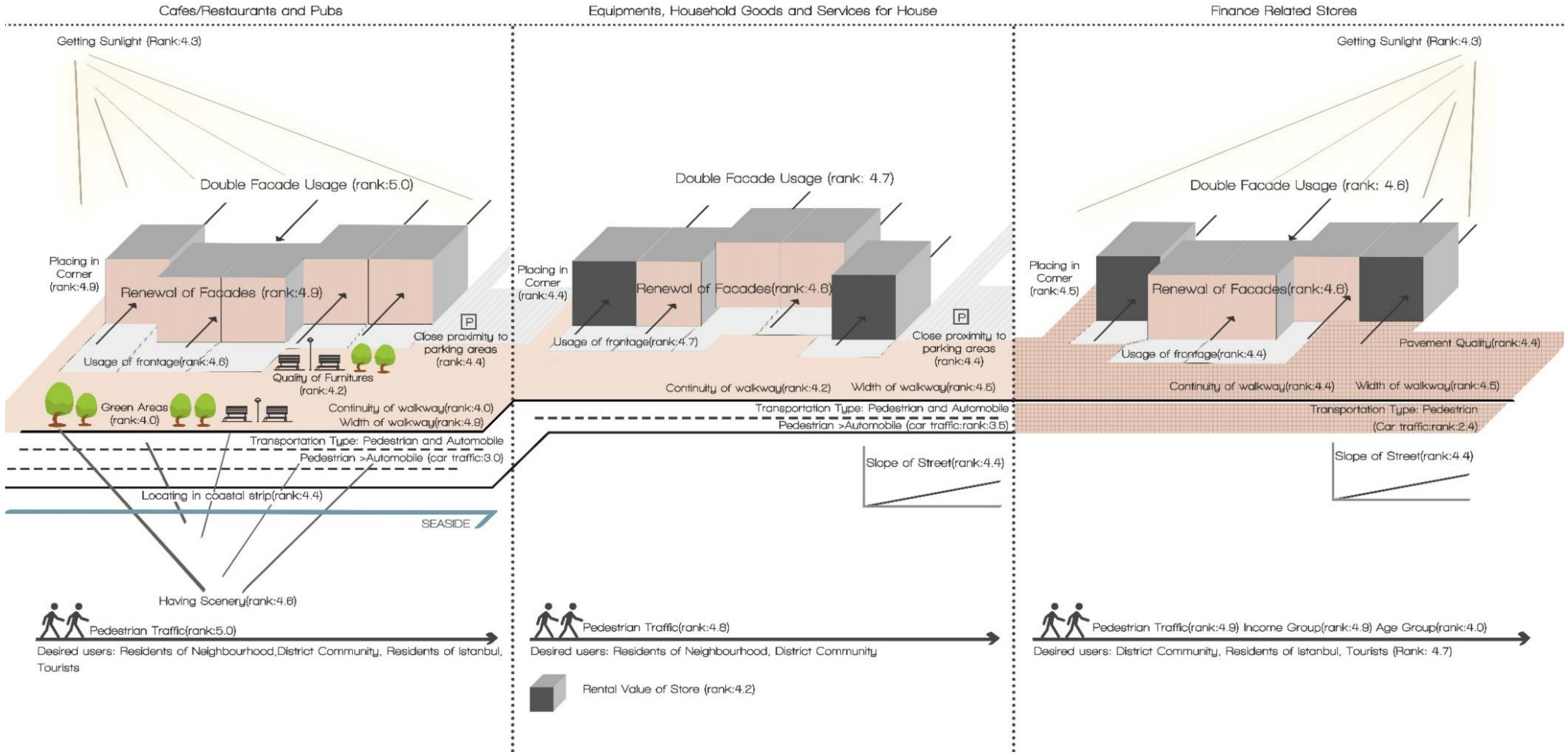


Figure 5.24: Desired street models of three retail groups depending on the determinants ranked above 4.0.

6. CONCLUSION AND RECOMMENDATION

In this study, it has tried to discover the spatial determinants of retail store clusters in local scale to shed light on to how spatial interventions can affect formation and decline of specific retail clusters. But first, cluster tendencies or clustering desire of the different retail groups should have been proven. As it shown in table 6.1, retailers of the all selected groups give high importance to locating together with the same sub-sector and parallelly, they geographically locate together in specific areas. These facts shows that different types of retail sector choose clustering.

Table 6.1: Comparing clustering tendencies of different retail groups.

Clustering Tendencies	Total Score	Total Given Score	Total Avarage Score
Cafes/Pubs/Restaurants			
Close proximity to other sub sectors in retail sector (complementary stores)	50	33	3.3
Close proximity to same sub sector (rival competition)	50	44	4.4
Equipments, household goods and services for house			
Close proximity to other sub sectors in retail sector (complementary stores)	50	40	4.0
Close proximity to same sub sector (rival competition)	50	48	4.8
Finance related stores			
Close proximity to other sub sectors in retail sector (complementary stores)	50	35	3.5
Close proximity to same sub sector (rival competition)	50	48	4.8

As it has shown in table 6.2, some specific spatial determinants can be unpreferable features by one type of retail groups while they are mostly preferred features for other retail groups. Thus, if it is aimed to sustain these typical clusters; physical interventions in urban environment should be analyzed in detail and change according to each cluster. For example, placing monumental structures or image elements is not supportive for the cluster of Equipments, Household goods and services for House and not effective for the development of Finance Related Stores clusters. Urban furnitures are not preferred by the Equipments,Household goods and services for House group.

Table 6.2: Changing effects of determinants according to the retail types.

	Cafes,pubs and restaurants	Equipments,Household goods and services for House	Finance Related Stores
Determinants ranked **similar** and ranked as **most effective**			
Pedestrian Traffic	5.0	4.8	4.9
Double facade usage	5.0	4.7	4.6
Width of walkway	4.9	4.5	4.5
Placing in Corner/Junction point	4.9	4.4	4.5
Quality of facades/Renewal of facades	4.9	4.6	4.3
Historical retail identity of a location	4.8	4.9	4.8
Frontage usage	4.6	4.7	4.4
Close proximity to same sub sector	4.4	4.8	4.8
Aligning in the main arterial	4.3	4.1	4.4
Continuation of walkway	4.0	4.2	4.4
Determinants ranked **similar** and ranked as **least effective**			
Aligning beside/front the park	1.8	0.5	0.9
Close proximity to other private sectors except retail sector	1.7	1.2	1.6
Accessibility to product dealer	1.3	1.8	2.0
Determinants ranked **highly different** by different groups			
Working days	3.3	0.9	2
Working hours	3.2	1	1.8
Desired Users	3.9	3.9	4.7
Aligning beside/front the square	5	3.2	1.8
Locating in the coastal strip	4.4	0.6	0.9
Having scenery	4.6	1	1.3
Urban furnitures	3.5	2	3.5
Getting sunlight	4.3	3.3	4.3
Quality of urban furnitures	4.2	2.9	3.6
Green-field organization along walkways	4	2.6	2.7
Having monumental structures and image elements	3.2	0.8	2.1
Locating around/in the historical structures	4.6	2.5	3.3
Desired income group	2.8	4	4.9
Close proximity to public institutions	3.3	2.5	2
Close proximity to touristic and historical centers	4.5	2.7	4.5

On the contrary to current practices treating retail sector with a holistic approach, retail sector has a large number of inner dynamics and sub-groups in itself. Even this thesis has been carried out on the basis of only three subgroups of retail sector, it has already seen that every retail group with similar services and products has their unique requirements from a place and target groups. Depending on those requirements, their locations and site selection criteria change according to the type of services they provided.

There are a lot of study taking retail sector into consideration as an whole structure and searching the effects of it on user's perception and orientation in space. However, throughout the implementation of analyses, it has clearly seen that clusters of different retail types originate unique identities for places and even for streets, by doing so they create various space perceptions and orientations for users.

On the other hand, there are lots of studies conducted with space syntax approaches to see how movement patterns are powerfully shaped by spatial layout and how these two shape the formation of retail structure of urban centers. In fact, in those studies strong relations are found between the spatial layout and retail structures of cities. Yet, there are limitied studies about how much spatial layout effects and related with the formation of different retail groups. In these study, it has seen that integration parameter of space syntax approach is not much correlated with all types of retail shops but highly correlated with specific groups. For example, location of finance related stores or cafes, restaurants and pubs are highly correlated with integration values of streets but locations of Equipments, Household goods and services for House does not Show meaningful correlation with integration values.

Similar to those explained above, analysis phases of urban planning and urban design studies especially in our country take retail sector into consideration with a holistic approach as well. However, such planning and designing approaches can be detrimental or damaging for the spatial identities of historical setllements including different type of evolved retail agglomerations. Because, in such evolved urban settlements there are different type of retail identities arised in paralel with urban development through the history and such identities have significant effects on usage of urban centers and organization of urban life. Thus, they become inconvertable elements of whole urban system that ''wholeness, is a matter of a vital interrelationship among the elements of any size, shape, and scale in a system''(Ekinoğlu, Kubat and Plunz, 2017, p. 69). If any implementation is done inapplicable to the structure of those typical clusters, whole system of city centers and the collective memory of users rised from this wholeness can be damaged.

As a result of the facts stated below, to protect and develop various urban and street identities developed through the history, it is important to define different retail patterns and their clustering determinants before implementing any planning and designing decisions especially for evolved urban centers like Üsküdar. By doing so, it will be possible to maintain the spatial perceptions of place users' developed through the history.

At the beginning of the design proposals for urban renewal projects in city centers following steps are recommendeddue to the findings of this thesis;

-Classification of existing retail structure according to the specific criteria such as similarities of served products, geographic locations and target customers

-Detection of clusters of retail groups

-Searching for the meaning of those clusters for the urban environment, place users and in history

-Describing the preferred spatial featuresespecially for the clusters have a valuein collective memory.

-Creating the design approach by taking into consideration the specific spatial features that supports the existing clusters.

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APPENDIX

APPENDIXA: Definitions of Clusters

Table A. 1: Definition of clusters and Emphasis

Author	Definition of cluster & Reference of Clustering	Emphasis
Alfred Weber	"The theory of agglomeration deals, according to the preceding discussion, with local concentrations of industry which arise because of the fact that the production of a unit of product came in this concentrated producing complex be more economically performed by a certain definite amount" (Weber, 1929, p.134).	- Local concentrations - Economic performance
Alfred Marschall	"An industry concentrated in certain localities is commonly, though perhaps not quite accurately, described as a localized industry" (Marschall,1890, p.222)	- Local concentrations - certain localities
Michael E. Porter	"Clusters are geographic concentrations of interconnected companies and institutions in a particular field" (Porter, 1998, p.79).	-Geographic concentrations -Interconnected companies -Particular field
Michael E. Porter	"A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities" (Porter, 2000, p.16).	-Geographic concentrations -Interconnected companies linked by commonalities and complementarities -Particular field
Edgar M. Hoover	"The incentives toward agglomeration of diverse types of business into a relatively small number of clusters at transfer nodes may be summed up under the head of "economies of urban concentration"(Hoover, 1948, p.120)	-Economics of urban concentration -Diverse types of business -transfer nodes

	"An industry requiring specialized or highly trained labor generally has a concentrated and rather stable pattern, clustering at points where such a labor supply has gradually developed" (Hoover, 1948, p.174) "Where the customer wants to compare alternatives before buying, market areas tend to coalesce, as the sellers find it desirable to cluster for display of their wares"(Hoover, 1948, p.66).	- Specialized and trained labor supply developed, - Customer demands
Örjan Sölvell	" Clusters are not seen as fixed flows of goods and services, but rather as dynamic arrangements based on knowledge creation, increasing returns (Krugman, 1991) and innovation in a broad sense"(Sölvell, 2008, 15).	- competitiveness -knowledge creation -innovation -increasing returns -particular location
Organisation For Economic Co-Operation And Development (OECD)	"Economic clusters emerge most often where there is a critical mass of firms allowing economies of scale and scope, a strong science and technology base, and a culture conducive to innovation and entrepreneurship"(OECD,1999, p.7)	- Science and Technology base - Culture conducive to innovation and entrepreneurship -Economics of scale -Mass of firms
	"Clusters can be interpreted as reduced-scale national innovation systems. The dynamics, system characteristics and interdependencies of individual clusters are similar to those of national innovation systems"(OECD,1999, p.12)	- İnnovation -Interdependencies
J. Han M.Kamber A.K.H. Tung	"Spatial clustering is the process of grouping a set of objects into classes or clusters so that objects within a cluster have high similarity in comparison to one another but are dissimilar to objects in other clusters" (Han, Tung & Kamber, 2001, p.1).	- high similarity of firms
T.C. Ministry of Industry and Technology	"Cluster is a operation model emerge from geographic concentrations of the firms operating in the same or similar branch, by being cooperative and competitive and the other supportive firms and institutions"(T.C. Sanayi ve Teknoloji Bakanlığı, 2011, p.5)	- Geographic concentrations -Same or similar branch - Cooperation - Competition

San Diego Association of Governments	"Clusters are groups of inter-related industries that drive wealth creation in a region, primarily through export of goods and services" (San Diego Association of Governments, n.d., p.1)	- İnter-relation -wealth creation
Website of Business Dictionary	"A network of connected businesses, suppliers, and associates in a specific field that are all located in the same geographical area. Clusters are thought to provide increased efficiency and productivity so businesses can be competitive on a national and global scale" (What is business cluster? The definition and meaning,n.d.)	-Network of connected businesses -Specific field -competition -Increased efficiency and productivity
David A. Wolfe Meric S. Gertler	"Clusters first as a functionally defined group of firms and supporting institutions that produce and market goods and services from a group of related industries that are concentrated in a specific geographic locale" (Wolfe & Gertler, 2004, p.1)	- Specific geographic locale -Geographic Concentration - Defined Group Of Firms And Supporting Institutions
Wilson Perumal & Company	"Clustering: a simple form of localization that groups together stores with similar customer bases with the goal of tailoring each cluster to better serve those customers" (Wilson Perumal & Company, 2013, p.3).	- Localization - Similar customer bases - Better serving to customers
Joshua Pollack	"The term clustering refers to “the process of grouping sales outlets together based on similarities or patterns in their underlying customers’ behavior" (Pollack, 2014, p.4).	- Customers’ behavior
C. M. Pop & D. C. Dabija	"Thus, the cluster analysis can lead not only to the identification of groups of objects with common characteristics but also to the delineation of consumers into those who prefer a particular package, those who take decisions according to various reasons or those who exhibit similar behavioural patterns" (C. M. Pop & D. C. Dabija, 2012, p.100).	Behavioural patterns of customers Customers preference - Delineation of consumers - Groups of objects common characteristics

PierluigiPassaro Sergio Salomone Luca Petruzzellis	".. store clusters within urban places generate agglomeration effects. These synergistic effects are due to outlets being nearby to one another and this can lead to benefits for both retailers and consumers" (Passaro, Salomone, Petruzzellis, 2016, p.24).	Being nearby (localization) Benefits for consumers Benefits for retailers
Christoph Teller Jonathan Elms	"Retail agglomerations can be defined as a cluster of stores within a clearly defined spatial area"(Teller & Elms, 2010, p.2).	Defined spatial Area

APPENDIX B: Geographic agglomerations of Retail Groups

Figure B. 1: Geographic agglomerations of groceries

Figure B. 2: Geographic agglomerations of cafes/pubs/restaurants

Figure B. 3: Geographic agglomerations of health related stores

Figure B. 4: Geographic agglomerations of outerwear underwear,accessories group

Figure B. 5: Geographic agglomerations of Technical Equipments, Household Goods And Services For House (Group 5 -6)

Figure B. 6: Geographic agglomerations of specific food and nutrients group

Figure B. 7: Geographic agglomerations of building design, construction, restoration and real estate group

Figure B. 8: Geographic agglomerations of finance related stores

Figure B. 9: Geographic agglomerations of motor vehicle machines and their services

Figure B. 10: Geographic agglomerations of lojistik and transportation group

Figure B. 11: Geographic agglomerations of press and stationery group

Figure B. 12: Geographic agglomerations of energy group

Figure B. 13: Geographic agglomerations of telecommunication group

Figure B. 14: Geographic agglomerations of cosmetic group

Figure B. 15: Geographic agglomerations of toys and giftstores

Figure B.16: Geographic agglomerations of landscape and flower-seller group

APPENDIX C: Spatial relation between pedestrian volumes and space syntax analyses

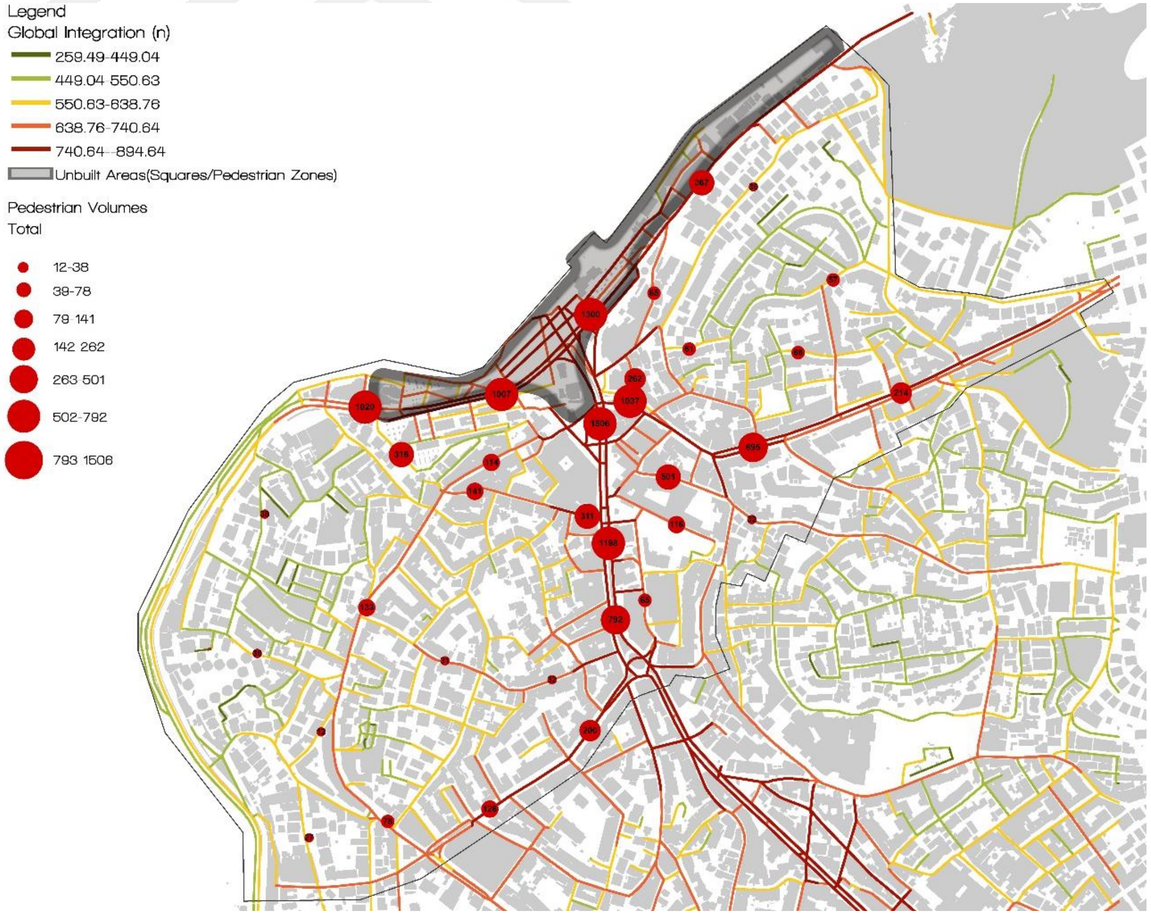

Figure C. 1: Spatial relation between global integration values and pedestrian volumes

Figure C. 2 Spatial relation between local integration values and pedestrian volumes

Figure C. 3 Spatial relation between choice values and pedestrian volumes

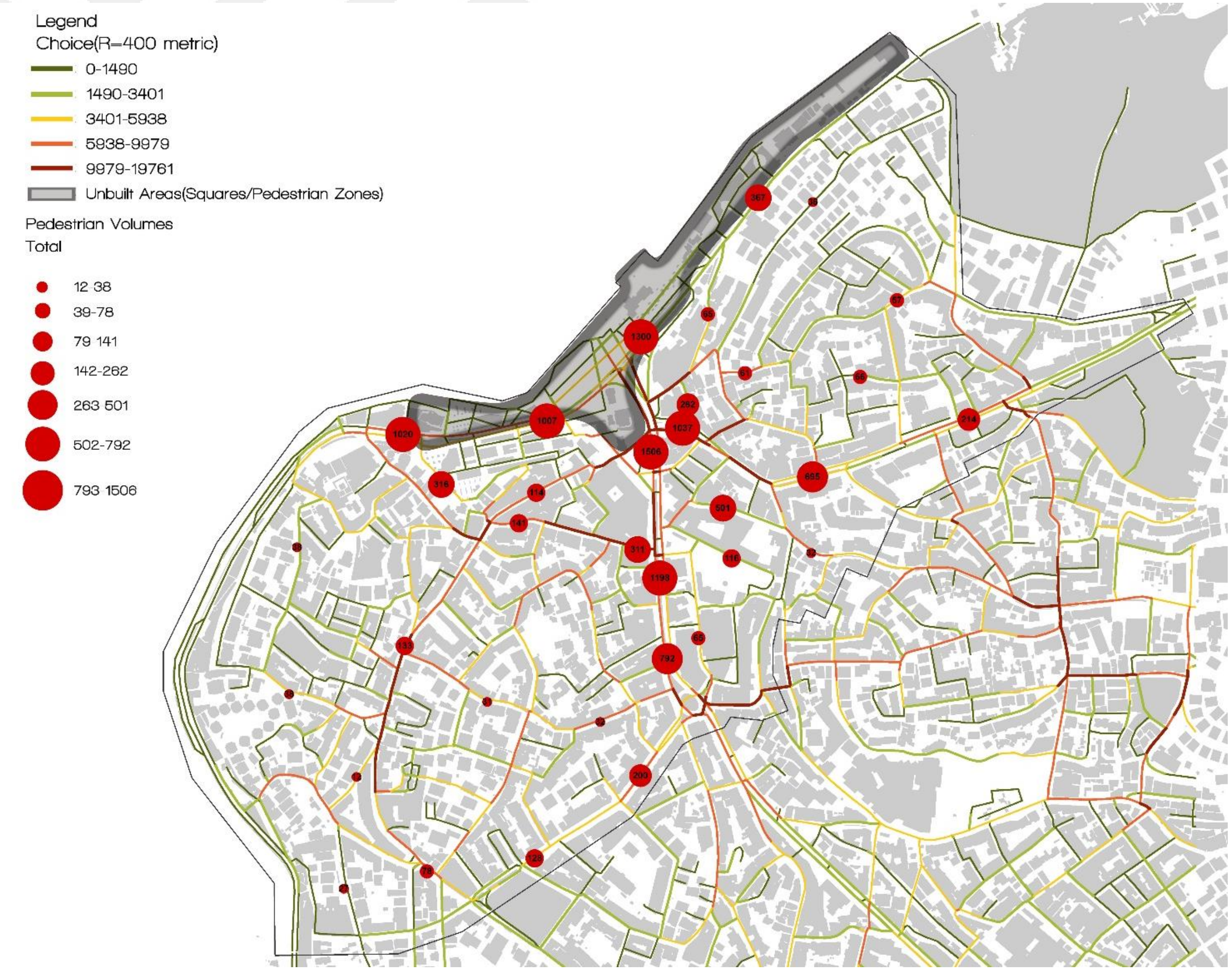

Figure C. 4: Spatial relation between choice-400 metric values and pedestrian volume

APPENDIX D:Superposition maps of total pedestrian counts and kernel density classes of three retail group

Figure D. 1 Total pedestrian volumes and clusters of cafes, restaurants and pubs.

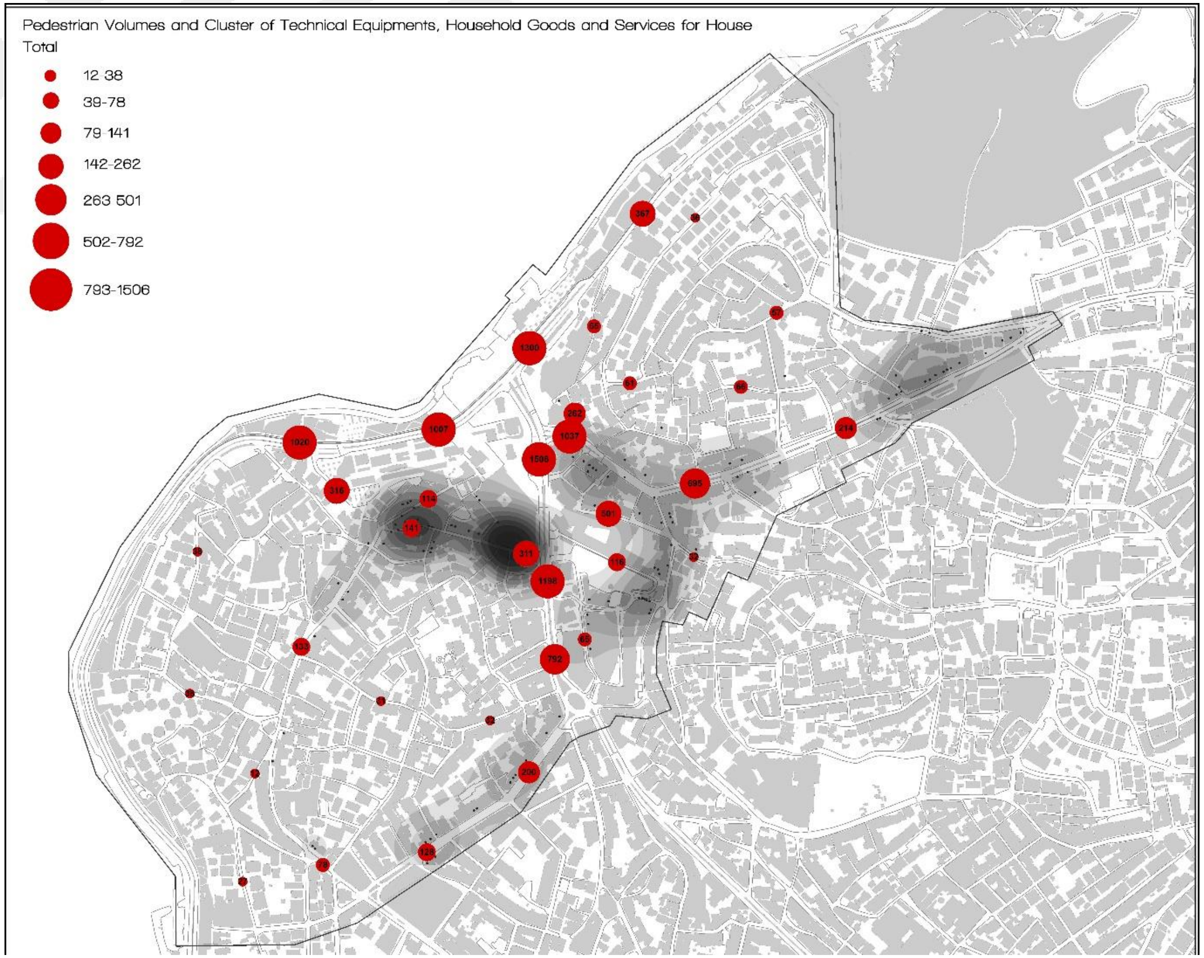

Figure D. 2 Total pedestrian volumes and clusters of technical equipments,household goods and services for house.

Figure D. 3 Total pedestrian volumes and clusters of finance related stores.

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