Geography Coursework

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Contents

Introduction

-Aim

Shopping hierarchy exists in urban centers. The aim of this report is to find out in which ways do shopping centers vary as their size increase (determined by the number of shops). Research was carried out in Nei-Hu District, Taipei, Taiwan. The following were investigated:

- Shop types
- Building height
- Traffic and pedestrian flow
- Environmental quality-litter
- Environmental quality-noise
- Amenities
- Shopping patterns:
  -Sphere of influence
  -Frequency of visit
  -Money spent
  -Transportation method
  -Purpose of visiting
  -Time spent

2 large centers where investigated. One was the local high street and another an out-of-town shopping center. The purpose was to find the difference between them.

-The area and centers (see map for location of centers)

Nei-Hu district is a mix of residential and business area. Taipei is a fairly new city, it may not have developed characteristics of older cities. It is located outer area of Taipei City. Thus, most people live here to commute to work.

The results from different centers vary be due to its location. Two corner shops were investigated because there may not be enough respondents to show the characteristics of small centers.

Centers were as follows:

C1-main high street of the district

C2-out of town shopping center

C3-local high street

C4-small center in residential area.

C5-cluster of shops near high way.

C6.1-corner shop

C6.2-corner shop near commuting zone.

At C1-C5, sample points were chosen to represent the area for certain data. See map.

-Methodology

At larger centers, sample points were chosen to represent the area. The larger the center, the more sample points were placed. This is because data may change in different parts of a large center. The points were random, but were equally spaced.

- Shop Types

  This was done because as centers increase in size, shop types will change. The time of investigation is not important: shops are not likely to change. Data was collected during the day at working hours. Shop type determined by majority of good/services provided. This is to aid recognizing shop types. One difficulty was investigating shops in C2. because there were only 3 superstores, the percentage of different goods sold was calculated by counting how much space each type occupies (this was in rows). This may be inaccurate as some goods occupy more space.

  Shops were categorized into the following:

  -Comparison Shops [CM]
  -Convenience Shops [CON]
  -Restaurant [RES]
  -Snacks [SN]
  -Service [SER]
  -Financial [F]
  -Entertainment [EN]
  -Educational [LEARN]
  -Specialist [SP]
  -Department [DEP]

- Building height

Unit	Number of floors including ground floor
Method	Counting at sample points
Purpose	How size of enter affect buildings built
Problem	Does not show size
Presentation	Iso lines

- Traffic and Pedestrian Flow

Unit	Number/minute
Method	Collected twice at 11:00 a.m. (two weekdays), the average was used to analyze. I collected the data at one point and then quickly rushed to the next point. The order was reversed on the second time and average used. Ensures accuracy.

Purpose	How busy a center is
Problem	Low accuracy despite using average; data at sample points should be collected at the same time.

- Environmental quality-litter

Bi-polar analysis was used. Points were given according to the type, size and amount of litter seen within 3 meters radius of sample points.

-Paper and card board pieces (point/unit)

One unit was defined as a piece about the size of an adult's hand.

-Drink cans (point/unit)

These include aluminum cans, plastic cans and general drink cans. A 1.5 liter bottle would have been counted as 2 units.

-Plastic pieces (point/unit)

Definition same as paper.

-Polystyrene pieces (point/unit)

It was important to have this category because many restaurants use polystyrene, and because restaurants are very common in Taiwan. Definition same as above.

-Small pieces of litter (point/10units)

These are little pieces of litter, e.g. cigarette butts and any of the above at sizes 5-10cm.

Time may also affect the results, so this was collected at 2-3pm weekdays. It was not repeated because time should not affect the results significantly. Sample points were used.

- Environmental quality-noise

Bi-polar analysis was used. The data was collected at 10 am and 4pm weekdays at sample points. The average was used; noise may be affected by time. I listened to the noise for 1 minute and gave a value. They were as follows:

1- Small enough to ignore, e.g people walking, chat, cats and dogs.
2- Scooter, bikes, car driving by slowly.
3- Average-acceptable
4- Large amounts of vehicles (trucks, cars, scooter)
5- Very loud, construction site noise, traffic honking and airplanes

Sometimes it is difficult to judge.

- Amenities

These included:

-bins

-public telephones

-post boxes

-public chairs

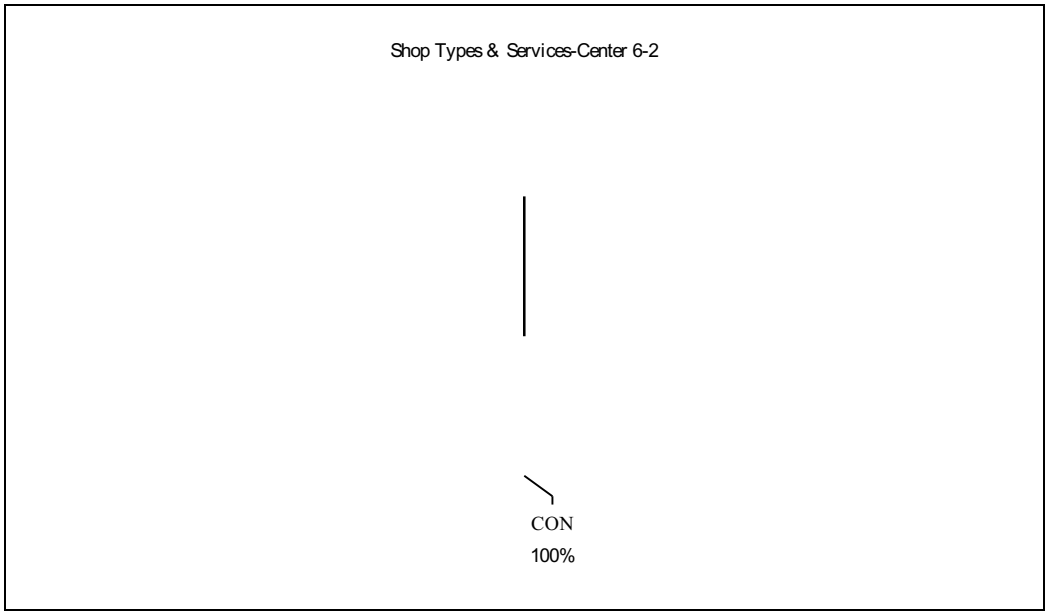
Amenities are not affected by time, so the data was collected during weekends.

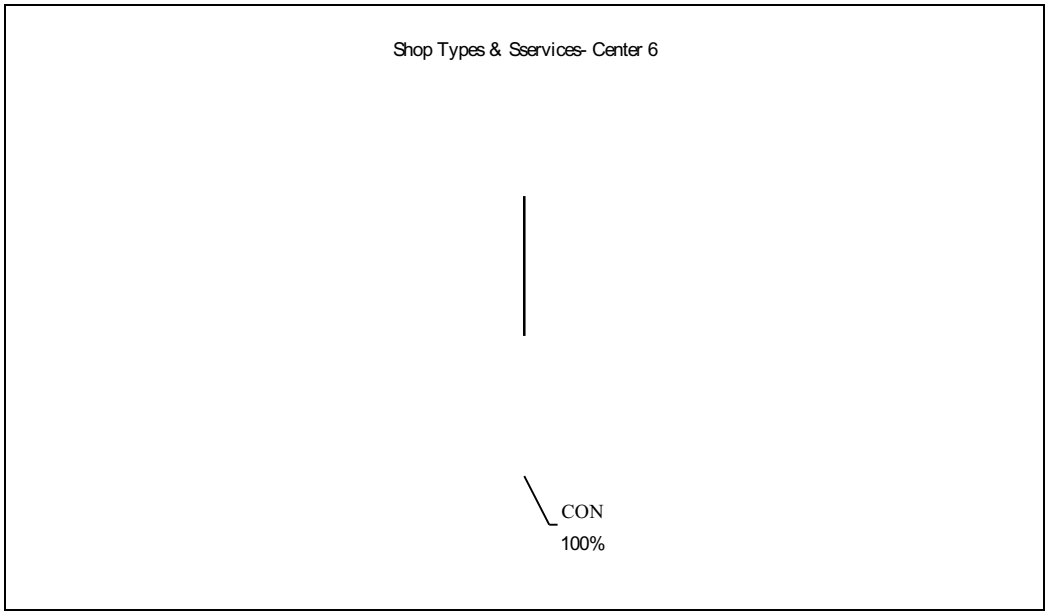
- Shopping Patterns (see appendix for example of questionnaire)

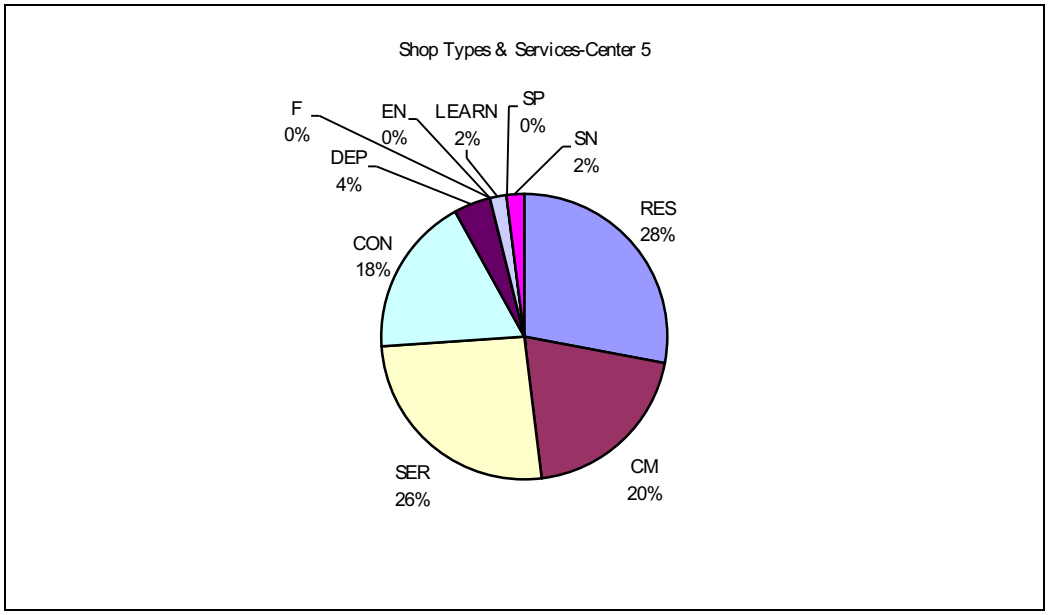
  This was done through a survey. Random sampling was used. There were 50 respondents at each center giving a more accurate result.. At large centers surveys were carried out at sample points so the total was 50. The questionnaire was done during the weekends, and split into morning and afternoon. It was suitable to do this at weekends because more people shop; we would have a cross section of the population. People may shop at different times for different purposes. Also more people means higher responding rate.

Data Presentation and Analysis

- Shop Types






Shop Types & Services-Center 5
F
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EN
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LEARN
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SP
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SER
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CM
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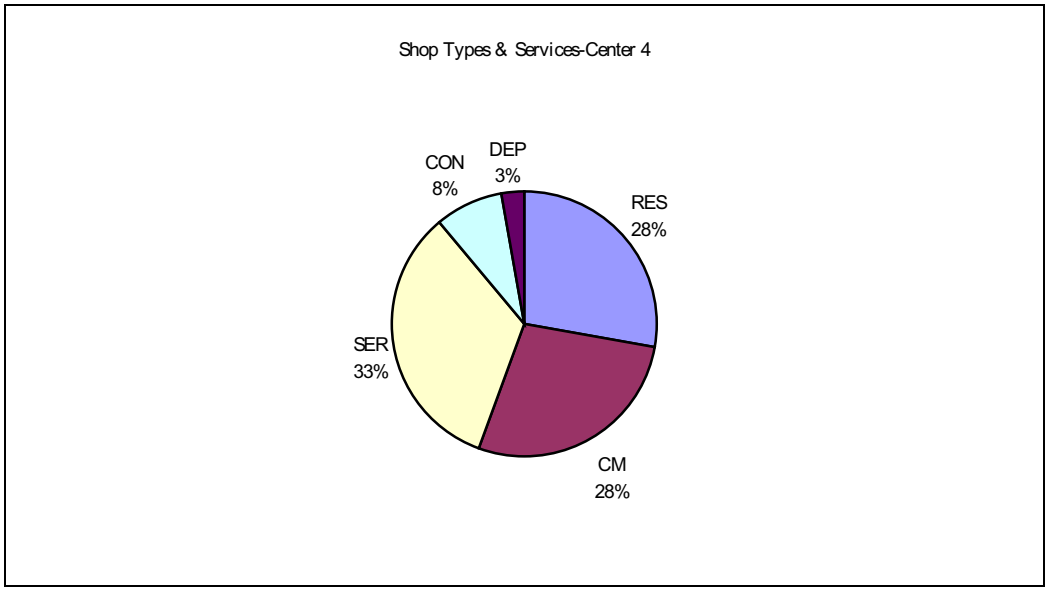
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DEP
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RES
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SER
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CM
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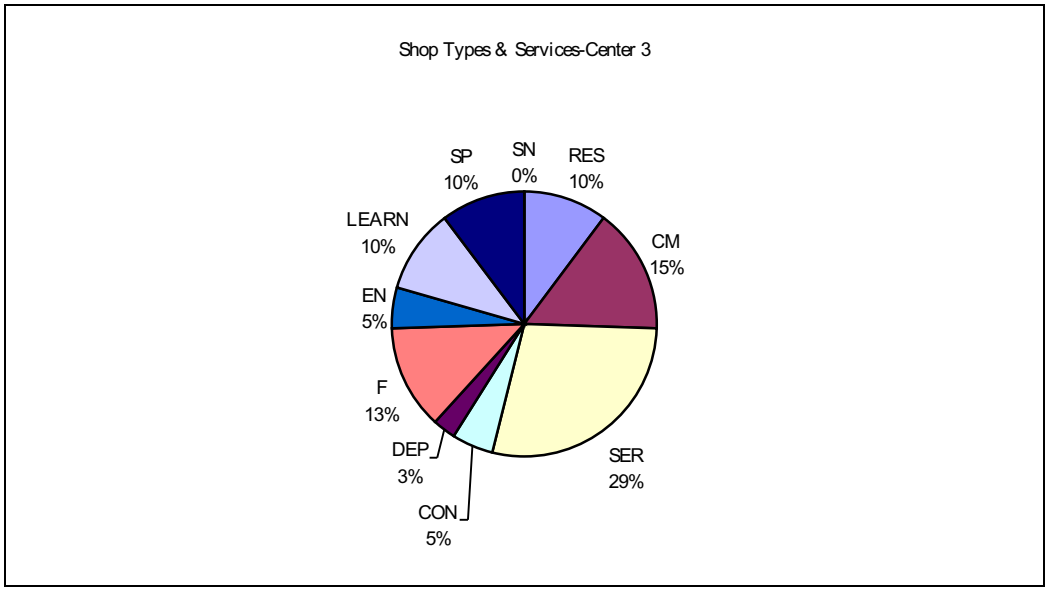
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RES
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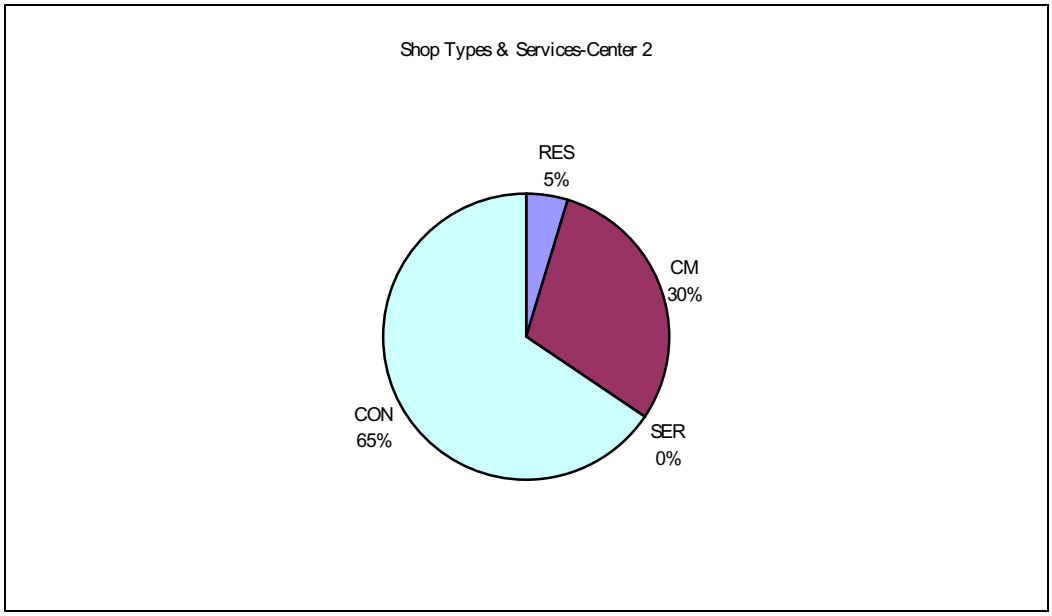
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CM
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CON
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SER
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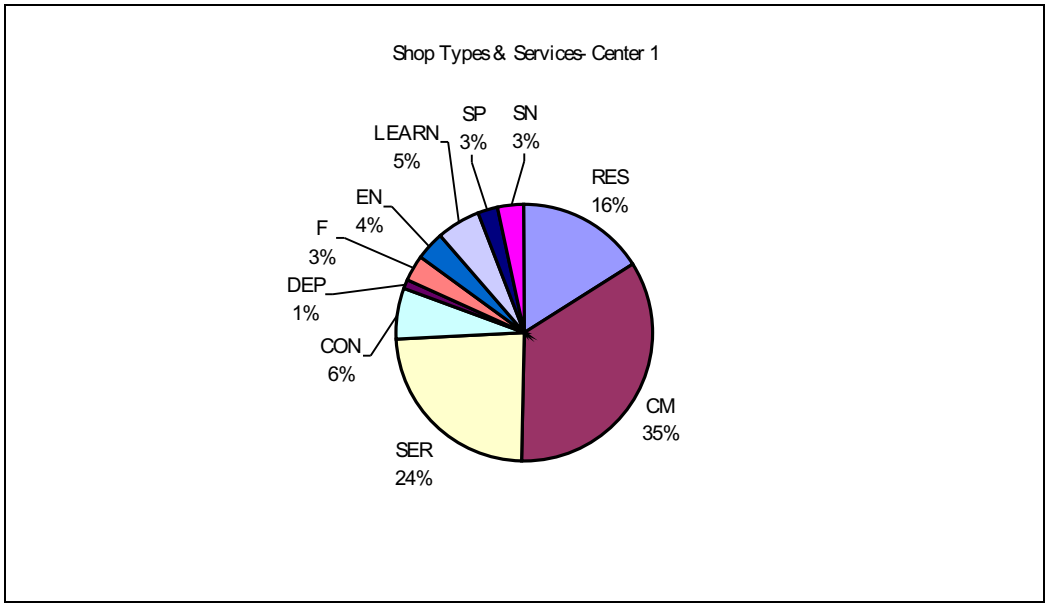


As a center increase in size, the number of shops and the number of types of shops also increase. This is because large centers have larger sphere of influence, which mean there is a high threshold population. This means the center can support more shops.

The proportion of comparison increase and convenience shops decrease. This is because people travel a short range for convenience stores. People are willing to travel larger range for up market goods, hence comparison shops. More people visit large centers for general shopping. High threshold population also means higher order shops supported.

Services do not change much because people do not want to travel far for it, especially medical services; they need to be available locally.

The proportion of restaurants is largest in the middle. This is because restaurants are considered to be convenient in Taiwan. But it requires higher threshold population than convenience stores, so they are found in this section.

C2 was an anomaly. It is a large shopping center but mostly sells convenience goods rather than comparison goods. This is because it provides good transportation links and parking. The prices are also low. It attracts people who need to do weekly shopping. It may also be because the local high street sells comparison goods, which mean competition.

- Building height (see graph)

  The highest buildings are found higher up in the hierarchy. This is because as centers increase in size, it moves towards the center of the district, where land price is highest; buildings are built tall. Comparison shops make enough revenue

to cover this cost. C6.2 was an anomaly. It had a tall building because this area of the district newer. To meet demand for housing (rising population), flats are built taller. C2 was also an anomaly. It is a large center located in the outskirts. It only has 3-5 floors but each floor has an large area. This suits the shop because it sells mostly food; one store sells DIY equipment and another sells food in bulk. Large space is more convenient.

- Traffic and pedestrian flow

  -Traffic (see graphs)

  The general trend it that, the large the center, the higher the traffic flow. This is because large centers serve more population. It is also because they are located near centers and many roads converge here. More people travel by vehicles to large centers (which has more transportation links). Also because most people own cars and large centers have parking. Small centers, which are mostly located in residential areas, have lower traffic flow because people travel small range for low order goods. In residential areas the roads are small, which aren't suitable for vehicles.

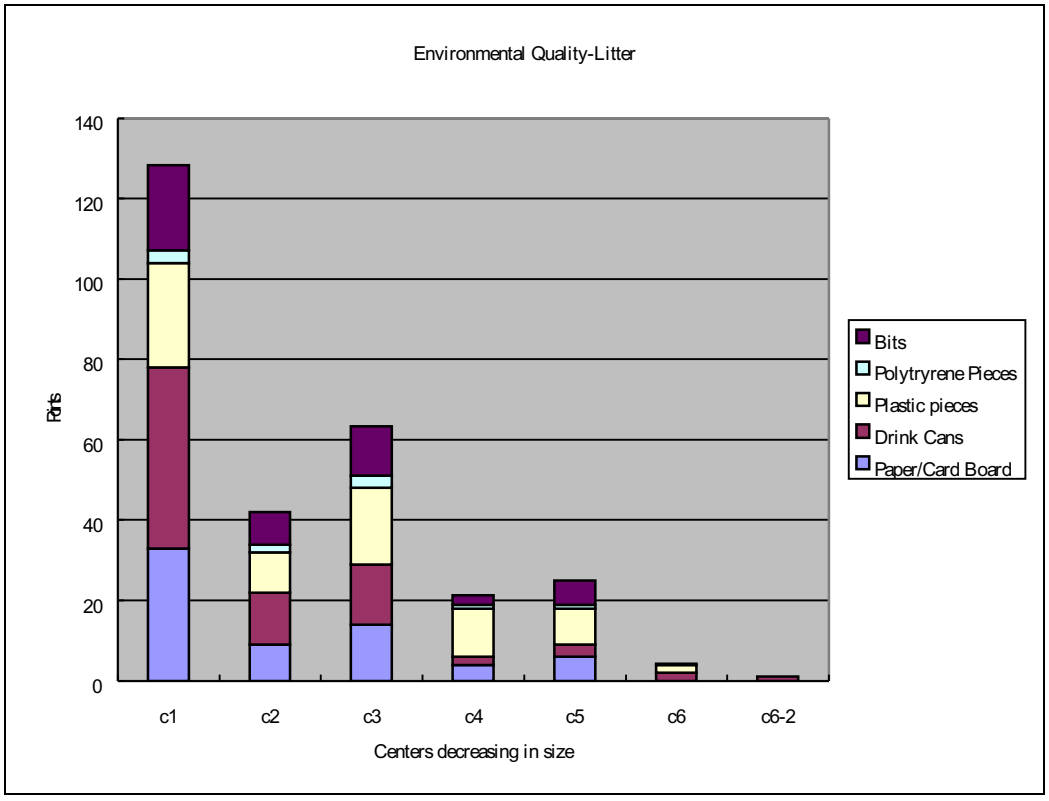
  C2 had lower traffic flow than expected. This may be because of its location. C6.2 had a high traffic flow despite it is only a corner shop. This is because it is located next to a main road, which people commute with. The same applies to C5. Most of the traffic flow was just people passing by.

  In large centers, there are variations within. However it still follows the patters. The highest is in the center. This is because it is a nodal point, other roads within large centers have much lower traffic flow, it spreads out into residential areas.

  -Pedestrian Flow

  Pedestrian flow increases as it goes up the shopping hierarchy. The main reason is because large centers have larger sphere of influence. It attracts more people, therefore a high pedestrian flow. This is supported by the fact that people spend more time at large centers. Anomalies are C2 and C3. C2 only has 3 superstores, also people have a purpose of buying when they visit, so although it's a large center, the pedestrian flow is low, people drive C3 is not located near any residential area, so people would not walk here. Therefore it was lower than expected.

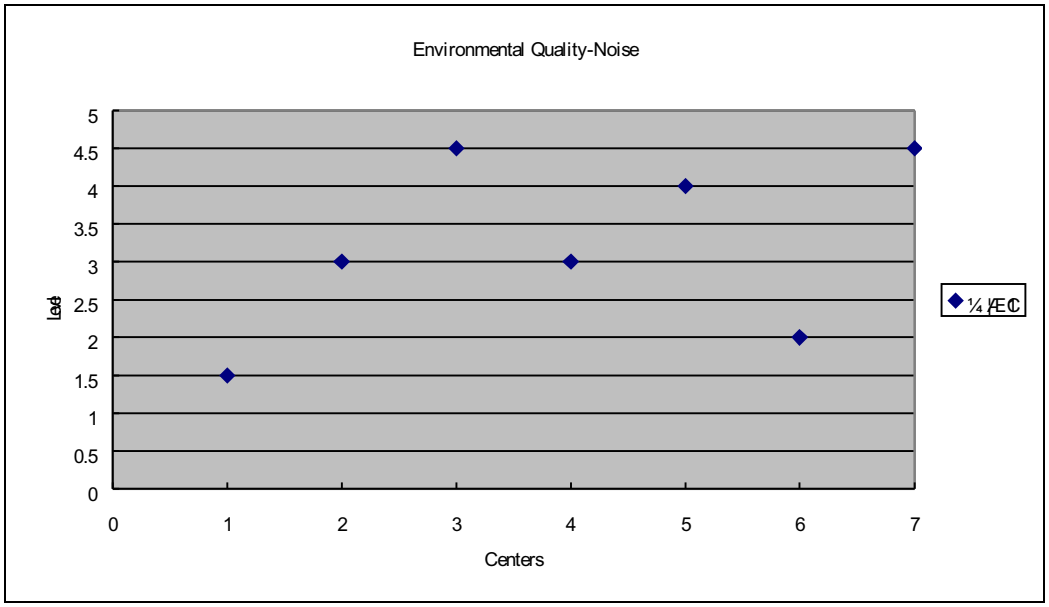
- Environmental quality-litter



The level of litter worsens as it goes up the hierachy. The is no strong correlation between the proportion of each type of litter and center size. This is because there are higher pedestrian flow at large centers and lack of amenties (bins). This is because the Taiwanese government has encouraged people to recycle rubbish them selves. Litter is signifigantly serious in C1. this is becuase it has over 400 shops, many of which are convinience stores selling drinks. A high percentage of people 'shopping around' means they may buy food drinks, and these increases the chance of littering. Smaller centers has a small sphere of influence, and also because they are mostly located in residential areas. This means people would buy goods and consume it at home. Also there are bins and recycle centers in the shop or outside. This reduces litter. C2 did not follow the trend. This is because the pedestrian flow is very low and most people shop within the superstores. Because there are only 3 shops, it is easy to manage the environment. A desirable environment to shop is one of the reasons people visit out of town shopping centers.

Within large centers, litter varies in different parts (see graph). Because shops cluster, in C1, [] has a high percentage of ploystyrene, plastic and drinks because restaurants/snacks cluster here. For C3, there is a fair distribution of shop types, causing litter to be more or less even.

- Environmental quality-noise



There is a weak correlation but it shows us the general trend is: as centers increase in size, noise worsens. This is mainly due to traffic flow. Large centers have higher traffic flow which causes noise. High pedestrian flow means chatter and shouting (common when a shop is on sale, a type of promotion from shop) contributes to noise.

There are variations in large centers, but still following the trend. See map.

- Shopping Patterns

  -Sphere of influence (see map)

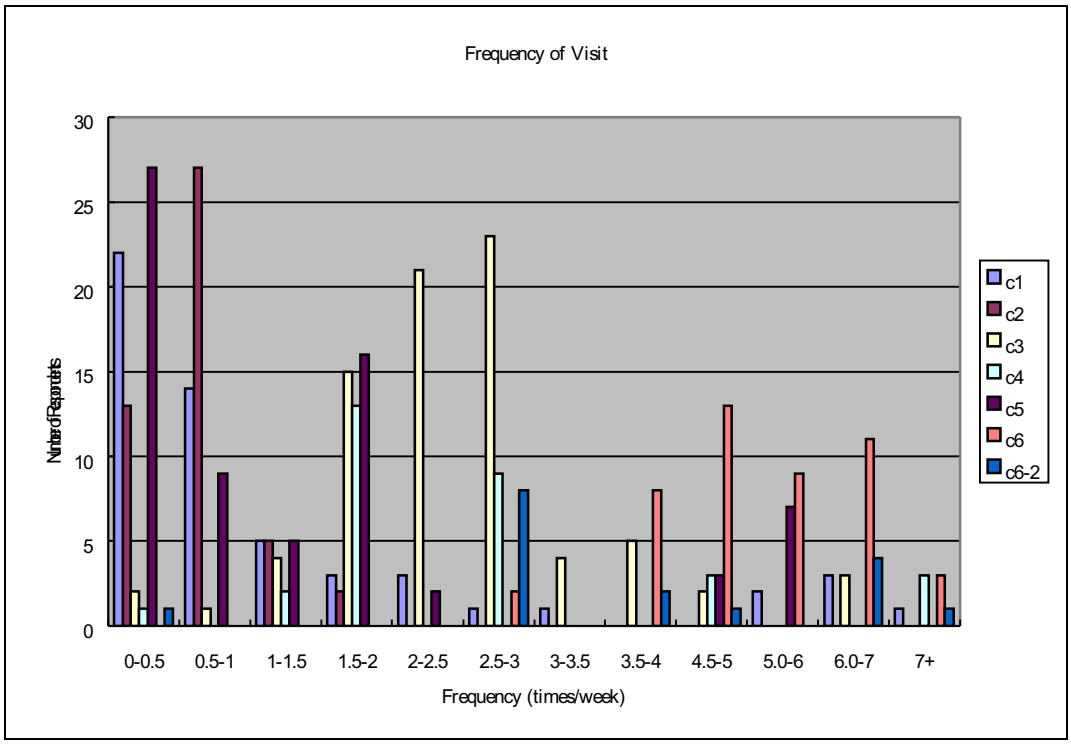
  As you go up the shopping hierachy, the sphere of influence increases. Ideally SoI's should be circles, but because population is not evenly spread, and also there are obstrution such as mountains, airports and roads, SoI's are distorted. SoI's may not indicate the size of population served.

  SoI increase due to range. People are willing to travel further for higher order goods, which are located in large centers. This causes there to be less large centers and further apart: each serves a large area. As you go down the hierachy, there are more centers with smaller soi. This is becuase they provide more and more convinience goods, which only attract locals.

  There are 2 anomalies. C2's soi is slightly larger than C1. C2 only has 3 superstores and the majority of goods sold are convenience goods. It has gained a large soi becuase it is attracting people from further. Because it has good transportation links, it is very accessible and there are parking available. People visit here for weekly shopping for food. The environment is clean. People are also attracted to the specialist DIY. The second is C5. it has a large sphere of influence because it is next to the highway. It provides services, which mostly

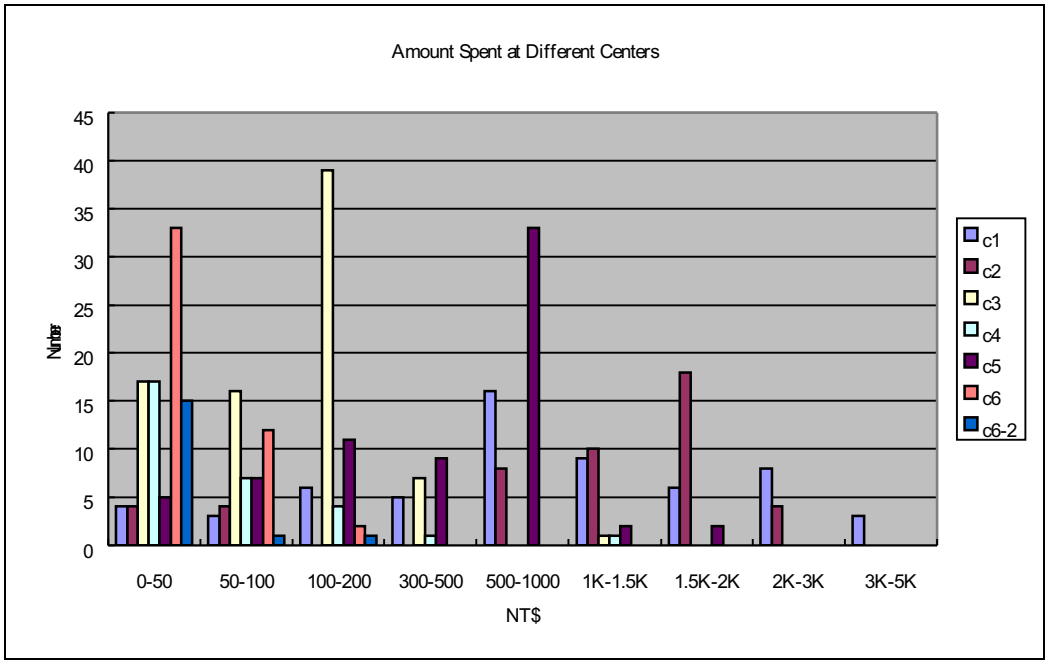
are car repairs. Shops clustering means people will travel here for its services. The population served by C5 is located towards the edge of its soi.

-Frequency of visit



The larger the center, the lower the frequency of visit. This is because of goods provided at centers. As you go up the hierarchy, the higher order goods become. People buy these goods less frequent, because they are high priced and often they last quite a long time. People visit C2 more frequent than C1, because they need to buy convenience goods on a weekly basis.

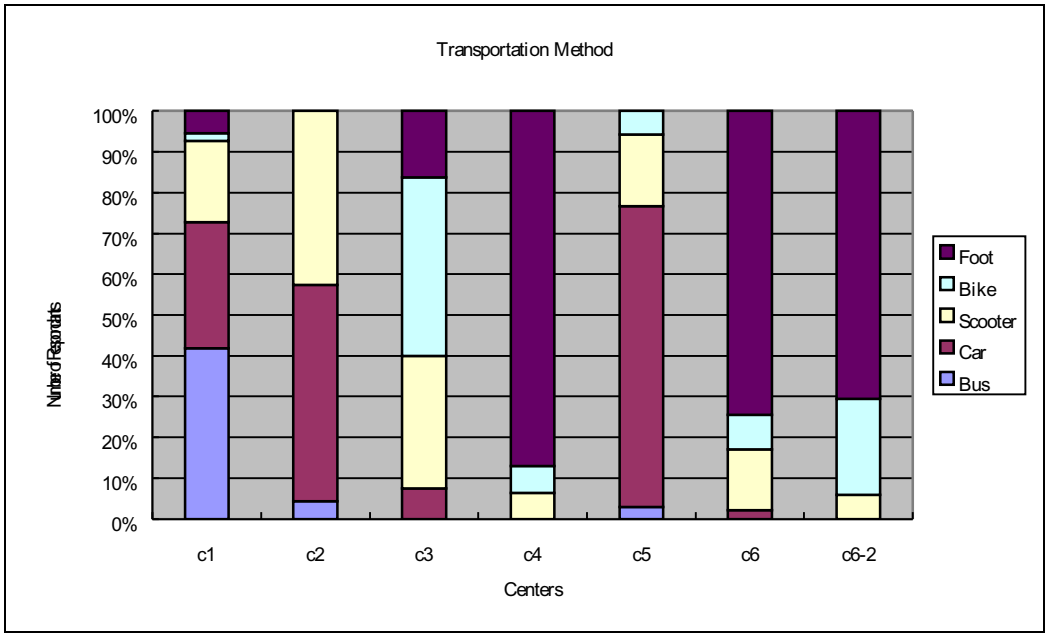
-Money spent



At lower centers, the majority of people spend $0-50. As you move up the hierarchy, the average amount spent moves up. At C1 the majority spends 500-1K. This is the only center where people spend 3K-5K, this is because C1, as most large centers, is an up-market area. The goods sold are predominantly comparison, which is high priced. But this is different for C2, there are much more people who spend 500-1K. this is because the majority has a purpose of buying when they visit, unlike C1, which relies on impulse buying (people shopping around). At C2, people buy convenience goods in high quantities.

Lower down the hierarchy, because centers like C6.1 and 6.2 sell convenience goods with little choice, people, as shown in 'Purpose of visiting,' buy food, which are very cheap but bought frequently.

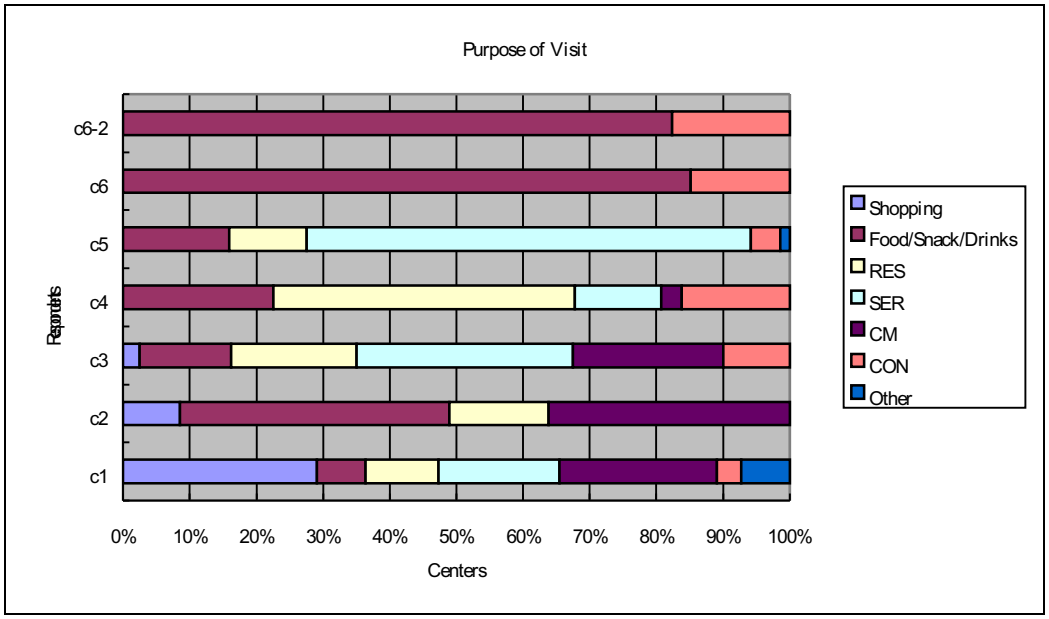
-Transportation Method



Choice of transportation results from sphere of influence. At smaller centers, most people travel by foot, because the SoI is small. There were people traveling by scooter, this was not expected. They were anomalies who were just passing by, this is particularly the case in C6.2, as it is located near the highway. C5 had an unusually high percentage of 'cars.' This has resulted from it location. It has a large SoI, but people do not live near the center. The majority lives on the edge of it SoI, therefore travel by car.

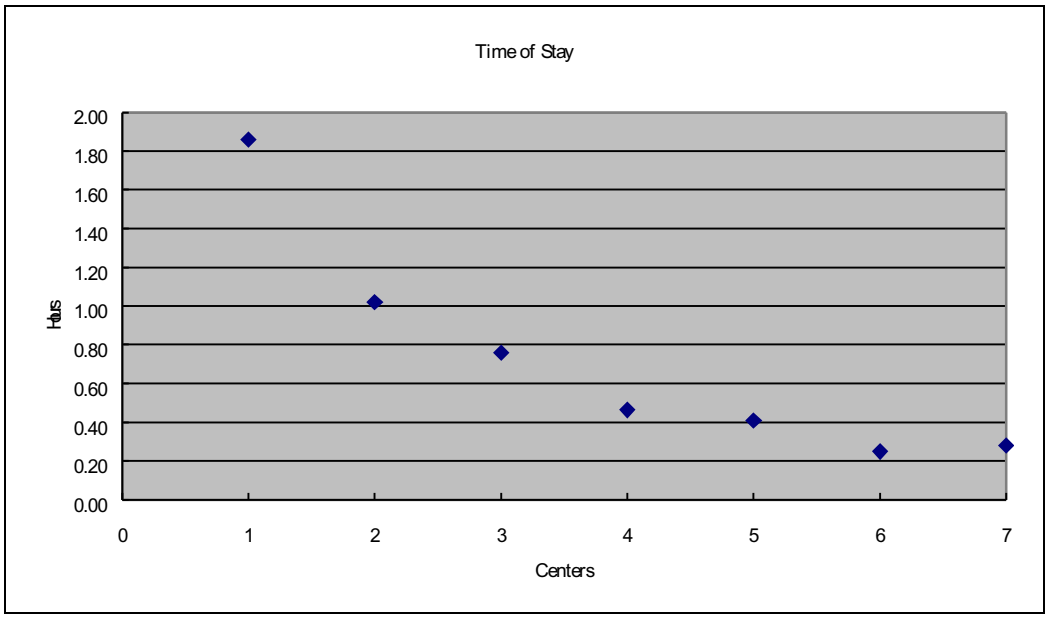
At C1, the majority travels by bus. This is because there are many transportation links converging (serving a large area) at the center. People are put off driving due to congestion (high traffic flow). At C2, most people travel by car. This is because of convenience. There are large parking spaces available. It is next to main roads linking with other districts. Also because people 'need' to drive to transport the large amount of goods bought.

-Purpose of Visiting



Purpose of shopping is largely affected by the type and number of shops. Corner shops largely sell convenience goods:over 80% of respondents buying food or drinks. C5 does not follow the pattern; because a high percentage of shops here provide service (car repairs). At the higher end, there begins to have 'shopping.' This is because at larger centers there are more shops and types of shops. At C1, there are many comparison shops, which cause people to compare goods, hence shopping.

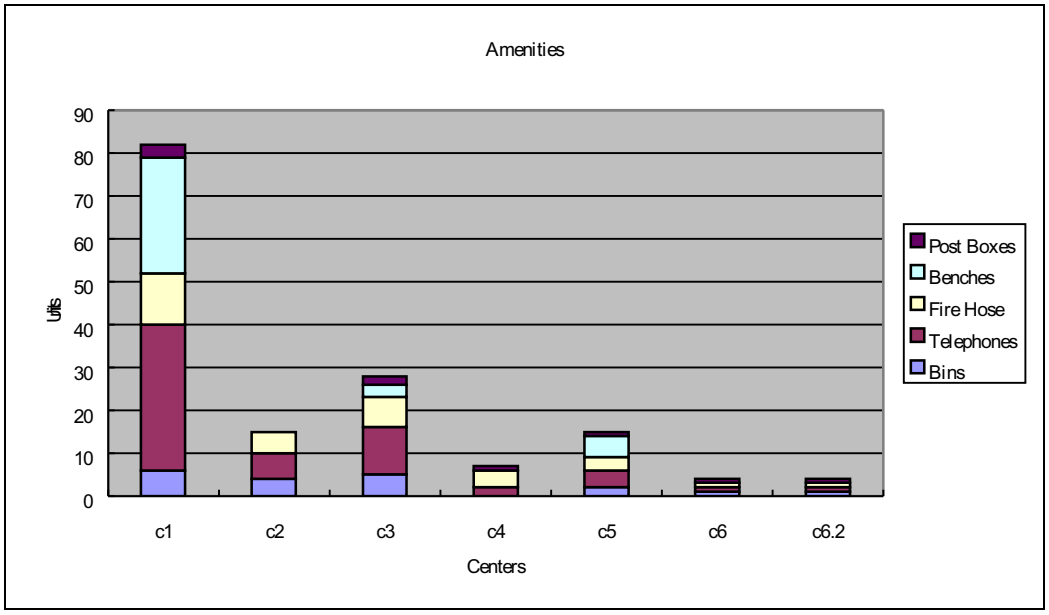
-Time Spent



People spend more time at larger centers. This is mainly resulted from 'purpose.' As you move down the hierarchy, People have more purpose: they know what to buy. This is especially the case for convenient goods, where comparison is not needed.

This cause people to spend less time at smaller centers. At large centers, more people 'shop around,' causing them to spend a long time there.

- Amenities



there is no variation between the type of amenities and size of centers. The important change is the number of them. At large centers, there are over 80 amenities and at corner shops only 4. this has resulted from the population served. The more people visits a center, the more amenities will be required to meet those needs. C2 doesn't follow the pattern because it consists of superstores, which provide its own amenities. There is less because people only shop here, also because people do not spend long buying, so there may not be a great need.

Conclusion

- Shop Types

  As centers' size increase, the number and type of shops also increase. Percentage of low order shops (convenient, restaurants) decrease while higher order shops increase.

- Building heights

  As center increase in size, it is more likely to be located near the CBD, where land prices are high. Therefore buildings are built tall to take full advantage.

- Environmental quality-litter

  The amount of litter increases with size of centers.

- Environmental quality-noise

  The level of noise increases with size of centers. At large centers it can be considered pollution.

- Traffic flow and pedestrian flow

  In general these increase with size of centers. However traffic flow can be affected by the location of the center.

- Shopping Patterns

  -Sphere of Influence

  SoI increases with size of centers. In reality SoI's shapes are not circles, they are distorted by certain factors.

  -Frequency of Visit

  As centers increase in size, people will visit less frequent.

  -Money Spent

  People spend more money at large centers due to impulse buying of comparison goods. At smaller centers people buy convenience good which are cheap.

  -Transportation Method

  As you move up the shopping hierarchy, more people travel by vehicles. This has resulted from larger SoI, where people live further away.

  -Purpose

  as centers increase in size, people who visit have less purpose, resulting in people to shop around. Also more people shop for comparison goods as oppose to convenient goods in small centers. This is due to people less willing to travel a large range for low order goods.

  -Time of Stay

  People spend less time in small centers because they know what to buy, and don't spend time comparing goods.

It is found that many of these factors are interlinked and affect each other. It is found that C2, an out of town shopping center, does not follow many of the patterns. It is a large center but provides mostly convenient goods. It has a large sphere of influence because people are attracted from far away. This is because of high environmental quality and good transportation links. C2 also has specialized superstores which people are willing to travel far to get to. People also visit it more frequent than high streets. This is because people visit for needs, which are mostly food. These are use up quickly and need to be replaced.

Evaluation

- Sampling

  Random sampling leads to many problems. The respondent may no represent the population of the SoI of the center (proportions of gender and ages groups may not match). A large proportion of respondents were young people. This means the results are biased. Thus affecting accuracy of results of other questions. I was unable to obtain demography of the area. However, it would still be difficult because not many people are willing to answer. This meant I spent more time than planned on the survey, which again affects accuracy, as different people may be present at different times. As At large centers, different sample points may have attracted different people (e.g. before a clothes shop means more women). Statistically, 1800 respondent are required to produce an accurate result, this was beyond my abilities, and smaller enter may not even have such population.

  If possible, one should obtain information on the demography, and use random quota sampling. The respondents would reflect the population structure of the center, and respondents must use the center. Target respondents should also be higher, to ensure accuracy, and anomalies to be easily identified.

- Time

  The investigation was carried out during the summer, thus it is biased. Because there may be more type of people, such as students. This means data such as pedestrian and traffic count may be higher than average (also may be higher because it was collected near rush hour). More people also increase frequency of visit. Time also affect the type and number of people visiting, such as during late mornings there will be more people shopping. During summer, people have more time, thus more people will be just shopping around. This means people are prepared to buy, thus more money spent.

  Pedestrian and traffic count should be collected more times in a day, over a year to represent the center.

- Sample Points

  During the investigation, one sample point was in front of a department store. These results are biased towards these shoppers. Some points were more remote, thus the target number of respondents were not achieved. Also due to shop clustering at C2, and because there were many respondents from there, the results may be slightly biased. This means the results are not fair. One should have more sample points (evenly spread) to achieve accuracy. One would need to make sure chosen sample points do not affect the results too much.

- Bi-Polar analysis

There were many types of litter, which wasn't defined (e.g. metal). Using numbers of pieces of litter was unsuitable, it took too long to count. Solutions would be to take photographs of different levels of littering, and using this to judge centers.

Noise was successful, as it corresponds with other data. However, duration was not included. At various points, the noise was loud but only lasted shortly; at others, it is the opposite. Noise levels should not be too well defined: this creates many exceptions. Also in C6, there was a construction site nearby which has affected the results. The true noise level may be lower.

- Shop types, buildings heights, Amenities

  These were accurate, as they are not affected by time. However, human errors are inevitable, to prevent this, two or more people should count and confirm each other.

  I would include chain stores, because they tend to change with center size.
- Data presentation

  It is not easy to see relationship between data; therefore it would be better to add scatter graphs linking different results.

This result from this investigation is not very valid in answer to the question. It is only valid for Nei-Hu district. One would need to investigate different regions and countries; also carry out the observations every month over a year. More of the same data needs to be collected to ensure accuracy. More types of data can be collected to help explain, such as shops clustering, pollution and chain stores. However, the general trend agrees to the theory of urban shopping centers. Therefore this investigation is successful.