

CHAPTER 1 - INTRODUCTION

The aim of this project is to investigate the **spheres of influence** of two retail outlets.

In this project, I will be using several specific terms, relevant to the topic. The explanations of these terms are shown below:-

The **sphere of influence** is formally known as “the area served by a settlement, sometimes called its catchment area, or the hinterland.” (Bowen & Pallister, 1999 p126).

Low order goods are also referred to as “convenience goods such as newspapers, bread and milk.” (Bowen & Pallister, 1999 p126) and are normally bought on a regular basis.

High order goods are also referred to as “comparison goods” and include “jewellery, sports equipment and furniture” (Bowen & Pallister, 1999 p126). They are normally bought less often than low order goods.

Threshold population is “the minimum number of people required to support a service so that it remains profitable” (Bowen & Pallister, 1999 p126).

The **range** of a good is “the maximum distance people are prepared to travel to use a shop or service”, (Bowen & Pallister, 1999 p126).

Friction of distance is an effect due to the distance of goods or services, which discourages a consumer to travel to them; “most people do not travel great distances to buy a newspaper”. (Bowen and Pallister, 1999 p126).

Accessibility is how easy it is for a consumer to get to somewhere, either as a pedestrian, or on foot. If it is accessible “it can readily be reached, entered, or used”. (Oxford Dictionary 1990).

Key to this investigation is the concept of the **sphere of influence**. It has been stated before that there is a link between the sphere of influence and the size of a settlement. For example, “The larger the settlement, the greater the number and variety of shops and services and the wider the area from which people will travel to use the centre.” (Understanding GCSE Geography). This hypothesis is based on work Castiller, who theorised that there are nested spheres of influence for settlements, which are linked to their size, with larger settlements having larger spheres of influence. From these theories, I can base my investigation. As it would be impractical to investigate the sphere of influence throughout a whole settlement, I will adapt the theory, and my project, to make shops the subject of investigation.

Since “In larger settlements there are more shops and services” (Bowen & Pallister 1999 p126), based on the hierarchy of settlements – larger settlements having a greater range of services, they will have larger spheres of influence, as already stated. The logical progression from this hypothesis is that larger shops, having a larger range of goods and facilities, will also have

larger spheres of influence. This is because consumers will be more willing to travel a larger distance to the store, attracted by the above factors.

I am making the aim of my investigation to find out the relationship between the spheres of influence of two retail outlets, of differing size, which sell the same type of goods, and what factors may effect this sphere of influence.

In this investigation, 'perfect knowledge' must be assumed, i.e. that everybody knows about the two retail outlets. If some people only know of one of the outlets, it is likely that the sphere of influence will be affected.

My hypothesis is that "a larger retail outlet will have a larger sphere of influence".

The two retail outlets which I will be comparing are "Tesco's" in Redditch, and a grocery outlet in Hunt End, Redditch. These two retail outlets both primarily sell **low order goods**, making it as fair a comparison as possible. However, the type of goods, and the order of goods will differ slightly between the two stores, not making it a perfect comparison. This is a factor which must be taken into consideration in this investigation.

The locations of these two stores are shown on the separate map sheet (overleaf), all maps are © Crown copyright 2001 - Ordnance Survey. The distance between these two retail outlets, is roughly 1.150km. Since they are fairly close together, it is more likely that the **accessibility** of the two retail outlets will be very similar, due to them being close to the same arterial routes. However, the **accessibility** will always differ slightly unless the two retail outlets are in exactly the same place (side by side). This will be another factor which must be taken into consideration in this investigation.

CHAPTER 2 - METHODOLOGY

The aim of this section is to explain the data collection methodology. This collection will be done in a variety of methods as detailed below.

My chosen subject for investigation (sphere of influence), was chosen because it was an accessible topic, which is studied as part of the syllabus in year 10, and as I live in a built up area where there are many retail outlets, so it could be easily studied.

Firstly, the main variable is the size of the retail outlet. This could be measured by either measuring the perimeter of the outlet in paces, or by obtaining the floor space area by another method, such as from a scaled map, or from the outlet's manager.

From investigation into available map websites on the geography- based page 'www.pupilvision.com', it has been seen that there are no available aerial photographs, for the areas being studied. Therefore, the former method must be used.

This will allow me to gain an indication of retail outlet size, to be compared with its sphere of influence, as detailed in my hypothesis.

Secondly, the spheres of influence must be recorded. This information will be collected in the form of the questionnaire. One of the questions will be asking what the interviewee's postcode is. Then, this postcode can be used as an input on an internet site, (e.g. www.streetmap.co.uk), which will illustrate whereabouts the postcode address is situated. All points collected

can then be collated on one single map, allowing a sphere of influence to be drawn.

Once this information has been collected, there is a way to compare the two retail outlets' spheres of influences, and a way to make links between their sizes and spheres of influence.

However, this is not all, as other factors which could affect sphere of influence are also being investigated. Such factors are listed below:-

- Price of goods
- Money spent
- Facilities available
- Range of goods
- Special offers
- Car park
- Work routes
- Advertisement
- Accessibility

The money spent can be investigated by finding a person's total bill in the questionnaire. However, different people will be shopping for different numbers of people, e.g. a single adult and a married mother of six. Therefore, it is important to also ask how many people they are shopping for, to approximate expenditure per person.

In order to collect information on the prices of goods, a "basket survey" may be conducted. This involves surveying the prices of 10 'everyday' items, (e.g. bread, milk etc.), which are sold at both retail outlets. It is important to ensure that the items surveyed are exactly the same in both outlets, as a different brand could be priced higher than another one, no matter where it is sold. This will be done on site at the grocery store and via the Tesco's website (www.tesco.co.uk).

Some retail outlets offer a number of facilities, as well as goods to buy. To find out whether this affects the sphere of influence, a question can be put into the questionnaire, to find out if they attracted the interviewee to the store.

It is likely that the two retail outlets compared will have different ranges of goods. Another survey can be used to compare the range. 10 'everyday' items (as in the basket survey) can be used, but this time, the number of different brands can be researched, again, on site or via a website. Once this is complete, another question can be used to find out if the interviewee was attracted to the store with a wider range of goods.

Some retail outlets offer special offers, such as reductions in price, or '3 for 2'. Again, it can be determined in the questionnaire whether this is another factor which attracts people to the store.

The same method can be used to find out how car parking facilities and advertisement affects people's choice of retail outlet to use.

Some people may prefer to use a retail outlet close to their place of work, than one which is close to home, due to a reduced friction of distance. Again, this can be determined by being asked in the questionnaire, whether the retail outlet is close to their place of work.

Finally a more accessible store may be more attractive to shoppers. However, it will be impractical to compare the accessibility of the two stores. This is because it is very likely that the larger retail outlet (Tesco's) will have the majority of its users travelling by car, whereas the smaller one will have the majority of its users travelling by foot. A pedestrian count at the entrance to both stores would therefore be more suitable.

A pilot study will be carried out, in order to test if my methodology is effective and appropriate. Adjustments will then be made to improve my methods of data collection.

Once my final data has been collected I will hopefully be able to decide what factors affect the sphere of influence, and I will be able to form a conclusion on the relationship between shop size and its sphere of influence.

I will then be able to re-evaluate my hypothesis and either reject it or accept it for this particular case study.

<u>Method of Data Collection</u>	<u>Where?</u>	<u>When?</u>	<u>How?</u>	<u>Why?</u>
Basket Survey	Inside the grocery store and via the Tesco's website.	Any free time, as the prices are unlikely to change over a short period of time.	Recording the prices for the 10 designated items.	To receive a representative sample of the price of items in the stores.
<u>Questionnaire</u>	Outside both stores, where consumers will pass by.	At the same time at both stores, e.g. at 10:00 – 12:00 on a Saturday.	By interviewing passing customers, and recording the results into a table.	To receive an idea of what other factors may affect the sphere of influence of the stores.
<u>Facility Survey</u>	On site at both stores.	Any free time, as the number of facilities is unlikely to change over a short period of time.	By recording the available facilities on both retail outlet sites.	To receive an idea of what facilities are available, which may increase the sphere of influence?
<u>Range Survey</u>	Inside grocery store and at the Tesco's website.	Any free time, as the range is unlikely to change over a short period of time.	Recording the number of brands for the 10 designated products.	To receive a representative sample of the range of items in the stores.
<u>Pedestrian Count</u>	At the entrance to both stores.	At the same time at both stores, e.g. at 10:00 – 12:00 on a Saturday.	By counting the number of people entering the stores.	To receive a representative sample of how many people use the retail outlets.

Chapter 3

In this chapter, the results obtained from the fieldwork will be presented and analysed in order to form a conclusion for the work carried out, and a re-evaluation of the hypothesis given in chapter 1.

From the map accompanying this chapter, the different spheres of influence can be clearly seen for the two retail outlets, with Tesco's in green, and the grocery store's in pink, in order to contrast.

From the map, the average distance of the desire lines can be calculated, by using the scale. This gives an indication of the sphere of influence.

For the Tesco's outlet, the average length was roughly 1.15 miles, compared to that of the Crabbs Cross Grocery Store, whose average desire line length was roughly 0.57 miles. This difference illustrates that Tesco's has a much larger sphere of influence than the grocery store.

The sphere of influence area can also be seen on the map as the area inside the joined up points.

Since it can be seen that Tesco's has the much larger sphere of influence, it has to be determined why this is. This will be examined hereon.

The results from the pedestrian survey may give an indication why. The pedestrian rate passing into the stores was considerably different for the two outlets. The rate for Tesco's was 1260 people per hour, whereas it was only 120 people per hour for the grocery store. This shows that on average, for the time surveyed, Tesco's has about 10.5 times as many people entering the store every hour. This shows that Tesco's has a much larger consumer base than the grocery store. This may be because of the larger sphere of influence, but is unlikely to be solely due to this factor, as the ratio for the desire line squared is 1:4, and the ratio for pedestrian flow is 2:21. There must be other factors that effect the number of people using the store, and effecting the sphere of influence.

The first range of factors to be illustrated, will be those of the pull factors which were responded to in the questionnaire – these are shown in the graphs overleaf, and will be referred to throughout the chapter, as links to other results.

Another range of factors to be illustrated, are the results of the range survey, which are tabulated below.

<u>Item</u>		<u>Semi - skimmed milk</u>	<u>Eggs</u>	<u>White sliced bread</u>	<u>Coffee</u>	<u>Teabags</u>
<u>No. of item types</u>	<u>Tesco's</u>	6	5	8	8	12
	<u>Grocery store</u>	4	2	3	3	2

<u>Item</u>		<u>Sugar</u>	<u>Orange juice</u>	<u>Cola cans</u>	<u>Chips</u>	<u>Margerine</u>
<u>No. of item types</u>	<u>Tesco's</u>	3	4	12	3	9
	<u>Grocery store</u>	5	1	3	3	4

Table 1 – the results of the range survey

It can be seen from the above table that Tesco's has a considerably larger range of goods than the grocery store, for the items surveyed. The average difference between item range is 4 items, in favour of Tesco's. This is probably due to the fact that Tesco's has a larger area than the grocery store, (figures to be inserted), a larger floor area allows for a larger range.

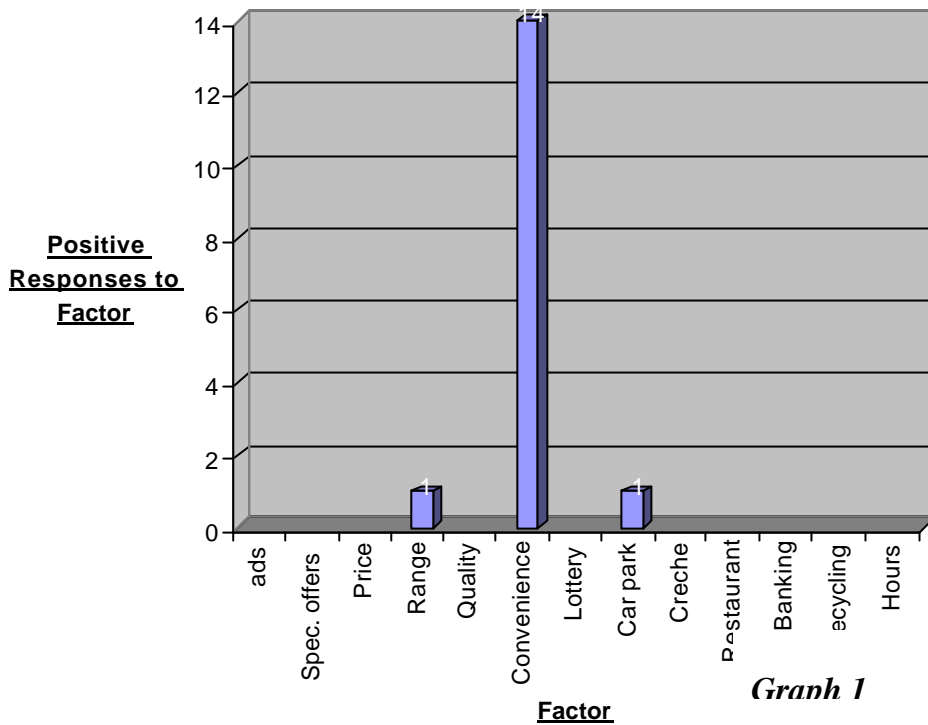
This increased range of goods may be a factor which attracts consumers to the store.

This information can be related to the fact that only one person stated that the range of goods was a factor which attracted them to the grocery store, as can be seen in graph 1, whereas 10 people said it was a factor which attracted them to Tesco's, as seen in graph 2. This reinforces the fact that ranges of goods influences the sphere of influence size.

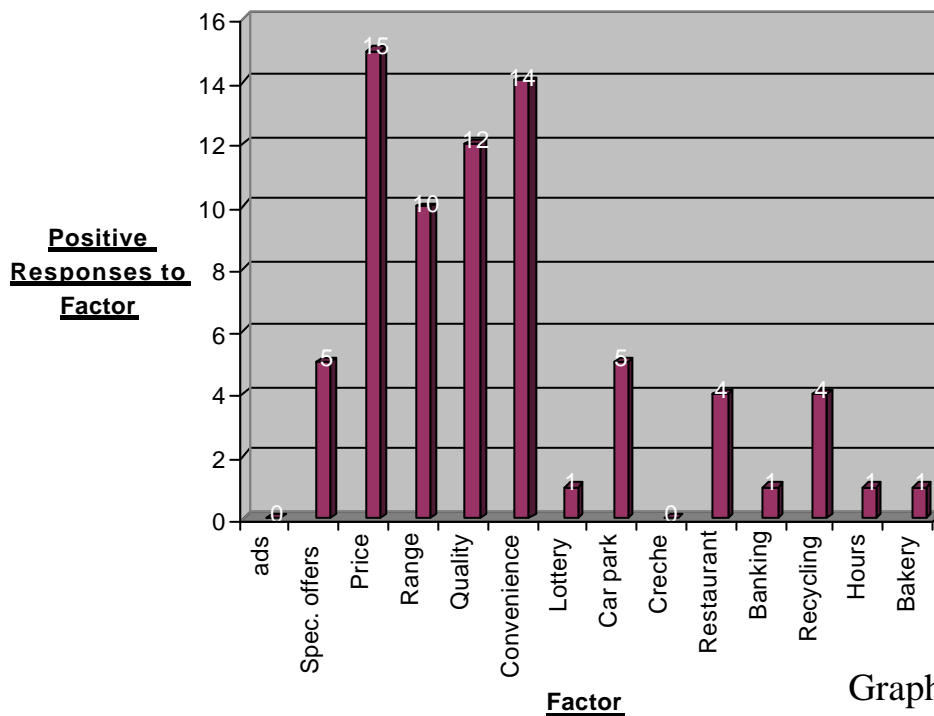
Also, the average amount of money spent at the store is likely to be effected by the range of goods, as the wider the range of goods, the more items can be bought at one time – this is backed up by the fact that the average bill per person for Tesco's was roughly 13 times that at the grocery store.

Another factor which may affect sphere of influence is the price of goods in both of the retail outlets, as consumers are likely to be attracted by an outlet which sells the same goods at a more affordable price. The result from the basket survey, which assesses the prices of the same brand of items at both stores, for the same amounts, is shown in the table overleaf:-

A Graph Showing the Popularity of Pull Factors at Hunt End Grocery Store



A Graph Showing the Popularity of Pull Factors at Tesco's



<u>Product</u>	<u>Price (£)</u>	<u>Price difference (£)</u>
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	<u>Tesco's</u>	<u>Grocery Store</u>	<u>(compared to Tesco's)</u>
<u>Milk</u>	0.54	0.69	+0.15
<u>Eggs</u>	0.59	0.70	+0.11
<u>Bread</u>	0.49	0.60	+0.11
<u>Coffee</u>	1.65	2.38	+0.73
<u>Tea</u>	1.48	1.85	+0.37
<u>Sugar</u>	0.59	0.86	+0.27
<u>Orange Squash</u>	0.84	1.00	+0.16
<u>Cola can</u>	0.43	0.50	+0.07
<u>Chips</u>	1.24	0.99	-0.25
<u>Margarine</u>	0.52	0.74	+0.22

Table 2 – The basket survey results

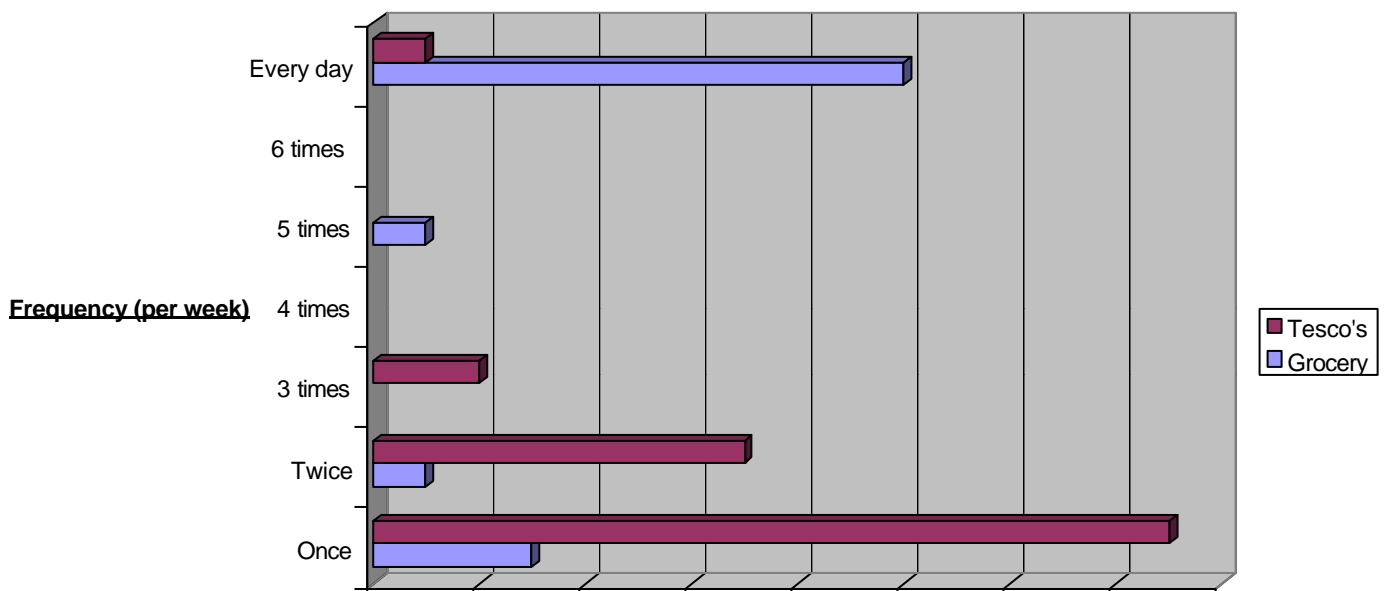
It can be seen from the table above that nine out of ten of the items surveyed were cheaper at Tesco's than at the grocery store, with the exception of the chips which were 25 pence dearer at Tesco's. However, the average price difference for all items was that the items at Tesco's were 19.4 pence cheaper. This sample of prices represents the fact that the price of items sold in both stores is less at Tesco's. This is probably due to the fact that Tesco's has a larger consumer base, so can afford to put prices lower, as the profit is recouped by the large number of people who use the store.

This is likely to be a factor which attracts people to Tesco's and will mean that the sphere of influence is likely to be larger.

This information can also be supported by the responses given by the interviewees. Nobody interviewed at the grocery store gave the price of items as a factor which attracted them to the store, whereas 15 interviewees at Tesco's said this was a factor which attracted them to the store.

Another factor which is likely to affect the sphere of influence of a retail outlet is the pattern of usage. This can be partially illustrated by the frequency with which each outlet is used, which is shown in graph 3.

A Graph Illustrating How Frequently the Retail Outlets are Used



Graph 3

It can be seen from the data that the majority – two thirds, of people who use the grocery store, use it every day. This is likely to affect the sphere of influence of the retail outlet, as a shop which is visited every day is unlikely to be relatively far away, as it should be more convenient for daily use. This is reflected by the fact that only one person did not state that convenience was a factor which attracted them to the grocery store.

However, it can be seen that the majority – 88%, of users of Tesco's, used it once or twice a week. This is likely to make convenience of the store less of a factor, as it is not used as often, and people will be willing to travel further, as they are attracted by other factors. This is illustrated by the fact that only 14 of all people interviewed at Tesco's stated that convenience was a factor which attracted them to the store. Because the Tesco's store is used less frequently, it is likely that people are more willing to travel a larger distance to the store, which results in a larger sphere of influence, where the friction of distance is overcome by the small frequency, and other pull factors.

From the questionnaire conducted, it can be seen that the modes of transport used can be examined; this is illustrated overleaf, in graphs 4 and 5.

From these graphs it can be seen that there is a distinct difference in the modes of transport used to travel to either store.

Firstly, the majority of people travelling to the grocery store, (53%) travelled there by foot. This is probably due to the fact that they use it so often – the majority use it every day – and convenience is the main factor which attracts people to the store. It can also be seen that the remainder of the interviewees travelled there by car.

From the map, it can be seen that all of the people who travel there by car fall into the area covered by the outer ring. This suggests that the car is used because the store is too far to walk, and is more convenient to use a car – a quicker mode of transport.

As for the Tesco's customers, the large majority, (88%), of the users travel to it by car. This is probably due to a number of reasons. The average distance length is longer, so it is easier to travel by car than by foot or bus. Also, the average bill per person is £16.90 greater than that at the grocery store, so it would be more convenient to use the car to carry the goods bought.

However, it can be seen that there was a small minority of people who used the bus to travel to the store. This may also be due to a number of reasons. Firstly, the average bill per person for the people who used the bus was much smaller than the overall average, (overall = £18.27, bus users =

£9.33). This may mean they carry fewer goods, which are convenient enough to be carried on the bus.

Also, it can be seen from the bus route map that the people who use the bus have travelled from locations which are very close to main bus routes, as marked on the map. This may mean it is very convenient for them to use the buses.

Another possible reason is that the average age of people using buses, is 46, which is greater than the average of 39. This may mean that they are more likely to be unemployed, and cannot afford the cost of using a car.

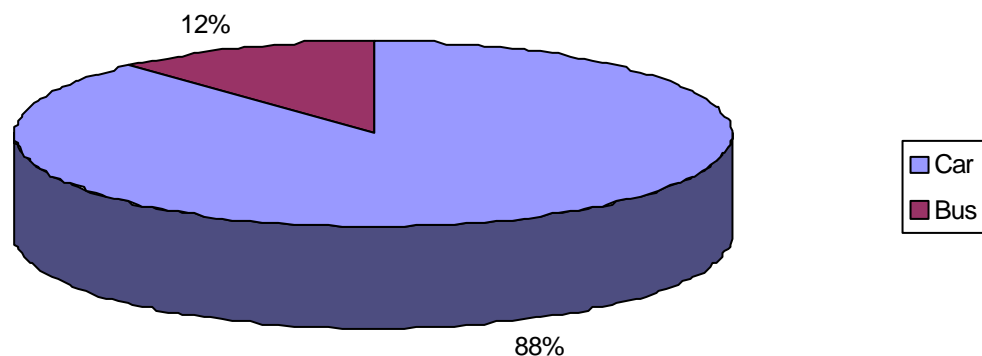
From the above analysis I can conclude that the fact that more people use the car to travel to Tesco's is not due to the larger sphere of influence, but the larger car use is due to other factors, and this in turn encourages a larger sphere of influence for the store.

A Pie Chart Showing the Modes of Transport used to get to Hunt



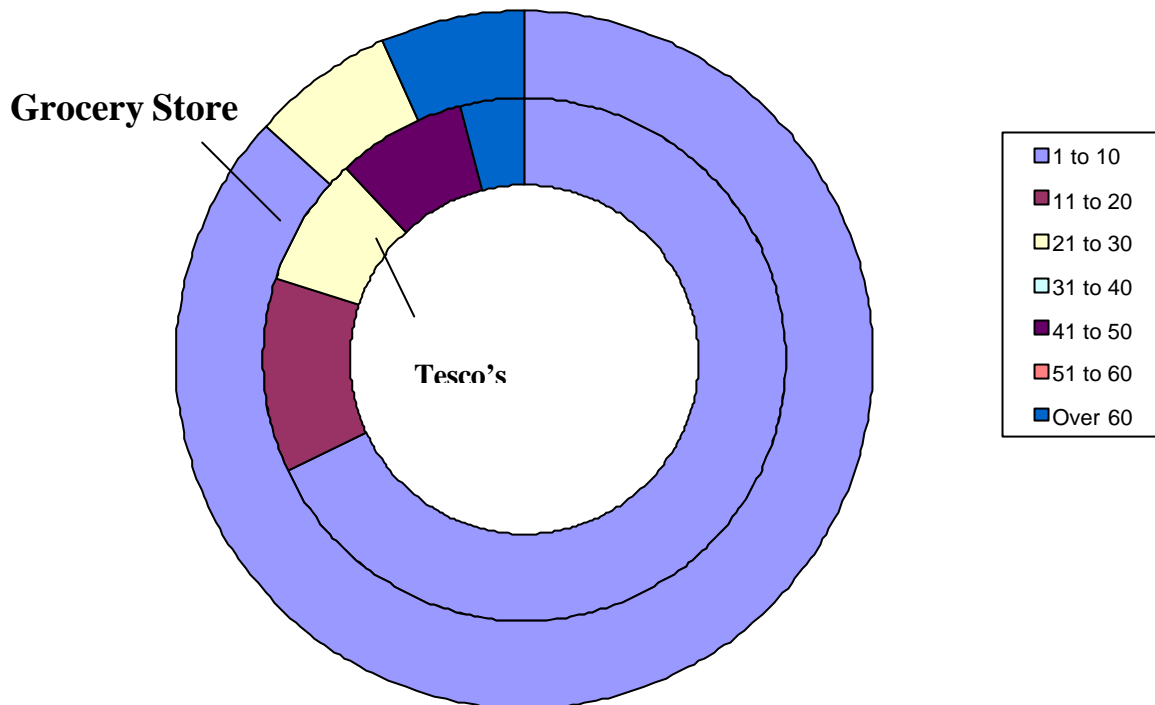
Graph 4

A Pie Chart Showing the Modes of Transport used to get to Tesco's



Graph 5

A Graph Showing the Times Taken to Reach the Two Retail Outlets



Graph 6

From this graph it can be seen that the large majority of users of the grocery store take between 1 and 10 minutes to travel to it, and a very small minority take any longer than this time. A slightly smaller majority take 1 to 10 minutes to travel to Tesco's – there is a larger proportion of people taking a longer period of time.

This illustrates that in general, people travelling to Tesco's take slightly longer to travel to it than people travelling to the grocery store.

This information can be related to the spheres of influence – the data reflects that on the map – there is a larger sphere of influence at Tesco's, and a larger amount of time taken to get to it, so the larger sphere of influence isn't due to the fact that it is more accessible, or that more people use cars to travel to Tesco's.

From the annotated photos overleaf, the various facilities at the two stores can be clearly seen.

At the grocery store, it can be seen that there are very few facilities available – there is limited parking space, a posting facility, lottery facilities and a license to sell alcoholic beverages.

However, at Tesco's there are many more facilities available to the consumer, such as a vast parking area, petrol station, recycling facilities, lottery facilities, café and banking.

It can therefore be concluded that Tesco's has a much wider range of facilities than the grocery store. This is probably due to the fact that it has a much larger consumer base, and a much larger threshold population, meaning it caters for a larger number of people with more needs.

Another reason may be that it makes a much larger overall profit/annum, meaning it can afford to install such facilities to attract customers.

Because Tesco's has so many more facilities available to consumers, they are more likely to shop at Tesco's, as they can carry out many more tasks in one place, and they are likely to spend more time at the store.

This pull factor is probably a reason why the sphere of influence for Tesco's is larger than that at the grocery store.

Another variable which was examined in the study was that of the floor size of the retail outlets – this was obtained by pacing the perimeter of the inside of the store, using a standard pace.

The following results were obtained – the perimeter inside Tesco's was one of 320 paces, and that of the grocery store was 21.

This shows that the floor area of the Tesco's store is significantly larger than that of the grocery store, as it has a larger overall perimeter.

Since Tesco's has a much larger floor area available inside, this allows them to stock more, and a wider range of goods, and there is more space to incorporate extra facilities into the store. This can be related to other results obtained within the study, as the Tesco's store had a much wider range of goods and more facilities than the grocery store. All of these factors will often increase the sphere of influence as they attract customers to the store. Therefore, a larger floor area can be linked to a shop having a larger sphere of influence, and may help to explain why my hypothesis is likely to be true.

Chapter 4

In this chapter I will summarise my findings, compare them to my original hypothesis on the results that will be obtained, and state whether I reject or accept my hypothesis, based on the results received for the particular situation studied.

In general, I accept my hypothesis that 'a larger retail outlet will have a larger sphere of influence', as it was seen that Tesco's the store with the larger perimeter had a sphere of influence which had a desire line length which was on average 4 times longer than that of the grocery store.

From my results, there are many reasons which back up why my hypothesis is true.

The fact that the range of items is on average 4 items in the favour of Tesco's is one of these supportive results – it shows that the shop has a wider range of goods, so this is a pull factor which will have affected the sphere of influence.

Another piece of evidence is the fact that 10 times as many people stated that the range of goods was a factor which attracted them to the store at Tesco's than at the grocery store.

Another piece of supportive evidence is the fact that items at Tesco's were on average 19.4 pence cheaper, and this is another pull factor, which was also more often stated by interviewees at Tesco's which will have affected the sphere of influence.

Also, there is a larger proportion of people that use the grocery store every day than at Tesco's. This means that they will have been less likely to be willing to travel as far to the grocery store, due to its frequent usage.

Another reason behind why the hypothesis may be true is the fact that more people used a car to get to Tesco's, so it is easier to go longer distances to reach it, meaning the sphere of influence is more likely to be larger.

I do not believe that there are any results which undermine the validity of my hypothesis for the situation in which it was tested, but I do believe that there were a number of possible inaccuracies.

For example, different results may have been obtained in a different situation for example, on a different day, due to uncontrollable outside influences, which may have created a bias in the users of the store. Also, different types of users may use the stores on different days, especially Tesco's which was used less often. This may have been avoided, by surveying on every day of the week, but then weekly variations may have been present, so a much larger time frame would be required, such as over a year.

Another possible source of accuracy may be in the refusals – the people that refused to answer, may all have had a certain type of data linked to them, such as those who are in work or have children are less likely to answer, as they have less time. This would have created a bias towards those who did answer. This may be solved by making it so everybody must answer, or making as many people as possible answer the questions.

I believe that another area where bias may occur is in the weather – different people may be attracted to the store according to different weather conditions, this may be improved by mailing the responses to shop users or by collecting data during a range of conditions.

Another source of inaccuracy in the results is in the measurement of shop size – using the inside perimeter, measured in paces. Firstly, a larger perimeter may not be directly linked to a larger floor size, as an irregular shape may have a larger perimeter but a relatively small area. Also, floor size itself may not be entirely suitable, as the amount of goods could differ with identical floor areas, due to shelves being closer together, or higher – there are three dimensions to consider. One way to improve on this method of data collection would be to calculate total shelf area, as this would give a direct relationship to the amount of goods space, but this would be much more difficult to do. Another source of accuracy in this method is the unreliable nature of the measurement – using a standard pace. Although every effort was made to keep the pace size the same, they would have not been the

same lengths, making the eventual length subject to error. A way to prevent such error would be to use the method detailed above.

A source of error may also be present in the calculation of the rate of pedestrian flow into the stores – the number of people entering the stores was only timed for a small amount of time. Therefore, they may be inaccurate as they may represent extreme, anomalous values. To best eliminate this source of error, it would be advantageous to record the pedestrian flow over a longer period of time, and to repeat it more times throughout the day.

A possible source of error, is the ability of interviewees to accurately answer the questionnaire, for example – the amount of time taken to reach the store may not have been estimated accurately, or some people may not have taken it seriously, and answered in a random manner. This would have led to un-representational results. It is difficult to eliminate such error, as it can not always be identified, but efforts were made to try and recognise any such occurrences.

To improve the reliability of the results, I would collect more data if the study were repeated, as this would give a more accurate overall perspective of the sphere of influence and the data collected in general.

At the time the collection of more data was not possible in the case of Tesco's, as the store was subject to a fire at the time when further results could have been collected. This is illustrated in the extracts from the local Redditch papers – the 'Advertiser' and the 'Standard', which are found in the appendix. Due to this incident, which closed the store for many weeks, no further questionnaires could be carried out, and any taken after the event would be subject to inaccuracy, as people may be less likely to use the store after the fire, as there would be limited services, and a damaged reputation.

I believe that the methods used in this study may be applied to different retail outlets, as I believe the results to be quite reliable, so the same general conclusions could be expected to be drawn from different shop comparisons.