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ECONOMIC LINKAGES WITHIN THE RURAL ECONOMY: THE CASE OF PRODUCER SERVICES

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ECONOMIC LINKAGES WITHIN THE RURAL ECONOMY: THE CASE OF PRODUCER SERVICES

by

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Economic linkages within the rural economy: the case of producer services

This research seeks to contribute towards the understanding of economic linkage within the rural context by exploring the relationship between rurally located small to medium-sized enterprises (SMEs) and their purchase of producer (business) services. In addition, the work considers other inter-rural and intra-rural differences, in both firm (SME) behaviour and firm characteristics.

Whilst the subject of linkages has been explored by other researchers, the market town and SME focus of this thesis provides a more spatially contained framework than is often encountered within this type of research. By using four towns of similar size and structure contained within two noticeably different counties, the work is able to explore difference within the rural setting. Given its emphasis on market towns, rural areas, SMEs, the service sector and indigenous growth potential, the work contributes to current debates in both academia and in national and European government policy.

The underlying hypothesis is that integration, in terms of local spending on producer services, is a function of a firm's characteristics. In order to test this hypothesis, data was collected from four rural towns, and a logistic regression model was constructed using variables that described both firms' characteristics and proportion of spend on services in their resident town. The model was then tested using data collected from a further two towns.

This thesis shows that there is a relationship between a firm's characteristics and the location of the firm's producer service spending, enhancing our understanding of firms operating within the rural context. Key characteristic variables that are shown to have a relationship with producer service spend location are: firm Standard Industrial Classification (SIC), size (in terms of total sales, total number of hours worked by all staff), total spend on producer services by firm and distance that the current location is from the firm's previous location. Given the changing role and nature of rural firms, this research provides timely information concerning the relationship between firms and service providers.

Keywords: Producer Services, Economic Linkages, Rural SMEs, Decision-Making, Indigeneity, Virtual Employees, Quasi-Products, Market Towns, Indigenous Growth

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At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award.

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Signed ....
Date...................................

Chapter 1: Introduction

1.1 Introduction

In recent years, the rural arena has moved further up the political agenda. This was clearly highlighted when, in February 1999, the British Government began a consultation process under the title Rural England (DETR, 1999a). This process ultimately led to the publication of a Rural White Paper on the 28 November 2000 (DETR, 2000). The Paper contained numerous initiatives, including £100 million made available to improve networking and services in rural market towns.

This renewed interest in rural areas has stemmed from a variety of circumstances, including the decline of agriculture in general, the impact of BSE on cattle farming community, the changing role (from production to leisure) and nature of rural areas (the re-population and economic growth of rural areas: Breheny, Hart and Errington, 1996; Keeble and Tyler, 1996; Westhead, 1995) and the need to respond to and engage with European initiatives. Traditionally, policies for rural areas have focused on a combination of agriculture-based initiatives (e.g. the Common Agricultural Policy), tourism (farm diversification and rural-based tourism) and, in areas that have an agriculture and industrial mix (e.g. Cornwall), the relocation of branch plants. However, the changing nature of the problems encountered in rural areas (particularly the move away from a dependence on agriculture) has led to a re-interpretation of the situation. It is, in fact, fair to state that the last two decades have seen the priorities of rural policy transformed (Lowe and Ward, 1998), with the emphasis on agriculture reducing and emphasis on diversification increasing.. Rather than adopt sectoral approaches, there is now increasing interest in the role and functioning of the rural economy in all of its diversity.

The traditional emphasis on relocation of branch plants has been superseded by an increasing interest in the growth of indigenous companies (Chaston and Mangles, 1996; Dobson, 1987; Grimes, 1993; Smallbone and North, 1994). In addition, the overall approach of policy initiatives has moved from 'top down' towards 'bottom up', i.e. greater emphasis on community involvement in local policy creation. However, for policy to be

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effective it must be targeted at appropriate geographical areas. Thus, there is a role for research that better explains the role and functioning of economic actors and locations within the rural arena.

1.2 The History of Rural Decline

Patterns of industrial and demographic location, apparent in any industrialised country, are partly explained by the phenomenon of industrial conglomeration and regional specialisation. This form of conglomeration has existed since early-eighteenth century industrialisation (Stobart, 1996). As industries developed, so their associations with a particular place began to strengthen (e.g. cotton in eastern Lancashire, woollens in West Yorkshire, metal working in West Midlands, etc.). This regional specialisation created new companies and attracted existing companies into the area, thereby maintaining and enhancing employment.

However, this conglomeration and industrial specialisation has often led to severe problems during down-turns in economic fortune. This is acutely apparent in regions such as Cornwall which, after seeing the decline of its mining, China clay, fishing and farming industries, has been left as the South West's poorest performer (GDP per head in Cornwall is 73.6% of the UK GDP per head figure) (ONS, 1998). Similar problems with specialisation can also be witnessed with the collapse of coal mining in South Wales and the North of England, and the loss of shipbuilding contracts on the Tyne.

In addition to this general decline there are also changes in the importance and provision of services to consider. For example, regional problems may be further compounded if Marshall's (1989 a, b) analysis is correct. Marshall (1989b) identifies the continuing growth in employment in the service[1] sector and the decline of employment in manufacturing. When this is viewed in conjunction with agglomeration of services in major urban areas and the expanding separation of ownership and highly skilled employment from the lower-skilled branch-factory style of employment found in rural

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[1] Services are activities *"consumed or enjoyed only at the instant that they are produced"* (Begg, Dornbusch & Fischer, 1994, page 2), as contrasted with goods which are *physical commodities*.

areas, the future for some rural communities looks bleak (Dobson, 1987 and Marshall, 1989a).

However, there has been growth in employment within some rural areas. Breheny, Hart and Errington (1996) have commented on the trend towards growth in peri-urban rural areas being driven by a flow of firms and jobs from urban areas back to rural areas (which they refer to as the *second wave* of counter-urbanisation – the first being a migration of people from urban areas to rural areas). However, as they also comment, the trend towards companies out-sourcing an increasing amount of business services requirements does not automatically lead to firms that have strong economic links with the local economy. The weak linkages sometimes created by outsourcing need to be considered alongside suggestions by Gripaios (1997), Marshall (1989a) and Love (1990) that local linkages are weakened as a result of one company taking over another - the predatory company often imposing its own preferences in suppliers.

1.3 Possible Solutions

The brief discussion above on the decline of rural areas has introduced the problems facing some but not all rural areas. However, the decline in rural areas has not arisen as a result of total governmental neglect, but has occurred in spite of government policies to assist rural areas. The exact nature of this assistance has changed with successive governments and within governments.

The traditional interventionist solution to the problem has been to offer grant aid to foster industry relocation (often branch factories). However, this may result in little more than the temporary relocation of semiskilled or unskilled employment, contributing little to local multipliers. Alternatively, grants may be directed towards 'propping up' dying industries, providing employment but no growth, at the risk of ever-increasing drains on the public purse (Gripaios, 1985).

A clear definition of a rural area's problem and the exact form which any subsequent regional aid should take are complex issues. Indeed the "*effectiveness or otherwise of various types of regional policy initiatives has been a major academic controversy for many years*" (McCann, 1997, page 695). This is often further complicated

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by political motives on the part of some policy makers (e.g. short term measures in response to media pressure). However, if aid is to have any long-term effect, the exact nature of problems within rural areas needs to be considered.

Englmann and Walz (1995, page 4) warn that "*If, for example, regional disparities are the result of cumulative processes, government intervention (e.g. subsidies in order to attract producers to a specific area) might not work at all if undertaken too late*". Mydral (1972) refers to the cumulative process as *cumulative causation* (growth causes, or encourages, additional growth) and states that, left to their own devices, companies and other economic agents will be driven to re-locate from one area to another in an attempt to profit-maximise. This drive towards short-term profit is often at the expense of long-term growth, for both the company and the country as a whole (Gripaios, 1985). Mydral (1972, page 26) also states that "*the play of the market normally tends to increase, rather than to decrease, the inequalities between regions*". This problem becomes further compounded when globalisation and the growth of information technology are brought into consideration. Doubts are beginning to be expressed as to any government's ability to control its national economy (Curran and Blackburn, 1994).

It has been suggested that the traditional 'top-down' (grant aid) approach has failed to remove regional economic disparities (Dobson, 1987; Keane, 1990 and above discussions). In addition, a pure 'free market' may not fully redress the balance between economically rich and poor regions (Curran and Blackburn, 1994; Mydral, 1972). It, therefore, follows that alternative strategies need to be considered.

1.4 The Theoretical and Real-World Importance of Linkages

In order to understand the dynamics and functionality of the rural economy, and therefore to suggest solutions regarding the economic problems encountered, it is necessary to develop an understanding and appreciation of rural linkages. In this context, linkages can refer to both the purchasing and supply of goods and services by both firms and households (Armstrong and Taylor, 2000). Firms supply products and services to each other, to the government and to households (both home and abroad). Households, on the other hand, both purchase goods and services and supply labour.

Within this thesis, the type of linkage of particular interest will be inter-firm linkages. Close inter-firm linkages may be important to the local economy, as they help to reduce economic leakages from the local economy (McCann, 2001) and encourage technological development (Dobson, 1987). However, this thesis concentrates on the first effect, the presence or absence of economic leakage, by investigating firms' purchasing of producer services and whether these are obtained locally, or from more distant suppliers. It is through this definition of the local linkage that the word integration is defined. Integration relates to the proportion of its total producer service requirement that an individual firm purchases locally.

1.5 Producer Services

Services can be defined in general as intangible economic activities (Pass and Lowes, 1993) and producer services can be defined as "*services that supply customers in business and commerce*" (Marshall 1990, page 363). Curran and Blackburn (1994, page 58) provide a useful classification of services, separating the category into "*services meeting the needs of businesses (producer services); services meeting the needs of other services and private consumers in the middle (mixed services) and services aimed at satisfying private consumers only...(consumer services)*". However, whilst this separation of services has it uses, the economic linkage caused by firms purchasing services is common to both producer and mixed services.

Marshall (1989b) warns against becoming pre-occupied with the search for the "*holy grail of a perfect classification.*" (page 366). The use of a service by a business makes it a producer service. If this service also happens to be used by consumers, this in no way negates the first, and in the study of linkages more important, use (Curran and Blackburn, 1994). Therefore, a combination of Curran and Blackburn's (1994) producer services and mixed services will be used within this thesis to define producer services.

The significance of (producer and consumer) service sector employment has been identified by numerous authors (for example: Dobson, 1987; Marshall, 1989a; Hansen, 1990a). The need for a more sophisticated understanding of the role of both small firms and service sector firms has been put by Dobson (1987) who states that "*We need to know*

more about the role of new firms in the [producer and consumer] *service sector in terms of their wealth and employment creating effects"* (page 58).

The importance of producer services in both wealth and employment creation has been well documented (Hansen, 1990a). Even in areas where there has been decline in the newly privatised service providers[2] (Gripaios, 1997), there has still been an increase in the overall number employed in the service sector (Gripaios, R., 1996 - producer and consumer services combined). In addition, it has also been shown that producer services play a pivotal role in attracting and retaining other companies to an area (Hansen, 1990a; Illeris, 1989a and 1989b and Stabler and Howe, 1988) (in addition, Hansen, 1990a quotes Bailly and Maillat, 1988; Gillis, 1987; Monnoyer and Philippe, 1985; Pederson, 1986; Quinn, 1988).

If this sector continues to be important then it is necessary to consider the case of services in a rural setting. Given that rural areas are already suffering from a decline in agriculture and a reduced importance as a location for branch-plants the concentration of a growing sector, such as services, in urban areas can only accelerate the decay of rural economies.

1.6 Rural SMEs

The above discussion has suggested that both linkages and producer services are important areas for research. However, focusing the research specifically on small and medium[3]-sized enterprises (SMEs) can further develop this research area. The importance of SMEs in rural economies and the role that such companies play in local economic linkages has become an increasingly important area for researchers. As traditional relocation and 'top down' approaches have proved unsuccessful, policy makers and economists have looked instead at more indigenous forms of development (Grimes, 1993) and, in recent years, the emphasis has shifted towards stimulating growth amongst existing SMEs as opposed to merely increasing the number of SMEs *per se* (Chaston and Mangles, 1996). Smaller business are typically locally owned, managed and located, thereby partly

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[2] BT, British Gas, etc.

[3] Medium Enterprise - one which employs, on average, less than 250 staff, has gross assets less than £2,800,000 and a turnover below £5,750,000 (Companies Act, 1981).

reducing the ownership and control problems identified by Dobson (1987), Gripaios (1997), Love (1990) and Marshall (1989a). This local ownership often means that growth in existing SMEs will lead to growth in the local economy, brought about by increased spending by the firm and increased spending by the owners.

Whilst interest has moved towards SMEs, there is still relatively little literature investigating SMEs *and* local linkages in the rural economy. Errington (1994a) states that *"more needs to be known...about the extent to which new businesses in the countryside provide employment opportunities for local people"* (page 373). Furthermore, Johnson and Rasker (1995) comment that *"A rich research agenda exists in the area of understanding location values"* (page 413). Keeble and Tyler (1995) found that most new company start-ups are instigated by in-migrants[4]. In addition, the fact that indigenous development has not managed to produce an *"adequate manufacturing base"* and thus is characterised by *"a low-skilled, poor opportunity local economy...and a service sector highly geared to part-time and seasonal work"* (Gorton and White, 1997, page 4) certainly causes concern when the policy move towards indigenous SME growth is considered.

1.7 The Relationship between SMEs and Producer Services

Given the inherent difficulties that arise when attempting to make general statements concerning the rural economy[5], it would appear that a more focused form of analysis might serve us better. Conti, Malecki and Oinas (1995) have suggested that the geography of the enterprise needs to be analysed. This is a sentiment echoed by Fawson and Criddle (1994) and Hansen (1990a) who call for research into regional linkages, with Marshall (1989b) offering the best summary of this need, given the importance of service providers as employers (as outlined on page 2): *"our understanding of the economies of private services is not sufficiently developed for us to easily identify an appropriate policy which does more than aim to attract mobile service industries"* (page 375).

These authors raise numerous areas for research, from regional linkages to private services, demonstrating that the general area is poorly understood. Rather than seeking to

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[4] In-migrants - people moving into the area from another part of the country.
[5] Errington, 1990 page 58 - *"rurality was not a good predictor of industrial structure"*.

address all of these research areas, there seems an immediate need to better understand the role of SMEs and services, particularly as rural economies are often dominated (in both employment and number of firms) by SMEs (Curran and Blackburn, 1994). For this reason, it would seem appropriate to use SMEs as the basis of any study into rural industries[6] (more 'traditional' agricultural industries having been covered in some depth by existing literature). In fact, the need for a better understanding of SMEs and local economies has been stated by Curran and Blackburn (1994) who insist that *"What is profoundly unsatisfactory... is the lack of clarity, the lack of rigour and, most importantly, the lack of well founded data and analysis to support the assumptions about small firms and local economies, however the latter* [local economy] *is defined"*(page 2).

One final important aspect of the provision of services, as opposed to the provision of goods, is that most towns actually contain at least one example of each of the main producer service types (e.g. accountant, lawyer, bank, IT or business consultant, etc.). The same cannot be said of goods. Thus, services allow us to ask more clearly why a firm has chosen not to source locally.

1.8 General Research Aim

The rural economy is being restructured, and may in some areas be in quite severe economic decline (Curran and Blackburn, 1994). However the mechanisms of decline, growth and interaction (betweens firms and between firms and households) are poorly understood (Conti, Malecki and Oinas, 1995; Dobson, 1987; Errington, 1994a; Fawson and Criddle, 1994; Hansen 1990a; Johnson and Rasker, 1995; Marshall, 1989b).

In order to begin to address this lack of understanding of interaction, this thesis seeks to provide an improved understanding of one specific type of economic interaction. The relationship between firms and their suppliers of producer services has not fully been explored. By investigating this relationship, within the context of rurally located market towns, this thesis provides insights into various key areas.

Firstly, an enhanced understanding of the relationship between firms' characteristics and producer service sourcing decisions is developed through the use of an

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[6] Activity that occurs in a rural economy i.e. defined by location not sector.

econometric model. This model demonstrates which key characteristics are most likely to influence a firm's choice of producer service provider location. In addition, by focusing on producer services in market towns it is possible to develop an appreciation of the role and function of the modern market town as a provider of such services. Finally, studying different counties allows an exploration of intra-rural differences.

In order to develop an understanding of the relationship between SMEs and providers of producer services, a logistic regression model focusing on SMEs' individual characteristics and inter-firm relationships is developed. By the inclusion of spatial dimensions, linkage relationships and general company characteristics, it is possible to test whether there is a significant relationship between a company's characteristics and its level of integration into the surrounding community, where integration is measured by the proportion of total producer services acquired locally.

Part of the original inspiration for this thesis (see Appendix 1) comes from Keane's investigation of the relationship between rurally located households' expenditure and local towns (Keane, 1989a, 1989b, 1990). However, the model eventually developed shares no direct link with Keane's work.

1.9 Structure of the Thesis

The remainder of this thesis is divided in the conventional way. After this introduction, a more detailed review of the literature is developed (Ch. 2). This follows the ordering of the introduction by first considering the nature of the rural economy. Considerable space is dedicated to this topic in order to ensure that the thesis is located in a clearly defined context. The review continues by demonstrating the important role which linkages play in economic analysis. The trend towards growth in the service industry is then considered alongside the rise in number and importance of small and medium-sized enterprises.

Following the review, a methodology chapter (Ch. 3) is included that establishes the research philosophy and provides a conceptualisation of the research question. This is then followed by an explanation of the data collection process and descriptive details of the data collected (Ch. 4). After this chapter, results of preliminary correlation analysis and

preparation of the data for model estimation are presented (Ch. 5). This chapter in itself provides considerable evidence of the relationship between integration and SME characteristics.

In order to build on the relationship identified in the descriptive quantitative findings, a further chapter (Ch. 6) is devoted to the exploration of the data set using multivariate logistic regression. This chapter adds to the evidence already provided in the two previous chapters and includes details of testing of the model through collection of further empirical evidence.

Finally the thesis concludes with a discussion chapter (Ch. 7), which provides a summary of the main findings alongside a discursive exploration of the implications both in terms of policy and research. The chapter concludes by considering methodological implications, weaknesses and areas for further research.

Chapter 2: Literature Review

2.1 Introduction

This chapter develops the themes introduced in Chapter 1 (e.g. producer services, linkages, SMEs, rurality, etc.), providing a deeper level of debate and integrating the argument within the context of the existing literature on the subject of rural SMEs and producer services. In order to present the findings of this review of literature, the chapter is structured as a series of steps building towards a justification for the thesis. The chapter takes as its lead the thesis title[7] and examines the issues encompassed within it. Thus, in order to place the work within its geographic context, the notion or concept of the rural economy is first explored, followed by the importance of economic linkages. The reasons for studying producer services in particular are then explained. The chapter then focuses on the important role SMEs now play in the economy and concludes with a brief discussion on the supply of services.

2.2 What is the Rural Economy?

Errington (1997) suggests two separate types of definition of a rural economy: a) economic activities (e.g. those which may be viewed as 'land-based') and b) the economic activities that occur within areas which could be described as rural. However, the word rural is left undefined. The first definition avoids all mention of rurality - any industry that is land-based is rural. This provides an intuitive and simple classification. Thus, agriculture is land-based, and the agricultural economy is therefore rural. However, this approach has some drawbacks. For example, it is difficult for the researcher to classify the small specialist grower either within or on the outskirts of an urban area (the first definition mentioned above would suggests this was a rural area). More significantly, all industries that are not land-based are excluded from the rural economy. This leaves areas traditionally referred to as rural with large sectors of their economic activity unaccounted for, and in many cases creates a false picture of the industrial mixture of these areas. As

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[7] Economic linkages within the rural economy: the case of producer services

Errington (1990) states: "*Apart from agriculture and forestry, there are few industries which can claim to be uniquely rural, and indeed, some may challenge even this claim*" (page 51).

Similarly, the second definition, *the economic activity that occurs within areas which could be described as rural*, still leaves the researcher with the difficulty of defining rurality. Although there are relatively simple quantitative measures relating to land use and population size which can be applied (for example, Cloke's (1983) index of rurality – discussed further in the following section), the prescriptive nature of these measures provides us with little added insight. To illustrate, Cornwall which is rural both intuitively and by classification (Cloke, 1983), relies on tourism, public services and retailing for the majority of its employment[8], with farm-related employment only constituting approximately 5% (CCC, 1997; Gripaios. R, 1996). When gross domestic product is separated into proportions per industrial sector agriculture is again shown to be of low importance: (sector contributions to GDP) Manufacturing 27.4%, Tourism 22.5%, Services 14.2%, and Agriculture 8.1% (CCC, 1997). This does not differ from the South West of England as a whole, which has less than the national average of agricultural employees[9] (Field, 1997), and yet both contain significant areas classified as '*extreme rural*' (Cloke, 1983). For Cornwall (and to a similar extent Devon) to rely so heavily on retail and manufacturing and, in addition, to have a labour-intensive tourist industry, would suggest a relatively industrialised or post-industrial area.

A Definition of Rurality

The difficulty in developing a classification of rurality has not gone unnoticed. Cloke (1997), in a recent editorial for the *Journal of Rural Studies*, describes the geographers' fascination with numbers as a 'fetish'. This sentence echoes a wider debate currently underway within social science with many researchers beginning to question the validity of using quantitative techniques in the study of human behaviour. However, the movement away from quantitative classification is not yet universally accepted, with many

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[8] If the self-employed are included in the figure for Cornish agriculture the proportion increases to over 8%. Nevertheless, this is still less than the other sectors mentioned; Tourism - 13%, Public Services - 25%, Retail - 9% (Gripaios, R., 1996; Sincock, 1995).
[9] Agriculture, forestry and fishing combined.

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authors preferring to adopt a mixed methods approach (e.g. Harrington and O'Donoghue, 1998; Hoggart, 1990).

Common definitions of rurality stems from classification based on indicator variables. One of the most famous of these classification schemes is Cloke and Edwards' (1986) 1981 Index of Rurality for England and Wales (based on Principal Component Analysis - PCA). Alternative measures include Hodge and Monk's (1991) classification of local authority districts, the Office of Population, Censuses and Surveys classification using Small Area Statistics (OPCS, 1978), those based on more recent census data, for example, The Office of National Statistics 'Classification of Local Authority Districts' and those based on population density, for example, The National Council of Voluntary Organisations list and the Department of the Environment Transport and the Regions list of districts found within the 1995 Rural White Paper (all cited by the Countryside Agency, 2000).

Cloke and Edwards' index, like many others, contains variables that are somewhat difficult to justify. The inclusion of such variables as *distance from urban node of 50,000 population*, *percentage of the population over 65 years old*, and *percentage of the population that are female and aged between 15-45* certainly raise some concerns over the validity of the index[10] due to the weak theoretical base justifying their inclusion. When the index was applied to 1981 Census data and compared with a similar study conducted using 1971 Census data, rurality in England was seen to diminish. Although this was partly due to alterations in census data collection, it led Cloke and Edwards to revise the index in an apparent attempt to return to their previous findings (Cloke and Edwards, 1986).

The selection of 50,000 population, for example, may be questioned. The loading of this variable is high (PCA Loading Score, -0.78654) but the choice of, say, 40,000 or 30,000 population might have considerable impact on the loading (when reanalysed) and on the distance measured, in other words its selection is somewhat arbitrary. In addition, the use of 'distance to urban node' also needs to be questioned. The use of travel cost

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[10] These represent three of the eight variables used, the others being occupancy rate, commuting out pattern, household amenities, population density, and occupational structure.

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might have greater relevance, since as Chorley and Haggett (1978) note, it is a fallacy to "*assume travel costs are proportional to distance*".

To return to Cloke and Edwards, the inclusion of the percentage of women in the population as an indicator of a less rural area (PCA Loading Score, 0.67725) and the use of the percentage of the population over 65 as an indicator of rurality (PCA Loading Score, - 0.65414) are also difficult to justify. Whilst there exists a tradition of 'retiring to the country' in Britain, this often means retiring to coastal resorts (such as Bournemouth) or small market towns and villages. However, the Cloke and Edwards model suggests that as the number of retired citizens in the population increases, the area becomes increasingly rural.

Of the remaining variables, the PCA Loading Scores are sometimes counter-intuitive. Population density, for example, has a loading of only 0.58588 making it the least significant variable in the index, although this is reflected in recent studies (EC, 1997)[11] that have shown that population density is, in general, a very approximate measure of rurality.

As an alternative to classifying rural areas, urban areas can be classified by identifying land use that is uniquely urban (OPCS, 1981) (leaving what is non-urban to be termed rural). In many ways, this is the reverse of the methodology outlined above and presents similar problems. Developments are designated as urban or as belonging to an urban area depending on various criteria (population size, distance between urban nodes, etc.). This definition of 'belonging to an urban core' is continued outward into the hinterland to include those areas that have over 15% of their workforce commuting to the specified urban centre. This wider urban area is referred to by Peter Hall as a standard metropolitan labour area (as cited in OPCS, 1981). However, this concept has been criticised for its inability to account for differing commuting patterns amongst social classes, between work and leisure and for the rather arbitrary cut-off point of 15% (OPCS,

[11] The EC do not have an independent definition of rurality but instead use ones developed by the OECD and EUROSTAT (EC, 1997) based on population density. However, it is noted by the EC that there are differing population movement patterns in areas that have traditionally been described as rural and so the validity at a regional level of this general, population density based, method may be limited.

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1981). In addition, the method presents problems when places of work are relocated outside of urban core areas (OPCS, 1981).

Economic Definitions of Rurality

As difficulties exist in using demographics as a classifier, attention could instead be turned to differences in rates of economic development and variance in industry structure (this follows Hoggart (1990, page 255) who suggests that we use *"theoretically significant markers* [such as]...*competition or monopoly employment sectors, poor or rich local councils..."*). In discussing the 'rural problem', it is suggested that rural areas are in some way disadvantaged and as such may be identifiable by their economic output, or lack of it.

Given that very large geographic areas are often divided into countries, as well as counties, economic based area descriptions could be 'borrowed' from inter-country analysis. It is common in this type of analysis to describe countries as post-industrial, industrial or developing. Arguably, industrial countries could be said to represent 'urban' areas whilst developing countries represent 'rural' areas (similar use of the words 'developing' and 'developed' can be found in Blunden, Pryce and Dreyer, 1998).

The difference between wealthy and poor countries has been explored by Viner (1953), who comments that the problem (poverty), and differentiation (between wealthy and poor), has not always been one of an absence of industry but rather a problem of *"poverty, backwardness, poor agriculture and poor industry"* (page 52). It would be difficult to suggest that, given modern education and media, any area of the UK is backwards. However, relative poverty and under developed industry and agriculture[12] are common to many areas.

Whilst Viner's classification provides a partial definition of the problem, it cannot be generally adapted to define rurality. There are rural areas that are prosperous and/or advanced (e.g., Kent, Silicon Glen in Scotland, the Western Crescent around London) and many rural areas are now seen by investors as new and exciting investment opportunities (Marsden, Murdoch, Lowe, Munton and Flynn, 1993). Furthermore, there are numerous urban areas, particularly inner-city areas, which could be described as having *"poverty,*

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[12] E.g. Compare small farms in Devon and Cornwall and Welsh hill farms with the intensive agri-businesses found in Kent.

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backwardness, poor [no] *agriculture and poor industry"* (Viner, 1953, page 52). Yet, is this not the way that rural areas are perceived, as backward, underdeveloped and lacking sophistication? Recent studies by Vaessen and Keeble (1995) on growth-orientated small to medium enterprises (SMEs) suggest that not only would this interpretation (that rural areas are backwards and underdeveloped) be unfair, but that in many instances it would also be inaccurate. SME growth is often shown to be greater and more innovative in areas traditionally defined as rural and peripheral (Keeble, 1997; Potter, 1993; Vaessen and Keeble, 1995).[13]

Further Consideration of the Problem of Identifying Rural Areas

The discussion above highlights the major difficulties in attempting to objectively define rurality. Whilst there is an obvious difference between open countryside and developed cityscape, any generalisation beyond this may hinder our understanding of economic or social environments. The thrust of this argument is based on the belief that the classification of areas as either 'urban' or 'rural' is overemphasised and given discriminatory properties that do not, in reality, exist. As Cloke (1997) suggests, rurality is perhaps one of the best examples available of what the post-modernists refer to as a 'hyper-reality' (the myth of rural idyll obscures the reality encountered in rural areas) .

Klaassen (1970) states that *"urbanisation is, in fact, nothing more than a rational process for the creation of activity bundles that can operate efficiently as bundles at a smaller distance from each other"* (page 115). The key here is the term *"at a smaller distance"*: in other words, the spatial distance between 'activities' has contracted to form 'bundles' or urban areas. This suggests that these activities already exist and have merely relocated for cost rationalisation. Thus, the urban is simply a spatially contracted rural. Alternatively, as isochronic distance is reduced by improvements in all forms of communication and as people, and the companies they work for, increasingly place value on relocating in or near *environmental assets*, rural becomes an expanded urban - a *dispersed urban.*

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[13] Although Westhead (1995) has provided contradictory evidence.

Whether the urban is encroaching on the rural or the rural on the urban is, of course, open to debate. What is clear, however, is that *"cities have become relatively less distinctive entities"* (Urry, 1984, page 55). With this reduction in one of the entities' distinctiveness, it is also implied that the other has become less distinctive. Urban and rural are increasingly merging into one homogenous whole (Cloke, 1997).

Reasons for Increased Homogeneity of Areas

There already exists a growing electronic communication infrastructure. This technology has meant that the *"tyranny of geographical distance and remoteness are considerably reduced"* (Blunden, Pryce and Dreyer, 1998, page 150). In addition, from a social perspective, families increasingly live in isolated units, shopping not in city centres but in 'out of town' retail parks for example (the very term 'out of town shopping' implies rural shopping). With communications improving both in terms of electronic and road transport, and with non-urban areas benefiting more greatly from road transport improvements than congested urban areas, the situation arises where the physical distance between villages, towns and cities becomes less relevant to economic transactions, and peripherality is reduced (Potter, 1993).

As distance becomes less relevant, so too does the distinction between urban and rural. Indeed, Moseley (1974) suggests, when discussing possible regional locations for growth poles, that *"there seems no valid reason why such an urban concentration might not take the form of a number of settlements close enough to form a single labour market"* (page 113). This sentiment is echoed by Hansen (1972) who states that a *"system of cities or towns linked by adequate transportation and communications might serve as well, or better* [than a single city]" (page 122). Arguably, if this was the situation in the 1970s when these authors were writing, the situation in the early 21st century may actually add further emphasis to their suggestions.

Private transport has increased, 'out of town' shopping has been introduced, telephone communication and television are now national, and the concept of e-mail and e-business has been introduced and continues to expand. With regard to business 'networking', spatial considerations have also reduced. The relocation and creation of

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firms outside urban areas have led to a migration of senior managers and owners (*entrepreneurs*) to the countryside (Keeble and Tyler, 1995). This has generated a spatial expansion of the social and business circles within which these economic agents operate. Problems of isolation from 'business contacts' in rural and peripheral areas are thus being reduced still further.

Attention can finally be paid to the changing social and domestic behaviour of rural/urban inhabitants. Commuting and associated dormitory towns have become an acknowledged part of British society and geography. In addition, the shopping and leisure activity of those within rural and urban areas is also changing. Furthermore, the continuing popularity of the car encourages rural residents to shop in neighbouring towns (see for example Keane's (1990) three town model) and urban dwellers to utilise the countryside for leisure. Many rural residents now find that their travel to work and 'shopping' areas encompass considerable geographic distance, and more than one town. This area, if viewed as a whole, can often be as large and functionally diverse as any major urban area and may in fact include one or more cities and several towns within its border.

A Working Definition

Whilst it has been shown that geographic areas are difficult to classify, this alone does not form a justifiable reason for abandoning the attempt. Although Marsden *et al.* (1993) have found that much of the empirical research conducted to date had failed to engender rurality with any explanatory powers it is still necessary to explore the concept. To do otherwise would be to suggest that the work to date has been exhaustive. However, when using rurality as an explanatory or discriminatory variable, the researcher or practitioner runs the risk of embedding themselves in a mindset that may actually impair their objective understanding of the situation (Hoggart, 1990). Alternatively, by accepting the multiplicity of roles and formations now present in 'rural' areas (Cloke, 1997; Marsden *et al.*, 1993), and the merging of rural and urban space (social, economic and actual), the researcher is free to identify and investigate social and spatial relationships. Whilst bearing this in mind, although an agreed definition of rurality still seems to elude

researchers, it is necessary to have some type of working definition if any sense at all is to be made of the rural economy.

Despite the fact that the Department of the Environment, Transport and the Regions state that, "*there is no precise definition of rural*" (DETR, 1999b, page 1), another government agency, by definition of its name, previously existed to serve rural areas[14]. The Rural Development Commission (RDC) (which after April 1999 merged with the Countryside Commission as the Countryside Agency, passing its rural regeneration role to the new Regional Development Agencies) listed geographic areas that came within their sphere of responsibility, classifying them as either remote rural or accessible rural.

This definition of rurality was based on three lists of rural districts – The Office of National Statistics 'Classification of Local Authority Districts', based on 1991 census data and grouping areas with similar characteristics; The National Council of Voluntary Organisations list, based on population density; and the DETR list of districts found within the 1995 Rural White Paper (Countryside Agency, 2000), also based on population density. It is the RDC definition, as used within Tarling *et al.* (1993), that is used throughout the remainder of this thesis. Blackburn and Curran (1993) also adopted this approach in their comparison of urban and rural areas.

Thus, although it is noted that there are difficulties in using rurality as a predictive variable, the notion of 'core-periphery' or 'remote' and 'accessible rural', as defined by the RDC, has been used within this research to classify rural areas. The study, therefore, utilises the RDC definitions of areas as either remote (core) or accessible (peripheral) rural to provide a basis for comparison of behaviour between core and peripheral areas.

2.3 Defining Economic Linkages and Multipliers

Central to the study of economics is the notion of equilibrium, supply and demand - the idea that one actor's want[15] is met by another's supply of either a good or service. The relationship between supplier and vendor is, in its simplest form, a type of contract and the process often described as a transaction. It is also possible to view this transaction as a link

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[14] The word rural is now also used by the Department of Environment, Food and Rural Affairs (DEFRA) since it absorbed MAFF.
[15] Want with the ability to pay - effective demand.

between the two parties. Of course, as the number and complexity (more numerous and complex contracts) of these links increases, so too does the complexity (Twomey and Tomkins, 1996) and difficulty of their identification and quantification.

One of the theoretical approaches that seek to help understanding of the importance of various industries to a region's growth, and which begins to develop an understanding of the importance of regional linkages (exports), is the use of economic (export) base theory (McCann, 2001). Within economic base theory the industries within a region are divided into basic and non-basic. Basic industries are those that primarily provide output to purchasers outside of the region whilst non-basic industries primarily have output markets within the region. Non-basic industries are sometimes referred to as service industries, although this is in a different context to the use of the term to describe tertiary industry (the firms service the region rather than form the tertiary sector). These sectors, basic and non-basic, can then be considered on an aggregate regional level. Employment is commonly used as a proxy for the level of output and the region's output is therefore defined as the sum of basic and non-basic sectors. As the non-basic sector relies on the region for its output market, it can be suggested that there need not be a term for non-basic output in any economic base equation as it can instead be represented as a proportion of total regional output (described as a sensitivity coefficient in the next paragraph).

A measurement of change in output in the basic sector and knowledge of the sensitivity of the non-basic sector to changes in total regional output can therefore be used to predict regional growth levels. The sensitivity coefficient (n) represents the basic sector's demand for non-basic sector output.

Equation 1: Economic Base

$$\frac{\text{Total Regional Output}}{\text{Total Basic Output}} = \frac{1}{1-n}$$

where :

n = a coefficient between 0 and 1 that represents the sensitivity of
non - basic output to basic output

(McCann, 2001, page 140)

Higher values of this sensitivity coefficient, or higher ratio of total regional output to basic sector output lead to greater economic base multipliers (indicating that growth in

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regional exports will increase total regional output more than would be the case with lower values of the sensitivity coefficient). Higher sensitivity coefficients are most likely to occur where there are strong inter-firm linkages and high levels of local sourcing of inputs.

More advanced versions of the economic base model allow exploration of the cumulative effects on labour productivity through growth in a region's output. This cumulative causation (growth improving labour productivity which in turn improves growth) was first proposed by Kaldor (1970), and is sometimes referred to as a Kaldorian approach, further developed by Dixon and Thirlwall (1975) (both quoted in Armstrong and Taylor, 2000). Recently, empirical evidence for cumulative causation within the European Union has been presented by Cheshire and Carbonaro (1996) who found that regional growth was closely linked to growth in the national economy, the growth rate of neighbouring regions, the size of the region and the number of research and development establishments per capita of population.

An explanation for varying degrees of cumulative causation, and for variation in economic prosperity between regions, is provided by earlier theories relating to growth poles. Perroux (1950) is attributed with the early development of the theory of growth poles. Perroux suggested that certain key nodes (firms or groups of firms) dominate the surrounding area and in so doing represent important bases for development growth. By encouraging development within these nodes it is possible to create a spread effect to those areas and industries which supply the key node. One important aspect of Perroux's work was [that he applied] *"the temporal notion of development simultaneously in social, economic and geographic space"* (Moseley, 1974, page 4). It is important to note that the key industry's domination may be in terms of innovation as well as size, although it is often most effective when innovation and size are combined (McCann, 2001). Whilst there has been some debate concerning negative effects of growth poles (most notably the backwash effect created by demand from the growth pole increasing prices in the surrounding area), the concept remains popular with some policy makers[16].

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[16] Boudeville (1966) is originally credited with translating Perroux's work into planning terms.

An alternative to the economic base multiplier is the Keynesian regional multiplier. In broad terms this is similar to the Keynesian national income and expenditure model. The key differences are that in the regional model, consumption and imports are treated as partly exogenous of regional income, rather than purely dependent on it, and investment and government expenditure are related (inversely in the case of government spending) to regional income rather than purely exogenous.

A third method of establishing multipliers for regions, with the added advantage of disaggregating the information into industry sectors, is regional input-output analysis (Bishop, Brand and McVittie, 2000). Originally conceived by Wassily Leontief in the 1930s, input-output (I/O) analysis (inter-industry analysis) seeks to identify and study the relationship between different companies' *factor inputs* and *outputs* (Pass and Lowes, 1993). The economy is appreciated as a complex interconnection of companies, many of which exist only to produce the *inputs* of another (for example: quarries *output* of gravel is the construction industries *input* of aggregate required in concrete), and it is common that these inputs are being used to provide goods or services that fulfil the demand of the final demand sector: households, government, exports or investment.

Information is collected concerning the expenditure flows of a range of different industry sectors and consumers within a region. This enables a matrix (transaction table) to be created which shows the flow of expenditure between different industries, industries and consumers, industries and factor inputs and regional imports (McCann, 2001). It is then possible to calculate the proportion of each industry or consumer's total inputs provided by each of the other industries, regional imports or factor inputs. For example, Bishop *et al.* (2000) showed that Devonport Dockyard and Naval Base had weak, though still important, links with the economy of Devon and Cornwall as a source of manufacturing inputs. These proportions (expenditure coefficients) can then be used to model the impact on the output of the regional economy, and on individual industries, of an increase in expenditure by any of the industries or consumers within the table. Harris and Liu (1998), for example, showed that, in the Portsmouth area construction firms had the greatest local multipliers (4.59), and paper and board producers the weakest (1.25).

A basic regional multiplier can also be calculated by dividing the total increase in output by the original increase in expenditure. By constructing an inverse matrix of the expenditure coefficients it is also possible to calculate sectoral output multipliers than can show the impact of increases in expenditure within the region. As with Keynesian multipliers, the eventual increase in output (income) is greater than the original increase in expenditure due to subsequent rounds of spending. This is due to the sector providing the initial increase (round) in expenditure also providing other sectors with inputs (subsequent rounds), which in turn requires additional expenditure to produce.

One important aspect of input-output analysis is that it allows researchers to consider the different impacts on overall regional output as they relate to individual industry's expenditure coefficients. For example, an industry that has regional imports as a high proportion of its total input will, when compared to an industry with a low import expenditure coefficient, have a reduced first-round impact for any given increase in its expenditure. This reduced first round expenditure will subsequently lead to a reduced total regional increase in output.

In economic base theory, Keynesian regional models and input-output analysis, the impact of increases in expenditure in a region relates in part to the number, or more specifically the value (Turok, 1993), of local linkages. Increases in expenditure, whether due to inward investment or expansion of indigenous expenditure, leads to an increase in output in the region, and often an increase in employment. The total number of jobs and wealth created within the area is not simply a matter of *direct* jobs but also the *indirect* effect of embeddedness (local purchasing by the firm) and the *induced* effect created by employees spending their new-found wealth locally (Armstrong and Taylor, 2000). It is important at this point to separate the definition of embeddedness into two. Embeddedness in the context used throughout this thesis refers to the economic embeddedness discussed by Gripaios (1997), McCann (1997) and Turock (1993) which is concerned with the quality and quantity of local economic linkages. The term embeddedness can also be used to relate to the integration of the firm with the local economy *and* community, expanding the study of economic linkages to include non-economic linkages. This second use of embeddedness is found within Curran and Blackburn (1994, page183) who discuss the

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"social, political and cultural life, which...have strong embeddedness effects...". Whilst this use of the term embeddedness has clear advantages in widening the debate surrounding local economic linkages, it goes beyond the scope of this thesis.

When considering economic linkages, different industries will source different proportions of input from within the local area. Turok (1993) found, for example, that local linkages within the Scottish electronics industry were low (12% of total material inputs) and were also of low value-adding significance. Similarly, service-specific findings were encountered in Devon and Cornwall by Gripaios (1997) and in the Scottish whisky industry by Love (1989), who suggest that *"linkage adjustments from external takeover are generally negative, and fall most heavily on the service sector"* (page 114). The value and strength of linkages, plus their sustainability, is of interest to policy makers simply because they are seeking to maximise regional growth.

Recently, interest has moved towards the higher benefits (stronger linkages) offered by smaller independent firms, and particular interest has focused on growing indigenous SMEs rather than importing branch plants (Chaston and Mangles, 1996; Dobson, 1987; Grimes, 1993). As Dobson (1987) states, *"Policy should recognise the potential key role they* [small independent firms] *may play in fostering local linkage..."*(page 55). This policy shift has come about through an enhanced understanding of the role and value of linkages.

As previously stated, although a linkage in its most simplistic sense is relatively easy to comprehend, both the number and nature of linkages adds to the complexity of the situation. Turok (1993) has suggested that linkages can be characterised as either a developmental or dependent relationship and refers to this classification as the linkage *tendency*, and has developed the following table from the literature:

Table 1: Developmental and Dependent Linkage Relationships

	Developmental	Dependent
Nature of local linkage	Collaborative, mutual learning. Based on technology and trust. Emphasis on added value	Unequal trading relationship Conventional sub-contracting Emphasis on cost-saving
Duration of linkage	Long-term partnerships	Short-term contracts
Meaning of 'flexibility'	High-level integration to accelerate product development and increase responsiveness to volatile markets	Price-cutting and short-term convenience for multinationals
Inward investors' ties to the locality	Deeply embedded High investment in decentralised, multifunctional operations	Weakly embedded Branch plants restricted to final assembly operations
Benefits for local firms	Markets for local firms to develop and produce their own products. Transfer of technology and expertise strengthens local firms	Markets for local firms to make standard, low-tech components Sub-contracting means restricted independent growth capacity
Quality of jobs	Diverse including high skilled, high income	Many low skilled, low paid, temporary and casual
Prospects for the local economy	Self-sustaining growth through cumulative expansion of the industrial cluster	Vulnerable to external and corporate decisions

From Turok (1993) page 412

Table 1 separates linkage relationships into developmental and dependent. Developmental linkages will assist in the general growth of a region (through the improvement of local firms), whilst dependent linkages represent an unequal relationship between local firms and new arrivals. Table 1 also needs to be considered along side the ongoing tension between economic development and political expediency. Whilst certain types of linkage offer long-term development potential, numerous unskilled jobs are offered by the linkage type not usually associated with growth. In order to foster economic development, it is necessary to establish which types of firm have a greater propensity to link locally. This, of course, depends in part on the availability of local services/goods (see page 42). However, assuming that services exist locally, economic development has been shown to relate also to firm sector (Moseley, 1974), ownership (Dobson, 1987; Gripaios, 1997; Love, 1990; Twomey and Tomkins, 1996), stage in growth (Basu and Johnson, 1996; McCann, 1997) and service/product type (Gripaios, 1997; Love, 1990; Marshall, 1989a). In addition, very simple pragmatic considerations may also come

into play. It is certainly more efficient, as Harrison (1993) has pointed out, to purchase frequently required inexpensive items (e.g. petrol) locally, whilst more expensive, less frequently purchased items (e.g. vehicles) may be purchased with more consideration as to cost which may lead to greater distances.

Whilst Turok (1993) makes a strong case for the role of the more embedded developmental firm, other authors have developed additional discussion - Basu and Johnson (1996) and McCann (1997) have argued that the situation is more complex than the one portrayed by Turok (1993). Basu and Johnson (1996) contend that there is *"a decrease in the density and complexity of linkages as an economy industrialises and develops"* (page 710), suggesting a weakening rather than an embedding as the economy takes on its new role. This is at odds with Turok's (1993) *cumulative expansion of the industrial cluster* (Table 1). McCann (1997), in direct response to Turok, suggests that the entire dependent/development approach is too simplistic and not evidenced empirically, with many potentially dependent firms behaving in a developmental way. Turok (1997) has responded directly to this criticism with further empirical evidence. Whilst contradictory evidence exists, Turok's development/dependent model still provides a useful starting point[17].

The formation of the link is often fostered by membership of a social or business network (Curran, Jarvis, Blackburn and Black, 1993) and, whilst this is not an essential ingredient of links, *"networks* [have] *increasingly become the vogue in theorising and describing contemporary organisational relationships, particularly linkages between firms located in the same geographic locale"* (Huggins, 1998, page 814). Therefore the transactional link is influenced by the social or business network.

Groups of firms working in one geographic area, or servicing a particularly demanding large incomer, will develop and boost each other's skills and knowledge base (Garmise and Rees, 1997; Huggins, 1998; Turok, 1993). This comes about partly through competition and partly through co-operation. If co-operation is the driver, this can again take two forms. Relationships that move the companies towards a contractual joint venture

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[17] The BIDS ISI Citation database lists 34 papers that reference Turok (1993), including three in 2000, and 2 that reference Turok (1997), suggesting that the work is still of great interest.

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are referred to as *hard* networks by Rosenfeld (1996), whilst the more casual 'networking' approach generates *softer*, more informal, networks.

Turok (1993) suggests that firms may move closer (or stay closer) together in order to further reduce transport and transaction costs, and thus a cluster, resembling an *"internally generated growth pole"* (page 402), is formed. Turock's suggestion is supported by Garmise and Rees (1997) who talk of *"networked relationships provide*[ing] *powerful resources of 'social capital'"* (page 104).

Huggins (1998) has also drawn upon Garnsey and Cannon-Brookes (1993) to show that, in one of the most successful areas of technology growth (and a good example of an economic district) in the UK (Cambridge), co-operation exists but stretches far beyond the region. In fact, it was shown that the networking was occurring on a global level. Whilst this brings in new working practices and helps the firms compete internationally, it reduces the localised linkage effect, unless demand for firms output subsequent increases.

The formation of networks, given that firms are run by people may, in part, be linked to the influence of indigeneity (a measure of how 'local' a person is). Fielding (1998) has explored indigeneity in terms of its effects on people's perception of land, politics and culture (people's perceptions being partly dependent on where they have lived – for example, an urban dweller may find a rural area more desolate than a rural dweller). However, this debate can be developed in two distinct ways. Firstly, this can be done by adopting a less anthropological interest in the importance of identity and culture *per se*, focusing instead on economic benefits gained through indigeneity's effect on local economic linkages, the economic manifestations and implications of the presence or absence of indigeneity. Secondly, the debate may also be developed by showing that indigeneity has an influence on decision-makers and sourcing and, therefore, linkage decisions.

Previous work (see below) has looked at factors influencing SME decision-makers. In many ways this previous research includes elements of indigeneity, although none have investigated the subject *per se*. The following paragraphs seek to highlight

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work that can be linked to the indigeneity concept. This work can be considered in terms of analysing the Firm, the Location and the Decision-makers.

The Firm and Indigeneity:

Gripaios (1997), McCann (1997), McQuaid, Leitham and Nelson (1996), O'Farrell, Moffat and Hitchens (1993), and Turok (1993) have all considered the importance and behaviour of branch factories and independent firms. O'Farrell *et al.* (1993) demonstrated, for example, that independent firms have a greater propensity than branch plants to use external services (i.e. to buy in services), and that this relates, in part, to the size of firms (small independent firms cannot afford to employ certain service related staff). However, they also argue that a rise in the number of producer service firms is as much related to a growing demand for services as it is to an outsourcing of service activities. Gripaios (1997) found evidence in Devon and Cornwall of an economic (producer service) leakage when indigenous firms were taken over or when new firms funded by foreign investment moved into the area.

Although Gripaios (1997) has noted the leakage of spending on business services, McQuaid *et al.* (1996) suggest that local availability of services is an important part of relocation decisions (though not as important as access to output markets, particularly for larger firms, and suppliers of goods). Turok (1993) suggests that incoming firms' linkages with local firms are, what he calls, 'dependent' rather than 'developmental'. In other words, linkages exist but tend to exhibit an unequal trading relationship characterised by low skilled work and short-term contracts. As already discussed (page 26), McCann (1997) has suggested an alternative interpretation of Turok's (1993) data.

Location and Indigeneity:

McQuaid *et al.* (1996), in their work on location decisions, include such variables as *origin* (new firm, branch, etc.) *of company at these premises, location of parent company* and *address of previous location.* This allowed observations to be made concerning the relationship between previous location and supplier utilisation. For example, it was observed that intra-regional movers tended to change suppliers less than firms moving inter-regional. O'Farrell *et al.* (1993) have drawn attention to the fact that

firms located in peripheral regions (Scotland in their case) tend to use fewer local services than firms in core areas (South East) (61% v 70% proportion of services sourced locally).

Westhead (1995) also examined urban-rural differences with regard to the opinions of new owner-managers. By comparing the replies of new owner-managers to the following statements concerning reasons for starting the company - *The customers were mainly local; The local economy was booming; There was a large number of new businesses in the area I live; There was a large number of new business failures in the area I lived,* Westhead (1995) found no significant differences between rural and urban areas. Whilst differences existed between urban and rural areas with regard to size and type of firm, attitudes of entrepreneurs were, at least in this limited set of statements, relatively similar.

Decision Makers and Indigeneity:

Birley and Westhead (1993) collected data on a wide range of factors concerning the characteristics of firms when investigating the differences between 'novice' and 'habitual' business founders, including whether parents were immigrants to this country, (but again without mention of past or present location). Westhead (1995) also looked at the personal backgrounds of founders but concerned himself mostly with differences in educational background between urban and rural areas, whilst McCann (1997) identified an increase in local sourcing when decision-making power is given to local managers (of branch factories). (Please note that decision-making in SMEs is discussed in more detail on page 39).

Finally, whilst Dodd (1996) found participation in organised social activities not to be significantly greater amongst business owners than employees (detracting from the significance of local networks), the use of family and friends for advice has been identified by Haughton (1993).

However, the research discussed above has failed to fully take account of the influence that present and previous location may have on decision-makers. If this influence has an effect then there are implications for local economic linkage development.

2.4 The Role of Service Industries

Whilst there are numerous interactions between organisations (purchase and supply, formal and informal), this particular thesis focuses on producer services. These services, as defined in the previous chapter, have become an increasingly important part of the economy (Illeris, 1989b; Marshall, 1992) and yet are still poorly understood (Begg, 1993). In addition, services in general differ from the production of either goods or raw materials in one important aspect. Service industry firms do not require a large input of raw or part-finished materials. Thus, a service firm's location decision is based mainly on the supply of labour, the cost of space and the location of the customer (when the service needs to be delivered in person) with less need to consider the supply of raw materials. In fact, it has been suggested (Marshall and Jaeger, 1990) that service industries tend to have their location determined principally by the location of their customers. There is, however, a debate concerning whether the service firm needs to be physically close to the customer or can rely on the use of information communication technology (ICT) to service customers from a distance (where there may be, for example, lower rents). Whilst the full implications of this technology has yet to unfold, there exists evidence that producer service firms still exhibit the tendency to agglomerate in core urban areas (Bennet and Graham, 1998; Marshall and Jaeger, 1990; Potter, 1993) through a combination of customer location and positive inter-firm externalities.

Although, as previously mentioned, there is concern over the lack of research focusing on the service sector (both producer and consumer), its study is by no means new. Early researchers, such as Buckley (1958), Daly (1940), Hinerbrand and Mace (1950), Hoyt (1954) and Innis (1920) (all cited in Stadler and Howe, 1988), have examined the role of services, although during this period it was seen as dependent on the region's export industry.

The importance of service-sector jobs (see Figure 1) was recognised by policy makers when the sector was included within regional assistance schemes in 1984. The key driver within service sector growth is growth of producer services (Marshall, 1992). However, in addition to the direct employment effects of services, which are significant given their share of employment, there also exists the symbiotic relationship between

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producer services and other businesses (Bryson, Ingram and Daniels, 1999). Figure 1 illustrates how growth in employment in producer services[18] has outperformed growth in employment in the economy as a whole.

Figure 1: Indexed Growth in Employment (1998-2000)
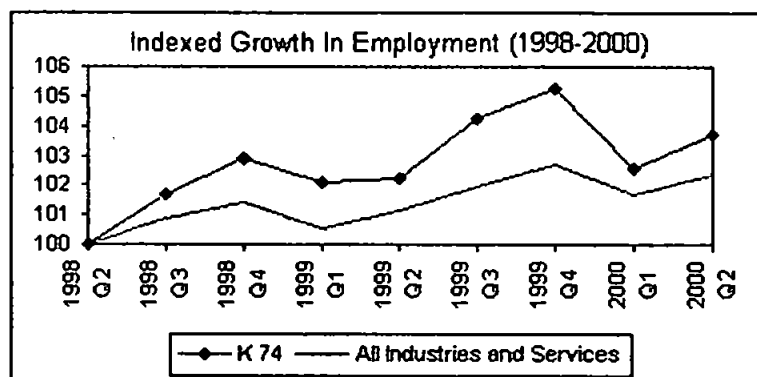
Service sector growth during the 1980s and 1990s has seen the total share of employment accounted for by this sector grow sharply. Throughout the twentieth century there was a movement from primary and secondary towards tertiary industry, but the decline of manufacturing during the 1980s saw the proportion of employment accounted for by services grow more sharply (see Figure 2) (Marshall, 1992).

Figure 2: Percentage of Total Employment in Service Industries (1861-1988)
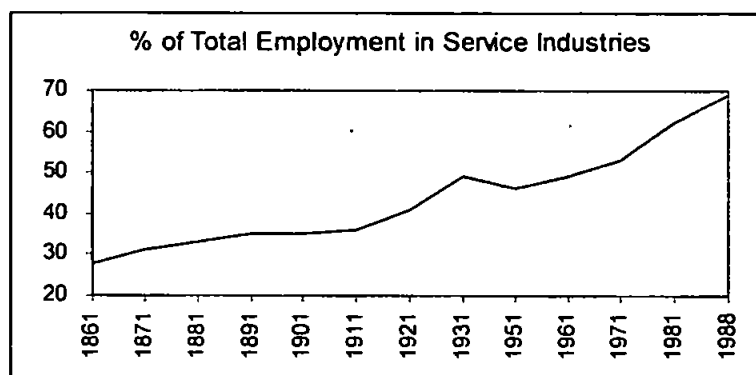
As already indicated (page 30) agglomeration of services has been identified by numerous researchers (see for example: Bennett and Graham, 1998; Marshall, 1989a; Marshall and Jaeger, 1990; Potter, 1993). What has occurred has been a *"spatial*

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[18] K 74 refers to the SIC class "Other Business Activities" and includes: legal activities, accountancy, market research, management activities of holding companies, architectural services, advertising, recruitment, security, industrial cleaning and miscellaneous business activities. It does not include IT, research and development, real estate activities and renting of machinery and household goods (which form the remainder of the SIC class K – "Real Estate, Renting and Business Activities").

contraction of service activities" around core urban areas (Marshall, 1989a, page 140). In addition to research explaining why agglomeration of services has occurred, work has begun to move towards understanding and appreciating the role and market relationships of business service providers. Marshall (1989a) describes this change in research focus as *"A dynamic market-based perspective which appreciates the fluidity of corporate structures and the interdependence of services and other activities..."* (page 140). This is a sentiment echoed by Bryson, Ingram and Daniels (1999) who cite numerous authors as having moved towards research that focuses on external service expertise and "[the] *direct impact on ...productivity, competitiveness and profitability"* (page 1). These two points taken together suggest an important role for services, not just in employment but also in total industry competitiveness.

References above have explored the important development and/or economic regeneration role which business services exhibit. This is what Bryson *et al.* (1999) see as the 'third stage' in services research, the first two being location and distribution of service activities, and location and development of urban-based service offices. The reason for this third stage is, in part, related to the changing nature of business within the developed world. There now exists a greater emphasis on market research, design, selling, value adding, training, information, staff development and recruitment, and a more sophisticated management of money (Bryson *et al.* 1999; Hansen, 1990a; Marshall, 1989a; Marshall and Jaeger, 1990). This emphasis (on market research, design, selling, value, etc.) has seen a movement from services as facilitating the delivery of physical produce (e.g. restaurants, retail, transport, etc.) to services as an integral part of production and as an export in their own right. As Hansen (1990a) puts it, *"the goods-producing and service'sectors are so interrelated that policy considerations for one cannot be meaningful without carefully examining impacts* [of policy] *on the other"* (page 465). Service firms are viewed as crucial to a region's growth (Westhead, 1995), largely due to the more sophisticated (e.g. increasingly global, as a result of developments in information technology) markets that now exist. Yet the linkages that exist between producer firms and service provider are often easily broken (Gripaios, 1997; Love, 1989; Turok, 1993). Given that services now make up a considerable amount of employment and employment growth, are important for

development and form a useful (regional) export, it is important to understand the strength of their integration and linkages within the local economy.

In a recovering rural area the agglomeration of services (in other areas) coupled with the increasing demand for services by firms of all types may create a significant leakage from the local economy (O'Farrell, Wood and Zheng 1996). In a declining rural area the lack of a local market (insufficient demand: Shonkwiler and Harris, 1996) or local market shrinkage (through external competition) prevents local service firms from developing, therefore failing to provide a vital local development role.

The lack of a local market may be due to the inability of local service firms to compete with firms in the service agglomeration. Moreover, this becomes self-perpetuating when lack of demand reduces the local service firm's revenue and hence development funds (referred to as the deindustrialisation view by Marshall, 1990). As discussed previously, other authors have noted that service provision attracts other firms (Hansen, 1990a; Illeris, 1989a and 1989b and Stabler and Howe, 1988) (in addition, Hansen, 1990a quotes Bailly and Maillat, 1988; Gillis, 1987; Monnoyer and Philippe, 1985; Pederson, 1986; Quinn, 1988). It may also be the case that service agglomeration is reducing both the number and quality of service providers in developing rural areas.

The use of service providers is part of the ongoing outsourcing of services (Breheny, Hart and Errington, 1996) and functions that has been the hallmark of the late 1980s and 1990s. However, thought can also be given to those product firms that never had these services internally. Certain specialist services have always been sourced externally (accountancy, legal advice, insurance, finance, delivery, etc.), and so the outsourcing movement has not affected these services. However, it might be reasonable to assume that smaller product firms have to make more use of service providers in order to remain competitive (e.g. Web page design companies).

Smaller product firms will always find it more difficult to influence the markets of their suppliers simply because of their size. Whereas larger product firms may represent anything up to 100% of their supplier's market, smaller firms usually represent small proportions. Although Marshall (1989a) has suggested that *"dense networks of local suppliers in central locations"* (page 140) are emerging to provide product firms with

previously internal functions, networks of local (non-central) suppliers still exist to provide firms with services, *despite* the attraction of service provision offered by firms in the central location. Perhaps the smaller local product firm does not have the wealth or expertise to engage the service of distant business service providers? Perhaps there is more to the supplier/purchaser relationship than cost and quality, and these other factors encourage localised provision.

2.5 The Importance of SMEs in general

Industrialisation gradually drew the interest of economic scholars away from the merchant and farmer and towards the factory and company. Industrialisation also led to ever more complicated market structures and regional variations, both of which have provided important and interesting fields for the researcher. However, changes in the nature and structure of firms have recently led economists back towards the artisans and merchants (traders).

Table 2: Number of Businesses, Employment & Turnover (1998)

Size (number of employees)	Number			Percent		
	Businesses	Employment ('000s)	Turnover[1] (£million)	Businesses	Employment	Turnover
None	2,339,645	2,749	88,634	64.0	12.7	4.6
1-4	922,585	2,356	214,258	25.2	10.9	11.1
5-9	204,290	1,483	123,017	5.6	6.9	6.4
10-19	111,800	1,568	154,360	3.1	7.3	8.0
20-49	48,300	1,496	152,716	1.3	6.9	7.9
50-99	14,945	1,043	110,925	0.4	4.8	5.8
100-199	8,145	1,127	116,995	0.2	5.2	6.1
200-249	1,520	338	37,781	<0.05	1.6	2.0
250-499	3,215	1,123	154,639	0.1	5.2	8.0
500+	3,445	8,311	773,663	0.1	38.5	40.1
All	3,657,885	21,595	1,926,987	100.0	100.0	100.0
All with employee(s)	1,318,240	18,846	1,838,353	36.0	87.3	95.4

[1] excluding VAT. Finance sector turnover excluded from turnover totals.
Number of businesses, employment & turnover by size of enterprise, at the start of 1998

Source DTI 1999a

Firms with less than 200 employees, which represent 99.8% of all firms, account for 50% of total turnover and 55% of employment in the UK (Table 2). Thus the smaller firm (under 200 employees) represents a significant part of the economy's production and employment.

Perhaps more surprisingly, firms with less than 100 employees represent 50% of employment and 44% of the total turnover. In addition, *"Most of the growth* [since 1980] *in the business population has been in one-person businesses"* (DTI, 1999a, page 1).

During the 1980s, it became increasingly apparent that redevelopment of lagging regions of the UK through the relocation of branch plants was not as effective a solution as it was once considered (Armstrong and Taylor, 2000). This policy had not been without its successes, but changes within the wider economic world (globalisation, new technology, etc.) and at home (labour practices, changes in skills requirements and a strong currency) were negating the competitiveness of British manufacturing. The decline in manufacturing coincided, and perhaps fuelled (Atkin, Binks and Vale, 1983 quoted in Armstrong and Taylor, 1993), a growth in the number of self-employed and of small firms. When this change in industrial structure was combined with the new government's political agenda (Thatcherism), a renewed interest in the small firm sector was inevitable.

There are five clear suggestions as to why SMEs have come to be seen as the prime engine of economic growth.

1. *Their ability to create large numbers of new jobs;*

2. *Their ability to improve industrial relations and to provide a superior working environment for employees;*

3. *Their ability to create a diversified and flexible industrial base by creating a pool of entrepreneurs willing and able to take risks;*

4. *Their ability to stimulate intensive competition for small and large firms alike, leading to an energetic enterprise culture;*

5. *Their ability to stimulate innovation.*

Armstrong and Taylor (2000) page 248

The above list also gives a combination of structural and cultural goals addressed by SMEs. There is evidence to show that some of the more quantifiable suggestions in the above list were achieved. Between 1979 and 1994, there was a 54% increase in the number of firms in the UK. Given that 99.8% of firms employ less than 100 staff this shows an increase in the total number of SMEs (Keeble, 1997) (points 1 and 3 above). Whilst there was increase in absolute numbers of firms, it is debatable as to whether the

economic situation has improved. The UK currently enjoys a period of low unemployment. However, there is evidence that the employment available in smaller firms is inferior to that offered by larger firms, being typified by low pay and abuse of statutory entitlements and controls (Rannie, 1989; Storey and Johnson, 1987), contradicting point 2 of the above list.

The regional implications of SME growth can also be considered. Much of the important work done in this field has focused not so much on increases in number of firms but on the number, increase and performance of innovative firms (see for example Bishop and Wiseman, 1999a; Keeble, 1997; Vaessen and Keeble, 1995; Keeble, Bryson and Wood, 1991). Whilst the seemingly inevitable core-periphery remains (core regions have faster rates of growth (Keeble, 1997)), there appears to be evidence of more innovation amongst peripheral SMEs. As Vaessen and Keeble (1995) suggest *"there is some indication of higher innovation rates amongst growing peripheral medium-sized firms compared with South Eastern enterprises"* (page 502).

Table 3: SME Innovation

	% of respondents whose firms had introduced innovation (1992-1995)		
	South East	Other Southern	Peripheral
Product Innovation	52.7	53.9	48.3
Process Innovation	43.3	39.9	44.1

Adapted from Keeble (1997) page 287

As can be seen from Table 3, innovation amongst peripheral SMEs lags slightly in terms of product innovation (new products), but is superior with regard to process innovation (new ways of producing products). It has been suggested (Vaessen and Keeble, 1995) that what peripheral SMEs lack in terms of agglomeration they make up for in terms of a harsh environment that ensures that only the most innovative firms survive.

Whilst the above discussion shows that there are interesting inter-regional differences in terms of the growth and innovation of SMEs, it also partly validates reliance on their economic potential. The New Labour government are continuing SME initiatives with the introduction of, amongst other policies, the Small Business Service to help 'champion' smaller businesses who are not within Business Link's remit (their primary responsibility being firms with between 10-250 employees) (Lowe and Talbot, 2000).

The role and importance of SMEs within the economy is now firmly established. However, in addition to establishing the effectiveness of such policies, there is still much to be established concerning the operation and behaviour of SMEs, both urban and rural.

Much research and thought has been given to the running and structure of large firms. One only needs look at the average MBA syllabus to confirm this. Whilst these large firms create interesting scenarios for the researcher and students, there is something to be gained from studying the more pure (as in an independent decision, rather than one dictated by policy or procedure) form of transaction encountered within the SME. The SME manager is often also the company owner and, as such, operates in a more personalised way than would be found within a large corporation. Whilst the corporate manager attempts to balance risk and enhance the company shareowners' wealth, decision-making is inevitably done within a structure of policy and procedure. On the other hand the SME manager operates in a way that more closely mirrors a private consumer (decisions based on one person's preference rather than policy). However, the SME manager is a consumer who is operating within a complex environment and often lacks information, and needs to form alliances as often as aggressively seek low costs. Part of the decision-making process relates to the localised nature of information, but this does not provide a full explanation. As Casson (1993) suggests, *"different people have access to different information, but, even where access is similar, opinions differ as to reliability"* (page 35). It is the personalised nature of decision-making that makes SME research complex. Generalisations as to decision-maker behaviour become more difficult as various forms of bounded rationality are encountered. The reasoning behind purchasing decisions is not as obvious or explicit as 'company procedure' (Burpitt and Rondinelli, 1998). Even if the set of purchases by the firm is restricted to the acquisition of services, behaviour patterns remain complex. Although direct cost of service supply remains a central factor, the decision-maker may also be influenced by the need to form alliances and by other location and market-based factors. Importantly, it is unlikely that the small firm owner/manager is operating in accordance with a prescribed policy. It has been suggested by Daniels (1995) that *"The role[s] of small and medium sized firms...in shaping the demand for producer services could fruitfully be pursued further"* (page 85).

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As an example of small firm decision-making, research by Errington (1993) revealed that farmers were *more likely* to delegate (to other members of the business) crop decisions, including planting and selling, than to delegate negotiation with providers of finance. Similar work on this theme (Errington, 1992) suggested that farmers were more likely to discuss their retirement plans with their accountant (45%) than their family (35%) (where the respondent listed more than one category). Whilst this represents only one, and perhaps in many ways unique, subset of all small businesses, it does begin to illustrate that the decision-making is not always obvious and that the relationship between the firm and the service provider is often important.

Further evidence of the influence of service providers is provided by Curran and Blackburn (1994) who explored sources of help used by SMEs to solve business problems:

Table 4: Sources of SME Advice

Sources of advice from external bodies on solving business problems (%)					
Accountant	Solicitor	Bank Manager	Small Firms Service	Enterprise Agency	Educational Institution
74.4	67.6	36.3	19.5	18.8	12.7

Adapted from Curran and Blackburn (1994) page 95

It could be suggested from Table 4 that governments should abandon development agencies and instead subsidise professional business services (accountant, solicitors, etc.) as firms appear, if usage is an indicator of value, to value the advice given by the professions more highly than that given by agencies. It is certainly clear that firms will often pay for advice from accountants, solicitors and banks rather than receive it from an agency. However, a significant amount of the advice and help provided by the professions is in fact specialist (e.g. tax advice, contract law, etc.) (Curran and Blackburn, 1994).

There also exists a differing level of service demand between different industry sectors. Dobson (1987) and Curran and Blackburn (1994) found evidence of low demand for business services amongst manufacturing firms, which has linkage implications. By combining the three previous sections, it could be suggested that an understanding of the local economic linkages between SMEs and their producer services, that are so useful to firms and to local economic development, could improve understanding of SME economics.

2.6 Decision-making in SMEs

The decision-making process can be described as a series of steps. Broadly, the steps are: identify problem; gather data; build model/generate solutions; choose a solution (Baillette, 2001; Davis, McKeown and Rakes, 1984). When considering the decision-making process as it relates to the purchasing of services, it can be assumed that the problem is already defined (i.e. the need for a service provider). The methods used by the decision-maker to collect the data (e.g. systematic market research, word of mouth, etc.) and issues (e.g. local influences, networks, etc.) that may influence the decision-maker in choosing a solution need to be considered alongside the nature of services as a transaction.

Within the service purchasing market, there are usually no costs of holding stock for the purchaser. In exceptional circumstances, there may be a retainer or a service contract that needs to be honoured for a certain amount of time (for example, the mobile phone service that often requires a year's contract).

However, there are additional costs to the direct cost of the service. The decision-maker has various choices that add transaction costs to the direct costs of the service (O'Farrell et al., 1993). These transaction costs, first identified by Coase (1937), include *"the time and expense of negotiating, writing and enforcing contracts"* (Besanko, Dranove and Shanley, 2000, page 134) in addition to the cost of research. In part, the transaction cost reflects the risk of doing business, representing, as it does, the relationship between the cost of the consequences of opportunistic behaviour and the cost of preventing it through research, contracts and enforcement.

Whilst the decision-maker is using a combination of internal and external information to inform the decision (Errington, 1984), it is apparent that this information will not be perfect. In addition, Perren and Atkin (1997) have noted that few owner-managers actually use any form of systematic planning, and that owner-manager decision-making is an area that is under-researched. The observations of Errington (1984) and Perren and Atkin (1997) can be considered against general theories of decision-making that suggest humans are influenced by 'hindsight bias' (overestimation of ability once proven correct – Fischhoff, 1975) and have difficulties in returning to their original beliefs even when their new beliefs have been discredited (Loewenstein, Moore and Weber, 2001).

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In addition to the complexities of decision-making in general, services, and specifically producer services, can represent a type of 'arm's length' transaction that experiences transaction-cost-related problems (O'Farrell *et al.*, 1993) as it may be unlikely that smaller firms will enter into long term formal relationships with their suppliers (partly due to the cost of such arrangements in terms of reduced flexibility). It is also unlikely that firms, for reasons of size (available capital), will seek mergers with their upstream or downstream suppliers of services[19]. Thus one of the few mechanisms available for significantly reducing transaction costs is removed.

Given the inability of both firms and legal experts to create complete contracts, a purchasing firm is left with an incomplete contract arrangement with the supplier (Besanko *et al.*, 2000). The tolerance of incomplete contracts can be explained by reference to two situations that business managers generally experience. First, all parties to the contract are operating within the limits of bounded rationality (Casson, 1993) and are attempting to deal with the complexities of the real world situation. This ultimately leads to difficulties in interpreting contract arrangements through a lack of clarity. For example, when a business asks an accountant to 'go through their books at the end of the year', do they mean 'prepare them for tax returns' or 'prepare them for tax returns and also offer us advice on how to better run the business finances'? Even if the situation is clarified by a written contract, the terms of this contract can in themselves be vague (to deal with the complexities of the real world). Secondly, the two parties are also exposed to asymmetry of information (Besanko *et al.*, 2000).

Decision-making can be further complicated by the development of relationship-specific assets. Although relationship-specific assets generally refers to physical location or investment (Besanko *et al.*, 2000; agglomeration to reduce transaction costs - Turok, 1993), it can be adapted to describe the symbiotic relationship that develops between certain suppliers and the firm. Investing time and effort in developing a close working relationship with an accountant, for example, means that the company is less willing to

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[19] Williamson (1971) explains that the transaction cost of external relations during times of market uncertainty can be such that disintegration becomes more cost-effective.

move to another firm because the accountant, partly at the cost of the company, has developed transaction-specific knowledge.

Arguably the need for trust is high in certain service/firm relationships. Certain service providers (accountants, banks, lawyers, etc.) are often party to very sensitive information concerning the firm and, whilst these providers maintain professional working practices, it is perhaps easier to trust a professional already known to the company. Trust both reduces the need for expensive contract negotiations (or risk allowances) (Casson, 1993) and increases co-operation between the two parties (Besanko *et al.*, 2000). This, in turn, leads to a situation where the firm gains more for less cost from the provider, but moves the firm away from a competitive market situation.

When decision-making is considered within the context of the small firm, the situation becomes more focused on a smaller number of people. Due to the fact that within small firms the owner and key decision-maker are often the same individual there is less bureaucracy than would be the case where ownership and control have been divorced. This lack of bureaucracy leads to a more rapid form of decision-making (Vossen, 1998). However, it can also be suggested that individual decision-makers have more trouble than teams of decision-makers in processing the wealth of information available to them (Hunnicutt, 2001). Baillette (2001) emphasises the sense of risk felt by decision-making owner-managers in small firms, highlighting not only the speed by which decisions can be implemented, but also the link between the owner-manager and company's wealth. Arguably, "*SME directors have very little room for error because practically all decisions taken are of strategic importance*" (Baillette, 2001, page 30)

In summary, the service purchaser is in a situation where a collection of decisions needs to be made. The cost of searching for alternative suppliers needs to be weighed against the cost savings that might be available. Also, the cost of developing and negotiating new contracts needs to be considered. Finally, a risk factor needs to be incorporated allowing for the consequences of default. All of these points may lead firms to retain services over long periods of time or source services locally, both of which can remove some of the uncertainty from the decision-making process.

2.7 Availability of Services

One important issue in the purchasing of services is the availability of services in a given district. Unavailability of services will inevitably influence sourcing decisions and this may in turn limit the way in which local firms operate. As stated by North and Smallbone (1992), *"supply-side constraints may limit the future creation of new firms and the expansion of existing firms in remote rural areas"* (page 2). Research has already identified the departure of high street banks and insurance companies from market towns, particularly with a view to loss of employment opportunities for local people (SWER, 1997). It seems fair to suggest that both the reduction in number of service providers and the reduction in decision-making power within these service units will have an effect on the firms' choice of providers. Simply put, a service purchasing firm may have no choice but to source out of town or county because a) the service does not exist or b) the necessary decision-making power is not devolved to this geographic area.

2.8 Summary

Whilst most policy makers, businesses and individuals have a working definition of what does and does not constitute a rural area, the literature suggests that rurality is difficult to define and classify objectively. This is partly a function of the fact that urban and rural are increasingly merging into a homogenous whole (Cloke, 1997), but it is also due to the subjective nature of such definitions in general. For this thesis, a workable definition was found within the RDC definitions of areas as either 'remote' or 'accessible rural'. Whilst pinpointing the exact point where an area ceases to be remote and becomes accessible is extremely difficult, it is relatively straightforward to identify the two extremes of this condition.

With the adoption of a definition of geographic space provided by the RDC, it is then possible to examine the business activities within it. The review then considered economic transactions and the linkages which these create. It has been shown that linkage is important for economic regeneration (i.e. Keynesian economics) and thus policy makers often welcome enhanced understanding of linkages. Authors have already found relationships between various firm types and economic regeneration: *"Policy should*

recognise the potential key role they [small independent firms] *may play in fostering local linkage...*" (Dobson, 1987, page 55) and yet still much of the subject remains undeveloped.

Linkages have often forced, or at least persuaded, firms to locate closely together. Many areas have gained from the pooling of skills and knowledge, and the cost reduction that this creates (Huggins, 1998; Turok, 1993). However, this has also created an increasing disparity between core and peripheral locations.

In addition to this, evidence suggests that the UK is increasingly becoming a service-sector-dominated economy. Not only do areas of agglomeration derive benefit from the direct employment effects of services, but they also benefit from the close relationship that exists between business services and business. This suggests that remote areas are a) missing out on the provision of high-quality services, b) importing services, or c) operating on a local level with service firms that are able to provide adequate services (i.e. the agglomeration of services is not having a significant impact). Given that it has been suggested that service firms are crucial to a region's growth (Westhead, 1995), it seems important that more is done to uncover how firms in rural areas are operating with regard to purchasing the services they require.

The procurement of producer services by smaller firms represents an important area for research. These firms, after all, amount to 99.8% of the stock of UK firms (DTI 1999a). In addition to the importance created by their number, their management style also engenders interest. These smaller firms are not as constrained as larger corporations by policy and practice; instead owner managers (single, partners, or small boards of directors) often operate them in a relatively independent way. It is this independence that makes decisions, on the face of it, less predictable. And yet their numbers makes an improved understanding important.

This review has illustrated that, although much has already been established concerning services, linkages and SMEs, research potential still exists. A study that explores the relationship between firms and producer services by concentrating on developing a model of the factors that influenced service procurement decisions would appear timely. In addition, by establishing if differences exist within rural areas, more evidence may be uncovered concerning the rurality and core-periphery debates.

Chapter 3: Research Methodology

3.1 Introduction

The aim of this chapter is to introduce the research methodology of the thesis by describing both the research philosophy and the research design. The chapter begins by considering research philosophy and then goes on to discuss conceptualisation and operationalisation of the area of enquiry, including a description of the qualitative work undertaken. Finally, a definition of terms is provided.

The Research Philosophy

The initial proposal for this research (see Appendix 1) suggested a positivistic enquiry. Positivism relates to a scientific approach to the acquisition of knowledge and is often used to describe the use of the scientific method in social science. Whilst social science as a whole has experimented with forms of phenomenology and post-structuralism as alternative approaches, economics has maintained positivism as a dominant paradigm. Although this in itself could be used as a justification for continuing with a positivistic stance, much thought was given to methodological implications of such an approach during the research process. Rather than adopt positivism simply because it was the dominant paradigm, alternative paradigms were considered and then rejected[20].

Positivism's link with the scientific method means that its foundation is based upon the assumption of an external, independent reality. Admittedly, this was not a concept that created specific problems for the researcher before commencing this thesis. However, the researcher became increasingly aware of the debate surrounding this approach for two reasons. First, criticisms made concerning papers related to this thesis presented at conferences were often aimed at the positivistic stance rather than the content (e.g. "Why are you still interested in models?", "It's all about process now, not agents", etc.). Secondly, the researcher developed a general concern about the ability of statistics to capture the decision-making process. This concern was tempered somewhat by the lack of

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[20] This in itself represents a positivistic approach.

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credible alternatives. Markusen (1999) has commented on the disturbing movement (since the mid-1980s) within the field of regional studies towards concepts that lack conceptual clarity and towards a preoccupation with powerless agents caught up in uncontrollable processes. It has been suggested that there has been a retreat from data collection and analysis towards theorising.

Criticisms of positivism are by no means a recent problem. In fact, as early as the beginnings of the twentieth century, doubts were already being raised as to the validity of adopting a scientific view of social science. Much of this criticism focused on the need to provide, or understand, meaning. It was argued that rationality was often absent from human and social experience and behaviour. Meaning, it was argued, was socially constructed. Positivism, however, sees the world as an environment governed by 'laws' (Coolican, 1993) and as such borrows from Newton's clockwork universe in its descriptions. There is a strong reliance on mathematics and little regard to human 'hunches' and 'feelings' or the social contexts within which they operate (Hussey and Hussey, 1997). There also exists a strong argument that even the most objective researcher cannot escape their own personal biases, and so even mechanistic models contain human intuition (Smith, 1983, quoted in Hussey and Hussey, 1997). Thus, the deductive hypothesis testing approach (*hypothetico-deductive*) has been criticised for a lack of understanding in the field of human affairs. In addition, more extreme opponents suggested that reality itself was subjective and that there was no external objective reality, and thus no role for positivism.

However, there are numerous arguments for an external objective reality. It has been suggested by some (Diettrich, 1995) that our in-built appreciation of an objective reality reflects an evolutionary process that has adapted us to accept such a situation. Thus, if there were no external reality, we would not, in the majority, believe there was. A slightly different defence of an external reality is provided by Sokal and Bricmont (1997) who suggest that "*The most natural way to explain the persistence of our sensations (particularly the unpleasant ones) is to suppose that they are caused by agents outside our consciousness* " (page 52). Of course, as they point out, this argument can be refuted. It is quite possible to insist, as an individual, that there is no external reality and that the reality

they experience is created by their own mind. However, Sokal and Bricmont (1997) doubt the sincerity of such statements. The statements are irrefutable, and it is in this that the instigator finds their defence, but *"irrefutability does not imply that there is any reason to believe it is true"* (Sokal and Bricmont, 1997, page 52).

Although the above discussion has begun to deal with the criticism levelled at positivism from phenomenology (exploration of subjective interpretations and consciousness), it also begins to move us, through relativism, to post-structuralism/post-modernism (interpretation of reality through the study of language and discourse). Whilst we arguably live in a post-modern age, where the positions of both religion and science have been weakened, it is difficult to subscribe to the post-modernist view that reality is simply a construct of discourses. Certainly our interpretation of reality, to differing context-specific degrees, is shaped by both interpretation (socio-cultural or genetic) and by the discourses we have been exposed to. However, it is still difficult to suggest that there is not an external reality. Perhaps it could be suggested that, whilst post-structuralism provides a useful critique of other paradigms, it relies too much on irrefutability as a defence (Sokal and Bricmont, 1997).

The Methodology Adopted

As this study seeks to develop a general model, of the type defined by Nelson (1998, page 281) as a *"system of definitions, assumptions, and equations set up to discuss a particular natural phenomena"*, to assess a particular company's likely actions, it was ultimately deductive in nature. It would be possible to conduct a deductive enquiry using only qualitative techniques, although it is common with economic studies to rely on quantitative research. Issues such as generalisability are more easily settled by the use of quantitative data that can be applied and replicated elsewhere. However, in order to construct the model a process of qualitative inductive investigative research was utilised to identify possible variables for consideration (Jones, 1993). This qualitative process, combined with the literature review, helped to establish the possible decision driver variables.

There were then, within this thesis, two choices with regards to data collection – primary or secondary. Whilst there are secondary data sources available, much of the information required in this thesis could not be obtained using this approach. Therefore, it was decided to collect data directly from companies (detailed in following chapter). The data collected was then used to develop the model (similar, though not identical, to the approach found in Love, 1990). The model was then tested using a new set of data.

Within quantitative research there are a variety of predictive modelling techniques available. One of the best known is ordinary least squares regression (OLS). In OLS the mean value of a random variable Y (the dependent variable) is conditional upon the value of X (the explanatory variable). When X alters so to does Y. This relationship is called the regression of Y on X (Nelson, 1998). This relationship, or function, is described in terms of regression coefficients and OLS analysis seeks to estimate these parameters.

Within this thesis an investigation is being conducted into proportional spend within a specific area and this gives the dependent variable an absolute minimum value of 0. Due to the fact that there is no mathematical mechanism within the OLS regression equation to prevent prediction of values below 0, it being simply a summation of a constant and a set of coefficients multiplied by their respective explanatory variables, there are limitations to the application of OLS in this instance. Logistic regression, a non-parametric development of OLS regression, seeks to predict not the value of the dependent variable but the probability that the dependent variable is either 1 or 0, therefore removing any possibility of values below 0 (Hosmer and Lemeshow, 1989; Menard, 1995; Pampel, 2000). Although this collapsing of the dependent variable inevitably loses some of the detail of the original data

In addition, for OLS regression, discriminant analysis, factor analysis or other parametric techniques, the distribution and the variance of the dependent variable should be normal and constant respectively for any value of the independent variable. Whilst techniques are available to modify data to meet these criteria, logistic regression does not have the same data requirements. In logistic regression, the dependent variable should be dichotomous and the independent variables either interval level or categorical. As with

OLS, it is advisable to avoid multicollinearity among the independent variables as this can inflate standard errors.

The combined qualitative - quantitative approach allowed a degree of methodology triangulation in that a variety of methods were adopted in the attempt to reduce the shortcomings of any one method. This triangulation produced superior results than quantitative research alone which, given its potential for bias and the lack of existing literature, may have resulted in a less robust investigation. This process of robust model building was continued after the initial model was established when the reliability of the findings was tested using a second survey in which further data were collected. This additional data allowed the model's prediction of spend to be compared with actual spend using data that had not be used to estimate the model.

Initial Interview Phase

The objective of this phase of the research was to identify and develop an understanding of the variables that may influence the SME owner/manager in his or her choice of producer service provider. This use of qualitative research to gather information to assist questionnaire planning has been described by some authors as the most common use of qualitative research (Walker, 1985).

Methodology of Initial Interview Phase

In order to generate as rich a set of data as possible, the method sought to obtain, analyse and use decision-makers' opinions and feelings regarding the factors influencing their decision-making.

Whilst during this qualitative phase of research an inductive methodology was selected, there still exists a considerable amount of choice concerning the *method*. Variation in method is often connected to variation in analysis (e.g. content analysis, repertory grid). In addition, the collection and analysis process are often inter-linked, meaning that the method describes both the collection and analysis (e.g. in protocol analysis the qualitative data is categorised and coded into themes that can be analysed quantitatively (Hussey and Hussey, 1997), grounded theory). It was necessary to establish which type of analysis would ultimately be applied to the data before the data collection

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process could be planned. However, as with quantitative techniques, more than one method of data analysis can often be applied.

Given the aim of this phase of the research, consideration was given to developing an understanding of the decision-maker's thought processes (Love, 1990). In order to identify quantifiable variables that affect the decision-making process, it was necessary to allow decision-makers to explain their decision-making process. This form of *retrospective verbalisation* forms part of protocol analysis (Hussey and Hussey, 1997). Retrospective verbalisation is most often used to elicit information concerning the decision-maker's thought process *during* the cognitive exercise. There are obvious financial (research time) and operational (being present during decision-making may not be possible to arrange) difficulties in this approach.

Whilst it would constitute a worthwhile longitudinal study, the keeping of logbooks by decision-makers was inappropriate in this research, given the requirement to establish key decision-making influencing variables at an early stage within the research. The possible length of time between the firm selecting producer service suppliers (which it may do very infrequently) and final data analysis suggested that logbooks would not be suitable.

Retrospective verbalisation requires the decision-maker to recount the thought process that led to a given decision. The method has been criticised for its similarity to an *"action replay"*[21] (Day, 1986, page 296, quoted in Hussey and Hussey 1997). However, given the difficulties outlined above relating to logbooks and operating in *real time*, and given the lack of any methodologically superior technique, retrospective verbalisation provided the most suitable method for collecting inductive decision-making data for this thesis, providing the problems identified by Day (1986) were recognised.

In addition to responses to the rather direct question "what led to you making decision *x*?", other information was collected. The researcher entered into a semi-structured discussion concerning the decision-maker's own decision-making process and also the processes which the decision-maker 'believes' are utilised by other managers. This process utilises the decision-maker as an 'expert witness'. Thus, whilst the decision

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[21] Sometimes described as *post hoc rationalisation.*

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maker may seek to present a 'model answer' during the retrospective verbalisation process, ideas and suggestions generated during the semi-structured discussion indicated additional themes and opinions.

Consideration was also given to the interrelationship of interviews. There are two main options open to the researcher: to treat each interview identically or to allow knowledge developed during previous interviews to influence subsequent interviews. The positivist approach to interviews has been an attempt to 'control' the investigation and maximise reliability by replicating questions, timing and, as far as is possible, environment in each interview (i.e. adopting a similar approach as to that found in questionnaire methodology). Alternatively, a hypothesis can be allowed to develop by allowing on-going analysis of interviews to influence questions asked in future interviews. An appreciation of the limitations of positivism led Glaser and Strauss (1967) to propose an alternative methodology known as *Grounded Theory*.

Grounded theory treats interviews as *"directed conversations"* rather than *"closely controlled, monitored and measured pseudo-experiments"* (Pidgeon and Henwood, 1996). By adopting this approach, it becomes acceptable, in fact *desirable*, to revise questions and topics between interviews. The extension of the sample (i.e. subsequent interviews) are considered not as an aid to the generalisation of the theory, as would be the case with questionnaire and conventional positivistic sampling, but rather as a deepening of the emergent understanding which the researcher is developing (Richardson, 1996). Collican (1993), summarising Glaser and Strauss (1967), suggests that researchers should *"enter a research situation with no prior theoretical preconceptions"* and *"create, refine and revise theory in light of further data collected"* (page 236).

This circular approach has similarities to the familiar inductive-deductive methodology found within numerous positivistic studies. The formation and subsequent testing of theory is in many ways a traditional positivist approach. This positivistic hypothesis based approach has been emphasised in Strauss's later work (e.g. Strauss and Corbin, 1990) and has been criticised by Glaser (1992) as having developed so far along this route as to be no longer true to the original ideals of grounded theory.

Given that the overriding paradigm within this present study was positivistic, Glaser's (1992) comments were considered to be important but not of concern. The research adopted a pseudo-grounded theory approach (allowing theory to develop and altering questions between interviews but not selecting subjects based on previous interviews). By using this approach, it was anticipated that a deeper understanding of the research question would be developed. Given that the nature of this stage of the research study was to gather 'rich' data from the field, whilst carefully avoiding 'data overload', the ability to adapt and allow theory to emerge, be tested and then develop again offered the potential of superior results. The method adopted, including sample size and approach to interviews, is provided in Appendix 2, whilst the interview schedules (guidelines) are in Appendices 3 through 6.

Difficulties and Limitations Associated with Qualitative Interviews

The most commonly cited criticism of qualitative interviews as a data collection technique is the problem of analysing the large volume of data created (Hussey and Hussey, 1997; Coolican, 1993). Whilst the data is rich in content, it also runs the risk of being inaccessible in volume.

In addition, there are problems of the power relationships within interview situations (Scott, 1996), alongside difficulties created by gender, class, race and confidentiality (Hussey and Hussey, 1997). The final point is also echoed by Lean (1996) who recognises the importance of sensitivity, particularly in the case of financial data and companies' financial positions. To fully compensate for all of the potential problem areas would be extremely difficult. However, it was felt that by being aware of the potential for difficulties it should be possible to restrict any effect these may otherwise have.

Conclusion of the Interview Phase

In addition to confirming those variables identified by the literature, two important findings stemmed from the interview phase. First, it appeared that there was a stronger emphasis on personal roots and networks than had been suggested in the literature. These networks can consist of friendships and associations between owner-mangers and friends not linked directly to the business, friendships formed through business interaction and

acquaintances (for example, neighbouring businesses on an industrial estate, suppliers, etc.). It appeared that networks (both social and business) influenced individuals and that these networks were locally bound. This led to the collection of information during the questionnaire phase relating to past and present locations of both the firm and the decision maker (both domestic and job-related).

Closely related to this point was the observation that decision-makers treat services in different ways. Some are treated as 'virtual employees' whilst others are treated as 'quasi-products'. Virtual employees are service providers that the firm are reluctant to change (the firm exhibits loyalty towards them), whilst quasi-products are service providers that the firm is willing to change more regularly. They (virtual employees) have a close and long-term relationship with the company, whilst 'quasi-products' are treated on a least-cost basis (buy cheapest). This separation of services differs from the traditional separation found within Keane (1990) who defines low-order as basic and high-order as more luxurious purchases. Within the 'virtual employee' and 'quasi-product' separation, the emphasis is not on the quality of the service, but rather on the strength and type of relationship between service purchaser and service vendor. The reason that different service providers are treated differently by service purchasers in such a way as to make possible the separation into 'virtual employee' and 'quasi-product' relates to the importance placed on the reliability of service provision and the close relationship between provider and purchaser. The concept of 'virtual employees' and 'quasi-products' is not developed in existing literature and represents a new method of classifying services.

This close relationship can partly be explained by the involvement of certain service providers during the early stages of a firm's life cycle. To create a firm, the owners need to consult various producer service providers, either before creation or during the first 18 months at the most (e.g. Curran and Blackburn (1994) point out the need to make tax returns). Accountants will need to be appointed to assist with financial returns, solicitors with property purchases and financial service providers for funding. Whilst all of these services can be purchased from a variety of locations, lower transaction costs will encourage a company to select providers within their immediate locality (be it town or nearby towns or countryside).

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Given that there is a growing trend, within business supply chains, for closer and longer-term relationships (Holmlund and Kock, 1996), initial choice of supplier may in fact be the choice of long-term supplier. Business and social networks in which the owners/managers operate have some bearing on their choice of producer service providers, as does the location of the company at start-up. Unless the cost of services and goods from another location is such that it leaves the decision makers with no other choice but to purchase them from a new supplier, the cost in terms of risk, uncertainty and inconvenience of changing supplier may discourage decision makers from switching to alternative suppliers in future. It could be suggested that integration into local networks has an effect on transaction costs. Where there is poor local knowledge, there is uncertainty and where there is uncertainty, there is an increase in transaction costs. This uncertainty may well be a manifestation of a lack of trust, as identified by Casson (1993), or simply a lack of local market information (both as a supplier and as a consumer) leading to expenditure on research or the need to factor into costs an element of risk. Therefore, relationships that require a high degree of trust are treated differently than those that are not so trust-dependent. Additionally, trust is geographically bound, reflecting as it does the interaction of people within a limited geographic space.

Turok and Richardson (1989 page 52) identify the reliance which SMEs, particularly stable and growing SMEs, place on accountants and banks as sources of advice (40% of stable firms used accountants and 30% used banks for advice; 55% of growing firms used accountants and 45% used banks for advice). It was also found by Curran, Jarvis, Blackburn and Black (1993) that one small firm manager continued to utilise the accountant and solicitor recommended by the bank which he used to fund his initial purchase of his company. This use continued despite the fact that the manager admitted that the service providers were *"expensive"* (Curran *et al.*, 1993 page 19).

Whilst the initial interview phase of the research was designed primarily to inform the quantitative phase of research by developing an enhanced understanding of the variables that may influence service purchasing decision-making within SMEs, it also provided evidence of two novel categories (virtual employees and quasi-products).

3.2 Research Aims

The aim of this research was to establish if it is possible to predict, using a description of the characteristics of the purchasing firm, whether a small to medium sized firm will source producer services from the town in which it is resident. Collecting data from SMEs enabled the relationship between the integration, in terms of purchasing of producer services locally (i.e. same town), and the purchasing firm's characteristics to be determined. This led to the identification of characteristics that were statistically the most significant. In order to achieve this aim, data was collected from SMEs in four market towns and used to produce a model. The model was then tested by using data from an additional two towns.

This thesis adds to the existing literature on economic linkages, such as the research conducted by Chaston and Mangles (1996), Dobson (1987) and Grimes (1993), who have investigated the positive economic linkage aspects of indigenous firm growth; Curran and Blackburn (1994), who explored the changing nature of rural areas; Gripaios (1997) and Love (1989), who examined the change to linkages as a result of company take-over; Keane (1990), who considered households' decisions to shop in different towns; and Turok (1993), who explored the strength of linkages in the Scottish high-tech industry.

In addition, it adds to the debate surrounding the role of market towns as outlined in the new Rural White Paper (DETR, 2000), and researched by Courtney (1999; 2000) and Errington (1997).

3.3 Research Objectives

The main objective of this research is to devise and test a model to measure the relationship between firms' characteristics and their local purchasing of producer services. The following three objectives are the main themes of this enquiry:

> *1) To establish which (if any) SME characteristics are a good predictor of producer service choice in relation to small and medium-sized towns.*

Current literature has tended to focus on the purchasing of a combination of goods and services and/or focused on broad geographic areas, for example Scotland by Love (1989) and Turok (1993). Alternatively, research has focused on individual sectors, for example

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manufacturing (O'Farrell *et al.* 1993). Research that focuses on producer service purchasing by SMEs in small and medium-sized market towns allows for an investigation of three important areas: the producer service sector, SMEs, and the role of market towns. Whilst these three areas have all been previously researched, it is the combination of the three that allows this thesis to contribute to the literature.

> *2) To establish, by comparison of two different rural locations, whether inter-rural differences exist in producer service sourcing decisions.*

The behaviour of firms in accessible rural areas has been studied by Keeble and Tyler (1995) and Breheny, Hart and Errington (1996). A comparison of the behaviour of firms in remote rural and accessible rural areas (RDC, 1997; Tarling *et al.*, 1993) adds to this understanding of the importance of location.

> *3) To highlight the implications of the results of the two preceding objectives for rural policy makers.*

Whilst this thesis is aimed primarily at an academic audience, and whilst analysis of policy is not the central theme of the thesis, some consideration of the findings in relation to policy will be made.

3.4 Conceptualisation and Operationalisation

Research Conceptualisation

In order to begin to develop a research methodology to answer the questions and satisfy the objectives identified within the research, it was first necessary to develop a conceptual model of the relationship between rural SMEs and producer services. The development of this model allowed the researcher to identify and explore significant relationships amongst the various strands of interest. Through the development of a conceptual model, it was possible to create conceptual hypotheses that could then be operationalised into a form that could be tested empirically.

The model draws on existing literature and the findings of the interview phase of the research by bringing together the numerous strands of enquiry explored in previous

sections and chapters into one homogenous whole. It is, of course, inevitable that the concepts will be inter-linked, originating as they do from a single literature review.

The conceptual model (Figure 3) illustrates the interrelationship between the firm and its environment in terms of developing an enhanced understanding of the workings of the modern market town. By maintaining the link between behaviour and environmental context, it is possible, and desirable, to both operationalise the study's findings and add to the literature in terms of abstract generalisable findings concerning the economics of the firm.

Figure 3: Conceptual Model of the Research
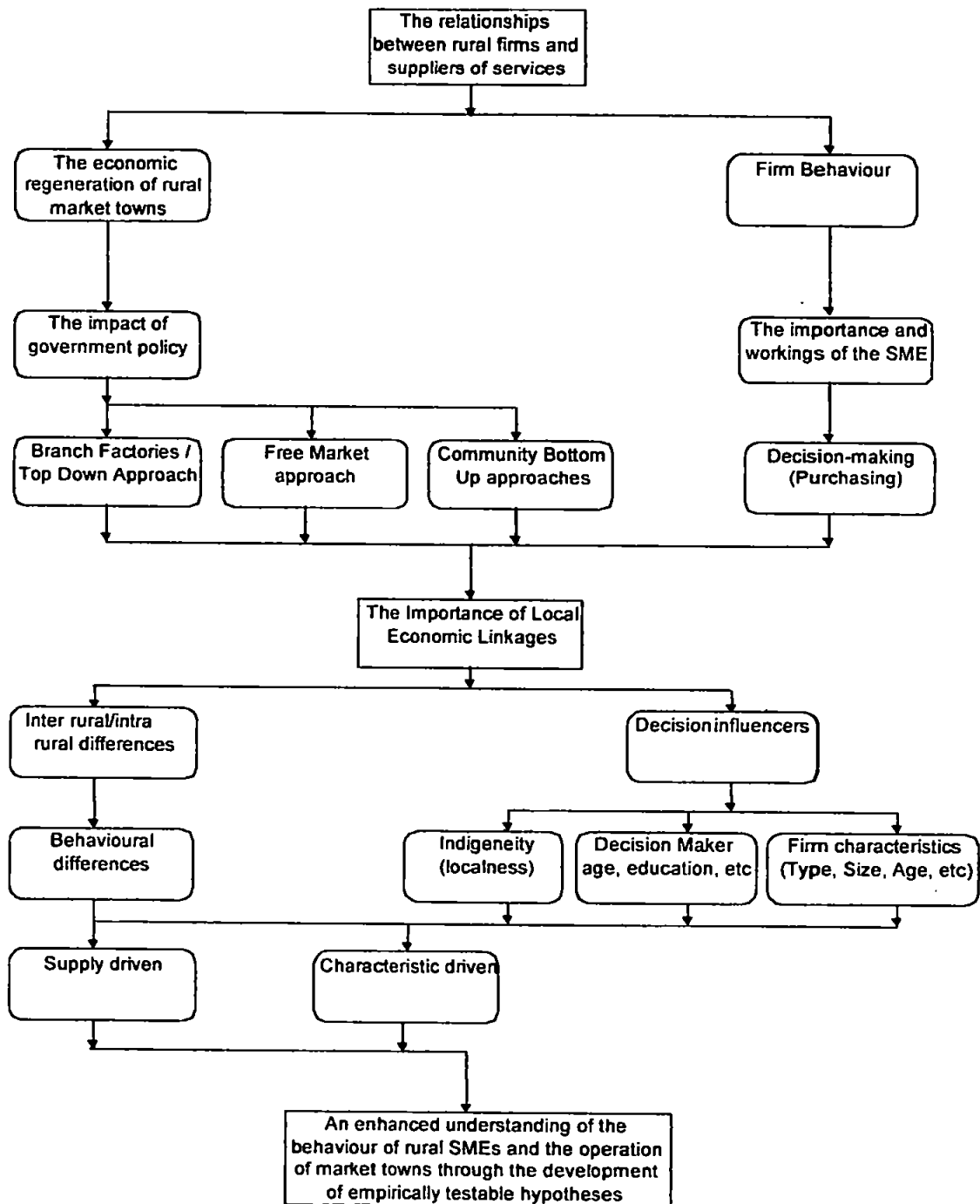
Figure 3 begins by stating the need to investigate the relationship between rural firms and suppliers of services. The figure then follows two paths. By exploring the relationship between rural firms and suppliers of services, an enhanced understanding of the well-being of market towns can be developed. This exploration will also provide information about the purchasing behaviour of firms. These two themes are then brought together to provide an assessment of the importance of local economic linkages in terms of producer service sourcing. It then becomes possible to investigate whether inter/intra rural

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differences exist, in terms of firm behaviour and characteristics, whilst at the same time highlighting which firm characteristics have the greatest influence over producer service sourcing decisions. Ultimately, this research produces an enhanced understanding of the behaviour of rural SMEs and the operation of market towns through the development of empirical evidence.

Whilst the conceptual model is in itself not aimed at producing empirical findings, instead simply being a stage in the research process, it is possible to move towards operationalisation by developing conceptual hypotheses. The use of a hypothesis suggests the empirical testing of the statement under consideration. However, at this stage of the development of the research the hypotheses are in effect proto-hypotheses. The relationship they consider is at a conceptual, or theoretical, level. By stating these proto-hypotheses, it is possible, through operationalisation, to progress towards testable variable-based hypotheses. Thus the process ensures that the empirical aspect of the thesis maintains a sound theoretical base. Whilst the first two proto-hypotheses are testable quantifiably, the final hypothesis can only be assessed qualitatively.

H_a^1 Hypothesis: Integration into the local economy as measured by the level of local producer service sourcing is a function of SME characteristics.

H_o^1 Null hypothesis: SME characteristics have no effect on its choice of local producer service provision.

H_a^2 Hypothesis: The level of peripherality of the rural area has an effect on the SME's choice of producer services, regardless of local provision.

H_o^2 Null hypothesis: There is no difference between the choice of producer services made by remote rural SMEs and those located in the peri-urban fringe, where provision exists locally.

H_a^3 Hypothesis: The influence SME characteristics and the location of the firm, in terms of peripherality, has on the sourcing of producer services has implications for policy makers.

H_o^3 Null hypothesis: The influence SME characteristics and the location of the firm, in terms of peripherality, has on the sourcing of producer services no implications for policy makers.

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Whilst these hypotheses are broad in statement, they provide an overview of the main themes of the research.

Operationalisation of Research

Of the three conceptual hypotheses detailed above, the first forms the main thrust of this investigation. Consideration needs to be given to exactly what is meant by both purchasing of services and characteristics, but we can immediately assume that these are dependent and explanatory variables respectively. Figure 4 provides a graphical representation of the first hypothesis and the numerous measures used to provide evidence for it. At the top of the figure there is a broad statement of the dependent and independent variables (Integration of the SME into the local economy = f(decision-maker characteristics, firm's characteristics). The independent variable is then broken down into a series of measures that allow for data collection. The next section explains how these variables were defined and researched.

Figure 4: Main Research Hypotheses

Integration into the local economy as measured by the level of local producer service sourcing is a function of SME characteristics

Integration of the SME in the local economy = *f*(decision-maker characteristics, firm's characteristics)

Main
Hypothesis

Measured by:

Measured by:

Measured by:

Above average proportion of total spend on
services that is spent in the local area
Whether service is provided locally or not
(by service type)

Years with firm
Age
Sex
Membership of organisations
Education
Previous employment location
Previous domicile location

SIC
Type (ltd., partnership, etc.)
Level of computerisation
Number of hours worked per year (all staff)
Turnover
Total spend on services
Number of separate premises
Owner/manager working from home
Age of firm
Time at present location
Distance to previous location
Number and timing of product changes
Number and timing of head office
relocations
Number of structural changes
Timing of structural changes
Company membership of organisations
Location of output markets
Remote or accessible rural

Variables

Indigeneity

Characteristics of Services

Characteristics of Decision
Makers

Characteristics of Firms

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Defining Integration of the Firm

The model developed in this thesis aims to predict level of integration (the dependent variable) from a given set of SME characteristics (the independent variables). Integration, in this context, indicates the proportion of the SME's producer service expenditure requirements that have been satisfied locally (integration as defined on page 5). This requires both a definition of *producer services* and a definition of *locally*. Whatever definitions are adopted need to reflect both the existing literature and the aims of the thesis.

It is necessary to draw a distinction between goods and services, as previously discussed in the literature review. Goods refer to physical objects (finished products, work in progress, and raw materials), whilst services can be defined as intangibles. It is clear that this definition will have implications related to transport and location. Whilst goods need to be delivered and certain goods may only be available in certain locations, implying long travel times, most services are provided at relatively short distances. It is common for most towns to have a provision of the main service types (e.g. accountants, lawyers, and banks). The points identified in the preceding sentences suggest that goods and services should not be examined together. New technology has also meant that a movement away from the local provision of services has begun (e.g. internet banking, call centres, etc.).

A pragmatic way of identifying producer services has been provided by Hansen (1990a, page 465), who lists the following sectors - finance, insurance, real estate, legal services, transportation, communication, accounting, advertising, marketing, research and development, data processing, and worker and management training. Whilst this list is not exhaustive (for example recruitment agencies, consultancy and security services, amongst others, are missing), it does provide an indication of the type of firms one can expect to encounter. In this research, the questionnaires used to collect data simply listed several common service types, and offered the respondent the opportunity to add others. Although this led to the addition of several service types, it was found that these were not in significant numbers (i.e. were only relevant to a small number of firms).

By asking the questionnaire respondent where the service provider is located various analyses could also be conducted based on alternative definitions of local. For example, services located in the same town as the service purchaser, the same county or the same region can all represent definitions of 'local'. In the town instance, all service providers that are located within the boundaries of the town's hinterland can be counted as *local* producer services and all others as *non-local*. The exact location of town boundaries is difficult to place (Courtney, 1999; Thomson, 1981). The boundary problem was simplified by selecting towns that have an area of relatively clear countryside around them, for example - a town whose nearest significant neighbour is 10 miles distant.

Whilst the collection of data suggested in the previous paragraph makes it relatively simple to ascertain where the service provider was located and then decide whether or not this was local this does not rank the relative importance to the individual business of each service, instead it only leads to a direct count of the *number* of local links. It is not simply the location that is important within linkage studies, but the flow of money from one area to another. Thus information needs to be gathered relating to the *value* of these transactions (Courtney, 2000). Although collection of the value of transactions provides us with an indication of the flows of money, it overemphasises the importance of firms with large service spends. Whilst the total flow of money is important, basing the dependent variable on amounts has implications for modelling. Given that some indication of the amount of services procured locally is ultimately the goal of the enquiry, basing measures on value amounts, as opposed to proportions of total service spend, will lead to firms being misclassified if, for example, a hurdle rate (e.g. above £5,000 spent on services in same town) is adopted (i.e. the firm may only use one local service, but its spend on that one service is greater than other firms' total spend who source 100% locally). Thus, whilst data is collected in terms of spend in pounds for descriptive purposes, the dependent variable within the model is based on proportional spend. It will later be demonstrated that hurdle rates are a necessity of the modelling regime adopted (logistic regression).

Defining SME Characteristics

The process of establishing a set of variables began by separating the characteristics into two groups: the firm's and the decision-maker's. This allows for consideration of the two groups both separately and together.

Previous research has used a variety of different descriptors of characteristics and there does not appear to be a consensus on how to describe a firm. To clarify the situation, two approaches were adopted.

Reference to existing literature enabled the identification and subsequent collection of data relating to a number of previously used variables. These variables include the firm variables: Standard Industrial Classification (SIC) (Marshall, 1989b), size (Illeris, 1989b; McQuaid *et al.*, 1996; Segal Quince Wicksteed, 1998), age of firm (Johnson and Rasker, 1995; McQuaid *et al.*, 1996), incoming or local (Illeris, 1989b; Johnson and Rasker, 1995; Keeble and Tyler, 1995; McQuaid *et al.*, 1996), number of premises (Errington, 1997), technical characteristics (Marshall, 1989a), length of time at present location (Marshall, 1989a), location of markets (Marsden *et al.*, 1993; Keeble and Tyler, 1995), and membership of organisations (Dodd, 1996). They also include the decision-maker variables: sex (Smith, 1999), ownership (Segal Quince Wicksteed, 1998), and indigeneity (Fielding, 1998).

Whilst the literature provided numerous variables, it was felt that these were constrained within the context of the research which they were originally designed to inform. In order to ensure that a complete list of characteristics was created, the study built on those already identified by conducting a series of 10 interviews, as described earlier in the chapter, with SME decision-makers (owner/managers). In the main, the characteristics suggested by the literature were found to be confirmed. However, one important variable appeared to have been understated in the existing literature. During interviews it became apparent that past and present locations of both the company and the decision-maker have a bearing on the decision-making process. Discussions with interviewees revealed that those that had relocated were still using, or had maintained for a time, certain services providers at their previous location. Those interviewees that had not relocated tended to use local service providers and, in addition, many interviewees sort informal advice from

local business associates and neighbours. Thus, it was decided that past and present locations were important variables to collect. In addition it was noted that type of firm (limited company, sole trader, partnership, etc.), or change of firm type and age of decision-maker might also influence decision-making.

3.4 Summary

This chapter has identified positivism as the main research paradigm. Also identified has been the aim of the research, its conceptualisation and operationalisation of the research objectives. Through a combination of literature review and qualitative investigation, it has been possible to identify variables to include in the quantitative data collection phase (detailed in the following chapter). The qualitative research also highlighted the possibility of two new classifications of services – 'virtual employees' and 'quasi-products'. Integration of the firm into the local area has been defined as proportional spend on producer services in the local area. The following chapter details the data collection process and introduces the data collected.

Chapter 4: Data Collection and Description

4.1 Introduction

This chapter and the two chapters that follow are dedicated to the quantitative phase of the research. The chapter aims to build on the methodology already detailed in Chapter 3 by describing the questionnaire, population to be surveyed and data collection process in detail. The chapter begins with a summary of the conceptualisation and operationalisation of the research question as discussed in Chapter 3. This is followed by an explanation of the methodology of the questionnaire phase. After this, consideration is given to the selection of the sample populations, both in terms of the broad geographic areas and specific sites. This is followed by an explanation of both the pre-test and pilot studies and survey results.

Conceptualisation and Operationalisation

Chapter 3 has already explored both the conceptualisation and operationalisation of the research question in detail. In order to provide a starting point for this chapter, the broad conceptualisation and more specific operationalisation of the main hypothesis has been presented in tabular form. The combination of variables from the literature and from interviews allowed for the full operationalisation of the research. The following table (Table 5) demonstrates the process:

Table 5: Operationalisation of the Main Conceptual Hypothesis

Concept	Operationalised Variable	Measures that represent operationalised variable
Economic Linkage	Integration into local area	Location of service provider (local/not)
		Distance to service provider (miles)
		Proportional spend on service(s) (%)
		Proportional spend on service(s) locally (%)
Firm Characteristics	Type	SIC
		Type (limited company, sole trader, partnership, etc.)
		Level of computerisation (index based on list of 15 uses of technology)
	Size	Number of hours worked per year (all staff)
		Turnover (£s)
		Spend on services (£s)
		Number of separate premises
	History & Location	Owner/manager working from home Y/N
		Age of firm (years)
		Time at present location (years)
		Location of and Distance to previous location (miles)
		Number and timing of product changes (years)
		Number and timing of head office relocations (years)
		Number of type changes
		Timing of type changes (years)
		Company or individual membership of organisations and time with (years)
	Markets	Location of markets and proportion of sales attributed (%)
Decision Maker Characteristics	Personal Details	Years with firm
		Age (years)
		Sex (m/f)
		Location of and distance to previous domicile (miles)
		Location of and distance to previous place of work (miles)
		Highest educational qualification
		Membership of organisations and time with (years)
Service Characteristics	Relationship with service	SIC of service
		Number of years SME has used service provider

The variables identified in the third column of Table 5 represent the data it was considered both desirable and practicable to collect using a questionnaire survey of a sample of rural SMEs. The following sections explain the methodology adopted to collect quantitative data from firms.

Questionnaire Phase

Aim

The objective of this phase of the research was to collect data from a representative sample of rural SME firms on the sourcing of producer services and on the factors that may influence firms in their choice of producer service provider.

Methodology of Questionnaire Phase

The variables which are thought to affect the decision-making process were used to devise a series of *closed* questions. The questions were separated into two groups to a) establish the individual firm's characteristics, b) establish their use of producer services. The questionnaires were then distributed by post and the results from completed questionnaires analysed to assist in the construction of the final model. Where possible, the data was checked against publicly available information.

Design of the Questionnaire

The questionnaire attempted to establish individual SME characteristics and the location of their producer service providers. Each question related directly to a variable, (either being SME characteristics or a details of the producer service provider - see Table 5). As the questionnaire (see Appendix 7 - Questionnaire) sought to gather data concerning both the purchasing of services by and the general characteristics of SMEs, it can be viewed as collecting data to inform both the left- and right-hand sides of the equation.

The questionnaire was separated into sections (further breakdowns of firm and decision-maker) beginning with details relating to the type and size of the company. This was followed by information concerning location of firm, products and services and management structure. The questionnaire was then used to collect data relating to the decision-maker and levels of computerisation before asking questions relating to markets and membership of organisations. Finally, a large section was provided for information relating to the sourcing of services. A detailed justification of each question is provided in Appendix 8.

Sample Size

To ensure that a statistically representative sample was collected, the number of returned usable responses had to be statistically acceptable. Surveys measuring proportional responses (of which there are examples in this survey) seek to minimise standard error and generally accept a 95% confidence level. The required number of returned questionnaires could be calculated as (using the proportion being estimated as

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50% - the highest point in the parabola created by using differing values for the range $0<p<1$ in $p(1-p)$):

Equation 2-Sample Size

$$n = \frac{Z^2 p(1-p)}{E^2} \quad \text{from:} \quad E = Z\sqrt{\frac{p(1-p)}{n}}$$

Binomial distribution sample size - where:
n = Number of usable questionnaires returned
Z = standard deviations from mean
p = Proportion being estimated
E = Error in proportion ($\pm$)

$$n = \frac{1.96^2 * 0.5(1-0.5)}{0.05^2} = 384$$
(Sapsford and Jupp, 1996)

To obtain 384 usable responses, given that return rates of questionnaires are often found to be around 10%[22], would require 3,840 questionnaires to be dispatched. As four separate towns are being investigated (the rationale for this is discussed in a later section), this figure would increase to 15,360. This may present two problems: a) a small rural town would not have 3,840 SMEs located in its catchment area[23] and b) at a cost of approximately 75p per questionnaire (2 postage stamps plus stationery), the cost of sending this number of questionnaires would total in excess of £11,520[24].

As the population size was known (from the County Council databases) to be approximately 500 per town, a finite error correction could be used to reduce the number of responses required.

Equation 3- Sample Size with Finite Population

$$e = z\sqrt{\frac{p(1-p)}{n}}\sqrt{\frac{N-n}{N-1}}$$

$$n = \frac{Nz^2 p(1-p)}{e^2(N-1) + z^2 p(1-p)}$$

where:
n = Number of usable questionnaires returned
Z = standard deviations from mean
p = Proportion being estimated
E = Error in proportion ($\pm$)

However, given the response rates mentioned above, it seems possible that this figure may never be obtained in practice. When the entire four-town set is considered together (n = 2,000) the total number of responses required becomes 322 (instead of 217 per town). Given a 10% (responses = 200) response to the survey, an estimate of a percentage-based response yielding a 50/50 proportional split (e.g. 50% male) would have

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[22] Curran and Blackburn, (1994) - 7% (urban) to 13% (rural) quoting a Department of the Environment research project.
[23] For example, Helston, a 'typical' Cornish town, has only 535 small businesses (CCC, 1998).
[24] Both Lynn (1996) and Thomas (1997) contain discussion on (and arguments for) using cost as a reason for limiting survey size.

a standard error of ± 6.5% at the 95% confidence level - as opposed to the 5% error encountered with a response of 322.

Whilst the above discussion has focused on standard error as a statistical test, other statistical measures of association and difference with different data requirements were also used during the analysis of data collected within this thesis. For example, for the calculation of correlation a data set of more than 30 cases is preferred. As another example, the chi^2 test for independence has a requirement for expected frequencies in over 20% of all cells to be greater than 5 (Hussey and Hussey, 1997). As expected frequency is given by (Row total * Column total)/Grand total, both the proportion in each cell and the grand total will have a bearing on the required sample size. As a guide to sample size, Loewenthal (1996) suggests that a minimum of 87 responses should result in an acceptable Chi^2 sample. Should the data produce expected frequencies which does not satisfy the 20% rule detailed above, then the sample should be increased by collecting more data - although this may not be practical. Alternatively, it would be possible to conduct tests by reducing the number of rows or columns in the data table. Ultimately, the thesis is constrained by number of firms per town and the response rate.

It should also be noted that there are arguments against using large sample sizes. For example, Coolican (1993) states that "*A large sample may disguise an important subject variable which needs teasing out*" (page 31)[25]. It is, in fact, more important to ensure representative structure (proportions of various size and type of firms) of the response than to rely on a larger response.

It was, therefore, decided to select towns with approximately 500 firms, and send questionnaires to all firms (i.e. not a sample). This figure is similar to the two surveys of 587 and 580 used by Lean (1996) and the 410 and 350 used by Curran and Blackburn (1994).

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[25] For example, the differences between two towns may also be related to the differences between two types of firms within those towns. When the sample is large, the difference between the towns may be so large (and obvious) that the difference between the two firm types is missed.

The key difficulty with some questionnaires is ensuring that enough are returned so as to represent a statistically significant and stratified sample. By utilising a covering letter indicating the importance and relevance of the study, by ensuring that the questionnaire itself is well presented, simple to use whilst avoiding appearing trivial, and by including a reply-paid envelope it was anticipated that an acceptable response could be obtained. It was decided not to use organisation logos (except the Cornwall Business School headed paper) as it was felt that it is not uncommon to find owner managers with strong negative views concerning, for example, the local Chamber of Commerce, District Council, the Institute of Management, etc.. This should also help overcome some of the difficulties outlined by Curran and Blackburn (1994) who noted that many companies are becoming saturated with sales promotions claiming to be 'research'.

To develop greater insight into any non-response bias that may be present[26], returned questionnaires were date-stamped and logged to allow further analysis. This analysis took the form of investigating whether significant differences existed between the first and last quartiles of questionnaires returned. Using the assumption that non-respondents are more likely to have similarities to late respondents than early respondents, differences would indicate a high probability that non-respondents are also significantly different (Bishop and Wiseman, 1999b). This 'wave analysis' was conducted in addition to analysing the industrial (SIC proportions) and employee number (proportion in different size categories) structure of the returned questionnaires against the original 'mail shot' list.

4.2 The Reasons for Selecting Multiple Towns

Introduction

In order to test the hypotheses posed by this study, it was necessary to collect empirical data directly from companies. Although it has already been indicated that towns with an approximate population of 500 SMEs will be used there are numerous alternative

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[26] Non-respondents may not be randomly distributed, and certain categories may be over or under represented (Errington, 1985).

approaches that could have been used to collect data. A random sample of firms could be collected at a national, regional or county level (a 'scattergun' approach). Alternatively, data could be collected from firms in specific towns. As is common with most research decisions, each of these approaches offers both opportunities and disadvantages.

Given the nature of the hypotheses it is *possible* that regional or even intra-county differences in SME producer service purchasing behaviour may exist *and* be explained in part by location of the firm. Thus, collecting data from a national or regional survey would allow the researcher to identify differences created by location. However, it is also possible that any variation would be so diluted as to mask important differences in behaviour. Generalised differences in behaviour might still be apparent, for example at the core-periphery or rural/urban level[27], but the level of detail at this level has, by its very nature, limitations when considering the micro and meso environments of firms.

Utilising a national (or regional) survey would also create difficulties related to the confounding of variables. Differing County Council, Unitary Authority, Regional Development Agency or other government agency initiatives as opposed to company characteristics might actually be influencing differences in firm behaviour. Whilst this would also be true for a survey based on a selection of counties, using counties has the advantage of allowing the researcher to incorporate inter-county differences into the explanation of variance. There would also be additional statistical confidence created by the large data set obtained for each county (i.e. the larger data set would allow a degree of confidence in the reliability of that data in representing the county).

This argument can also be pursued at an intra-county level. Whilst counties represent a relatively localised administrative area, smaller districts and towns exist, each with their own limited administration functions. The decision then becomes whether to choose district or town level. Given that districts often contain numerous towns, and that each of these towns enjoys a degree of autonomy, often having its own chamber of commerce, town council and, most importantly, its own hinterland[28] and loyalties, it would seem appropriate to concentrate the research at town level. This also coincides with recent

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[27] Although defining rural presents its own problems as discussed elsewhere in this thesis.
[28] Some researchers prefer the term *umland* for the area that is related to a particular town or city, culturally, economically and politically (Aundrey, 1985).

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policy interest in market towns. The Rural White Paper (DETR, 2000) dedicates considerable space to market towns describing them as "*a focus for growth...and more generally as service centres and hubs for surrounding hinterland(s)*" (DETR, 2000 page 73). Thus the research design focuses on two counties and gathers data from two towns within each county (to assist in generalising to a county level).

The Reasons for Selecting Cornwall and Oxfordshire?

As outlined in the previous section, it was decided to study two counties. However, the selection of two counties was in itself a decision designed to add further value to the thesis. Working on the hypothesis that location and economic environment influenced firms' behaviour, two counties were selected that had very distinct differences in location and economic situation, whilst maintaining the ability to describe both as rural. The counties chosen (Cornwall and Oxfordshire) represent the two extremes of English 'remote' and 'accessible rural' (RDC, 1997; Tarling *et al.*, 1993), which, as discussed in Chapter 2, can be treated as proxies for core and peripheral locations. The core location in this instance is one that is located on London's peri-urban fringe (Errington, 1994a), whilst the other is a county that is the remotest English county in terms of distance to a major regional city (Bristol is 200 miles from central Cornwall).

Cornwall

Cornwall, as a county, has many economic problems. Using the popular economic measure of Gross Domestic Product (GDP) per head to represent wealth, Cornwall is England's poorest county (excluding The Isle of Wight) (ONS, 1998). Cornwall's GDP per head of 73.6%[29] is poor compared even to the rest of the South West (95.2%[30]) (ONS, 1998).

In terms of more specific measures of poverty Cornwall performs poorly compared to national averages. For example, the Index of Local Deprivation[31] ranks Cornwall's 6 districts as (see Table 6):

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[29] The revised European Union figure for Cornwall quoted by CCC (1999) is similar at 71.5% (ONS, 1998)
[30] UK indexed at 100.
[31] Based on 12 indicator variables: level of unemployment, ratio of long-term to all unemployed, Income Support recipients, children in households receiving Income Support, non-income support recipients of Council Tax Benefit, standardised mortality ratios, GCSE attainment, low educational participation at 17 years old, home insurance ratings (indicator of crime), overcrowded housing, housing

Table 6: Index of Deprivation - Cornwall

Caradon	162
Carrick	117
Kerrier	87
Penwith	77
Restormel	115
North Cornwall	146

(out of a maximum of 310) (ONS, 1998)

Kerrier and Penwith are two of the five districts in the South West that are amongst the lowest 100 in the country (the others being Bristol, Plymouth and Torbay). The economic problems present in the county can be explained by numerous factors. Traditional industries, such as tin and copper mining, mining-related engineering, fishing and farming have all declined significantly. Whilst some of this loss has been met by increases in the tourist industry, the employment that exists tends to depend on part-time work, small firms and self-employment, at proportions above the UK average (CCC, 1999a).

Whilst the decline of traditional industries reflects a national shift from primary via secondary (industrial) to service sector (tertiary), Cornwall has failed to adjust successfully. There may be many reasons for this, but one variable that is immediately apparent is Cornwall's geographic location. While being a rural peninsular jutting into the Atlantic Ocean and English Channel offers numerous attractions to holiday makers, it leaves the county's business community with only two choices concerning markets: within county or north-east. Having only one border adjoining a neighbouring county gives Cornwall one close alternative market – Devon, which unfortunately shares many of Cornwall's economic problems. To reach the wealthy markets of the South East from Cornwall requires a journey of about 280 miles (Penzance to London); even the markets of Bristol are 200 miles away, with the first 100 miles of the journey on non-motorway roads.

Thus it can be concluded that Cornwall is peripheral, a point that has been noted by the Rural Development Commission who list all of Cornwall's districts as remote rural (Tarling *et al.*, 1993). No English county has a larger proportion of its total area classified as a Rural Development Area by the Rural Development Commission (RDC, 1997).

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lacking basic amenities, derelict land (ONS, 1998). Developed by the Department of Environment and the regions in association with the University of Manchester.

Oxfordshire

Originally the research was to have focused on Berkshire. In many ways, Berkshire provides the antithesis of Cornwall, having the highest GDP per head of any county, at 133.8% of the UK average (ONS, 1998). Unfortunately, this county has two drawbacks as far as this research is concerned. Firstly, during the Local Government Review of 1998 (April), the existing local government structure (including Berkshire County Council) was replaced by 6 unitary authorities: Bracknell Forest, Newbury (to be renamed West Berkshire), Reading, Slough, Windsor and Maidenhead, and Wokingham. This gave Berkshire a significantly different form of local government (Cornwall maintains the traditional County Council). Secondly it is difficult to find towns within Berkshire that compare in size with those in Cornwall. Berkshire has a combination of numerous larger towns (including Reading and Newbury with populations of 140,000 and 28,000 respectively) and several large villages/small towns (population < 7,000 - Cookham, Hungerford, etc.). This does not compare easily with Cornwall that has many towns around the 12,000-population mark.

It was, therefore, decided to look again at the remaining home counties and select a more readily comparable county. Examining the remaining counties, Buckinghamshire forms part of London's urban area (e.g. High Wycombe) and again has few comparable towns. Sussex's location on the coast means that it does not have the transport links enjoyed by other south-eastern counties and from the 'core' of England. The next wealthiest county is Oxfordshire (GDP 108.8% of UK). Further investigation revealed that Oxfordshire had all of its districts classified (RDC, 1997) as accessible rural (with the obvious exception of Oxford City - Cherwell, South Oxfordshire, Vale of White Horse and West Oxfordshire are rural). In addition, the population of Oxfordshire, whilst being higher than Cornwall's, is comparable (600,000 and 500,000 respectively) and the size of the counties is similar (Oxfordshire has 1,000 square miles compared to Cornwall's 1,370).

When considering the Index of Local Deprivation, although Oxford City itself has the lowest Oxfordshire score (147), the remaining districts range in values from 191 to 310 (Cherwell 310, South of Oxfordshire 191, Vale of White Horse 233, West of Oxfordshire

282). Compared to the Cornish figures, this represents a significant difference in terms of deprivation.

With regards to peripherality, Oxfordshire is only 57 miles from London, and has the M40 passing along its north-eastern side and the M4 located close to its southern border. These two routes provide easy access to London and the South East, the North, the Midlands and the South West, and pass through the western crescent described by Hall *et al.* (1987).

Figure 5 Southern England's Major Roads (Motorways)
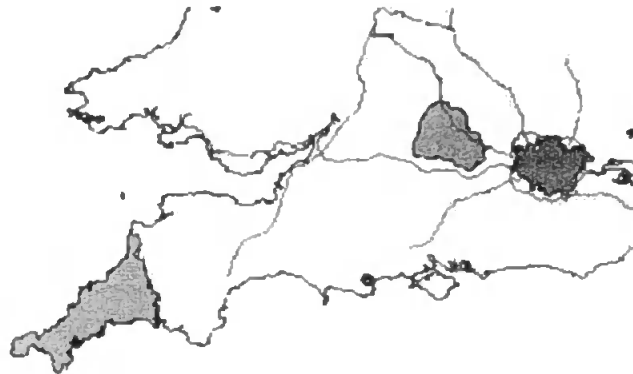
Summary

From the above discussion, it is possible to conclude that Cornwall and Oxfordshire are two radically different counties. Being 200 miles from the regional centre at Bristol makes Cornwall the remotest county in England (in terms of distance to regional centre - it is also remote when considered in terms of number of nearby cities). Whilst both counties are rural in nature, one has prosperity and the other economic hardship. Oxfordshire represents Southern England: wealth, ease of access to London, excellent communications and yet maintaining a rural charm. On the other hand, Cornwall is peripheral, poor and lacking in both industry and communications.

The study's adoption of two counties that, whilst both are rural, are different in many economically important factors allows the thesis to examine whether decision-maker behaviour is universal or influenced by location. The towns studied within each county are significantly similar in terms of industrial structure and size (population, number of firms), comparison between the two counties offers the potential of demonstrating difference in

behaviour created by exposure to competition, local wealth, accessibility of a wide range of markets and proximity to the capital city. This analysis will be in addition to the difference in behaviour associated with the firms' characteristics (size, age, SIC, etc.).

4.3 Rationale for the Selection of Towns

Number and General Location of Towns

The study required that a minimum of two towns were surveyed (if inter-rural comparisons were to be drawn), one in an area which can be described as "remote rural" (Cornwall), and one in an area that can be described as "accessible rural" (Oxfordshire). As rural towns have small populations of firms and return rates for questionnaires can often be as low as 10-15%, it was decided that four towns be surveyed, two in each area. This increased the overall size of the data set from approximately 1,000 firms to 2,000 whilst allowing for correlation analysis between towns within and between counties (helping to demonstrate generalisability/difference within and between the counties). Rather than draw samples from the towns' populations, questionnaires were sent to every business (SME) within each town.

Method for Selecting Towns

In order to attempt to find comparable towns within each county, and accepting that an element of compromise was inevitable, the following series of steps were adopted:

1. Obtain data for the major towns within the county under consideration concerning number of firms and population, and calculate means and standard deviations.

2. Select all towns within one standard deviation of the mean for each of the criteria and retain towns that are within one standard deviation of both criteria.

3. Consider other issues (reliance on tourism as major industry, proximity to city, etc.) and reject towns accordingly.

4. Identify remaining towns on a map to ensure selection has face validity.

Cornwall

Using data on population of firms within Cornish towns collected from a variety of sources by the County Council (the DRIVE database - CCC, 1998a) and data from the 1996 mid-year parish population statistics (CCC, 1998b), 17 Cornish towns were selected. These towns were: Penzance, St Ives, Helston, Camborne, Redruth, Falmouth, Truro, Newquay, St Austell, Bodmin, Launceston, Liskeard, Wadebridge, Bude, Saltash, Hayle, and Padstow.

After calculating means and standard deviations of population and number of firms, and rejecting those not within one standard deviation of both, nine towns remained (Table 7). Whilst population was reasonably normally distributed, the number of businesses was skewed towards lower values. This was caused, in part, by Truro (which is a city) having a significantly higher number of businesses (thus increasing the mean). The towns within one standard deviation of both mean number of businesses and mean population were: St Ives, Helston, Camborne, Redruth, Bodmin, Liskeard, Bude, Hayle, and Saltash.

St. Ives was rejected as it relies heavily on tourism, and Camborne and Redruth were rejected due to the fact that the geographic proximity of these two towns means that they are one and due to their unique position (within Cornwall) in an area of industrial and mining decline[32]. Liskeard and Saltash were rejected due to their proximity to Plymouth, and Bude and Hayle were rejected due to their small number of firms. This left Bodmin and Helston. The presence of the Royal Naval Air Station at Culdrose (Helston) was not considered to represent a problem for the research. Whilst Culdrose represents an important part of the local economy, it does not draw heavily on the types of business service under consideration. Therefore it was decided to base the Cornish research on Bodmin and Helston.

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[32] Whilst other Cornish towns have also seen industrial restructuring and decline, Camborne and Redruth have been particularly adversely affected.

Table 7: Cornish Towns

	Number of Businesses[1]	Population (parish) 1996 mid-year[2]	Within 1 SD of Businesses Mean	Within 1 SD of Population Mean	Meets both Criteria	Reason to Reject
Penzance	981	19,545	yes	-	-	
St Ives	426	10,960	yes	yes	St Ives	Tourism
Helston	535	8,720	yes	yes	**Helston**	
Camborne	456	14,945	yes	yes	Camborne	Conurbation
Redruth	879	11,925	yes	yes	Redruth	Conurbation
Falmouth	820	19,785	yes	-	-	
Truro	1847	16,705	-	yes	-	
Newquay	1027	18,060	yes	-	-	
St Austell	1436	20,675	-	-	-	
Bodmin	587	12,775	yes	yes	**Bodmin**	
Launceston	445	6,845	yes	-	-	
Liskeard	625	8,085	yes	yes	Liskeard	Plymouth
Wadebridge	471	5,735	yes	-	-	
Bude	316	8,640	yes	yes	Bude	Small No. Firms
Saltash	413	15,380	yes	yes	Saltash	Plymouth
Hayle	299	7,445	yes	yes	Hayle	Small No. Firms
Padstow	164	3,110	-	-	-	
Mean	690	12,314				
St.dev	438	5,447				

Note[1]: CCC (1999b)

Note[2]: Source: Research and Information Support Services (CCC, 1998b)

Oxfordshire

Using information on population and number of firms available from the Oxfordshire County Council, nine Oxfordshire towns were identified as being suitable for further investigation (population between 5,000 and 20,000, number of firms between 300 and 700 - and therefore similar, and comparable, with the Cornish towns). These towns were: Faringdon, Carterton, Kidlington, Wantage, Henley on Thames, Didcot, Chipping Norton, Wallingford, and Thame.

After calculating means and standard deviations, and rejecting those towns not within one standard deviation of population and number of firms, it was found that six towns remained (see Table 8: Oxfordshire Towns): Carterton, Kidlington, Wantage, Henley on Thames, Wallingford, and Thame.

Consideration was then given to the size of these towns, in terms of population and number of firms, in relation to the two Cornish towns, and to the towns' location within Oxfordshire and the South East. This resulted in the rejection of four towns, leaving Wantage and Thame as the most appropriate for comparison with Cornwall (see Table 9).

Although the town selection is somewhat arbitrary, it was decided that two of the towns offered locational benefits for the study - Wantage is located in the south of the county close to the M4 (12 miles) and Thame is in the east and lies close to the M40 (3 miles) whilst not being far from the M1 (30 miles), the M4 (21 miles) and London (55 miles). Both towns are within commuting distance of Oxford, but neither could be considered a suburb of that city.

Table 8: Oxfordshire Towns

Town or Parish	Number of Businesses	Population (parish)1996 mid-year	Within 1SD of Businesses Mean	Within 1SD of Population Mean	Meets both Criteria
Faringdon	301	5,573	-	-	-
Carterton	498	12,477	yes	Yes	Carterton
Kidlington	555	14,127	yes	Yes	Kidlington
Wantage	641	9,371	yes	Yes	**Wantage**
Henley On Thames	620	10,098	yes	Yes	Henley
Didcot	655	20,422	yes	-	-
Chipping Norton	688	5,590	yes	-	-
Wallingford	696	6,391	yes	Yes	Wallingford
Thame	666	10,968	yes	Yes	**Thame**
Average	**591**	**10,557**			
SD	**126**	**4,775**			

Source: Oxfordshire County Council Web Site and personal communication

Table 9: Wantage, Thame, Helston, Bodmin Compared

Town or Parish	Number of Businesses	Population (parish)1996 mid-year
Wantage	641	9,371
Thame	666	10,968
Helston	535	8,720
Bodmin	587	12,775

4.4 Questionnaire Pre-Test and Pilot Stage

Questionnaire Pre-Test Interviews

With the co-operation of 'friendly' decision-makers and fellow academics, the questionnaire was tested by completion in the presence of the researcher. This allowed the researcher to query the replies. In addition, it allowed the respondent to identify wording that was ambiguous. The questionnaire was also circulated amongst fellow academics for comment. This process was repeated nine times until a final draft of the questionnaire was

established. A log of changes made to the questionnaire during this phase is provided in Appendix 9.

The Camborne Pilot

Further opportunity for pre-testing some parts of the questionnaire was provided by an undergraduate honours project supervised by the author. Etherton (Cornwall College/University of Plymouth) had chosen to study economic linkages relating to Camborne in Cornwall. The project examined products and services, sources and destinations for firms in Camborne.

Whilst the overall aim of Etherton's project differed from this study, various questions in her data collection instrument were designed to be similar to those being developed by the present author. Of the 75 questionnaires which Etherton distributed, nine were returned (a 12% return rate). Where questions were the same between questionnaires (Etherton's and this thesis), it was possible to make an initial assessment of their reliability.

The Pilot Study

Whilst the questionnaire itself had been tested, as outlined above, it was necessary to test the practicalities of the administrative process as low return rates or process failure would severely damage the empirical phase of the research. A pilot study was, therefore, conducted to identify weaknesses within the administrative design of the questionnaire distribution and collection process, i.e. difficulties in obtaining addresses, preparing questionnaires/envelopes for dispatch, raising return rates, and processing replies. Where difficulties arose, it was possible to redesign the distribution and survey process before the expensive task of large-scale surveying began.

The pilot exercise consisted of distributing a final version of the questionnaire to 30 companies within each of the four towns covered by the study (i.e. 120 in total). It was decided to pilot all towns within the study area to test the practicalities of both collecting addresses and processing replies in the four different areas.

Alternatives to this approach exist. It would have been possible select one, two or three towns from the four towns and pilot in them. Alternatively, towns in a different area could have been selected. This would have certainly made larger sample sizes more

practical (e.g. 120 within one town as opposed to 30 in four). However, as no statistics are being drawn from these data (other than response rate), a large sample size is not required at this point. In addition, focusing on fewer than four towns would have simply demonstrated that the administration works *for those towns*. The same is true of towns other than the four under consideration. By concentrating effort on those towns selected for the main survey, knowledge and contacts in and around those towns is developed.

The pilot was broken down into two phases. Firstly, Helston and Bodmin were surveyed, results were checked and changes to the questionnaire and process were made. Then Wantage and Thame were surveyed. Finally, an analysis of the overall process was conducted.

The Helston/Bodmin Pilot

As previously stated, 30 questionnaires were distributed to a random selection of companies within each town (60 in total).

The Process

Companies were selected from the DRIVE database (CCC, 1999b) using the Microsoft Excel spreadsheet sampling function. This provided a random list of 60 companies. This list was then transferred into a form that could be used by a Microsoft Word word-processing package to produce a personalised covering letter (see Appendix 10).

The Results

The first response came on 4 May 1999 (six days after posting). A secretary at one of the Helston companies called to say that as all senior managers were away at the time it would not be possible to complete the questionnaire, at least for a couple of weeks. Seven questionnaires were returned indicating that the companies were no longer at these mailing addresses or, in the case of two companies, were not relevant to the study (school and company attached to District Council). The first, and only, returned completed questionnaire came on 13 May 1999 (15 days after posting).

Alterations to questionnaire

Although the response was low, and it was therefore difficult to draw conclusions, a decision was still made to alter the wording of question 18 to reflect cost of services and not percentages, it being decided that these values would add depth to the analysis. In addition, it was emphasised that the figures given need only be estimates but were essential.

Alterations to process

The accompanying letter was reworded (see Appendix 11). The new wording attempted to emphasise the importance of the study more assertively whilst also offering the subject the opportunity to participate in a prize draw. The approach adopted, borrowed from advertising methodology, is known as AIDA - *attention, interest, desire, action*. First *attention* was raised by a clear statement of the thesis title and of the important role firms play in the development of the local economy. Next, *interest* was raised by outlining the study. This was combined with the chance of winning a cash price to add to *desire*, finally culminating in instructions concerning *action*.

It was also noted from the Helston/Bodmin pilot that there were problems with the mailing list. To maintain a random sample, no attempt had been made to check the addresses of the 60 companies selected.

The Thame/Wantage Pilot

30 questionnaires were distributed to a random selection of companies within each town (60 in total).

The Process

At the time of this pilot, a database of company addresses had yet to be acquired from Oxfordshire County Council. Therefore, in place of this, companies were randomly selected from the Commercial and Industrial Directory of Oxfordshire 1998/9 (CIDO, 1999). The addresses of these companies were then established using the (British Telecom) Yellow Pages web site (http://www.eyp.co.uk). Questionnaires, reply-paid envelopes and the new covering letter were then dispatched, as detailed above, on 19 May 1999.

The Results

Of the 60 questionnaires dispatched, seven were returned completed (12%). These were received as follows: one on 26 May, three on 27 May, three on 28 May. Which gives waits of seven, eight and nine days respectively. The result of the pilot, before reminders were dispatched, is presented in the table below.

Table 10: Summary of Pilot Results

County	Returned Completed	Wrong Address	Database Error
Cornwall	1	7	6
Oxfordshire	7		

Reminders

No further alterations were made either to the process or the questionnaire. Initial telephone enquiries began on the non-respondents to determine reasons for non-response, but no significant points were identified. The Helston/Bodmin address list was re-examined and found to contain multiple repetitions of one company making a further six addresses unusable. Whilst avoiding problems caused by the subjects having moved address or closed would have been difficult,[33] it should have been possible to spot this computer-related error by checking the address list more rigorously. Emphasis was placed on *not* examining the address list in detail to help ensure a truly random sample. In hindsight, this approach was misdirected.

Therefore 53 reminder questionnaires (with the same covering letter) were dispatched to Thame/Wantage and 46 (60 - 1 completed - 7 wrong address - 6 repetitions) to Helston/Bodmin.

The reminders generated one extra response from Thame, Wantage and Helston. This took the two totals to 9 for Thame/Wantage and 2 for Bodmin/Helston - 15% and 4% (2/47) respectively.

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[33] Either requiring a highly accurate data base or cross checking of the data base - reasonable for a pilot of 120 but not possible for the 2,000+ of the main survey

Telephone Follow-up of Non-Respondents

In order to investigate reasons for non-response, a telephone survey was conducted drawing a random sample from the Helston/Bodmin pilot survey sample. The companies were telephoned and the senior decision-maker asked why the company had not responded. The intention was to establish whether non-response was due to the design of the questionnaire or another factor.

Of the 60 firms in the original mail-shot, 13 (22%) were deemed to represent a database error, 2 (4% after the database correction) responded, and 24 (51% after the database correction) gave a reason for non-response. Thus 37 (62% of the original 60) subjects were accounted for. Additional telephone interviews were not considered necessary as the responses gained from the initial set appeared to follow a similar pattern. The reasons for non-response are provided in Table 11.

Table 11: Reasons for Non-Response

	Reason for individual non-responses			
	Too Busy		**Miscellaneous**	**Data Base Error**
24 Telephoned Firms' Responses	Too busy	Too busy / Will do	Changing management	Never received/ send another
	Too busy	Too busy / Will do	Did not feel it relevant (farm)	Never received/ send another
	Too busy	Too busy / Will do	Does not fill in questionnaires - (gets lots) fear of data getting into 'official' hands	Never received/ send another
	Too busy	Too busy / Will do	Never fill out questionnaires	Never received/ send another
	Too busy	On holiday - but probably too busy to have done it yet	Sent to head office (financial questions)	Company is part of North Cornwall District Council - therefore director felt he could not respond[34]
	Too busy - get loads	Too busy (bit long)- but if there had been a question I did not want to answer I would have completed the rest and sent it in.	No manager at this branch - discarded	Not relevant for school[35]

Most respondents explained that whilst they would have liked to have participated in the survey they were unable to do so due to workloads. Only one respondent commented that the questionnaire was "*a bit long*". It is difficult to see how the

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[34] Written response
[35] Written response

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questionnaire could be shortened to such a length as might be easier to complete without losing essential data.

The addresses of the respondents who claimed not to have received questionnaires were investigated and found to be correct. It is likely that the respondents had simply forgotten it had arrived (and/or had thrown it away). Disappointingly, all of those respondents who said that they would now complete the questionnaire failed to do so[36].

It was decided that only one small change would be made to the questionnaire. In addition, changes were made to the covering letter. It would appear that only a severe reduction in the number of questions could result in a substantial increased return rate (theoretically). This reduction would lose valuable data as the questionnaire had already been designed to be as brief as possible. What would be gained in statistical significance through a higher response rate could easily be lost via a lack of explanatory variables.

Changes to process

The problems encountered with the database were investigated and found to rest on two points. Firstly, while the DRIVE database is updated constantly, the pilot sample was drawn approximately 5 months before execution of the pilot survey. The main survey used an updated data source and did not draw a sample from the database, but instead sent questionnaires to all SMEs in the database (i.e. census not sample).

4.5 Consideration of the Significance of Low Pilot Response Rates

Relationship Between Pilot and Eventual Response Rate

Given the low response rates experienced in both the Oxfordshire (15%) and Cornwall (2%) pilots, this suggested that a similar problem would be encountered in the main survey. However, the logic behind this assumption is flawed. Sapsford and Jupp (1996) suggest that any pilot is such a small sample that it has little chance of being representative of anything specific. This does not negate its valuable role as a means of testing questionnaires, but does prevent statistical conclusions from being drawn.

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[36] One sent in a partially completed questionnaire 8 days later.

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Representative Responses

The desire for a high response rate stems from the belief that higher response rates may be more representative of the population, thus allowing inferential statistics to be calculated more reliably from the sample. However, large responses are not always economical to pursue, or even possible to obtain.

The researcher is, therefore, left with the task of demonstrating that the low response obtained is representative of the population. This immediately creates problems. Without knowing full information about the population, and thus negating the need for a survey, how can the researcher be sure that the sample is representative (Arney, 1990)? Generally this is overcome by ensuring that representation has occurred in those areas which are known for the entire population (known structure of the population). Within this study these 'knowns' are number of employees and proportion of firms within each SIC classification (detailed below).

Non-response Bias

An additional concern is that there is a reason for non-response. This might result in non-response bias. The fact that certain members of the population are either not represented or at best poorly represented may hide important information, particularly if a general picture of the population is being sought. Denscombe (1998) separates non-response bias into two types. Firstly there is the problem of *non-response stemming from non-contact*. Within this study, this source of bias is related to the databases provided by the two county councils. Inspection of these databases reveals a spread of both firm types and size. Whilst the perennial problem of high birth and mortality rates amongst firms, particularly small firms, exists, no evidence has been found as to the presence of bias amongst the missing firms. Of more concern to this study is the second source of bias, described by Denscombe (1998) as *non-response through refusal*. Again this only presents a problem for the research when generalisations are being made concerning the population as a whole, or about either of the known population characteristics (SIC and number of employees).

Increased response could have been achieved by either hand-delivering questionnaires or telephoning subjects. However, both of these would have had severe time and cost implications. Assuming a response rate of 25% and assuming 15 minutes needed for those that agree to answer the questionnaire, and 5 minutes for those that refuse, 250 * 15 mins + 750 * 5 mins, i.e. a total of 125 hours that can be increased by 10% to allow for natural breaks taking the time needed to 138 hours - or three and a half weeks would be required. However, this assumes that only one call will need to be made to each firm - in other words a senior executive will always be available to speak. It is conceivable that this figure could easily rise to well over one month of constant telephoning. Hand delivery of questionnaires, which in this instance would have meant discussing the issue with at least one employee, would take an even longer time allowing for the fairly wide spread of locations possible in and around a small town.

Whilst follow-up posting during the pilot resulted in a slight increase in response, telephoning firms resulted in no increase - even when subjects promised to respond subsequently. From the pilot phase there was no evidence to suggest that telephone communication to elicit greater response had any noticeable effect.

Representativeness within the Four Towns

We have seen from the above discussion that, whilst the pilot cannot be relied upon to provide us with an accurate estimate for eventual respondent rates, consideration should be made to the structure of the population and the structure of the response. This requires that the structure, in terms of SIC and number of employees, is examined. This data is provided in the tables and bar charts below:

Table 12: Structure of Firms in the Four Towns

	Wantage		Thame		Bodmin		Helston	
SIC	Frequency	%	Frequency	%	Frequency	%	Frequency	%
A	38	6.8%	24	4.9%	35	6.0%	39	7.3%
B	1	0.2%	0	0.0%	1	0.2%	1	0.2%
C	1	0.2%	0	0.0%	4	0.2%	1	0.2%
D	35	6.3%	56	11.4%	77	6.3%	71	13.3%
E	0	0.0%	0	0.0%	0	0.0%	0	0.0%
F	40	7.2%	19	3.9%	32	7.2%	22	4.1%
G	141	25.3%	152	30.8%	175	25.3%	163	30.5%
H	47	8.4%	38	7.7%	64	8.4%	86	16.1%
I	18	3.2%	15	3.0%	22	3.2%	16	3.0%
J	13	2.3%	8	1.6%	16	2.3%	11	2.1%
K	111	19.9%	106	21.5%	44	19.9%	55	10.3%
L	6	1.1%	3	0.6%	19	1.1%	5	0.9%
M	30	5.4%	17	3.4%	24	5.4%	13	2.4%
N	27	4.8%	23	4.7%	33	4.8%	27	5.0%
O	48	8.6%	31	6.3%	41	8.6%	25	4.7%
P	1	0.2%	1	0.2%	0	0.2%	0	0.0%
Q	0	0.0%	0	0.0%	0	0.0%	0	0.0%
n	557		493		587		535	

Note: may not tally due to rounding

Figure 6: Thame and Wantage SIC Structure
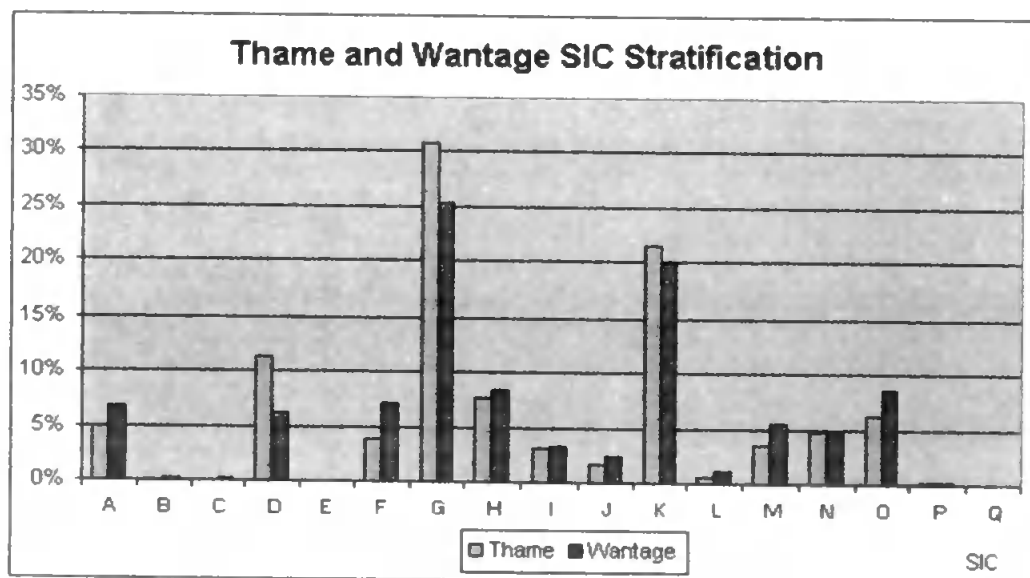
As can be seen from the above table and bar chart, the towns of Thame and Wantage share a similar structure. Both towns have a high number of Retail and Wholesale companies (G), a large number of Business Services (K) and a significant number of Manufacturers (D), almost equivalent to Leisure (O). The bar chart is displayed in percentage terms so that the absolute number of firms is not altering the graphical

representation. Thame's greater numbers in each of these three main industries (G, K, D) is matched by its lower representation in other sectors. Wantage and Thame also exceed national figures for Retail (25%, 31% and 15% respectively) and straddle the figure for Manufacturing (6%, 11% and 9% respectively).

Figure 7: Bodmin and Helston
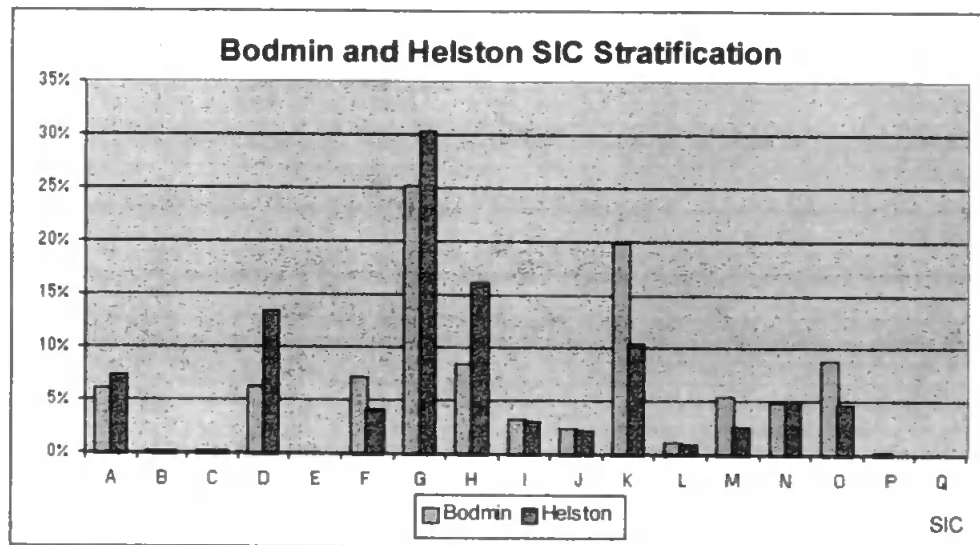
A similar picture exists for Bodmin and Helston, although we now see Hotels and Restaurants (H) playing a more important role. In fact, the similarities that exist between all four towns can be demonstrated by the final bar chart (below).

Figure 8: SIC Structure - 4 towns
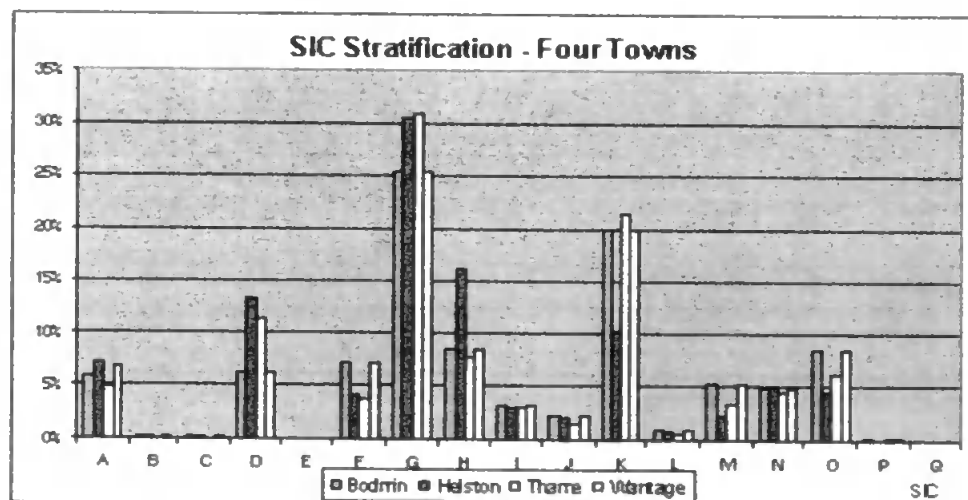
Whilst the importance, relevance and reasons for these similarities and differences will be discussed elsewhere, it is worth returning to the structure table to further investigate

response rates. The values contained within the following table indicate expected numbers of firms per sector if the response provided a representative structure.

Table 13: Expected Response per SIC

SIC	Wantage 25% resp	Wantage 15% resp	Thame 25% resp	Thame 15% resp	15% Combine	Bodmin 25% resp	Bodmin 15% resp	Helston 25% resp	Helston 15% resp	15% Combine
A	10	6	6	4	10	9	5	10	6	11
B	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-
D	9	5	14	8	13	9	6	18	11	17
E	-	-	-	-	-	-	-	-	-	-
F	10	6	5	3	9	11	6	6	3	9
G	35	21	38	23	44	37	22	41	24	46
H	12	7	10	6	13	12	7	22	13	20
I	5	3	4	2	5	5	3	4	2	5
J	3	2	2	1	3	3	2	3	2	4 -
K	28	17	27	16	33	29	18	14	8	26
L	2	1	1	-	1	2	1	1	1	2
M	8	5	4	3	8	8	5	3	2	7
N	7	4	6	3	7	7	4	7	4	8
O	12	7	8	5	12	13	8	6	4	12
P	-	-	-	-	-	-	-	-	-	-
Q	-	-	-	-	-	-	-	-	-	-
n	141	84	125	74	158	145	87	135	80	167

Clearly if a 25% sample could be obtained, the study would favour Wantage and Bodmin as they would also score highly in absolute numbers of returns. This is simply due to the fact that they have a higher number of firms to begin with. However, the response figure of 25% may be considered on the generous side. The table therefore shows a *realistic* response rate of 15% and a *desirable* response of 25%. In certain cases, sectors would not appear regardless of which response rate is assumed (P, B and C - E and Q were already absent). What is immediately apparent from the above table is that whilst enough data exist to test the hypothesis that SIC is one of the characteristics that influences integration, some groups are so poorly represented (even in terms of absolute numbers) that it will be difficult to make generalisable statements concerning *all* sectors.

A similar situation exists in terms of number of employees. Again we see the domination of the area by a couple of specific groups (under 5 employees, under 10, under 19, under 49), coupled with very low representation in other areas (see Figure 11).

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Figure 9: Employee Numbers Structure
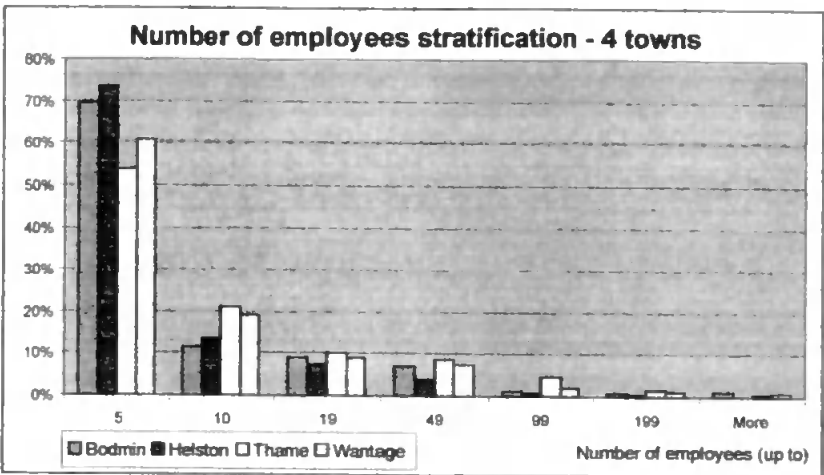
Whilst the Cornish towns appear to have a larger number of very small (micro) firms, the four towns exhibit similar patterns. The impact that a small number of large firms can have on an area can still be investigated, but from a structure perspective it should be relatively straightforward to both check for and ensure adequate strata representation.

Finally, the use of four towns rather than two does of course equate to a larger absolute number of firms (being the equivalent of a 30% response from two towns). This larger absolute number has advantages in allowing a wider range of statistical tests to be conducted with more confidence.

4.6 Response Rate to Main Survey

To ensure that a statistically representative sample is collected, the number of returned usable responses would have to be sufficiently large as to be statistically acceptable. The following table illustrates the number of firms per town as provided by the databases:

Table 14: Number of Firms on Database

Town	N_1	Cleaned	Repeat	N_2	"Not at this address"	N_3
Bodmin	587	57	1	529	66	463
Helston	535	25	4	506	37	469
Thame	493	19	2	472	9	463
Wantage	559	38	9	512	9	503
				Population	N = 1,898	

In Table 14 N_1 is the size of the original databases provided by Cornwall and Oxford County Councils. 'Cleaned' refers to the removal of public sector organisations (note: where it is suspected that a doctor's practice is self-managed, the practice remains). Repeat refers to the removal of repetitions within the database. N_2 can be regarded as the population, as it refers to the sampling frame from which the survey census was selected.

The population (1,898) displayed in Table 14 includes all firms, including firms that were found not to fit the SME description. In addition, it was found that many branch 'firms' (e.g. mostly retailers and banks) had no local decision-making power concerning services. The removal of large firms, branch firms and those that are not independent owner-managed firms leaves the following population[37]:

Table 15: Usable Population

Town	N_3	"Branch or large"	N_4
Bodmin	463	49	412
Helston	469	33	436
Thame	463	32	431
Wantage	503	33	470
	Final Population	N = 1,749	

Table 16: Final Response Rate

	N_4	Response	%
Bodmin	412	42	10.19
Helston	436	55	12.61
Thame	431	42	9.74
Wantage	470	69	14.68
	1,749	208	11.89

The response level to the survey (after a reminder was sent containing another questionnaire and postage paid envelope) was considered acceptable given a) response rates to business surveys generally and b) the very detailed nature of the questionnaire[38].

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[37] Westhead (1995) also removed branches and charities from his investigation of owner-manager firms.

[38] The cumulative response for the initial survey and the follow-up were calculated and displayed graphically. The graphs suggested that the response created by a further reminder would not outweigh its cost in terms of both time (approximately 1 month) and cost. The

Curran and Blackburn (1994) stated that a Department of the Environment research project had a response of 7% (urban) to 13% (rural) and imply that these values are common within business surveys. Additionally, Westhead and Wright (1999) state that their "*15% valid response rate ...was slightly higher than that recorded in similar studies that had collected data from...rural and urban areas*" (page 161). In the survey conducted for this thesis, the structure of the response was compared to the two known variables for the population: SIC and number of employees (graphically and using correlation tests). Whilst there were differences, Spearman's rho tests found these to be non-significant (see following section). It was concluded that the response was a good representation of the population.

Treatment of Missing Values

Consideration was given to those respondents who had not completed all questions on the questionnaire. Where possible the missing data was collected from publicly available information. Other methods of replacing missing variables were considered (replacing missing values with averages, replacing missing values by using regression models) but ultimately the values were left blank. This was partly out of concern for the reliability and validity of the methods available for replacing missing variables. In addition, it was noted that there were few values that could be replaced (a maximum of 26 cases representing distance that the main decision-maker is from their previous domicile) and so, in the interest of validity and reliability, it was consider prudent to ignore those cases in analysis.

Test for Non-Response Bias

In addition to the basic checking and cleaning of data as it was input, consideration was also given to the structure (SIC and number of employees) of the response compared with that of the original data drawn from the two county council databases and the timing of replies (wave analysis - the methodology is similar to that used by Westhead and

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reminder offered to pay £0.50 to the NSPCC for every completed questionnaire, in addition to entry into a prize draw for two £25 cash awards (the initial survey only offered the prize).

Wright, 1999 and Bishop and Wiseman, 1999b). In both cases, the analysis seeks to demonstrate that the response is a representative one.

Structure of Response and Population

The structure of both the database of SMEs in town and the survey response were compared in order to assist in determining the representativeness of the response. The first series of figures (below) display the relationship between the original sample and response in terms of number of employees in the firm.

Figure 10: Helston Employee Structure   *Figure 11: Bodmin Employee Structure*
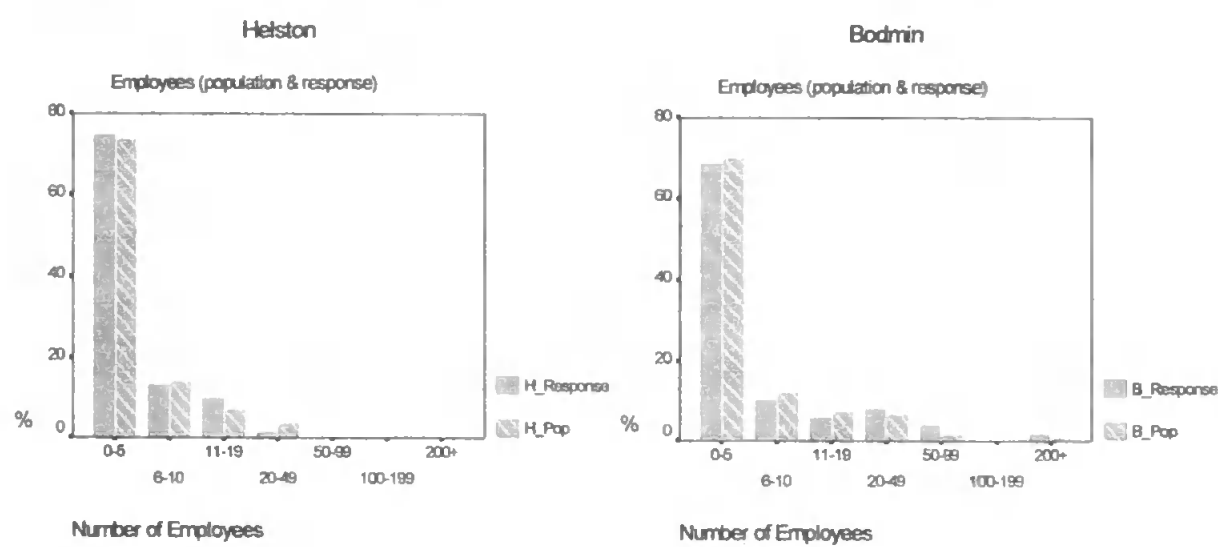
Figure 12: Thame Employee Structure   *Figure 13: Wantage Employee Structure*
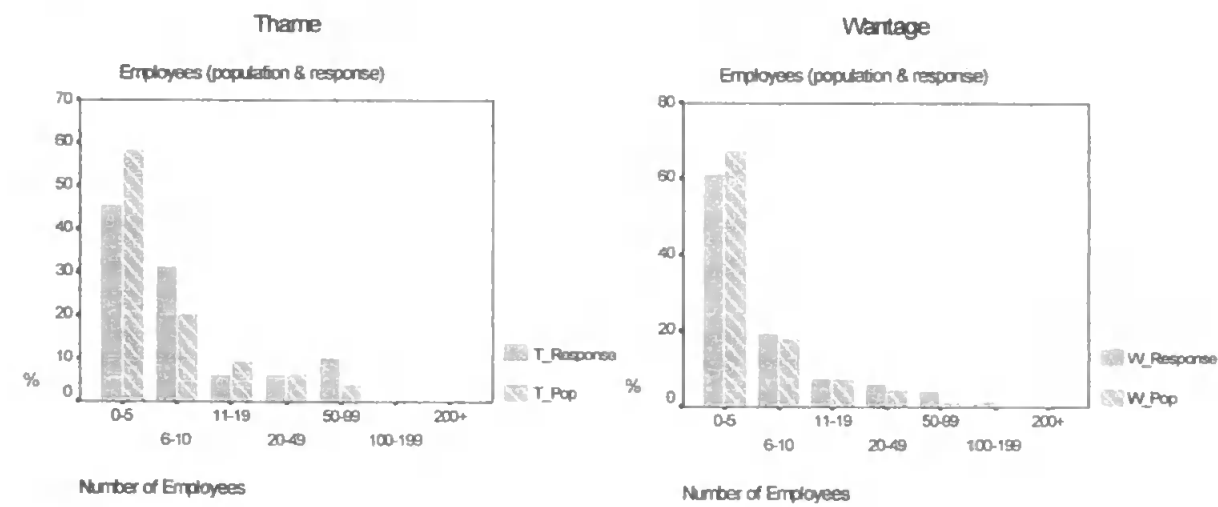
Whilst all suggest similarity between population and response, the Thame and Wantage charts display a slight under-representation of firms with less than five employees

(and a subsequent over-representation of other categories). Given the volatile nature of this sector (i.e. large number of self-employed sole traders) this would be expected. The statistical significance of this difference is explored in Table 17 (below).

Consideration was then given to the number of firms per SIC category. This revealed in all cases a under-representation of retail/wholesale type firms (G in the Figures below), though this is to be expected as the towns contained many firms that were branches, and branches were deliberately excluded from the survey. In addition, Helston, Wantage and Thame all experienced an over-representation of business services type firms (K). Again this may be because these types of firms are familiar with rapid form-filling, and have more interest in a questionnaire concerning the sourcing of business services.

Figure 14: Bodmin SIC Structure   *Figure 15: Helston SIC Structure*
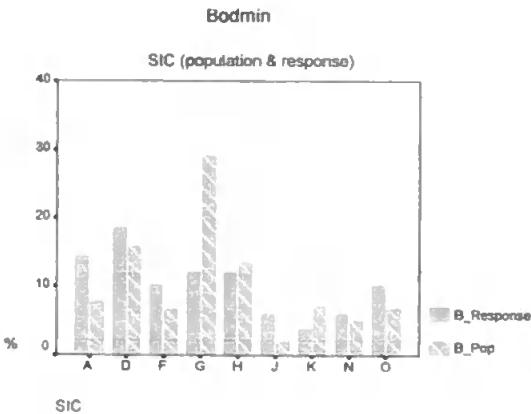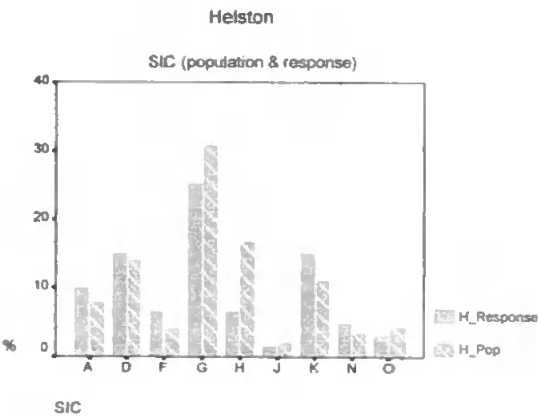
Figure 16: Wantage SIC Structure   *Figure 17: Thame SIC Structure*
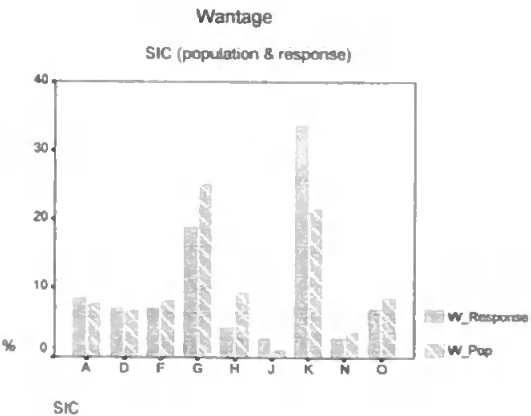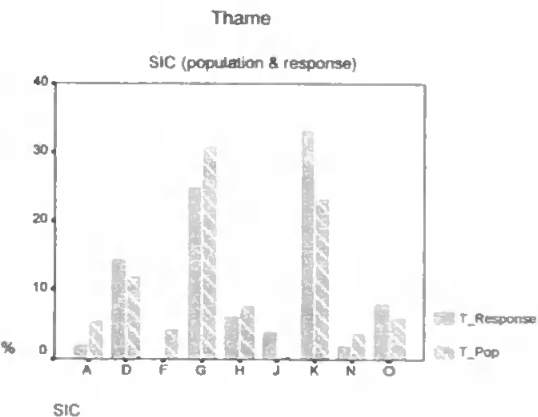
Although the data appears to suggest similarity between town population and survey response (SIC structure) when compared by means of charts, it was felt prudent to

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also conduct an analysis that could measure the relationship between the response and the original sample. Given the type of data under consideration (a case-by-case analysis of the proportions), Spearman's correlation analysis was adopted. The results are reproduced in Table 17. In all cases, the analysis suggested that there was significant ($p < 0.05$) correlation between the original structure and the response. In fact, in all but three cases this significance was at the 99% level. These three cases, Thame number of employees, Bodmin and Wantage SIC, had already been identified by consideration of the charts provided above.

Table 17: Correlation of Population and Response

Spearman's rho		Bodmin Population
Bodmin Response[39] Number of employees	Correlation Coefficient Sig. (2-tailed)	.964(**) .000
		Helston Population
Helston Response Number of employees	Correlation Coefficient Sig. (2-tailed)	.964(**) .000
		Wantage Population
Wantage Response Number of employees	Correlation Coefficient Sig. (2-tailed)	1.000(**) .
		Thame Population
Thame Response Number of employees	Correlation Coefficient Sig. (2-tailed)	.873(*) .010
		Bodmin Population
Bodmin Response[40] Number per SIC band	Correlation Coefficient Sig. (2-tailed)	.726(*) .027
		Helston Population
Helston Response Number per SIC band	Correlation Coefficient Sig. (2-tailed)	.807(**) .009
		Wantage Population
Wanatge Response Number per SIC band	Correlation Coefficient Sig. (2-tailed)	.724(*) .028
		Thame Population
Thame Response Number per SIC band	Correlation Coefficient Sig. (2-tailed)	.837(**) .005

**   Correlation is significant at the .01 level (2-tailed).
*   Correlation is significant at the .05 level (2-tailed).

Response Bias in the Timing of Replies

In order to allow some form of investigation into bias created by non-response through refusal (Denscombe, 1998), returned questionnaires were logged and date-stamped. This allowed significant differences between the first and last quartiles of questionnaires returned to be explored. The last quartile questionnaires were also treated as a proxy for non-returned questionnaires, based on the assumption that non-respondents are more likely to have similarities to late respondents than early ones. Differences between the first and last quartile respondents would indicate a high probability that non-

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[39] n = 7 (i.e. 7 employee bands)
[40] n = 9 (i.e. 9 SIC bands)

respondents are also significantly different. In addition, the relationship between all four quartiles is considered (see Table 5 for definition of variables).

As both Table 18 and Table 19 clearly show, there is no significant difference between any of the quartiles. This indicates that the spread of returning questionnaires is not dependent on any firm characteristic (more correctly, on those tested), and that non-respondents have characteristics similar to late respondents demonstrating that non-respondents are also randomly distributed.

Table 18: Difference Between First and Last Quartile by Date Returned

Test Statistics

	Number of hours	Turnover	Distance to Previous Location (Firm)	Proportion of sales within 10miles	Spend on services
Mann-Whitney U	865.000	709.500	972.500	871.500	899.500
Wilcoxon W	1946.000	1612.500	2100.500	1817.500	1889.500
Z	-1.187	-.853	-1.178	-.973	-.212
Asymp. Sig. (2-tailed)	.235	.394	.239	.331	.832

Table 19: Difference Between all Quartiles by Date Returned

Test Statistics(a)

	Number of hours	Turnover	Distance to Previous Location (Firm)	Proportion of sales within 10miles	Spend on services
Chi-Square	1.972	1.241	1.962	4.224	3.795
df	3	3	3	3	3
Asymp. Sig.	.578	.743	.580	.238	.284

a   Kruskal Wallis Test

4.7 Main Features of Respondents

Using descriptive statistics alone, it is not possible to answer the main hypothesis of this enquiry completely, although it is possible to build evidence for the first two hypotheses.

H_a^1: Integration into the local economy as measured by the level of local producer service sourcing is a function of an SME's characteristics.

(see *The Economic Linkages of the Surveyed Firms* and *Linkages by Type of Firm* page 102 onwards)

H_a^2: The level of peripherality of the rural area has an effect on the SME's choice of producer services, regardless of local provision.

(see *Inter County/Town Differences* page 109 onwards)

Tests for Normal Distribution of Data

In order to assess which type of statistical tests (of correlation, comparison and model estimation) were most appropriate (i.e. non-parametric or parametric), it was first necessary to establish which, if any, variables were normally distributed. Given the ease with which this can be conducted using modern computer software (SPSS Version 9), no assumptions were made and all variables were analysed. This analysis consisted of Kolmogorov-Smirnov tests, Shapiro-Wilk tests (when $n < 50$) and Q-Q plots. With the exception of Computerisation in Oxfordshire, all other variables failed the Kolmogorov-Smirnov test. Although there was some statistical significance when using the Shapiro-Wilk test on a town-by-town basis, it was observed that the results were at the lower end of true significance. In addition, as the data set was to be used as a whole in many of the following tests, it was considered prudent to reject the assumption of normality of distribution in all cases. This resulted in the use of Spearman's, Chi^2, Mann-Whitney and Kruskal-Wallis for the descriptive statistics and analysis of correlation, and logistic regression for the model-building exercise.

Firm Characteristics

In order to gain an insight into the structure and content of the data collected in the survey, several basic descriptive measures were explored. Consideration was given to describing the four towns' size of firms, age and movement of firms, structure of firms, decision-maker profiles, and location of markets. The results have been rounded to whole numbers for ease of reading, and to more realistically reflect the level of accuracy possible. As already discussed in the preceding section, the data is not normally distributed about means.

Size of Firms

Table 20 shows that, of the four towns, Thame has the largest firms in terms of both sales, hours worked and service spend. Its near neighbour Wantage shares some similarity with the Cornish towns in terms of these variables. This may be a reflection of the two

Oxfordshire towns' different locations. Thame may well be more strongly influenced by its proximity to London than Wantage.

Table 20: Size of Firms

Totals Per Year		TOWN Bodmin	Helston	Thame	Wantage
Sales £s	Mean	£563,390	£353,037	£1,649,825	£579,422
	Median	£250,000	£150,000	£315,000	£250,000
	SD	£891,152	£605,492	£2,647,730	£1,118,963
	Minimum	£5,000	£8,000	£40,000	£12,000
	Maximum	£4,000,000	£3,000,000	£10,000,000	£7,000,000
	n	33	41	40	51
Hours worked (all emp.)	Mean	32,771	12,385	37,356	20,620
	Median	9,360	8,762	12,480	8,320
	SD	64,527	11,781	59,138	49,502
	Minimum	1,092	1,560	2,080	832
	Maximum	322,400	60,840	242,320	353,216
	n	39	50	44	54
Service spend £s	Mean	£21,822	£11,762	£35,500	£21,995
	Median	£4,500	£4,510	£11,752	£8,550
	SD	£46,334	£20,146	£58,260	£47,997
	Minimum	£662	£750	£700	£30
	Maximum	£201,000	£115,250	£313,000	£287,000
	n	35	44	43	58

Previous Location of Company

It would appear from Table 21 that Cornish firms tend to be older both in terms of mean and median values (the median reducing the effect of the rather obvious outliers). It is more difficult to draw conclusions, or even make suggestions, based on the distance data. The population contained a large number of firms that are still based in their location at start-up, and that this would be expected, reflecting the lack of mobility of certain, particularly small, firms (which serve a customer base that is locally bound).

Table 21: History of Firms

		TOWN Bodmin	Helston	Thame	Wantage
Company time at location	Median	11.5	15	6.5	9.5
	Mean	21	30	10	20
	SD	41	52	10	31
	Minimum	0	0	0	0
	Maximum	256	292	50	173
	n	38	52	44	58
Distance from prev. location (all firms)	Median	0	0	0	0
	Mean	20	0	4	3
	SD	64	2	11	6
	Minimum	0	0	0	0
	Maximum	270	12	50	35
	n	39	53	44	60
Distance from prev. location (firms that moved)	Median	35	10	18	12
	Mean	110	10	26	12
	SD	121	3	16	8
	Minimum	6	8	8	6
	Maximum	270	12	50	35
	n	7	2	7	13

Company Type

When considering firm type (sole trader, limited, etc.) (Table 22), a pattern emerges with Thame being characterised as having larger firms with a more corporate nature (e.g. limited companies as opposed to sole traders). Also evident, is the clear difference between Cornwall and Oxfordshire. Cornwall has a larger number of firms classifying themselves as sole traders and partnerships.

Table 22: Type of Firms

	Bodmin	Helston	Thame	Wantage
Branch, Plc, Other	0%	6%	9%	3%
Ltd	13%	10%	50%	37%
Sole Trader	36%	38%	20%	30%
Partnership	49%	46%	20%	30%
n	39	52	44	60

Note: May not sum to 100 due to missing values

The table below (Table 23) demonstrates that little can be concluded regarding the number of changes of type that each firm has gone through per town. Only 19% of firms experiencing a change, and only 1.5% experiencing more than one change.

Table 23: Number of Type Changes per Firm

		TOWN Bodmin Statistic	Helston Statistic	Thame Statistic	Wantage Statistic
Number of	Mean	0	0	0	.2167
type	Median	0	0	0	0
changes	SD	.5	.4	.4	.5
	Minimum	0	0	0	0
	Maximum	2	2	1	3
	n	39	52	44	60

Characteristics of the Decision-Makers

With regard to decision-maker's age and years with firm, Table 24 demonstrates surprising consistency amongst the towns. It would appear that the majority of company owners had been in business for around ten years, with Cornish decision-makers being in post marginally longer (years with firm). This replicates what was found in Table 21 (particularly the median values).

Table 24: Decision-maker Profile (Years with firm and Age)

		TOWN Bodmin	Helston	Thame	Wantage
Decision maker's years with firm	Mean	15	15	9	15
	Median	14	14	8	11
	SD	10	10	7	11
	Minimum	1	1	1	1
	Maximum	36	42	27	48
	n	36	50	42	57
Decision maker's age	Mean	51	46	47	50
	Median	50	48	48	49
	SD	7	9	10	8
	Minimum	29	26	24	26
	Maximum	71	64	65	69
	n	39	52	44	60

One of the most consistent figures within this descriptive section, and the one with the distribution that most closely resembles a normal distribution, is the age of the decision-maker (see Table 24).

Distance-related data is varied both within and between towns (see Table 25). However, Wantage appear to have the most 'indigenous' group of firm owners (mean measure). There is little difference between towns with reference to highest qualification level. Overall, 22% of respondents reported 'A' levels or equivalent' as their highest qualification and a similar proportion reported that they had obtained a post-graduate qualification (23% - the next highest category is a degree at 15%). This level of post-graduate qualification is partly explained by the number of accountants and lawyers that responded to the survey.

Table 25: Decision-maker Profile (distance and qualifications)

		TOWN Bodmin	Helston	Thame	Wantage
Distance to previous job	Mean	73	84	51	19
	Median	13	0	35	12
	SD	109	128	71	22
	Minimum	0	0	0	0
	Maximum	295	354	370	68
	n	23	43	37	50
Distance to previous domicile	Mean	94	86	51	28
	Median	7	0	18	6
	SD	129	137	78	92
	Minimum	0	0	0	0
	Maximum	338	490	370	630
	n	20	44	32	48
Highest qualification	Mean	2.9	3.3	3.5	3.8
	Median	3	3	3	4
	SD	2	2	2	2
	Minimum	0	0	0	0
	Maximum	6	6	6	6
	n	38	52	42	59

4.8 Economic Linkages

By examining the output markets (where the firms sell goods and services) of the firms in the four towns in different geographic areas (same town, same county, same region, rest of UK, Europe and World), it is possible to examine the towns' linkages with different geographic units (Figure 18). This is achieved by expressing each area as a percentage of the firm's total sales (turnover).

Figure 18: Location of Output Markets
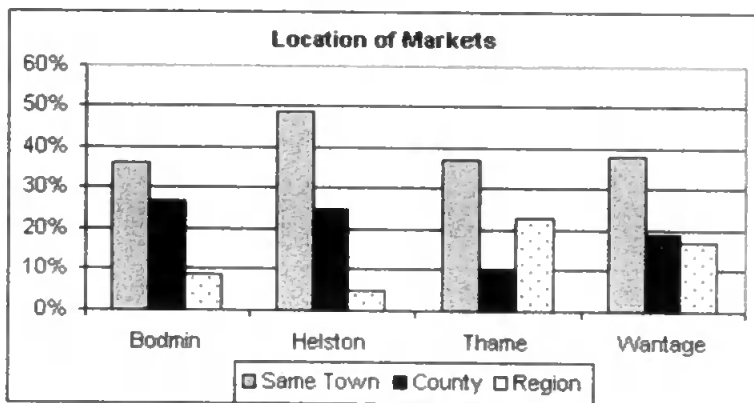
Of the four towns, Helston shows the strongest ties with its immediate locality (firms reported that on average 50% of their sales were within Helston itself), with the remaining towns showing similar but weaker links (less than 38% same town). Helston's peripheral location may explain this result. Firms in Oxfordshire differ from firms in Cornwall by depending more strongly on the rest of their region than on Oxfordshire. This is explained in part by the pull of the markets associated with London itself (within this study London is treated as part of the SE region).

The remainder of the firms' sales were either to the rest of the UK (approximately 20%) or beyond (approximately 6%) and did not demonstrate dramatic differences between the four towns (see Table 31 for a statistical analysis of the difference between towns and counties). A core-periphery situation is influencing the firms under consideration, producing more localised markets in Cornwall, although the peninsular location of Cornwall also concentrates its markets.

Whilst this section began to explore the forward linkages of the firm, it is also important to consider the location of firms' service providers. Table 26, which represents

proportion of spend on services per area as a percentage of total spend on services, shows that whilst services may not be located within the same county as the firm, they are located within 100 miles.

Table 26: Location of Service Providers by Proportion of Total Service Spend

Location of Service		TOWN Bodmin	Helston	Thame	Wantage
Same town	Mean	43%	47%	34%	33%
	Median	42%	44%	25%	29%
	SD	35%	34%	32%	28%
	n	31	38	33	56
County	Mean	70%	78%	54%	63%
	Median	77%	89%	55%	68%
	SD	29%	25%	34%	35%
	Minimum	13%	17%	-	-
	n	31	38	33	56
<100 miles	Mean	80%	80%	93%	90%
	Median	100%	89%	100%	100%
	SD	27%	24%	12%	21%
	Minimum	13%	17%	61%	10%
	n	31	38	33	56
Region	Mean	80%	79%	86%	84%
	Median	100%	89%	96%	99%
	SD	28%	28%	21%	24%
	Minimum	13%	-	5%	13%
	n	31	38	33	56

Note: where minimum and maximum figures are absent the figures were minimum 0% and maximum 100%

As can be seen from Table 26, firms in Cornwall have stronger local ties (although the difference between proportional spend within local town was not statistically significant). However, the figures for within 100 miles and same county are almost mirror reflections of each other, in that over three-quarters of firms in Cornwall's service provision are catered for 'in county' ($p<0.05$), and therefore within 100 miles, whereas most of the Oxfordshire firms are serviced within 100 miles, but with less than two-thirds within Oxfordshire. This partly reflects the nature of county boundaries, representing, as they do, administrative rather than market-based entities. Figures for service provision within the same region reflect, in part, the fact that Cornwall is over 200 miles from a regional boundary, whereas Oxfordshire is closer, therefore increasing the likelihood of out of region transactions (although the difference was not statistically significant). These results are at odds with Keeble *et al.* (1991), who suggest that remote rural firms source *fewer* inputs at a local level. However, Keeble *et al.* were referring to all inputs, not services only.

The final geographic analysis is the amount of service provision that is purchased elsewhere (other than within the same region, county, within 100 miles or the same town). The means displayed in Table 26 in the row representing spend on services with the same region indicate that 10% (Bodmin), 11% (Helston), 14% (Thame) and 16% (Wantage) of spend on services are made outside of the home regions. Although some of this spend is explained by the location of mail order or telephone/internet-based services, the proportions still appear high. Given that the data is not normally distributed, that the median values are significantly lower than the mean,s and that spend on services is at a considerable distance, further investigation was conducted. By displaying (Figure 19) the data in the form of a histogram, with the percentage of service provision placed in the rest of the UK as the horizontal scale and a simple count as the vertical scale, it is possible to observe the reason for this high mean value.

Figure 19: Service Provision Sourced from the Rest of the UK (all four towns)
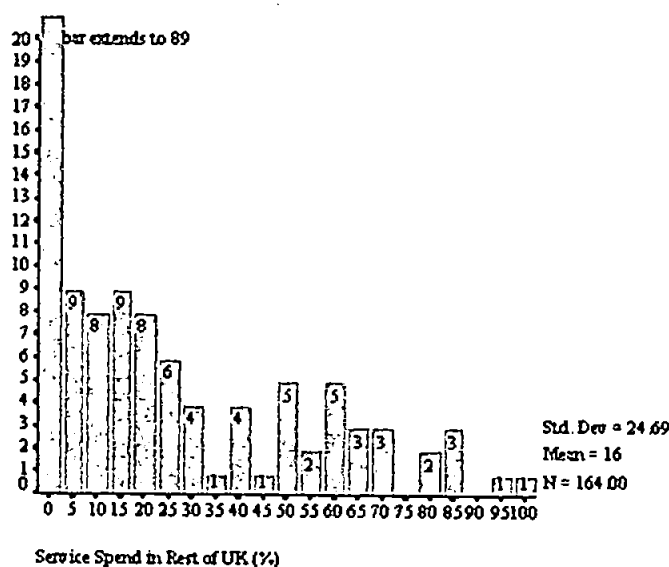
From Figure 19 which shows the distribution for service spend in the rest of the UK for all firms, it is possible to appreciate the skewed nature of the data. Although there is mean spend in the rest of the UK of 16% a significant proportion of the data (54%) is in fact below 2.5% (the first column), and almost 70% of the data is below the mean (first three columns and part of column four). When the distribution of the few firms that are above the mean are examined, it can be seen that the seven firms with a provision in excess of 77.5% are having a disproportionate influence on the overall data set. If these seven

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firms are excluded from the data, the mean service spend outside of the firm's region falls to 13%.

In addition to the evidence provided by the preceding paragraph, Table 27 provides evidence that service provision within the remainder of the UK is explained by the use of mail order, telesales or the Internet. By comparing, using correlation analysis, the proportion of services purchased outside of the firm's home region with the proportion of services purchased by the firm using tele-sales related service (e.g. telephone sale, internet, etc.) it is possible to demonstrate that a significant proportion of this remote service provision is procured using some form of tele-sale.

Table 27: Correlation between Tele-sales and UK Service Provision

Spearman's rho		% Rest of UK
% Tele-sales	Corr. Coeff.	.610**
/Internet/Phone	Sig. (2-tailed)	.000
	N	162

** *Correlation is significant at the .01 level (2-tailed).*

Linkages by Type of Firm

Whilst linkages have been explored in terms of location it is also possible, and desirable, to consider difference between firm types.

Table 28: Location of Service Provision by SIC

Main SIC codes		% Same Town	% Same County	% Same Region	Main SIC codes		% Same Town	% Same County	% Same Region
Agriculture	N	18	18	18	Business Services	N	37	35	35
	Mean	51	87	97		Mean	25	49	73
	Median	48	100	100		Median	23	42	89
	SD	34	25	7		SD	26	31	32
Manufacturing	N	15	15	15	Other Services	N	11	11	11
(non- branch)	Mean	26	53	78		Mean	52	79	91
	Median	16	47	82		Median	47	86	96
	SD	30	37	26		SD	35	21	12
Retail/Wholesale	N	35	34	34	Other	N	33	33	33
(non - chain)	Mean	39	71	84		Mean	43	67	84
	Median	30	78	96		Median	40	71	95
	SD	32	32	22		SD	30	31	24
Hotel & Leisure	N	12	11	11	Total	N	161	157	157
	Mean	37	70	79		Mean	37	66	82
	Median	17	80	100		Median	30	75	96
	SD	40	33	29		SD	32	32	25

	% Same Town	% Same County	% Same Region	% UK*	% EURO*
Chi-Square	13.527	22.892	10.798	10.508	3.941
df	6	6	6	6	6
Asymp. Sig.	.035	.001	.095	.105	.685

a Kruskal Wallis Test
b Grouping Variable: main sic codes
* UK and Euro refer to services not accounted for in previous three

Table 28 shows that differences in location of service provision exist between industries. It would seem that both agriculture and other services are most firmly tied to

their local town (51% and 52% respectively), while business services and manufacturing have the weakest links. This is in agreement with current literature (e.g. Dobson, 1987 and Curran and Blackburn, 1994). The pattern is repeated at both county and region levels. Business services' low level of linkage suggests that, if other firms are purchasing services locally, the multiplier effect is relatively small since subsequent rounds of purchasing leak out of the locality.

The difference between industries is significant in most cases, except services sourced in Europe (Table 28). There is significant difference between SICs at the town and county levels ($p<0.05$). At the regional level, the significance is less strong ($p<0.1$) and at both the UK and European level there is no significant relationship ($p>0.1$). This partly reflects the fact that few companies are serviced at these geographic levels. Williams (1994) and Errington (1994b) have both demonstrated that service firm dependence on local markets for inputs can be ranked as Other Services, Producer (Business) Services, which is in broad agreement with the findings of this, service-specific, enquiry. Local sourcing of services by agriculture exceeds the reliance on the local area for *all inputs* found by Errington (1994b), again emphasising the difference between all input and service-only input research.

Analysis was also conducted comparing SIC with location of output markets served by the company. In Table 29 each column represents the proportion of the firms' total sales derived from that geographic area.

Table 29: Location of Output Markets by SIC

Main SIC codes		Market Same town	Market County	Market Region	Market UK	Market Euro	Market World
Agriculture	N	20	20	20	20	20	20
	Mean	25	35	15	17	1	2
	Median	10	25	0	0	0	0
	SD	33	39	27	29	3	9
Manufacturing	N	23	23	23	23	23	23
(non- branch)	Mean	16	22	16	28	7	11
	Median	1	15	0	20	0	0
	SD	26	30	28	30	13	17
Retail/Wholesale	N	41	41	41	41	41	41
(non - chain)	Mean	52	18	11	17	1	1
	Median	50	10	0	0	0	0
	SD	39	22	19	28	3	7
Hotel & Leisure	N	15	15	15	15	15	15
	Mean	46	4	1	40	6	4
	Median	55	0	0	30	0	0
	SD	46	6	2	40	9	8
Business Services	N	43	43	43	43	43	43
	Mean	35	15	17	23	4	4
	Median	25	7	10	9	0	0
	SD	36	18	22	31	12	17
Other Services	N	14	14	14	14	14	14
	Mean	66	17	13	0	3	0
	Median	85	5	0	0	0	0
	SD	37	23	26	0	12	0
Other	N	33	33	33	33	33	33
	Mean	45	29	16	8	0	1
	Median	20	10	0	0	0	0
	SD	43	34	24	16	1	3
Total	N	189	189	189	189	189	189
	Mean	40	20	14	19	3	3
	Median	25	10	0	1	0	0
	SD	40	27	23	29	9	12

Values may not sum to 100% horizontally due to rounding

	Market Same town	Market county	Market region	Market UK	Market Euro	Market World
Chi-Square	25.287	12.538	9.642	29.273	13.862	20.835
df	6	6	6	6	6	6
Asymp. Sig.	.000	.051	.141	.000	.031	.002

a Kruskal Wallis Test
b Grouping Variable: main sic codes

The above table (Table 29) shows that 'other' services rely heavily on the local area whilst manufacturers and business services have weaker links (as was found by Curran and Blackburn, 1994). What is also obvious is that agriculture has a wider area dependency (compared to its input of services), reflecting the purchasing of farm produce by non-local manufacturers and large supermarket chains. Business services sell a proportion of their output beyond their hometown. However, not all differences are statistically significant. The important measure of sales within the same town has significant differences between SIC types ($p<0.01$). The county-level differences are also significant with a probability value under 0.1.

Membership of Organisations

Organisations and individuals maintain membership of trade and civic organisations for a variety of reasons. One common reason for joining is to benefit from the organisation's role as facilitator to ease networking and contact-forming. Some authors expand on this and see such membership as an integral part of embeddedness (Curran and Blackburn, 1994). The firm, or its managers and employees, are not just economically linked with the locale but are also involved in local-level politics, culture and society.

The most significant finding (detailed below) is that membership of national organisations is more common than membership of local organisations. In this instance, national organisations are the SB (Federation of Small Businesses), national trade/professional body and TECc (Training and Enterprise Councils), whilst local organisations are chambers of commerce, Business Links (a Government agency offering business advice), the Rotary Club of Great Britain and other local business organisations. Arguably, Business Links (BL) can be treated as national as could Rotary. Alternatively, TEC or FSB membership can be treated as local (as they attempt to foster local links). However, inspection of Table 30 reveals that membership of BL, TEC and Rotary are too low to significantly alter the findings. This only leaves debate as to whether FSB should be seen as local or national. The FSB generally have regional branches in preference to town-based approaches. For example, Cornwall is treated as a region and then separated into three sub-regions, each containing numerous towns. Therefore, although the FSB could be described as have local interests it is not based on individual towns.

As can be observed in Table 30, membership of local organisations appears to be fairly consistent (10%-23%) between different SIC groups, with Retail/Wholesale, Manufacturing and Business services showing slightly higher rates of membership. The relationship is not significant (χ^2(6, n=194) = 3.901, p> 0.05). With regard to membership of national organisations there is a more distributed membership level overall, ranging from 5% to 24%, although the relationship cannot be considered significant (χ^2(6, n=194) = 2.495, p> 0.05).

Table 30: Organisation Membership

	Member of local organisation			Member of national organisation		
Main SIC codes	*N*	*Members*	*% of Group*	*N*	*Members*	*% of Group*
Other	33	4	10%	33	14	17%
Agriculture	20	4	10%	20	7	9%
Manufacturing	24	7	18%	24	12	15%
Retail/Wholesale	43	9	23%	43	19	23%
Hotel & Leisure	16	4	10%	16	6	7%
Business service	44	7	18%	44	20	24%
Other services	14	4	10%	14	4	5%
Total	194	39	100%	194	82	100%

4.9 Inter Town/County Differences

There were three main reasons for assessing inter-town/county differences in characteristics. First, part of the research considers the difference between the two counties as a proxy for the differences between remote and assessable rural areas (RDC, 1997; Tarling *et al.*, 1993), what can be termed intra-rural difference. Secondly, it is desirable that the model being developed should be generalisable to other towns, and this requires a data set that incorporates a variety of towns. Finally it was desirable to develop as large a data set as possible. By using the entire data set, with dummy variables to represent counties/towns (Cornwall, Oxfordshire and Helston, Bodmin, Thame, Wantage), the model-building stage of the enquiry can realistically reflect differences created by location, whilst at the same time draw on a larger set of data.

Analysis of the 55 variables measured (see Appendix 12) demonstrated that the four towns and two counties had significant variance between areas (counties or towns) for the following 29 variables, 0.05 (two-tailed):

Table 31: Significant Inter Town/County Firm Differences

	Between Towns Kruskal-Wallis	Between Counties Mann-Whitney	Within Counties Mann-Whitney
1	Sales	Sales	-
2	Level of Computerisation	Level of Computerisation	-
3	Total Service Spend	Total Service Spend	-
4	Decision maker 1's Years with Firm	-	-
5	Decision maker 1's Age	-	-
6	Decision maker 2's Years with Firm	Decision maker 2's Years with Firm	-
7	% of Goods/Services Sold in Same County	% of Goods/Services Sold in Same County	-
8	% of Goods/Services Sold in Same Region	% of Goods/Services Sold in Same Region	-
9	-	% of Goods/Services Sold in Next Nearest Town	-
10	% of Goods/Services Sold out of County but Within 100 miles	% of Goods/Services Sold out of County but Within 100 miles	-
11	-	% of Goods/Services Sold Within Region	-
12	-	*% Services same town is 0.059*	-
13	*% of Services within County is 0.057*	% of Services Sourced within County	-
14	-	% Services Tele-sales	-
15	*% of services within 100 miles*	% Services Within 100 miles	-
16	-	% Services Within County	-
17	Spend on Accountant	Spend on Accountant	-
18	Spend on Lawyer	Spend on Lawyer	-
19	Spend on Property Insurance	Spend on Property Insurance	-
20	Spend on Advertising	-	-
21	-	Spend on Liability Insurance	-
22	-	Spend on IT	-
23	-	Spend on Cleaner	-
24	Distance to Accountant	Spend on Advertising Distance to Accountant	-
25	Distance to Lawyer	Distance to Lawyer	-
26	Distance to Insurance (liability)	-	Distance to Insurance (liability) (Cornwall)
27	Distance to Insurance (property)	-	Distance to Insurance (property) (Cornwall)
28	-	Distance to Courier	-
29	Distance to Stationery Provider.	Distance to Stationery Provider..	-

Although Table 31 shows that many (there are only 29 out of a possible 55) of the variables do not have statistically significant variations between towns, there remain some exceptions. It can be suggested, rather tentatively, that 15 of these differences between towns are due to inter-county differences (compare *between towns* and *between counties* in Table 31). For example, although sales differ between towns they also differ between counties. In addition, sales were not found to differ within counties (more accurately - the variation in sales within the towns outweighed the variation between the towns).

In addition to the inter-county comparison of characteristics which the above table makes possible, another important issue may also be raised. Due to the lack of significant difference between towns within counties (Table 31 column four) it can be suggested that using a dummy variable for County allows the data set to be treated as one homogenous whole, whilst losing none of the importance of peripherality. This is important for two reasons. First, it allows the four town data sets to be combined, thus giving a larger *n*. This has clear statistical benefits. In addition, by using a dummy variable for county (or

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town) during the model-building process, it is possible to again examine the effects of peripherality, though this time in a multivariate model.

4.10 The Significance of the Inter-County Differences

Differences in behaviour and characteristics of firms exist between the two counties (Table 31). It could be suggested that this was due to different industrial structure within the two areas. However, during town selection, care was taken to avoid such confounding problems. In addition, the questionnaire responses were also checked for structure in terms of SIC and number of employees, and an acceptable match between population and response was observed. Therefore, it can be suggested that industrial structure is not playing a significant role in the behaviour or characteristics of the firms in these two counties, although some difference inevitably exists.

If we look more closely at the differences in characteristics and purchasing behaviour of SMEs it becomes apparent that they fall into three main groups, with two exceptions:

Size: Sales, Total Service Spend, Spend on Accountant, Spend on Lawyer, Spend on Property Insurance, Spend on Liability Insurance, Spend on IT, Spend on Cleaner, Spend on Advertising (Oxfordshire higher mean rank)

Markets: % of Goods/Services Sold in Next Nearest Town, % of Goods/Services Sold in Same County (Cornwall higher mean rank)

% of Goods/Services Sold out of County but Within 100 miles, % of Goods/Services Sold in Same Region (Oxfordshire higher mean rank)

Supplier choice: % of Services Sourced within County, % Services Tele-sales, % Services Within County, Distance to Courier (Cornwall higher mean rank)

% Services Within 100 miles, Distance to Accountant, Distance to Lawyer, Distance to Stationery Provider (Oxfordshire higher mean rank)

Exceptions: Level of Computerisation (Oxfordshire higher mean rank)

Decision-maker 2's Years with Firm (Cornwall higher mean rank)

Further inspection of the data in Table 31 reveals that the differences in firm behaviour and characteristics between counties can be put down to larger turnovers, access to more varied markets (with the exception of couriers), and access to a wider range of services on the part of the Oxfordshire firms. In addition, Oxfordshire firms tend to have adopted computerisation more readily.

These differences reflect, to a large extent, the difference between 'core' Oxfordshire and 'peripheral' Cornwall. It is important to acknowledge that these are preliminary findings based on a few relatively simple statistical tests. This finding complements the existing literature that highlights factors explaining the variation between core and peripheral locations (core regions have faster rates of growth (Keeble, 1997); economies of agglomeration exist in core areas (Bennet and Graham, 1998; Marshall and Jaeger, 1990; Potter, 1993)). The data suggest that hypothesis 2[41] may well be valid and that there exists a difference between remote and accessible rural areas (RDC, 1997; Tarling *et al.*, 1993), with regard to the sourcing of services.

Location of Services and Uptake

If we concentrate on one aspect of the difference between the four towns more light can be shed on inter-county difference. Whilst Table 31 lists significant variables, the percentage values of service spend are also of interest.

Returning to the mean proportions of service spend in various geographic areas displayed in Table 26, the differences between the firms in the two counties becomes clear. The Cornish firms purchase a larger amount of their services from within the same town (43%, 47%) than the firms in the two Oxfordshire towns (34%, 33%). Illustrating peripherality is the fact that firms in Cornwall purchase between 70 and 80 percent of their producer services within the same county and that this figure alters little when the area is widened to within 100 miles or the rest of the South West region. This differs from firms in Oxfordshire that, due to their location and region's geography, are more able to purchase

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[41] Ha2 Hypothesis: The level of peripherality of the rural area has an effect on the SME's choice of producer services, regardless of local provision.

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in neighbouring counties (only between 54% and 63% of producer services are supplied within Oxfordshire).

Whilst this provides us with a view regarding purchasing activity, it is interesting to consider availability of supply issues. If services are unavailable, then using services at a distance is the only solution. The following table (Table 32) lists the main service activities considered within this thesis and the number of companies listed on the database per town. The numbers are adjusted so as to reflect the total number of firms per town in relation to Bodmin that has the lowest. Building maintenance is excluded due to difficulties in disaggregating the data.

Table 32: Service Availability - Number of Service Firms per Town

	Wantage n	Thame n	Bodmin n	Helston n
Accountants	4.4	8.6	6.0	7.6
Lawyer	3.5	5.7	4.0	4.7
Banks	4.4	4.8	6.0	5.7
B/M Consult.	15.8	7.6	1.0	0.0
IT Consultant	9.6	17.2	3.0	0.9
Insurance	5.3	2.9	7.0	2.8
Couriers	0.0	1.9	0.0	0.0
Building Maint.				
Stationery	2.6	2.9	4.0	2.8
Cleaners	0.9	1.0	1.0	0.0
Designers	4.4	3.8	1.0	5.7
Advertising	1.8	3.8	0.0	0.9
Index Factor	0.877	0.956	1.000	0.945

The absence of management/marketing consultants in Helston, the low number in Bodmin, and the low number of cleaning and courier firms may be explained by the fact that many of these firms are micro firms and therefore absent from the database. However, these types of firms are also not that common in terms of 'services used' within the data collected (see Table 33).

Table 33: Use of Services per Town by Firms Surveyed

	Bodmin N	Helston N	Thame N	Wantage N	Total N
Accountant	34	40	36	51	161
Lawyer	23	31	26	33	113
Bank	34	44	35	57	170
B/M consult.	1	3	6	6	16
IT Consultant	7	6	13	8	34
Insurance (L)	27	27	25	46	125
Insurance (P)	26	26	22	37	111
Couriers	7	3	15	11	36
Building Maint.	12	12	9	11	44
Stationery	18	29	28	32	107
Cleaners	8	13	11	10	42
Designers	3	3	6	2	14
Advertising	9	19	13	11	52

The previous table (Table 32) indicates similarities between the four towns in terms of number of accountants, banks, law firms, insurance and stationery firms. Predictably, given its core location, Oxfordshire has more consultants (IT and business/marketing) and designers/advertising agencies/consultants. However, the number of firms is, in many ways, a poor measure of service availability, as it does not reflect the available service capacity. Therefore, consideration was given to the number of employees within service firms in the database. The data displayed in Table 34 has been adjusted to negate differences in the total number of firms per town.

Table 34: Service Availability - Employees

	Wantage staff	Thame staff	Bodmin staff	Helston staff
Accountants	46	154	44	57
Lawyer	31	128	43	31
Banks	116	84	54	77
B/M Consult.	108	319	6	0
IT Consultant	99	258	5	2
Insurance	31	28	21	4
Couriers	0	52	0	0
Building Maint.	0	0	0	0
Stationery	30	33	55	46
Cleaners	175	5	6	0
Designers	26	24	1	9
Advertising	47	37	0	2
Index Factor	0.877	0.956	1.000	0.945

The two databases (Cornwall and Oxfordshire) are not immediately comparable. The Cornwall database lists the exact number of employees, Oxfordshire has bands (0-5, 6-10, 11-19, 20-49, 50-99, 100-200). However, even allowing for this, it is possible to suggest that the Oxfordshire firms are on average considerably larger, particularly in Thame. With the exception of banks and stationery suppliers, Thame has more service capacity than Helston and Bodmin combined. This suggests two points. First, assuming other towns have a similar pattern, Oxfordshire may have a more competitive market for services than Cornwall - due to there being a greater number of service providers (although this is only one element of competition). In addition, although there is adequate service provision within the two Oxfordshire towns, and yet their firms have a higher propensity to source externally (see Table 35) than is encountered within the Cornish towns - *even though* the Cornish towns contain fewer service providers.

Table 35: Percentage of Firms that use Service in Same Town

	Bodmin	Helston	Thame	Wantage	Overall
Accountant	44%	48%	37%	33%	40%
Lawyer	50%	69%	38%	45%	51%
Bank	58%	64%	49%	60%	58%
Marketing consultant	50%	0%	33%	14%	22%
IT	57%	22%	23%	38%	32%
Insurance (liability)	33%	13%	21%	27%	23%
Insurance (property)	33%	15%	20%	35%	27%
Couriers	30%	0%	44%	7%	23%
Building Maint	67%	69%	64%	100%	74%
Stationery	55%	72%	44%	30%	50%
Cleaner	75%	69%	69%	60%	68%
Designers	0%	0%	17%	0%	6%
Advertising	31%	20%	19%	21%	22%

As can be seen above (Table 35), purchasing of services within the same town is lower in both Thame and Wantage in most instances. The exceptions are IT consultancy, marketing consultancy and insurance in Helston, and designers and building maintenance in Helston and Bodmin. Given that marketing consultancy, IT consultancy and design are rarely used in the Cornish firms, and that use of building maintenance as a proportion of total service spend is relatively low (refer to Table 33), the only instance of Cornwall using noticeably less local services is in insurance provision in Helston. Table 34 illustrates the low availability of insurance services within Helston and so this may explain why Helston firms purchase this service elsewhere.

As mentioned above, what is more difficult to explain is the fact that in many instances Oxfordshire firms have lower local utilisation but higher provision. Of course, this is only difficult to explain if a closed view of the market is considered. The competition that exists within and between the towns and cities in the South East could well produce a situation that sees either active marketing, pricing, or both, leading to a movement of purchasing decisions. This, in turn, suggests a more networked region. The towns within Cornwall are either not competing with each other as aggressively as in Oxfordshire or contain companies that, for some other reason, are more inclined to remain with the same service provider.

In a continued attempt to explain the high supply of service but lower usage encountered in Oxfordshire, attention can now turn to the relationship between size of sales and service acquisition. Considering first the sales row displayed in Table 36, we would expect, based on sales as a proxy for output, that the service spends for Wantage and Bodmin would be similar and that Thame would be higher and Helston lower (than

Bodmin and Wantage). It is possible to suggest, given the higher costs of inputs, that services are usually more expensive in core areas *despite* competition. If this is the case, we might expect to see Thame, Wantage, Bodmin and Helston as the order of spend on services. Overall, this ordering is confirmed by the total average spend, although this includes services used in Oxfordshire but not used so widely in Cornwall.

Table 36: Mean Spend on Services

	Bodmin	Helston	Thame	Wantage	Overall
SALES	£563,390	£353,037	£1,649,825	£579,422	£779,454
Total Service Spend	£21,822	£11,762	£35,500	£21,995	£22,686
Accountant	£2,960	£1,440	£4,165	£2,523	£2,737
Lawyer	£2,271	£787	£2,413	£2,748	£2,123
Bank	£2,033	£1,316	£5,835	£1,822	£2,676
Marketing consultant	£2,375	£0	£5,250	£4,167	£3,667
IT	£578	£851	£5,391	£10,500	£4,734
Insurance (liability)	£3,351	£940	£2,744	£3,251	£2,603
Insurance (property)	£1,870	£594	£3,003	£2,691	£2,088
Couriers	£2,755	£5,300	£4,090	£5,601	£4,368
Building Maint	£4,475	£2,542	£6,154	£8,250	£5,485
Stationery	£3,993	£1,476	£2,706	£2,073	£2,454
Cleaner	£5,269	£779	£2,379	£2,252	£2,480
Designers	£3,667	£4,000	£15,425	£4,000	£7,438
Advertising	£2,690	£6,793	£12,503	£4,738	£7,140

Using a service-by-service analysis, the data reveals a slightly different story. Bodmin firms appear to purchase more than Wantage firms in terms of accountancy and banking and more than both Thame and Wantage firms on liability insurance, stationery and cleaning (note: property insurance will be more expensive in Oxfordshire). Helston firms pay more for couriers than firms in Thame and more for advertising than firms in Wantage.

Table 37: Significance of Difference in Spend between Towns

	Total Spend	Accountants	Lawyer	Bank	Marketing consultant	IT	Insurance (liability)	Insurance (property)
Chi-Square	11.399	11.221	12.679	3.024	2.825	6.946	7.424	8.775
df	3	3	3	3	3	3	3	3
Asymp. Sig.	.010	.011	.005	.388	.419	.074	.060	.032

	Couriers	BM	Stationery	Cleaner	Designers	Advertising
Chi-Square	5.189	3.791	2.704	8.551	4.764	10.682
df	3	3	3	3	3	3
Asymp. Sig.	.158	.285	.440	.036	.190	.014

a Kruskal Wallis Test
b Grouping Variable: TOWN

As can be observed in Table 37, there is significant difference between overall spend on accountancy, lawyers, property insurance, cleaners and advertising. Table 31 has already shown that significant differences also exist between counties with regard to spend on accountants, lawyers, property insurance, liability insurance, IT, cleaners and advertising.

In order to reduce the effect of different levels of activity (turnover), the individual service spend means were divided by mean turnovers to provide cost of servicing each pound sterling of sale. The data is presented in Table 38 and demonstrates a relatively expensive cost of service in Cornwall.

Table 38: Overall Service Cost per £ of Sales

	Bodmin	Helston	Thame	Wantage
Accountant	0.53	0.41	0.25	0.44
Lawyer	0.40	0.22	0.15	0.47
Bank	0.36	0.37	0.35	0.31
Marketing consultant	0.42	0.00	0.32	0.72
IT	0.10	0.24	0.33	1.81
Insurance (liability)	0.59	0.27	0.17	0.56
Insurance (property)	0.33	0.17	0.18	0.46
Couriers	0.49	1.50	0.25	0.97
Building Maintenance	0.79	0.72	0.37	1.42
Stationery	0.71	0.42	0.16	0.36
Cleaner	0.94	0.22	0.14	0.39
Designers	0.65	1.13	0.93	0.69
Advertising	0.48	1.92	0.76	0.82

In conclusion, Cornish firms are certainly not advantaged in terms of the relationship between turnover and cost of producer services. Whilst this section has highlighted the differences between Oxfordshire and Cornwall, it has also observed that there is more to sourcing decisions than availability of services alone, although absence of provision will lead to sourcing from another area.

4.11 Conclusion

This chapter has introduced and justified both the selection of sampling methods and the selection of towns and businesses. It has also provided an introduction to the data set, described how the data was collected and introduced some initial analysis. The emphasis during this part of the enquiry was to achieve a set of responses from SMEs that was both representative of rural SMEs in general, and more specifically of SMEs located in core and peripheral (accessible and remote) rural areas (RDC, 1997; Tarling *et al.*, 1993). Whilst questionnaire research will always involve an element of compromise, it is felt that the approach adopted minimised the difficulties associated with surveying SMEs.

Also detailed within this chapter was the pilot phase of the research. This allowed for development of the questionnaire in a cost-effective manner. Although the response from the pilot was low, the main survey response was higher, providing further evidence for the suggestion that pilot studies do not necessarily represent reliable measures of

response. This was further demonstrated in the discussion on the survey response and testing of the response for both structure and non-response bias. In addition, the normality tests confirmed the need to adopt non-parametric analysis. Whilst these type of tests have inherent limitations, the nature of social science type data often means that there is no alternative (May, Masson and Hunter, 1989).

Within the confines of descriptive analysis, it has been shown that intra-rural differences do indeed exist. Whilst the results were not unexpected, it was important to confirm that the more peripheral firms did indeed have more localised markets and were generally a smaller size. Issues relating to availability of supply, though still important, may not rest simply upon the availability of services *per se*. Instead, it would appear that the workings of and access to a competitive market might explain more than the absolute number of services in the town.

The following chapter will consider the relationship between individual characteristics and spend on local services. This work is then further developed in the following chapter to allow for multivariate relationships.

Chapter 5: Preliminary Data Analysis and Model Development

5.1 Introduction

This chapter examines the statistical relationship between the characteristics of firms and their local sourcing of producer services. Whilst this relationship will be examined using a multivariate model in the following chapter, an exploration of bivariate relationships is both interesting in its own right, and an important part of model-building.

In addition to exploring the study's main hypothesis, this chapter also provides further evidence for the concept of indigeneity and the separation of services into virtual-employees and quasi-products. As has already been discussed in the previous chapter, since the data is not normally distributed, non-parametric techniques are adopted in most instances.

5.2 Correlations with Characteristics

This study's primary focus of interest is the relationship between a firm's characteristics and integration into the local area in terms of proportional spend on producer services. This section of the thesis explores the strength of correlation between various characteristics and purchasing of producer services. From these relatively simplistic tests it is not possible to draw firm conclusions. However, these tests represent an important contribution in the building of a weight of empirical evidence. Table 39, which represents the relationship between firm characteristics and differing geographical locations for service spend, demonstrates that there does indeed exist a relationship between a firm's characteristics and its service provider location. For reasons of brevity, not all of the firm's characteristic variables collected are contained within this table the remainder will be dealt with later in this chapter and within the model building chapter. The table does, however, contain variables that are commonly discussed in the literature.

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Table 39: Service Location and Firm/Decision-Maker Characteristics (1)

Spearman's rho		Total hours worked per year (all staff)	Sales (£s)	Computerisation	Spend on services (£s)	Highest educational qualification
Town	Corr. Coeff.	-.166(*)		-.211(**)	-.225(**)	
Spend	Sig. (2-tailed)	.038		.007	.004	
	N	156		162	161	
County	Corr. Coeff.	-.216(**)	-.242(**)	-.346(**)	-.249(**)	-.253(**)
Spend	Sig. (2-tailed)	.008	.004	.000	.002	.001
	N	152	141	158	158	155
Regional	Corr. Coeff.			-.174(*)		
Spend	Sig. (2-tailed)			.029		
	N			158		
UK#	Corr. Coeff.			.177(*)		
Spend	Sig. (2-tailed)			.023		
	N			164		
European	Corr. Coeff.					
Spend	Sig. (2-tailed)					
	N					

** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).
\# Spend not accounted for in Town, County or Region

Firm size (service spend and sales), computerisation and service spend all have a negative relationship with the proportion of services obtained locally (same town). When this is broadened to same county, the highest educational qualification of the main decision-maker also has a negative association (only data on the main decision-maker was analysed as not enough information was collected on the second decision-makers educational level to conduct reliable statistical tests – this is also the case in latter tests). Thus, larger, more computerised companies with more educated management are less integrated into the local rural area.

Evidence that firms which have been in the town for longer periods of time are more integrated into the area is provided in Table 40. However, firms that have been located in the town for longer periods are not significantly more integrated at town level. The age of the main decision-maker has no impact on location of service provider, whilst the main decision-maker's time with the firm has a negative effect on spending beyond the regional level. There also appears to be a relationship between having local (same town) output markets and using local services. In other words, 'being local' tends to lead to 'buying local'. Having more distant output markets has a negative influence on purchasing within the same county.

Table 40: Service Location and Firm/Decision-Maker Characteristics (2)

Spearman's rho		Company time at location	Age of Main DM	Main DM years with firm	Output Market Same Town	Output Market County	Output Market Region
Town	Corr. Coeff.				.369(**)		
Spend	Sig. (2-tailed)				.000		
	N				158		
County	Corr. Coeff.	.261(**)			.233(**)		-.204(*)
Spend	Sig. (2-tailed)	.001			.004		.011
	N	156			154		154
Regional	Corr. Coeff.	.178(*)					
Spend	Sig. (2-tailed)	.026					
	N	156					
UK#	Corr. Coeff.	-.203(**)		-.159(*)			
Spend	Sig. (2-tailed)	.010		.046			
	N	161		158			
European	Corr. Coeff.						
Spend	Sig. (2-tailed)						
	N						

** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).
# Spend not accounted for in Town, County or Region

The final table in this set (Table 41) confirms the statistical relationship between input and output markets, suggesting that there is a reduced propensity to purchase from the local area when the company sells produce in distant markets.

Table 41: Service Location and Firm/Decision-Maker Characteristics (3)

Spearman's rho		Output Market UK	Output Market Euro	Output Market World
Town	Corr. Coeff.	-.275(**)		-.180(*)
Spend	Sig. (2-tailed)	.000		.024
	N	158		158
County	Corr. Coeff.	-.328(**)		
Spend	Sig. (2-tailed)	.000		
	N	154		
Regional	Corr. Coeff.			
Spend	Sig. (2-tailed)			
	N			
UK#	Corr. Coeff.			
Spend	Sig. (2-tailed)			
	N			
EURO#	Corr. Coeff.		.181(*)	
Spend	Sig. (2-tailed)		.020	
	N		165	

** Correlation is significant at the .01 level (2-tailed).
* Correlation is significant at the .05 level (2-tailed).
# Spend not accounted for in Town, County or Region

The remaining variables (with the exception of variables that relate to distance measurements which are dealt with in the next section) were at the nominal or categorical level and were, therefore, assessed using Chi^2 analysis. To achieve this, the proportion of service spend was separated into either above or below average spend within the same town. Table 42 indicates that none of the discrete characteristic variables are significant:

Table 42: Service Location and Firm/Decision-Maker Characteristics (4)

Test	χ^2	df	Significance
Number of premises	5.358	2	.069
Decision maker working from home	.843	1	.358
Product Changes	1.673	1	.196
Head office changes	.024	1	.876
Company Type (Ltd., etc.)	5.773	3	.123
Gender	.538	1	.463
Member of Local Organisation	.008	1	.930
Member of National organisation	.020	1	.887

5.3 Indigeneity

Indigeneity creates a link between the previous location of decision-makers and firms and the location of their service providers. This is based on the suggestion that the business and social networks in which the owners/managers operate have some bearing on their choice of producer service providers.

Within this thesis, indigeneity was operationalised by examining distance-related variables (e.g. distance to decision maker's previous job, domicile and/or previous firm location)[42]. Table 43 shows that the components of indigeneity may indeed be a factor in service sourcing decisions. Significant correlation exists between certain key variables, details of which are provided below:

Table 43: Indigeneity - Local Spend Correlation

Spearman's rho		Distance to (Firm's) Previous Location	Distance to Previous Job Main DM	Distance to Previous Domicile Main DM
Same Town Spend	Correlation Coefficient	-.245(**)	-.166(*)	-.197(*)
	Sig. (2-tailed)	.002	.036	.012
	N	162	161	161
Spend within 100 miles	Correlation Coefficient			-.188(*)
	Sig. (2-tailed)			.038
	N			122
Same County Spend	Correlation Coefficient	-.323(*)	-.233(**)	-.278(**)
	Sig. (2-tailed)	.030	.007	.002
	N	45	131	122

Correlation tests were run on three service-spend-location-distance variables (% spent: *same town, within 100 miles, same county*) and on all distances to service provider locations. Only those that had significant correlations have been included in Table 43 and Table 44. It is clear that in-migrants (both firms and decision-makers) have lower spending locally.

In Table 44, there appears to be a relationship between distance from previous location and distance to certain key service providers. As before, only those services that are significantly correlated with distance are included in the table below. There exists a difference between those present and the others (insurance services, cleaning, IT

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[42] Additional variables are considered in Table 56.

consultant, stationers) and suggests that services can be separated into high- and low-order - or *"virtual employees and quasi-products"*.

Table 44: Indigeneity - Distance to Service Correlation

Spearman's rho		Distance to (Firm's) Previous Location	Distance to Previous Job DM1	Distance to Previous Domicile DM1
Distance to Accountant	Correlation Coefficient			.227(*)
	Sig. (2-tailed)			.011
	N			123
Distance to Lawyer	Correlation Coefficient		.245(*)	.240(*)
	Sig. (2-tailed)		.019	.026
	N		92	86
Distance to Bank	Correlation Coefficient	.494(**)	.202(*)	.257(**)
	Sig. (2-tailed)	.000	.018	.003
	N	46	138	130
Distance to marketing Consultant	Correlation Coefficient			.683(**)
	Sig. (2-tailed)			.004
	N			16
Distance to Building Maintenance	Correlation Coefficient		.366(*)	.369(*)
	Sig. (2-tailed)		.022	.029
	N		39	35
Distance to Advertising Company	Correlation Coefficient		.336(*)	.397(**)
	Sig. (2-tailed)		.028	.009
	N		43	42

** Correlation is significant at the .01 level (2-tailed).
* Correlation is significant at the .05 level (2-tailed).

5.4 Virtual Employees and Quasi-Products

Relative Importance of Different Service Providers

To create a firm, owners often need to consult various producer service providers, either before creation or during early stages of trading. The thesis concerns itself with identifying factors that influence choice of services. However, within this section we continue to explore the loyalty placed with certain service providers (virtual employees) as identified during the qualitative research phase. For these types of service providers, the initial choice of supplier may become the choice of long-term supplier, wherever the firm subsequently moves. Both anecdotal and quantitative evidence collected during the research have demonstrated a relationship between original location (firm and/or decision-maker) and location of service provider (particularly accountants, lawyers and banks). This distance relationship suggests, but does not confirm, loyalty.

Although it is difficult to represent loyalty quantitatively, the time spent with a supplier is a proxy. There may also be a relationship between the age of the firm and its

time with certain suppliers. It is hypothesised that virtual employees have a stronger correlation with the age of the firm than quasi-products.

Unfortunately. analysis of correlations between these variables provided no conclusive results. However, it was observed in Table 44 that there are certain key services that are retained, even though the provider is not close to the firm, when firms or decision-makers relocate. This may provide additional evidence for Turok's (1993) developmental theory of longer-term partnerships, although it is not possible to establish where on their growth cycles the firms involved are located. Whilst this limited quantitative evidence (Table 44) does not contradict the qualitative evidence already presented, it is not sufficiently robust to draw conclusion from.

5.5 Variable Preparation

Logistic regression models predict the likelihood of a dependent variable being either 1 or 0 by estimating coefficients values for selected independent variables. In order to construct a multivariate logistic regression model to explore this study's hypotheses, the series of steps suggested by Hosmer and Lemeshow (1989) were adopted. These four steps are a) analysis to determine (at a univariate level) the presence of zero cells (insufficient number of observations to conduct non-parametric tests), b) selection of variables, c) post-model assessment of variable importance, and d) interaction terms. Although this analysis can be used to produce a smaller set of variables for model estimation, the ease with which modern software is able to conduct elimination tests on larger numbers of variables meant that all variables were entered into the logistic regression model (next chapter). The following sections therefore detail the methodology and results obtained during the variable analysis phase of the research. Variable selection (elimination), assessment of importance of variables and interaction effects will be considered in the following chapter

As the data contains categorical, ordinal and continuous data, a selection of different tests were adopted to ensure that the data collected was suitable for inclusion within the model estimation process. In addition, analysis also explored the nature of the relationship between variables. These tests explored the possibility of encountering zero

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cell values (in the case of insufficient ordinal and nominal data) and the linearity of the relationship between individual independent variables and local integration (in the case of continuous data).

Categorical Data Variables

In this thesis, the dependent variable represents either above average (mean) (1) or below average (0) proportional spend on services in the firm's home town. Therefore, it is relatively straightforward to examine other categorical data against the dependent variable to identify the presence of zero cells (insufficient data).

The following categorical variables are present within the study:

Table 45: Categorical Variables

Firm's spend on services (same town)	1 = above average	0 = below average
County	1 = Cornwall	0 = Oxfordshire
Decision-maker works from home?	1 = Yes	0 = No
Decision-maker no. 1's sex	1 = Female	0 = Male
Decision-maker no. 2's sex	1 = Female	0 = Male
Decision-maker no. 3's sex	1 = Female	0 = Male
HE qualification	1 = Yes	0 = No
Local organisation member	1 = Yes	0 = No
National organisation member	1 = Yes	0 = No

In addition, two sets of dummy variables were created (see Table 46) representing SIC and town to allow for investigation into the potential for zero cells.

Table 46: Town and SIC dummy variables

Town

1 = Bodmin	0 = Others
1 = Helston	0 = Others
1 = Thame	0 = Others
1 = Wantage	0 = Others

SIC

1 = Agriculture (A)	0 = Others
1 = Manufacturing (D)	0 = Others
1 = Retail/Wholesale (G)	0 = Others
1 = Hotels (H)	0 = Others
1 = Business Services (K)	0 = Others
1 = Health (N)	0 = Others
1 = Services (O)	0 = Others
1 = all others	0 = SIC A, D, G, H, K, N, O

Company Type

Company type was ultimately coded as a dummy variable, but at this stage of the analysis the raw numerical values were used to assess zero cell occurrence (code 2 had already been collapsed into code 1). Thus:

1.00 = Branch, plc, co-operative
3.00 = Limited
4.00 = Sole trader
5.00 = Partnership

All of the above data were analysed using contingency tables, with a view to identifying zero cells. No zero cells were identified.

Ordinal Variables

A total of six ordinal variables were utilised. Although four of the variables have the potential to be represented by a continuous scale, the truncated nature of their range (e.g. a firm could have any number of premises - but none had more than 8) led to these variables being treated as ordinal.

Table 47: Ordinal Variables

Number of premises	Range 1 to 8
Number of product changes	Range 0 to 3
Number of head office changes	Range 0 to 4
Number of generations	Range 1 to 5
Highest qualification	Range 0 to 7 (ordinal)
Level of computerisation	Range 0 to 17 (ordinal)

Contingency table analysis revealed zero cells in all data apart from Highest Qualification. In order to accommodate this, the data were transformed using the following methodologies:

Table 48: Adjusted Ordinal Variables

Number of premises	Collapse to 1, 2, 3+
Number of product changes	Collapse to 0,1+
Number of head office changes	Collapse to 0,1+
Number of generations	Collapse to 1, 2+
Level of computerisation	4 categories based on quartiles

This process of re-coding, which represented a simplification based on examination of the data, removed all occurrences of zero cells.

5.6 Variable Selection

Hosmer *et al.* (1989) recommend that a useful test for the suitability of continuous variables is to conduct a series of univariate logistic regression tests. In addition, this information could also be used to select variables for inclusion within the final model. This inclusion decision is based on the significance of the Wald statistic. Unlike other statistical tests, where a significance of <0.05 is required, there is no general agreement in relation to logistic regression. Menard (1995) suggests a threshold of either 0.15 or 0.20, whilst Hosmer *et al.* (1989) suggest 0.25. The following table highlights in italics those Wald statistics that are below 0.20.

Table 49: Univariate Logistic Regression

Variable	Coef	SE of Coef	Wald	df	sig	Exp(B)	Initial LL	Log-likelihood	Model Chi-square	Sig	R^2_L
CORNWALL OR OXFORD	-.5546	.3207	2.9896	1	.0838	.5743	222.57555	219.563	3.013	.0826	1.35%
TOWN			3.3974	3	.3343		222.57555	219.117	3.458	.3262	1.55%
SIC			8.7632	6	.1873		220.94592	211.684	9.262	.1594	4.19%
TOTAL HOURS	-3.7E-06	3.460E-06	1.1174	1	.2905	1.0000	214.18036	212.919	1.262	.2614	0.59%
LOG OF TOTAL HOURS	-.1949	.1398	1.9428	1	.1634	.8229	214.18036	212.181	1.999	.1574	0.93%
SALES	-1.8E-07	1.420E-07	1.6941	1	.1931	1.0000	194.9061	192.868	2.038	.1534	1.05%
LOG OF SALES	-.0740	.1151	.4133	1	.5203	.9286	194.9061	194.490	.416	.5189	0.21%
NUMBER OF PREMISES	.0096	.2931	.0011	1	.9740	1.0096	222.57555	222.574	.001	.9740	0.00%
WORK FROM HOME (yes/no)	-.3145	.3429	.8409	1	.3591	.7302	218.59971	217.759	.841	.3591	0.38%
FIRM TIME AT LOCATION	-.0003	.0045	.0051	1	.9430	.9997	219.7778	219.773	.005	.9429	0.00%
DISTANCE TO PREVIOUS LOCATION	.0007	.0048	.0195	1	.8889	1.0007	222.57555	222.556	.019	.8890	0.01%
ANY PRODUCT CHANGES (yes or no)	-.7538	.5936	1.6123	1	.2042	.4706	222.57555	220.911	1.664	.1971	0.75%
NUMBER OF HEAD OFFICE MOVES	.0547	.3512	.0243	1	.8762	1.0562	222.57555	222.551	.024	.8761	0.01%
TYPE (Ltd, etc.)			5.2288	3	.1558		222.57555	216.632	5.943	.1144	2.67%
YEARS WITH FIRM DECISION MAKER (DM)1	.0011	.0158	.0048	1	.9450	1.0011	211.38062	211.376	.005	.9450	0.00%
AGE OF DM 1	.0214	.0192	1.2471	1	.2641	1.0217	211.38062	210.112	1.269	.2600	0.60%
GENDER OF DM1	.2951	.4030	.5361	1	.4640	1.3432	210.99713	210.461	.536	.4639	0.25%
DISTANCE TO PREVIOUS JOB DM1	-.0029	.0021	1.9181	1	.1661	.9971	214.18036	212.106	2.074	.1498	0.97%
LOG OF DISTANCE TO PREVIOUS JOB DM1	-.1472	.0838	3.0826	1	.0791	.8632	214.18036	211.033	3.147	.0761	1.47%
DISTANCE TO PREVIOUS DOMICILE DM1	-.0023	.0017	1.7393	1	.1872	.9977	199.01499	197.104	1.911	.1668	0.96%
LOG OF DISTANCE TO PREVIOUS DOMICILE DM1	-.1618	.0818	3.9099	1	.0480	.8506	220.94592	216.896	4.050	.0442	1.83%
YEARS WITH FIRM DM2	-.0258	.0187	1.8899	1	.1692	.9746	215.80384	213.800	2.004	.1569	0.93%
AGE OF DM2	-.0017	.0066	.0679	1	.7945	.9983	215.80384	215.736	.068	.7944	0.03%
QUALIFICATIONS DM1	-.0155	.0771	.0403	1	.8410	.9847	219.0036	218.963	.040	.8410	0.02%
COMPUTERISATION	-.1916	.1401	1.8697	1	.1715	.8257	222.57555	220.687	1.888	.1694	0.85%
% SALES SAME TOWN	.0168	.0043	15.4314	1	.0001	1.0170	216.97942	200.448	16.531	.0000	7.62%
% SALES SAME COUNTY	-.0009	.0060	.0211	1	.8844	.9991	216.97942	216.958	.021	.8843	0.01%
% SALES SAME REGION	-.0149	.0080	3.4999	1	.0614	.9852	216.97942	213.153	3.827	.0504	1.76%
% SALES UK	-.0206	.0067	9.5678	1	.0020	.9796	216.97942	205.323	11.656	.0006	5.37%
% SALES EURO	-.0261	.0252	1.0746	1	.2999	.9742	216.97942	215.722	1.258	.2621	0.58%
% SALES WORLD	-.0505	.0301	2.8098	1	.0937	.9508	216.97942	211.618	5.361	.0206	2.47%
MEMBER OF LOCAL ORGANISATION	.0351	.3976	.0078	1	.9297	1.0357	222.57555	222.568	.008	.9296	0.00%
MEMBER OF NATIONAL ORGANISATION	-.0451	.3186	.0201	1	.8874	.9559	222.57555	222.555	.020	.8874	0.01%
SERVICE SPEND	-9.4E-06	5.204E-06	3.2626	1	.0709	1.0000	219.0036	214.128	4.875	.0272	2.22%
LOG OF SERVICE SPEND	-.3080	.1200	6.5860	1	.0103	.7349	219.0036	211.851	7.153	.0075	3.27%

The size of the coefficients also needs to be considered. Due in part to the effect on the standard error and the Wald statistics, it is best to avoid, or at least be suspicious of, those variables that have relatively large or small coefficients (Menard, 1995). From Table 49, it is apparent that this problem affects most of the continuous variables under investigation. In order to correct this situation, the logs of the continuous variables were taken and used in place of absolute values. In the case of distance variables, this was Log $(1 + x_k)$ in order to avoid taking the log of 0 (the other variables do not have 0 values). The log transformation process produced more smaller coefficient values as can be observed in Table 49.

Table 49 also indicates that the goodness of fit (model chi-square) of the variables that are Wald significant is generally superior to the other variables. Menard (1995) suggests that the model chi-square is in many ways similar to the multivariate F test for linear regression (and the regression sum of squares). Chi-square values below 0.05 allow us to reject the null hypothesis that the variable adds no predictive value to the model. Not all of the Wald significant variables in Table 49 exhibited significant chi-square values. However, at this stage of enquiry this can be overlooked as over-zealous removal of variables may hide effects caused by interaction.

The final measure included within Table 49 represents logistic regression[43] R^2. R^2_L is derived from the relationship between the model without any variables (constant only) and the model with variables. As such, it suggests the proportion of explanation provided by the independent variable. R^2_L is given by the following equation:

Equation 4: McFadden R^2

$$R^2_L = \frac{\text{Model chi-square}}{\text{Initial log likelihood}}$$

(Veal and Zimmermann, 1996)

Again, the Wald significant variables give superior R^2_L values. Thus, this initial analysis (univariate logistic regression) suggests that the model can be expected to include (design variables as constructed by SPSS):

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[43] The R^2 used in logistic regression is often referred to as a pseudo-R^2 (Veal and Zimmermann, 1996).

5.7 Correlation Analysis

In order to avoid missing interactions between variables that have been excluded from analysis by the preceding investigation, and to avoid excluding variables that may have an effect on variables already included, further correlation analysis was conducted. This analysis took the form of Spearman's correlation analysis between the independent variables and the continuous dependent variable 'proportion of services procured in same town' (Table 50). This is a different measure than the 'above average town spend' used in the analysis detailed above, but produces similar results (categorical variables with more than two dimensions have been excluded). The rationale behind using a different variable

was that it would in some way correct the loss of richness that is created by converting a continuous proportion spent into dichotomous above or below average.

Table 50: Model 1 – Significant Spearman's Correlation (% Same Town Spend)

	Total Hours	Distance to Previous Location	Distance To Previous Job DM1	Distance To Previous Domicile DM1	Quartiles Of Computerisation
Coeff.	-.166(*)	-.245(**)	-.166(*)	-.197(*)	-.182(*)
Sig. (2-t)	.038	.002	.036	.012	.020
N	156	162	161	161	162

	Output Market Town	Output Market UK	Output Market World	Total Service Spend
Coeff.	.369(**)	-.275(**)	-.180(*)	-.225(**)
Sig. (2-t)	.000	.000	.024	.004
N	58	158	158	161

** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

These results can be compared to those obtained from the univariate logistic regression analysis:

Table 51: Univariate and Spearman's Compared

Significant relationships from Univariate Logistic Regression:	Significant relationships from Spearman's:
County[(-ve)] SIC most Hours[(-ve)] Type Distance from previous Job DM1 [(-ve)] Distance from previous Domicile DM1 [(-ve)] Years with firm DM2[(-ve)] Quartiles of Computerisation[(-ve)] Proportion Output Market Same Town[(+ve)] Proportion Output Market Region[(-ve)] Proportion Output Market UK[(-ve)] Proportion Output Market World[(-ve)] Total Service Spend[(-ve)]	Hours[(-ve)] Distance[(-ve)] Distance from previous Job DM1 [(-ve)] Distance from previous Domicile DM1 [(-ve)] Quartiles of Computerisation[(-ve)] Proportion Output Market Same Town[(+ve)] Proportion Output Market UK[(-ve)] Proportion Output Market World[(-ve)] Total Service Spend[(-ve)]

Thus the Spearman's analysis suggests that there may be benefits in including distance to location where firm was previously located.

5.8 Multicollinearity

Before conducting multivariate logistic regression analysis, it was thought prudent to examine the continuous variables within the data set for multicollinearity. Multicollinearity is not desirable within regression models as it can create error in the estimation of coefficients and mask redundant variables. Menard (1995) recommends the use of correlation matrices for the identification of multicollinearity: *"because the concern* [in analysis of multicollinearity] *is with the relationship between the independent*

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variables, the functional form of the model for the dependent variable is irrelevant to the estimation of collinearity"(page 66).

Analysis of the data using SPSS indicated that collinearity existed between several variables (Distance to Previous Job DM1, Distance to Previous Domicile DM1, proportion of output market in same Town/County/Region/UK/Europe/World). Table 52 shows a correlation between distance to decision-maker one's previous job and their distance to previous domicile. It is also clear that a negative relationship exists between decision-maker's distance to previous job and domicile and sales within the town and a positive relationship between these distance-related variables and output markets at a distance. This again demonstrates the significance of indigeneity related variables. Collinearity also exists between the output market variables, and it can be suggested that it is the output market variables themselves that are correlated - each being an indication of the percentage of business per market with the set of variables totalling 100%. This is supported by correlation analysis which suggests that the variables are indeed interrelated (with the exception of region).

Table 52: Multicollinearity and Spearman's Correlation

Spearman's rho	Distance to Previous Job DM1	Distance to Previous Domicile DM1	Output Market same town	Output Market same county	Output Market same region	Output Market UK	Output Market Euro	Output Market World
Distance to Previous Domicile DM1	.778**							
Output Market same town	-.253**	-.224**						
Output Market same county								
Output Market same region	.233**		-.353**					
Output Market UK	.255**	.227**	-.563**	-.313**				
Output Market Europe	.238**	.158*	-.360**	-.234**		.486**		
Output Market World	.190**	.145*	-.404**	-.214**		.385**	.545**	
Spend on services (£s)			-.248**		.193*	.258**	.185*	.213**

** Correlation is significant at the .01 level (2-tailed).
* Correlation is significant at the .05 level (2-tailed).

The solutions that exist to deal with multicollinearity usually present their own problems (Maddala, 1992; Menard, 1995). Removal of the correlated variables is perhaps the most obvious cure, although this denies the final model of the explanatory benefits that these variables may possess. Menard (1995) suggests that *"(perhaps) the safest strategy is to focus on the combined effects of all of the variables in the model and to recognise the precariousness of any conclusions about individual predictors in the presence of high collinearity"* (page 67). If the model is to be used in its complete form for prediction

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purposes only and individual variables are analysed with reference to their bivariate relationships then the importance of multicollinearity is reduced (Hair, Anderson, Tathan and Black, 1998).

5.9 Variables to be Included in Model

The above selection process has suggested that a logistic regression model can be constructed, and that this model may include the following variables and expected sign:

Table 53: Possible Variables to be included in Model

Variables	Possible Sign
Location	Negative for Oxfordshire
SIC group	N/A (Effect)
Size	Negative for larger
Type	N/A (Effect)
Main DM's distance from previous location	Negative for greater
Computerisation	Negative for increased levels
Location of Output Markets	Negative for distant markets

It is not methodologically sound to discuss dummy variables with more than two values (SIC group and Type) in terms of positive or negative signs as no coefficient is produced for the category as a whole (for example, there is no coefficient for SIC group). However, it is expected that industry types closely tied to the locality (smaller retail and service firms and older farms) and firm types that are associated with smaller firm size (e.g. sole traders and partners as opposed to limited companies) may have a higher proportion of spend on services in their local town than other firms. Although little more than this can be suggested at this point, it is possible to indicate the significance of these variables and make decisions as to their inclusion in any further (multivariate) models.

5.10 Conclusions

This chapter has begun to provide evidence for the study's two main hypotheses. It has also provided a screening of the variables to be included within the estimated logistic regression model.

The following series of tables demonstrate which of the variables have a significant relationship, and within which table the evidence resides. The variables are dealt with in the order they appear in the Methodology chapter.

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H_a^1: *Integration into the local economy as measured by the level of local producer service sourcing is a function of an SME's characteristics.*

Producer services integration is stronger when the following SME characteristics are encountered (Table 54):

Table 54: Hypothesis 1 Results

Variable		Significant (any area)?	Significant (town)?	Table
Firm				
a	Firm type (SIC)	Yes	Yes	Table 28
b	Small firm size (hours measure)	Yes	Yes	Table 39
c	Small Firm size (turnover measure)	Yes		Table 39
d	Larger number of premises occupied in the town			Table 42
e	Decision maker working from home			Table 42
f	Old firm	Yes		
g	Long time at present location	Yes		Table 40
h	Close past location	Yes	Yes	Table 43
i	Few product changes			Table 42
j	No head office relocations			Table 42
k	Sole trader or partnership			Table 42
l	Low level of computerisation	Yes	Yes	Table 39
m	High level of sales to local markets	Yes	Yes	Table 40
n	Membership of local organisations			Table 42
Decision Maker				
o	Decision maker has spent many years with firm			Table 40
p	Older DM			Table 40
q	Female DM			Table 42
r	No or close previous domicile	Yes	Yes	Table 43
s	No or close previous place of work	Yes	Yes	Table 43
t	Lower level of educational qualification	Yes		Table 39

Smaller firms, with close local connections and markets, appear to spend more within their local town. In addition, firms that are less computerised and run by less qualified managers have a higher propensity to spend locally on producer services.

Finally, the integration (in terms of local spend on services) of various industry types also follows a pattern (Table 55). Agricultural firms have the strongest local service links, followed by other services (hairdressing, etc.), then a collection of others (health, construction, transport, etc.). At the lower end of the table, hotels and manufacturers have limited linkages with the area in terms of service procurement.

Table 55: Distribution of Service Spend by SIC

Main SIC codes	% Same Town	% Same County	% Same Region
Agriculture	48	100	100
Other services	47	86	96
Other	40	71	95
Retail (non-branch)	30	78	96
Business services	23	42	89
Hotel	17	80	100
Manufacturing (non-branch)	16	47	81

A specific variable has been suggested within this research: *Indigeneity has an influence on the decision-maker in terms of sourcing decisions.* Other authors (Dobson,

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1987; Gripaios, 1997; Love, 1990; Twomey and Tomkins, 1996) have already demonstrated that branch plants have reduced local sourcing. This research now adds to earlier research by exploring the relationship between indigeneity and local spend on producer services.

$H_a^{1\ Indigeneity}$ Indigenous SMEs have higher local spend on producer services than SMEs which relocate to, or are formed by individuals relocating to, a given rural area when indigenous is measured using the following variable(Table 56):

Table 56: Indigeneity Results

		Significant (any area)?	Significant (town)?	Table
a	Large number of premises the firm occupies in the town			Table 42
b	Decision maker working from home			Table 42
c	Long time at present location	Yes		Table 40
d	Close past location	Yes	Yes	Table 43
e	No head office relocations			Table 42
f	No, or close location of & distance to previous domicile	Yes	Yes	Table 43
g	No, or close location of & distance to previous place of work	Yes	Yes	Table 43

Of the seven variables put forward, four were shown to be significant, but only three at the town level (Table 56). However, these three demonstrate an interesting point. If a firm and its decision-maker both moved to the present town from elsewhere, there is a reduced propensity to consume services in that town. In other words, incomers exhibit reduced local spending compared to indigenous companies. This in itself is not to say that incomers (firms and managers) are not beneficial to the town. This research does not cover the purchasing of non-services, the importance of the introduction of new techniques or the introduction of new capital. However, a link is demonstrated between previous locations and present service purchasing.

Intra-rural difference (hypothesis 2) can also be considered at this stage of the enquiry. It is common to refer to rural areas as if they are a homogenous whole. Within this research, differences have been observed between the two areas under consideration.

H_a^2: The level of peripherality of the rural area has an effect on the SME's choice of producer services, regardless of local provision (Table 57):

Table 57: Hypothesis 2 Results

		Significant?	Table
a	Spend on service is lower in more rural areas (£s)	Yes	Table 36, 37
b	Proportional spend on service is more localised in more rural areas	No	Table 26
c	Distance to service provider is shorter in more rural areas	Yes	Table 31

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Differences were observed in relation to numerous variables and the three identified as important in this enquiry were found to be amongst this group. Cornish firms generally have a lower turnover, and this, in part, explains the lower spend on services. This spend is also more localised, with a higher proportion spent within the same town (though not significantly different), and shorter distances, on average, to service providers.

The following chapter will now consider the relationship between firms' characteristics and spending on local services using multivariate logistic regression. The combination of the correlation analysis conducted in this chapter and the multivariate analysis conducted in the following chapter provides a more complete consideration of the relationship between variables than would be the case if only one technique was adopted.

Chapter 6: Multivariate Model Estimation

6.1 Introduction

It is the intention of this chapter to develop and estimate a mathematical model illustrating the relationship between local integration in terms of service sourcing and a firm's characteristics. In order to achieve this, a process of model construction and testing was adopted. The model tests the main hypothesis of this thesis, namely that local integration in terms of spend on producer services is a function of a firm's characteristics.

The model explores a range of decision-maker and firm characteristics beyond the simple Standard Industrial Classification (SIC), staff numbers, type and turnover level usually used to describe firms. Whilst a selection of characteristics make up the independent variables in the proposed model, the dependent variable represents local integration. The term 'local integration' is used to define the proportion (by value) of the SME's producer service requirements that are satisfied locally. All service providers that are located within the boundaries of the town and its hinterland are counted as *local* producer services and all others as *non-local*.

The final model takes the form of a logistic regression model, predicting the probability of a firm choosing to source services locally. Due to the fact that logistic regression uses a dichotomous dependent variable, it was necessary to convert the proportional spend per town into a 1 or 0 based variable. Those that were above average (mean) were labelled 1, those below 0.

6.2 Results of Model Estimation

The model was estimated using the 30 variables identified in Table 49 in the previous chapter (including re-coding and log-transformation). Four models were estimated using backward elimination based on the significance of the log-likelihood ratio with differing significance levels[44]. Within logistic regression analysis, this has become

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[44] A model was produced containing all of the variables without the use of elimination. However, the model contained a large number of variables that were not significant. Given that there were 30 variables within this model, and given that the model was unreliable due to the large number of variables that were not significant, the results of this model have not been reported.

the preferred technique (Hosmer *et al.*, 1989; Menard, 1995). There is some debate as to the exact significance level to use, with suggestions ranging from 0.05 to 0.25 (Hosmer *et al.*, 1989; Menard, 1995). Therefore it was decided to construct models using significance levels of 0.05, 0.10, 0.15 and 0.20.

Of the four significance levels chosen, 0.05 and 0.10 produced models that contained only two and four variables respectively. This low number of variables led to low R^2_L values and additionally created low predictive accuracy.

The two higher significance thresholds, 0.15 and 0.20, produced models with similar predictive accuracy (proportion of cases model is able to correctly identify). The results of all four models are detailed below.

Table 58: Comparison of Models using Various Significance Levels.

Significance Level	Initial Log Likelihood	Number of Independent Variables	Model χ^2	R^2_L	Predictivr Accuracy
0.05	164.0785	2	16.209	9.88%	66.12%
0.10	164.0785	4	22.001	13.41%	61.98%
0.15	164.0785	12	41.275	25.16%	74.38%
0.20	164.0785	18	56.07	34.17%	75.21%

Whilst the use of a log-likelihood ratio significance of 0.20 for variable removal produces a model with higher R^2_L values, this is a result of the greater number of variables within that model. Although the 0.20 model has a high degree of predictive accuracy (75.21%), the number of variables included within it makes it a less reliable model than the model based on the log-likelihood significance of 0.15 (for example, some of the coefficients had signs that were other than expected). This 0.15 model only loses a small amount of predictive accuracy (<1%), but has a smaller number of variables (12 rather than 18), which reduces the chance of over-fitting the model (Hosmer *et al.*, 1989). Therefore, it was decided to adopt the 0.15 model as the appropriate model for consideration.

Using backward elimination based on a 0.15 significance of the log-likelihood ratio, the following model estimation is developed:

Table 59: Logistic Regression Model

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
SIC group#			9.4803	6	.1483	.0000	
Agriculture	2.5087	1.2423	4.0777	1	.0435	.1125	12.2888
Manufacturing	.9822	1.1958	.6747	1	.4114	.0000	2.6703
Retail	-.6783	.9667	.4923	1	.4829	.0000	.5075
Hotel	.4732	1.2967	.1331	1	.7152	.0000	1.6050
Business Services	.2962	.9993	.0879	1	.7669	.0000	1.3447
Other	.0159	.9828	.0003	1	.9871	.0000	1.0160
Total Hours	-.8533	.4150	4.2288	1	.0397	-.1165	.4260
Total Sales	1.2059	.4295	7.8837	1	.0050	.1894	3.3399
Time at Location	-.0103	.0063	2.6489	1	.1036	-.0629	.9897
Distance from prev.	-.5805	.3007	3.7283	1	.0535	-.1026	.5596
Years with firm MainDM	-.0442	.0278	2.5303	1	.1117	-.0569	.9568
Age Main DM	.0600	.0295	4.1485	1	.0417	.1144	1.0618
Output in County	-.0149	.0095	2.4550	1	.1171	-.0527	.9852
Output in Region	-.0253	.0112	5.1375	1	.0234	-.1383	.9750
Output in UK	-.0237	.0109	4.7091	1	.0300	-.1285	.9765
Output in World	-.0629	.0286	4.8477	1	.0277	-.1317	.9390
Total Spend on Serv.	-.6147	.2798	4.8249	1	.0281	-.1312	.5408
Constant	-2.6710	2.6747	.9972	1	.3180		

* Output in county refers to output that is not accounted for in the local town or elsewhere. Likewise, output in region is output not in the same town, or county or the remainder of the UK, or Europe or further abroad. The same applies to UK and World output.
# coefficients are not produced for categorical variables with more than 2 groups

The opportunity was also taken to explore interaction effects within the multivariate model. These tests involved running logistic regression models containing interaction effects and assessing the interaction variable for significance. A total of ten different theoretically plausible interactions between variables were considered. There are no significant interactions at the 0.15 level (Table 60).

Table 60: Model Interactions

Interaction	Significance
Total Sales * Total Hours	.2915
Total Sales * Proportion Output in County	.8244
Total Sales * Proportion Output in Region	.1666
Total Sales * Firm's Time at Location	.9448
SIC group * Proportion Output in County	.5365
SIC group * Proportion Output in Region	.3459
SIC group * Total Spend on Services	.1528
SIC group * Total Sales	.2927
SIC group * Proportion Output in County	.5365
SIC group * Proportion Output in Region	.3459

As can be seen from the above table, no significant interactions were identified. For this reason, interaction effects were not included within the final model developed.

6.3 Interpretation of Model

The model described in Table 59 suggests that integration in terms of local spending on producer services by firms is related to the type of firm, its size, its markets, time at present location and distance from previous location. This seems a plausible model, as Fawson *et al.* (1994) suggests: *"A criterion that is equally as important as*

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forecast performance is, "Do the selected models make any sense?"' (page 72). The predictive ability of the model will be tested in a later section. Before this occurs, consideration of the importance to the model of individual variables can be considered.

A one-unit movement in the independent variable translates to an alteration in the odds of the dependent variable being 1, which in this case relates to above average spend on services in the local town by the firm. Therefore positive coefficients imply an increased likelihood of local spending whilst negative ones imply a lower likelihood. This is reflected in the odds ratios (Exp(B) in Table 61) which are less than 1 in the case of negative coefficients and greater than 1 when the coefficient is positive. The table below details these effects and directions (Table 61).

Table 61: Model Coefficients

	B	Exp(B)	Exp(B) -1	% alteration to odds
Agriculture	2.5087	12.2888	11.2888	1128.9% increase
Manufacturing	.9822	2.6703	1.6703	167.0% increase
Retail	-.6783	.5075	-0.4925	49.3% decrease
Hotel	.4732	1.6050	0.605	60.5% increase
Business Services	.2962	1.3447	0.3447	34.5% increase
Other Industrial Type	.0159	1.0160	0.016	1.6% increase
Total Hours	-.8533	.4260	-0.574	57.4% decrease
Total Sales	1.2059	3.3399	2.3399	234.0% increase
Time at Location	-.0103	.9897	-0.0103	1.0% decrease
Distance from Previous Location	-.5805	.5596	-0.4404	44.0% decrease
Years with Firm (Main DM)	-.0442	.9568	-0.0432	4.3% decrease
Age Main DM	.0600	1.0618	0.0618	6.2% increase
Output in County	-.0149	.9852	-0.0148	1.5% decrease
Output in Region	-.0253	.9750	-0.025	2.5% decrease
Output in UK	-.0237	.9765	-0.0235	2.4% decrease
Output in World	-.0629	.9390	-0.061	6.1% decrease
Total Spend on Services	-.6147	.5408	-0.4592	45.9% decrease

As can be seen from Table 61, alteration of any of the variables will have an effect on the odds of the company purchasing locally (referred to as the odds ratio). In the case of Total Hours, Total Sales, Distance and Total Spend, the figures are log based and so a one-unit increase represents a substantial increase in either sales or distance. For example, for sales a one-unit increase occurs at £10,000, £100,000, £1,000,000 etc. and for distance at 10 miles, 100 miles, 1,000 miles etc.

Consideration of the coefficients reveals that many variables have, on their own, a limited impact and raises another point for consideration. It has been shown (Table 49) that individually each variable included in the model has a relationship with the dependent variable. It has also been shown (Table 49) that taken individually no one variable can be said to explain decision-making. What the model reveals, true to multivariate models generally, is that the whole is greater than the sum of the parts.

The table below lists the variables and the associated coefficients in descending order (Table 62).

Table 62: Impact of Model Coefficients in Descending Order

	B	% alteration to odds
Agriculture	2.5087	1128.9% increase
Total Sales	1.2059	234.0% increase
Manufacturing	.9822	167.0% increase
Hotel	.4732	60.5% increase
Total Hours	-.8533	57.4% decrease
Retail	-.6783	49.3% decrease
Total Spend on Services	-.6147	45.9% decrease
Distance from Previous Location	-.5805	44.0% decrease
Business Services	.2962	34.5% increase
Age DM1	.0600	6.2% increase
Output in World	-.0629	6.1% decrease
Years with Firm (DM1)	-.0442	4.3% decrease
Output in Region	-.0253	2.5% decrease
Output in UK	-.0237	2.4% decrease
Other Industrial Type	.0159	1.6% increase
Output in County	-.0149	1.5% decrease
Time at Location	-.0103	1.0% decrease

The findings presented in Table 62 indicate that SIC group is a significant influence on local purchasing of producer services. A firm being in any SIC group other than retail appears to increase the odds of purchasing services locally. Within the SIC groups that have increased odds of purchasing locally agriculture is by far the most likely to produce an increase in the odds of purchasing services locally (reference to Table 59 illustrates that it is the only significant SIC group variable).

Larger firms, as measured by total hours worked by all staff and total spend on producer services, have a reducing effect on the odds. This is in contrast to the effect of total sales, where larger firms have *improved* odds of purchasing services locally. Increases in the firm's distance from its previous location reduce the odds of purchasing services locally, as does having more distant output markets. The model implies that older decision-makers are more inclined to purchase producer services locally, whilst older firms and decision-makers that have spent a long time with the firm are less inclined to purchase producer services locally.

Correlation analysis shows that the apparent wrong direction of the increasing sales effect is almost certainly due to collinearity amongst the dependent variables (Hosmer and Lemeshow, 1989). Given the variables (total sales, hours and service spend) under consideration, this is not a surprise. The usual reaction to this situation is to remove the offending variables and rerun the model. In this case, numerous models were constructed

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leaving out various combinations of variables and/or treating various combinations as interactions. In all cases the treatment failed to produce coefficients with the signs anticipated. However, it is possible to argue that all of the variables included are "*scientifically relevant*" (Hosmer *et al.*, 1989, p 83) and that the overall effect of all the variables is the production of a usable model. It could in fact be argued that the model represents the complexity of the situation, even though there is a small amount of ambiguity present. Within this thesis Menard's (1995) warning that "*(perhaps) the safest strategy is to focus on the combined effects of all of the variables in the model and to recognise the precariousness of any conclusions about individual predictors in the presence of high collinearity*" (page 67) was adopted and the sales variable retained.

6.4 Individual Service Models

In addition to modelling proportion of total spend on producer services in the same town, firms were also examined at an individual service purchasing level. The intention of this part of the analysis was to separate the service spend into its component parts with a view to identifying differences between service types. Models were constructed for all service types in the study, but only those detailed in Table 63 were found to be significant. In this instance, the models predict whether or not the service provider is local, rather than the proportion of spend on producer services being above average.

Table 63: Individual Service Models

Model	Initial log Likelihood	Number of Independent Variables	Model χ^2	R^2_L	Accuracy
Accountant	151.074	18	51.187	33.88%	71.68%
Lawyer	109.403	4	20.473	18.71%	69.62%
Bank	165.345	14	78.573	47.52%	82.64%
Ins. Liability	114.417	9	19.347	16.91%	76.85%

All of the individual producer service models in Table 63 were able to predict the likelihood of a firm choosing to use a local supply of that service based on the characteristics of the purchasing firm collected during the study. Both the accountant and bank models achieved some of their high R^2_L value due to the relatively large number of variables used within the models. Of the variables present within the individual service models, many are shared with the above average spend model (see Table 61 and Table 64). The full models are provided in Appendix 13.

Table 64: Total and Individual Service Spend Models (Shared Variables)

Above Average Spend in Same Town (Local)	Local Accountant	Local Law Firm	Local Bank	Local Insurance Provider (Liability)
SIC	SIC		SIC ·	
Total Hours	Total Hours			
Total Sales	Total Sales		Total Sales	
Time at Location			Time at Location	
Distance from Previous Location	Distance from Previous Location	Distance from Previous Location	Distance from Previous Location	
Years with Firm (Main DM)		Years with Firm (DM1)		
Age Main DM		Age Main DM		Age Main DM
Output in County	Output in County		Output in County	Output in County
Output in Region	Output in Region	Output in Region	Output in Region	Output in Region
Output in UK	Output in UK		Output in UK	Output in UK
Output in World	Output in World		Output in World	Output in World
Total Spend on Services				

Although it is difficult to draw conclusions between four separate models, it does appear that sales location is of particular relevance to all models. In addition, the distance to previous location is also seen to be an important shared variable. Additional variables not found within the above average town spend model were also found to be relevant. These are reported in Table 65.

Table 65: Individual Service Spend Models (Unique Variables)

Local Accountant	Local Bank	Local Insurance Provider (liability)	Local Law Firm
County (firm location)			
Town (firm location)			
Owner/manager Working from Home	Owner/manager working from home	Owner/manager Working from Home	
Type (Ltd., etc.)	Type (Ltd., etc.)		
Age DM2			
Highest Educational Qualification Main DM			
Level of Computerisation	Level of Computerisation		
Output in Town		Output in Town	
Output in Europe		Output in Europe	
Membership of Organisations (National)		Membership of Organisations (Local)	
	Number of Separate Premises		
	Number of Head Office Relocations		
	Distance to Previous Place of Work DM1		

Additional output market variables (town and Europe) have been added to the variables already discussed. In addition, importance is given to whether or not the business is run from home, level of computerisation of the firm and membership of organisations.

6.5 Application of Model

Introduction

Whilst various statistical tests have shown an acceptable model fit and accuracy, it was considered important to test the model empirically. It had always been the intention of the research to produce an applied model that was of use to policy makers. Although the exact requirements of academia and practice often differ, it was considered, in this instance, that application of the 'above average local service spend' model could demonstrate its 'usability' and test its generalisability, validity and reliability.

After careful consideration, the application of the model to a further two towns and counties was considered to be the best course of action. The use of new locations would extend the boundaries of the model beyond the four case study towns considered, and assist moves towards a generalisation of firm behaviour. The selection of these extra towns differed from the rigorous consideration given to the selection of the four towns in the model development stage. During the testing phase, there was no requirement to represent an 'average' town.

Method

Using Hodge and Monk's (1991) rural classification of local authority districts, two districts were selected that differed from each other and from those in which the four towns from the main study were located. By investigating towns in East Devon and North Dorset, it was possible to examine two areas that were not as 'remote rural' and not as 'accessible rural' as Cornwall and Oxfordshire (RDC, 1997; Tarling *et al.*, 1993). This approach can be likened to taking 'one step in' in each direction. Although the areas are no longer to the extremes of remote and accessible, there still exists an expectation that they are significantly different from each other and from the towns used in the model-building exercise. However, the more 'remote' location (East Devon) is actually closer to the motorway road network than the 'accessible' location (see Figure 20).

Figure 20: Approximate Location of East Devon and North Dorset

E Devon   N Dorset
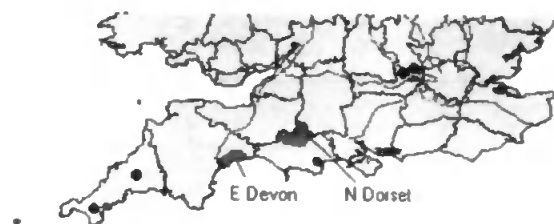
Within these two areas, two towns were selected that had broadly similar sizes to the four examined within the model-building phase - namely approximately 10,000 population and 500 firms. This led to the selection of Honiton (East Devon) and Blandford Forum (North Dorset). Honiton is situated approximately 14 miles to the north-east of Exeter and has a population of 7,859 (ONS, 1999) and 413 firms (BSYP, 2000). Blandford Forum is located approximately 20 miles south-west of Salisbury (and 12 miles north-west of Bournemouth) and has a population of 8,880 (ONS, 1999) and 533 firms (BSYP, 2000). A sample of 413 firms was adopted in both cases to ease comparison. Firms were selected from the Blandford Forum (DCC, 2000) database by using the first 413 firms with the database sorted alphabetically.

Whilst the firms in the earlier model-building phase were selected from County Council databases, there were many 'not at this address' responses (between 2% and 12.5%). Partly for this reason and partly due to the availability of an alternative database (BSYP, 2000), it was decided to use Business Select Yellow Pages (BSYP, 2000) which is based on BT telephone listings. The two samples were then screened for companies and organisations that were considered irrelevant to the study (e.g. schools, national chains, etc.). Details of these reduced samples were then used to create addressed covering letters that were posted, along with a copy of a shorter questionnaire and a reply-paid envelope, to the companies under consideration. The questionnaire only collected information on those variables found to be significant in the above average spend on producer services model. This reduction in questionnaire length also made it possible to test the theory that the length of the original questionnaire may have reduced the response rate (see Table 66).

Table 66: Response from Firms in Honiton and Blandford Forum

Town	Sample	Database Error (wrong address, etc.)	Usable Sample	Usable Response	Response rate
Honiton	413	63	350	42	12.00%
Blandford Forum	413	15	398	27	6.78%

Two facts are apparent from Table 66. First, the reduced questionnaire length did not increase the response rate, and second, it is possible to have noticeably different response rates using the same methodology. The 69 responses collected were entered into a Microsoft Excel spreadsheet that contained a formula representing the 'above average spend on producer services in the same town' model, using 38% as the average. This average was used during the original estimation of the model, the average in the new data being 43.89%[45]. The output of this spreadsheet was constructed in such a way as to make it possible to compare predicted and actual results. The results of predicting above average spend on producer services in the same town can be seen in Table 67.

Table 67: Predictive ability of Model

Town	Number Correctly Predicted	Proportion Correctly Predicted
Honiton	26	62%
Blandford Forum	16	59%

The model tended to get incorrect predictions relating to small firms (in terms of sales, hours and spend on services) that spent below average on producer services locally or firms that were large but tended to spend locally. Out of a total of 33 firms that had above average spend on producer services in the same town, 14 were falsely assigned. Of the 36 firms that had below average spend on producer services in the same town, 13 were falsely assigned. This indicates that errors within the model's prediction are shared equally between the two possible outcomes (i.e. above or below average spend on producer services in the same town).

6.6 Summary

This chapter has taken the quantitative results outlined in the previous chapters one stage further by creating a model. It has been shown that it is possible to model the producer service-purchasing behaviour of firms, and to test the model empirically.

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[45] No firms in the new data had values between 38% and 43.89% and so none were misclassified as above average spend on producer services locally.

The above average spend on producer services in the same town model confirms the conclusion drawn in the previous chapters. Integration is, indeed, a function of a firm's characteristics and is influenced by the following variables:

SIC, Total Hours Worked (All Employees), Total Sales, Firm's Time at Present Location, Firm's Distance to Previous Location, Time with Firm of Main Decision-Maker, Age of Main Decision-Maker, Proportion of Sales Within County, Region and Rest of UK and World and Total Spend on Producer Services

These variables correspond both with expected findings and the bivariate analysis. The similarities between the multivariate model and the bivariate analysis conducted in the previous chapter are displayed in Table 68.

Table 68: Univariate and Multivariate similarities.

Variable	Spearman's	Univariate Logistic	Multivariate Logistic	Expected
SIC	Significant		Significant	Significant
Total Hours	Negative	Negative	Negative	Negative
Total Sales	Not significant	Negative	*Positive*	Negative
Time at Location	Not significant	Negative*	Negative	Positive
Distance from previous	Negative	Positive*	Negative	Negative
Years with firm DM1	Not significant	Positive*	*Negative*	Positive
Age DM1	Not significant	Positive*	Positive	Positive
Output in County	Not significant	Negative*	*Negative*	Positive
Output in Region	Not significant	Negative	Negative	Negative
Output in UK	Negative	Negative	Negative	Negative
Output in World	Negative	Negative	Negative	Negative
Service Spend	Negative	Negative	Negative	Negative

* coefficient sign indicated but variable not significant in univariate test
* italics represents signs other than expected

The above table demonstrates that whilst the model produced the results expected, there were three anomalies. Firm's total sales, main decision-maker's years with firm and proportion of total output sold within county but outside of local town all produced coefficients different than anticipated. At a univariate logistic regression level, two of these variables exhibited the expected sign. The reason for this anomaly is probably related to multicollinearity.

As indicated in Table 64 many of the variables are also significant when considering the purchasing of individual producer services. This leads to the conclusion that prediction of a firm's services purchasing behaviour is possible, and that, with reference to Table 62, it is possible to show which variables have the greatest impact on the odds of purchasing services locally. The most important variables to concentrate on are SIC, size of firm (in terms of total sales, total number of hours worked and total spend on producer services) and distance from previous location of firm. However, as with all

multivariate models, it is important to appreciate that the model works by combining all of the twelve variables included within the above average spend on services in the same town model.

In conclusion, the model indicates that twelve of the variables suggested by the literature review and qualitative research were statistically significant. In addition, the model also appears to be robust enough to apply to different geographic locations. In many ways, the model serves as a means of exploring the multivariate significance of the variables used as well as a tool for prediction - though prediction also serves as a useful test of the model's reliability. If data were to be collected on firms for the purpose of using the model *only* for prediction, it could be argued that it would be just as easy to ask the firms for information concerning their purchasing. However, this was never the intention of the model. The model seeks to highlight the importance of various variables, namely firm type (SIC), size, distance from previous location (indigeneity), decision maker characteristics and firm's output market locations. The importance of these variables has implications for policy makers who may be seeking to either strengthen or reduce local dependency on services. In addition, areas that exhibit the certain combinations of variable values and yet lack local services may in fact represent a market potential for producer service firms.

Chapter 7: Discussion and Conclusion

7.1 Introduction

In this final chapter, the findings of the research are discussed in relation to both the existing literature and policy. The original aim of this research had within it two key strands, namely to consider intra-rural variations between firms with regards to their characteristics and behaviour and investigation of the possibility that integration into the local rural economy (town), in terms of spending on producer services, is a function of a firm's characteristics.

During the process of enquiry, several observations were made. It became apparent that the relationship between the increasingly important service sector and smaller firms was poorly understood. It also became obvious that little consideration had been paid to the past geographical location (indigeneity) of decision-makers, with particular emphasis on how this may influence producer service sourcing decisions. Whilst developing this point, it also became clear that producer services were separable into two distinct groups (quasi-products and virtual employees) and that this split was based more on the relationship between the firm and the service than consideration of high- and low-order services *per se*.

This chapter considers the study's main hypotheses in turn. The discussion will begin, mainly for reasons of textual flow, with a consideration of intra-rural differences in firm characteristics and behaviour. It then considers the proposition that integration in terms of local spend on producer services is a function of a firm's characteristics. This naturally follows into discussion of a currently underdeveloped area, the indigeneity of the decision-maker, and the novel separation of services into 'virtual employees' and 'quasi-products'. Finally, drawing these strands together, will be a brief discussion on the relationship between the research findings and policy.

7.2 Intra-rural Differences in Firm Characteristics and Behaviour

One of the most obvious differences between the firms in the study areas is their geographic location. The main reason for choosing firms in rural areas, as previously

discussed in the chapter on research method, is the desire to generalise the findings to all rural firms (SMEs). However, in addition to this important function the selection of towns in different geographical areas also allowed the work to contribute towards current research on difference *within* rural areas.

There currently exists considerable debate as to what is rurality. However, a solution, for this research, presented itself in the form of a Rural Development Commission definition. The Rural Development Commission list areas that are within their sphere of responsibility (rural) separating them into remote rural and accessible rural (RDC, 1997; Tarling *et al.*, 1993).

This separation has the added advantage of providing us with a definition for various degrees of rurality and, by using the term accessible which means accessibility from/to the core, a representation of core and periphery. Numerous authors have considered the core-periphery situation over the years. This work has ranged from central place theory to more recent work by Keeble and Tyler and others examining intra-rural differences (for example: Errington, 1994a; Keeble, 1997; Keeble, Bryson and Wood 1991; Keeble and Tyler 1995; O'Farrell, Moffat and Hitchens, 1993). This work has demonstrated on numerous occasions that rural areas are not one homogenous whole.

The research conducted for this thesis, whilst focusing on the relationship between firm and decision-maker characteristics and producer services, has highlighted some interesting intra-rural differences. Care was taken during town selection to choose four towns that had similar profiles. This gave four separate towns, each with a population of around 10,000 people and 500 firms. In addition, each town was 'old' and could be defined as a market town. Thus any differences encountered were due to the differences in proximity to core metropolitan areas.

Key Differences

As expected, many of the differences between the firms in the four towns can be explained as differences between the two counties. However, a few interesting differences existed. For example, Thame had larger firms in terms of sales, hours worked and service spend, whilst Wantage was similar to the Cornish towns. Of the two Cornish towns,

Bodmin appeared to have some similarity with Oxfordshire. This suggests, given the location of each town, that in addition to the county-level variance there also exists inter-county variance that can be explained in terms of localised peripherality, or at least in relation to central place(s), although it should be noted that peripherality had the greatest effect.

Oxfordshire firms were on average younger than the Cornish firms. This suggests a more stable and settled business pattern in Cornwall, although more Cornish firms are sole traders. The firms in the four towns all exhibited similar, low distance to previous locations, indicating most firms are locally formed. Thame firms are again shown to be different from Wantage firms, having a larger number of limited companies, although there is still a clear difference between firms in Cornwall and firms in Oxfordshire.

Discussion of sales and spend data ignores the important area of access to markets. Of the two counties, Oxfordshire has a distinct advantage in terms of access to markets. It would be expected that the Cornish firms are more reliant on markets within the same town, and this is certainly true of Helston firms. However, firms in Bodmin exhibit market figures that are more closely related to Oxfordshire. As previously discussed, this raises the interesting point that even at this local level (Bodmin) there is a pull from the nearby core (Plymouth) with a reduced effect in the periphery (Helston).

There is similarity within the counties in relation to proportion of sales within county, but firms in the two Oxfordshire towns have a lower level of sales within the same town than the Cornish firms. At the regional level, Oxfordshire firms have significantly greater sales than firms do in Cornwall, and firms in Bodmin have greater sales than firms in Helston. In all, it would appear that firms in Cornwall rely more heavily on sales within the immediate vicinity than Oxfordshire firms (and this replicates, in part, findings by Keeble *et al.*, 1991).

From an economic development perspective (local linkages), Cornwall also relies heavily on local markets for services. This finding contradicts Keeble *et al.* (1991), who suggest that remote rural firms source *fewer* inputs at a local level. However, this referred to all inputs, not services only. Firms in Oxfordshire secure much of their services from within 100 miles but significantly less within county. Although the city of Oxford would

seem an ideal source of additional services, firms appear to use a wider South-East market. This highlights the importance of considering behaviour not simply within administrative boundaries but in terms of markets.

If services are unavailable, then using services at a distance is, assuming that the service is required, the only solution. However, almost all small towns have all the main producer services categories, with at least two accountants, law firms, banks (even allowing for recent closures) and so on. Of course, the size and quality of these services may not, for some reason, suit all purchasing firms (and the firms will have no demand for them as a result). Where this is the case, the reason for selecting out of town services will be due to supply availability factors.

Whilst it is difficult to judge the quality of the service firms available in the four towns under consideration, it was possible to establish their approximate number. In most cases, Oxfordshire had a greater number of services available in the same town[46]. This difference was not, however, always large, except that business and IT consultants were far more readily available in Oxfordshire.

Thus, there is more local provision of producer services in both Thame and Wantage than in Helston and Bodmin, and yet we have already seen that these two Oxfordshire towns source a lower level of services locally than is found within Cornwall. This suggests that supply issues need to be considered not in-terms of services available in town, but in terms of how competitive the market is for services *and* how willing firms are to enter into a competitive process. It would seem that Cornish firms have decided that either the wider local (County, within 100 miles) or national market, with its cheaper prices, has little to offer. The reasons for this reluctance may stem from either a lack of information, a lack of trust or a lack of sophistication in sourcing techniques. Clearly there is a role here for government policy aim at assisting access to more competitive producer service providers.

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[46] This is also reflected in the SIC stratification.

Summary of Intra-rural Difference in Firm Behaviour and Characteristics

The distinction between accessible and remote rural, or core (peri-urban fringe -
Errington, 1994a) and periphery, does appear to explain differences in service purchasing
behaviour between the two counties. Oxfordshire firms tended to be characterised by larger
turnovers, access to more varied markets, and access to a wider range of services. Despite
there being local provision of producer services, Oxfordshire firms use neighbouring, and
sometimes more distant, supplier alternatives. Cornish firms, on the other hand, prefer to
source locally, even though local provision is not as great.

In many ways, these findings reflect a growing body of literature that has explored
difference in terms of access to the core (Bennet and Graham, 1998; Keeble, 1997;
Marshall and Jaeger, 1990; Potter, 1993). It seems that this explanation of the difference
between prosperous and less developed regions now has considerable evidence in its
favour and yet it is not obvious how this may be translated into policy. There was
certainly no evidence in this study that technology has meant that the *"tyranny of
geographical distance and remoteness are considerably reduced"* (Blunden, Pryce and
Dreyer, 1998 page 150).

7.3 Integration as a Function of a Firm's Characteristics

The notion that it is in some way possible to predict a firm's integration into its
locality in terms of sourcing producer services by reference to a description of that firm has
been examined in this thesis. As we have seen, integration is clearly related to rural
location. Cornish firms are, on average, more closely integrated into the local area in terms
of spend on services. What we now move on to discuss is the multitude of other firm
descriptors and their relationship to sourcing of producer services.

Both the bivariate analysis and the multivariate modelling conducted within this
thesis told a similar story. The most significant variables in describing the relationship
between firm characteristics and purchasing of producer services were those that described
firm SIC, size (total hours, total sales and total spend on services), distance (to previous
firm location), time (firm's time at present location and age of decision-maker) and

location of output markets. The distance related variables are discussed more completely in the next section.

The remaining themes (firm SIC group, size and markets) are in broad agreement with the general conclusion of the existing literature (e.g. Dobson, 1987; Curran and Blackburn, 1994). For SIC groups, agriculture and 'other' service firms are the most integrated in terms of spending on producer services in the same town, with median spends approaching 50%. Conversely, figures below 25% are encountered with business services, hotels and manufacturing (similar to the ordering of all inputs found by Williams (1994) and Errington (1994b): other services, producer services, manufacturing). The pattern is repeated at both county and region levels, and overall it was shown that differences in spending between SIC groups were statistically significant, with the exception of spending at the European level.

The relationships between the SIC groups 'other' services, manufacturing and business services and location of service provider are, in part, explained by the geographic location of the firms' output markets. Each firm buys from and sells to markets in a similar pattern. The exception to this is agriculture. Though agricultural firms buy a large proportion of their services locally, they rely on a wide area for their sales. This wide area is partly explained by their need to sell to food processors and supermarkets. What is less easy to explain is their use of local services given these wide markets. It has been observed by other authors that the modern farm cannot be adequately supplied at the local level with physical inputs due to their increasingly complex nature (e.g. chemicals, feed, etc.) (Errington, 1994b).

Most farms are significantly older businesses than the other firms in the survey and, in addition, they relocate less than many firm types (although not significantly different). It would seem that, whilst farms rely on distant output markets they are more integrated into the local economy in terms of services due to the long length of time that the businesses have been in the area.

Moving to consideration of firm size (size of workforce, spend on services and sales), the results are similar to those of previous studies (for example: Errington, 1994b). It was found by both bivariate and multivariate analysis that turnover, number of hours

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worked (i.e. true workforce size) and service spend are significant variables in explaining the relationship between firm characteristics and location of service provider.

Curran and Blackburn (1994) suggest that size alone is not a reliable predictor of behaviour. Small firms may exhibit stronger local linkages than larger firms, but there is variation amongst small firms. In part, the multivariate model tries to allow for this by including, by definition, a range of explanatory variables. One point that Curran and Blackburn (1994) make that was not confirmed here is that *"newer and most rapidly expanding kinds of small business are much less likely to be tied 'locally' in any conventional sense"* (page 183). Although this assertion cannot be rigorously denied within this thesis, variables that sought to capture it were not found to be significant, with the possible exception of computerisation that *may* be a proxy for a dynamic enterprise.

The reason why smaller firms are more locally tied is possibly due to several related factors. Small overall size often relates to small turnover, and small turnover is often explained by a reliance on a local market. In addition, small size (size of workforce, spend on services and sales) restricts the ability of the owner to operate in a strategic way and creates a 'fire-fighting' situation. In this type of situation one way of reducing transaction costs is to purchase at a local level. This localism reduces risk of failure of the supplier and the need for additional research into the supplier (when the supplier is known to the firm due to them both sharing the same location). Also, because they are usually smaller, partnerships and sole traders are more locally tied than limited companies.

Firms whose sales are mostly contained within the local area tend to source services locally. This appears to suggest that widening of output markets leads to a widening of input markets. This may be explained by the fact that a company experienced in dealing with distant markets is engaged with transactions at a distance. Thus, the company has experience with risk (customer's failure to pay) and information gathering. These skills can be used to reduce the transaction costs associated with purchasing at a distance. Companies that operate e-commerce may also be more likely to use e-commerce inputs, suggesting another leakage potential for Cornwall.

Wider markets also offer networking potential. The firm has contacts beyond its immediate locale and managers may in fact visit these distant locations. This, in turn,

leads to exposure to potentially more cost-effective service providers. In addition, it may be desirable to locate service providers closer to the firm's output markets, thus using their suppliers' local knowledge to supplement the firm's.

Summary of Integration as a Function of a Firm's Characteristics

This research has confirmed that integration of the firm into an area in terms of purchasing of producer services is related to a firm's characteristics (firm SIC group, size, markets and distances). Not only has this been revealed through bivariate analysis, it was also possible to model the relationship and test the generalisability of the model using data from additional towns. By identifying the relationship between characteristics and purchasing of producer services it is possible to indicate the outcomes of various policy initiatives designed to encourage growth in certain firms.

There is a difference between research that looks at producer services and research that looks at all inputs in terms of local economic linkages. Although there are similarities, particularly relating to size of firm and diverse markets, it was found within this study that agriculture-based firms are more closely integrated in terms of their local purchasing of services than is encountered when all inputs are considered.

7.4 Indigeneity

The previous section considered integration in terms of a firm's characteristics. This is by far the most common approach encountered in such studies, partly due to the availability of data and the ease with which findings can be translated into policy. Whilst this style of research is common, it fails to examine one important aspect of SMEs - indigeneity.

Findings from this research suggests that previous location has an influence of sourcing decisions for producer services. Work that has been done in this area tends to either investigate membership of organisations or personal characteristics, whilst ignoring past location of the decision-maker. What this work fails to explore is one important aspect of social and business networks: membership of networks is often geographically bound. When an individual, or firm, moves to a new area, it takes time before the

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individual or firm become both aware and part of local networks, particularly informal ones. This time period can be reduced somewhat by the work of organisations such as chambers of commerce and Business Links. However, the decision-maker may continue to source services from networks that are already known to them and where trust (Casson, 1993), or at least risk knowledge, is established. This is simply explained in terms of an attempt to reduce transaction costs.

This study has demonstrated that a link exists between past location of firm and decision-maker and pattern and level of present use of producer services. Exceptions do of course exist, but, in the case of SMEs, data on past location can be used to indicate propensity to use local suppliers.

Summary of Indigeneity

The importance of indigeneity is explained by the need for decision-makers to adopt some form of bounded rationality to reduce the complex decision-making process. Decision-makers are more likely to be influenced by a combination of cost, product *and* the feeling of security that is related to dealing with people they know. This combination of *local influence* and *bounded rationality* (Casson, 1993) causes the manager to base supplier decisions on factors other than least cost or efficiency of supply alone. What remains difficult to establish is the network in which the individual manager operates and is therefore influenced by. Numerous networks are possible. These may range from social clubs, though Dodd (1996) found no conclusive evidence that business owners were more active in organised social events, to business clubs and friends/family. The findings of this thesis do, however, partly explain Johannison's (1986) finding that *"owner manager's core attitudes are more likely to be shaped and influenced by social than by commercial networks"* (cited in Dodd, 1996, page 81).

7.5 Virtual Employees and Quasi-Products

The work has also identified the separation of producer services into two groups, although these groups are not readily explained as high- and low-order. The first group, referred to within this thesis as 'virtual employees', consists of accountants, banks, lawyers

and builders. It would appear that this list represents a collection of high-order services, although it may be arguable whether builders are high-order. However, the second group, known as 'quasi-products', also contains high-order services. This group is made up of designers, advertising companies, stationers, cleaners, insurance companies, IT consultants and couriers.

The difference between the 'virtual employees' and 'quasi-products' is not based on the service itself. Instead it appears that the groups are formed by the relationship between the firm and the supplier. Again this can be explained in terms of transaction cost minimisation. The firm remains loyal to certain service firms simply because those service firms operate a type of business that requires a high level of trust (builders), a high level of trust and company knowledge (banks and accountants) or a high level of trust, company knowledge and knowledge of the individual (law firms). Whilst the consequences of any supplier failing to deliver can be damaging, it can be argued that these suppliers are more costly to replace.

Virtual employees are often used as a key source of advice as has been noted by Curran and Blackburn (1994); Curran et al. (1993); Turok and Richardson (1989). Finally, the decision-making process within a service-purchasing firm is influenced by individuals whose selection itself may be influenced by location (indigeneity).

7.6 The Relationship between Research Findings and Policy

Although this thesis has not sought to analyse policy, it is constructive to relate some of the findings to policy. It is not the intention here, nor is it within the remit of this work, to discuss what form policy should take. Rather, this work has highlighted certain facts that are of interest to both academics and policy makers alike.

Rural policy has also undergone change during the past 20 years, reversing the separation of general rural policy from agricultural production policy. This manifests itself most obviously in recent (1997) European proposals that seek to "move[d] CAP away from an emphasis on production support and towards a more Integrated Rural Development Policy" (Lowe and Ward, 1998 page 470). The policy situation has moved away from the

traditional mix of agricultural support and relocation of branch plants. However, it is not exactly clear what the new position is.

Regional economics has had a significant boost through the creation and empowering of the Regional Development Agencies. These new agencies serve both to absorb other functions (e.g. RDC and English Partnerships) (Gibbs, 1998) whilst representing a conduit through which to channel European and national aid. However, examining the objectives and implementation policies of these agencies does not exactly clarify their mission. Taking the South West RDA as an example, their Regional Strategy 2000-2010 document suggests that implementation will represent *"the application of the Strategic Drivers"* (page 5), including, a) the Environment, b) Innovation and Technology, c) Skills and Learning and d) Partnership South West. If looked at in detail, it is possible to appreciate the vagueness that surrounds these drivers:

The Environment:
Ensuring that the region's unique cultural and environmental assets are used to attract and develop business potential.

Innovation and Technology:
Putting innovation, creativity and technology at the heart of the region's business and institutions.

Skills and Learning:
Equipping people with the skills and adaptability needed to underpin a modern, developing and inclusive economy.

Partnership South West:
Promoting greater quality and effectiveness in the ways in which the region works together and organisations operate.

RDA (1999) page 4

Whilst all of the above are laudable, it is difficult to see how they would differ from any other area's general wishes, rural or urban. The approach appears to be one that is based on vision and initiatives, rather than direct intervention. The general approach has drawn criticism from The Economist, perhaps also demonstrating how Regional Economics has moved up the policy agenda. In an article (August 5th 2000), The Economist criticised the suggestion that the South West, particularly Devon and Cornwall, could become another California. Sarcastically they suggested that providing *"the lack of motorways, airports, large cities and universities* [is ignored] - *the comparison with California is quite plausible"* (Economist, 2000, page 32). In other words, direct

intervention has been replaced with vague initiatives and strategic goals. Thus, whilst previously the relative merits and demerits of increased or reduced support for agriculture or branch plants could be discussed, the situation is now more vague.

However, although policy makers no longer favour branch plants, they have continued to support the notion of economic linkages locally and between regions and multipliers. Policies relating to business and enterprise in general have sought to encourage business through a variety of assistance schemes that recognise the importance of smaller firms (Armstrong and Taylor, 2000). It is and was anticipated by policy makers that these smaller firms would form the basis of economic regeneration. As such numerous agencies have been set up to assist them. Organisations such as Training and Enterprise Councils, Regional Supply Offices and Business Links aim to provide advice, training and assistance to firms, and it is assumed that this help will lead to growth amongst these firms and knock-on multiplier effects in the local economy. In many ways this form of growth is best described as growth within the local economic network, and hence the increased importance of that area of research. However, one of the key areas of interest in this research is Curran and Blackburn's (1994) observation of *"trends in the UK which weaken the importance of locality as a link between businesses"* (page 182).

Research detailed in previous chapters has shown that the service purchasing links between town and firm is not necessarily that strong. The proportion of service spend placed locally was on average 38%. Whilst this was in excess of that spent on goods locally, it is clearly significantly less than 100%. Although the towns under consideration all had a supply of the producer services, many firms used producer services at a distance. A difference between Oxfordshire and Cornwall was also noted, namely that Cornish firms had a greater propensity to source locally *despite* the fact that local provision was not as great as that encountered in Oxfordshire.

This immediately throws up several interesting policy implications. First, it illustrates that there are differences within rural areas. Although this would be expected in relation to size of firms and revenues, it also apparent in terms of service purchasing behaviour. Thus, in addition to allowing for structural or size difference between locations, it will also be necessary for policy makers to consider the possibility of service

purchasing behavioural differences. It may be the case that policy makers should seek to harness these differences by targeting certain types of firms and actually use them to increase local purchasing. With this in mind, the poorer of the two counties already exhibited a greater propensity to source locally. Given the continued reliance on local linkages, and given the warning by Curran and Blackburn (1994) concerning the death of the local economy, it remains constructive to consider which types of firms offer the strongest local connection in terms of spend on services.

From this research, the view that the small local firm is a tool for economic regeneration is supported. Thus, any new or improved policy should seek to encourage growth amongst local firms. We have already seen initiatives (ranging from the Enterprise Allowance Scheme of the 1980s to the 1990s' notion of the Incubator Unit) with current government initiatives in this area centring around the Small Business Service (Lowe and Talbot, 2000). The Small Business Service will attempt to capture those firms not covered by Business Link, and the two agencies working together should manage to support firms ranging in size from 1 to 250 employees. The research conducted for this thesis suggests that this effort should be focused on the growth of small local firms, although thought also needs to be given to the developmental role of incomers in terms of increased competition and new processes/technology.

Of the different firms studied, agriculture and 'other' service firms were seen to be most integrated, in terms of local producer service spending, and so it may be beneficial to offer encouragement to these areas[47]. Business services, hotels and manufacturing all had low levels of local producer service purchasing. In many ways, part of these industries' reason for not purchasing locally is explained by their reliance on distant output markets.

In addition, The Regional Supply Network's (another agency that has been tasked with assisting firms) brief to encourage local *regional* sourcing is too broad to assist in encouraging firms to purchase more services locally (same town). Thus, there may be a more effective solution at the town level using either chambers of commerce or town councils to promote what services are already available locally.

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[47] This assumes that the encouragement of local economic linkages is a policy goal, and that the industries in question are not in decline in the specific geographic area under consideration.

The findings of this research suggest that, given the general, albeit vague, theme of current policies, there are certain industries whose growth should be encouraged, whilst others may benefit from an encouragement to source locally. It is not simply economic linkages that have a bearing, though they remain important, but the maintenance and development of a mixed rural economy. The agglomeration of services has been noted by other authors (Bennet and Graham, 1998; Marshall and Jaeger, 1990; Potter, 1993) and represents a worrying trend for rural areas, many of whom imagined that they would be the natural home of footloose service industries. A rural economy that continues to haemorrhage producer services, partly through a lack of local demand, will lose industrial diversity. As service industry growth remains an important factor in the overall economy, this is concerning for the rural economy (Illeris, 1989b; Marshall, 1992).

The maintenance and growth of service firms should be an integral part of policy and the research conducted for this thesis has highlighted areas that could be pursued. However, as a final conclusion it is important to note that the research also suggests that smaller firms with localised markets are best suited for trapping service spending. This is obviously contrary to many policy goals that seek an expansion of firms' size and an expansion of export markets. It would, therefore, seem wise to use the results of this research not as the basis of picking which firms to encourage but rather which firms to target in an attempt to encourage them to place service contracts locally.

7.7 Methodological Considerations

Introduction

The thesis has raised numerous methodological points. In many ways it shares some of the common concerns of methodology within quantitative social science, namely difficulties in collecting representative data. Much of what could be said concerning these problems is true of other studies and has been discussed at length by other authors (for example: the weaknesses of postal questionnaires, Coolican, 1993; Sapsford and Jupp, 1996; Thomas, 1997). Rather than re-examine these problems at length here, it seems

more appropriate to revisit and summarise the methods adopted to overcome these difficulties.

Structure of Questionnaire

The central research question within the study focused on the notion that integration was in some way related to a firm's characteristics. Therefore, data was required on spending habits and characteristics of the firm. Dealing with spending habits first, the immediate problem of data gathering is that companies may view this data as confidential. Information was required on both the amount spent and the location of the service provider. Arguably, this data could be represented in terms of proportions spent and at what distance (e.g. 10% at 12 miles), but proportions immediately lose some of the content of the data. It can be argued that it is important to know x% of what exactly is being spent at what distance - the exact amount may represent a proxy for the level of service provided whilst the use of distance creates problems when the firm is located on the edge of the town (for example).

This problem is also reflected in some of the data collection required to explain the firm's characteristics. The key descriptive variables relating to a company consist of the industry (SIC group), the turnover, the number of staff and location of output markets. These certainly appear to be the variables most often cited within the existing literature. However, firms, particularly ones that are not required to publish such data (e.g. sole-traders and partnerships), are sometimes reluctant to provide information concerning turnover. Advice was received from other researchers that the turnover variable should be dropped, as it would reduce response. However, after the data was collected and analysed, turnover represented a significant variable.

The first methodological problem encountered was, therefore, a balance between the inclusion of variables that may reduce response and the exclusion of variables that may have a significant effect. The final decision was that all variables that had a theoretically justifiable reason for inclusion should be collected, and that other methods should be adopted in order to assist response rates.

The test for 'theoretical justification' was based on two criteria: either the variable had been used by other researchers in similar models (suggested by the literature) or the variable had been highlighted during the interview phase (suggested by induction). These two tests produce a large set of variables. However, it was demonstrated during the analysis of the data collected that knowledge of these variables was indeed required. One of the significant factors that came out of this dual approach was the identification of *indigeneity* as an important variable in business decision-making and the separation of services into 'virtual employees' and 'quasi-products', facts missed by the existing literature.

Representativeness

In order to maximise response rate, careful consideration was given to the design of the questionnaire and the covering letter. In addition, reminders were sent in order to follow up those firms that had simply forgotten to respond. This simply represents current good practice and so these points will not be developed further.

Whilst the emphasis on variable inclusion focused on the need to include all variables that may have an influence, the reason for preferring a high response rate relates to the ability of the data collected to represent the wider population. Thus the goal is not simply a high response but rather an attempt to ensure representativeness. It can easily be demonstrated that it is possible to have both a high response and an unrepresentative sample. Within this thesis, two methods were adopted to ensure that the responses collected were representative. First, the response was compared to the parent population on the structure of known variables - distribution of SIC bands and number of employees. In addition, wave analysis (Bishop and Wiseman, 1999b) was used to indicate the presence of non-response bias (Denscombe, 1998). As both of these tests demonstrated that the structure of the response matched the population, no further work was required.

The Choice of Model

Given the central research question and hypothesis (the relationship between a firm's characteristics and its sourcing of producer services) a model needed to be constructed. Whilst it was always possible to examine the relationship between each

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variable considered and the dependent variable, and for that matter between independent variables, the combined effect of numerous variables was also assessed. Thus a multivariate approach was adopted. There are numerous model types to choose from ranging from the conventional ordinary least squared regression through to exotic computer based solutions such as artificial neural networks. The choice of model in this instance ultimately reflected the data under consideration. Given that a firm can be described in terms of ratio, ordinal and nominal data, and given that even when data was ratio-based it was either non-normally distributed or non-linear in its relationship with the dependent variable, it became apparent that simple OLS regression would not be appropriate.

Validity and Reliability Check

Once the initial model had been constructed, itself a long process of including/excluding various variables, it was considered prudent to test the model empirically by application to new data. Although it is of course possible to test the model against the data already collected, it was considered more rigorous to test the model against a new set of data.

Data could have been collected from any town or area to test the model, but the most methodologically sound approach was to select towns that were fundamentally similar to the four already used (i.e. market towns), whilst being in quite different locations. As two extremes had first been adopted (remote and accessible rural), it was decided to move 'one step in' in each direction and select two towns that were similar but less remote and less accessible. This allowed a more rigorous test of generalisability than would otherwise have been possible. The towns selected allowed the researcher to suggest that what appears true for the original four towns may also be true for most market towns, an important statement to be able to make.

7.8 Areas for Further Research

In many ways the research has gone some way to answering the criticism of rural research raised by Curran and Blackburn (1994) "...*the lack of clarity, the lack of rigour*

and, most importantly, the lack of well founded data and analysis to support the assumptions about small firms and local economies" (page 2). This is such a bold, and important, criticism that no one thesis could answer it. What has been attempted is a combination of theorising with sound empirical research (Markusen, 1999), and as such there are other areas into which regional research could be extended. These extensions could take the form of widening the scale and location of the research, studying different variables, or altering the methodology, or a combination of these three.

The most straightforward recommendation for further research simply takes the form of repeating the investigation in different geographical areas. To date, the research has focused on a range of rural locations in the south of England: one obvious extension would be to explore other towns located in the north of the country, or in neighbouring countries. Research conducted in these areas would have two immediate benefits. In the first instance, it would simply allow testing of generalisability. In addition, the opportunity would exist to explore failures of generalisability, which in this instance may be ascribed to geographic location. Of course, the reasons why that geographical difference may have created an alteration in behaviour may yield yet more insights (e.g. differences in structure, culture, administration, etc.).

It would also be interesting to explore localised geographic areas within large urban areas. The behaviour patterns of firms that this research has identified in rural areas may also be true of cities. Much of the work conducted in urban areas has in the past been based around the functioning of the city as a whole, and it would be beneficial to move this research towards a micro level exploring the transactions of individual firms.

Whilst these suggestions might extend the reliability and validity of the existing model, it is also possible to adopt the existing methodology and apply it to alternative modelling exercises. Similar models could be constructed examining the behaviour of households, or the purchasing by firms of goods in addition to services. Indeed, Courtney (2000) has already had some success in this area. The general research strategy encompassing a combination of literature and inductively acquired variables tested over different geographic areas and assessed using logistic regression certainly appears to be a methodology worth replicating.

However, it should be acknowledged that other methodologies exist. These alternatives begin by fundamentally rethinking the research paradigm itself. Within this research, the qualitative interviews remained subservient to the quantitative, they informed the quantitative but did not provide the main source of evidence. The research could feasibly be re-examined using only, or mainly, qualitative techniques. Although this would reduce generalisability, it would produce greater validity for those cases examined. It is almost certainly the case that decision-making is very much of the 'voluntaristic' nature first suggested by Thomas Hoddes and Giambattista Vico[48] (Williams, 2000). The decisions are not based on entirely mechanistic rules but are rather subtly influenced by various conditions, many of which have been identified in this study, but some of which may be too diverse or complex to generalise about.

As Markusen (1999) has observed, and indeed been critical of, there also exists a movement within rural studies in general to adopt many of the methodologies now finding favour amongst sociologists. However, it is difficult to see in this instance how this style of research (for example, discourse analysis) could inform the subject other than in its ability to examine why it is we have come to be interested in the area. In many ways, this in itself may be constructive. Arguably after a period of time disciplines become increasingly locked in (Waldrop, 1994) to a prevailing discourse and are only moved by the occasional paradigm shift - in other words we have to wait for either new technology or for a 'brilliant discovery' before we fundamentally change a view. Perhaps if the whole subject is deconstructed and looked at again, we may begin to develop a new discourse. However, this will not demonstrate whether integration is a function of a firm's characteristics!

Returning to a positivistic framework, method-based changes to the research may also be constructive. One area that is of particular interest is the construction of methodologies that allow better access to micro-businesses. Currently, most databases find it difficult to capture information concerning the very small business. It is not even possible to rely on such databases as the Yellow Pages as many micro businesses operate

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[48] Both circa 17th century

via mobile phones or private domestic telephones. Thus, there are a group of businesses that, though small in number and size, represent an important part of the economic fabric of an area - and yet are difficult to access. It is difficult to envisage how this group may be contacted except to suggest that the work is conducted at a very localised level where local knowledge may be able to fill the gaps left by databases. Alternatively the seemingly all-pervasive databases and computer technology may 'capture' this in the near future.

One immediate and important area that requires further investigation is the influence of indigeneity on decision-makers. During the thesis the importance of this under-researched influence became apparent. It would be extremely constructive to pursue this notion further.

Further analysis of the importance of indigeneity in business decision-making is required, and it appears that there are three paths open. First, research could be conducted that sought to establish the importance of the variable in business decision-making using quantitative approaches. Whilst this thesis has begun to explore indigeneity, future research could focus on the importance of indigeneity and its analysis and explanation. Alternatively, research could be conducted that was of a more qualitative nature. It would certainly appear that some form of retrospective verbalisation of the decision-making process, particularly by firm's owners that had relocated, would be rewarding. After all, that is how the indigeneity originally came to light in this thesis. Finally, one approach would simply be to include the variable into any model and data collection exercise that sought to explain decision-making, and subsequently to examine indigeneity's significance in the decision-making process under investigation - in many ways this reflects more closely how indigeneity has been studied in this thesis.

The suggestion that service firms can be separated into 'virtual employees' and 'quasi-products' also needs further analysis. Again this research would perhaps be a direct investigation into the existence of two clearly defined sets - 'virtual employees' and 'quasi-products'. The methodology would not necessarily need to be complicated, simply focusing on firms' history with service suppliers and their attitude (trust and loyalty) towards them. It may also be possible to achieve larger response rates by avoiding specific details relating to cost of services - although this may exclude an important variable.

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Alternatively, this work could also be conducted in a qualitative manner, exploring on a case-by-case basis attitudes and opinions relating to various service types.

Appendix 1 - The Original Research Proposal

An introduction to the thesis is provided by Professor Andrew Errington of the Seale-Hayne Faculty of The University of Plymouth in his general proposal for research: *"Economic linkages within the rural economy: the case of producer services."*:

With the transformation of agriculture, the decline of other primary industries and a variety of other social and demographic trends, rapid changes are taking place in the economic and social structure of England's rural areas, giving rise in some localities to severe unemployment, underemployment and deprivation. Historically, small towns have formed an integral part of both the agriculture sector and rural economy as a whole. As a source of farm inputs (both goods and services); as a first destination of farm outputs; as a provider of supplementary employment and income to pluriactive farm households; and as a source of consumer goods and services for farm households these "market-towns" have had a symbiotic relationship with the surrounding countryside.

However, the restructuring of rural society and economy may be breaking these links, leading to the "death" of the local economy (Curran and Blackburn, 1994). A whole range of factors may account for this, from the globalisation of food production and the growing prevalence of "commuting lifestyles" to the development of telecommunications networks which reduce the transactions costs that have till now encouraged farmers and other businesses to conduct most of their business in the immediate locality (Marsden et al., 1993).

As rural issues (including, but extending beyond, farming) assume greater importance in England, the UK and Europe as a whole, it is increasingly important to have a clear picture of the various economic links that exist between small towns and the surrounding countryside. For example, one recurrent theme in the debate over appropriate policies is the place of growth poles (Cloke and Little, 1991) or "development sub-poles" (EC 1988) where investment in economic activity and service provision is concentrated in a few key settlements on the assumption that the benefits will "trickle down" to the surrounding area. The effectiveness of such policies will depend on the extent to which such settlements are indeed linked to the surrounding areas in a single local economy. While extensive government-funded Household Family Expenditure and Farm Accounting surveys are found all over Europe, they contain inadequate spatial information to allow inter-relationships within the local rural economy to be explored.

The present project (sic) will explore one aspect of these inter-relationships within the rural economy by examining the sourcing of producer services by small to medium sized enterprises (SMEs) located in rural areas. The main framework for analysis will be provided by Keane's study of local versus non-local household spending (Keane, 1990) in which he compared the pattern of consumer expenditure of the rural population in higher and lower order centres in Ireland using a Keynesian-type income model.

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The present study will adapt Keane's approach, assessing the degree of local economic integration as reflected in SME expenditure on producer services (from accountancy and legal advice to graphic design and printing services).

Secondly, it will extend the analysis by testing the hypothesis that the degree of integration of rural SMEs in the local economy is a function of the key characteristics of the firms e.g. size, SIC, age of firm, use of IT, and whether or not it was established by an incomer to the locality.

In order to complement the existing studies of small towns in the rural economy currently underway at the Seale-Hayne Faculty of The University of Plymouth, this project (sic) will focus on two contrasting counties, one characterising the "accessible rural areas" of the peri-urban fringe (Errington, 1994, 1997) e.g. Berkshire, Buckinghamshire and the other characterising remote rural areas, e.g. Cornwall, Devon.

Cloke, P. J. and Little, J. (1991) *The Rural State: Limits to Planning in Rural Society*, Oxford, The Clarendon Press.

Curran, J. and Blackburn, R. (1994) *Small Firms and Local Economic Networks*, London, Paul Chapman.

DoE/MAFF (1995) *Rural England*, London, HMSO.

EC (1988) *The Future of Rural Society*, Bulletin of the European Communities Supplement, 488 COM (88), 371 final.

Errington, A. J. (1994) The Peri-urban Fringe: Europe's Forgotten Rural Areas, *The Journal of Rural Studies*, Vol. 10, pp 367-376.

Errington, A. J. (1997) Rural Employment Issues in the Peri-urban Fringe, in: Bollman, R. D. and Bryden, J. (Eds.) *Rural Employment: An International Perspective*, Wallingford, CAB International, pp 205-224.

Keane, M. J. (1990) Economic Development Capacity Amongst Small Rural Communities, *Journal of Rural Studies*, Vol. 6, pp 291-301.

Marsden, T., Murdoch, J., Lowe, P., Munton, R. and Flynn, A. (1993) *Constructing the Countryside*, Restructuring Rural Areas 1, London, UCL Press.

Appendix 2 - Qualitative Research Method

This brief appendix outlines the qualitative research methods adopted within the thesis.

Method

The purpose of this phase of the research was to identify variables which managers *believe* affect a firm's producer service sourcing decisions. Therefore, as statistically relationships were not examined at this stage of the research, selection of firms was not a random process. Rather, firms that were considered to be rich in information were selected (e.g. firms were selected which are known to differ from each other, in terms of age, sector, indigeneity, etc.) (Lean, 1996; Hughes, 1997[49]; Walker, 1985).

There were certain constraints that had an immediate bearing on company selection. Size of company, for example, is restricted to only those companies falling within the *small to medium enterprise* category as that is the main group·of interest to this research. In addition, for reason of cost and convenience the geographic location was restricted to Cornwall. However, within these constraints there still existed considerable room for choice.

Once the firms were selected, it was necessary to identify, and arrange an interview with, the decision-makers within each firm. In all instances the interviews were conducted with the owner manager. Initially, to establish who was the service sourcing decision-maker, a letter providing an introduction to the study was sent to the managing director as identified on the DRIVE[50] database. In addition, the letter explained that the researcher would be telephoning the company in the next *x* days to arrange a suitable time for a half an hour[51] interview.

It was anticipated that there would be some difficulty in establishing a 'pool' of willing volunteers. Without detailed knowledge of the company and its culture it is often difficult to determine who are the company's 'gatekeepers'[52]. However, these concerns did not manifest themselves in any significant way within this thesis.

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[49] Hughes (1997) refers to these as *elite* interviews.
[50] The DRIVE database is Cornwall County Council's database of Cornish firms.
[51] One half hour is considered the longest time managers will be prepared to speak due to having other commitments.
[52] Sometimes the term *gatekeeper* is used to describe the person who controls access to company information. These people may also have their own agendas beyond company policy and the Data Protection Act.

Sample Size

Given the cost and time involved with this style of research, the sample size was kept small. Lean (1996) achieved acceptable results in his study of the support received by post-start-up small businesses using 14 subjects, whilst Love (1990) was satisfied with the response he gained from 3 managers during his study of take-over and linkage adjustment within the Scotch Whisky industry. Again, as mentioned above, the objective of this part of the study is not to prove a relationship but to identify variables, and so the sample size does not need to be large enough to establish statistical acceptability. It was therefore considered that interviews with 10 SME managers were sufficient.

Approach to Interview

A semi/unstructured interviewing approach was applied. Whilst a series of questions were developed, these were only used as 'jumping off points' (see Appendices 3 through 6, Interview Guidelines and Updates). It is the experience of the subject that were sought - not the testing of any interpretation of the factors affecting producer service decisions constructed.

The interview began with a brief introduction to the thesis detailing its aims and scope. This introduction was of considerable importance to the study as it prevents time wasting and confusion through misunderstanding (Walker, 1985). It was already noted by the researcher during informal conversations with owner-managers that the phrase *producer service* created confusion, with the subject often interpreting it as meaning *all* suppliers (including goods). For this reason, care was taken over the wording of both the introduction and all subsequent questions and discussion topics (see Appendices 3 through 6). All interviewees gave permission for the interviews to be taped, which aided later analysis.

Appendix 3 - Initial Interview Guidelines

This appendix contains the interview guidelines used in the first qualitative interview

Introduction

(assuming general introductions have been dispensed with by this point)

Thank you for agreeing to participate in my study. As you will already be aware from the letter I sent you previously, I am particularly keen to hear the views of people working within small companies.

The information collected will then be used in developing a questionnaire to collect data from other companies.

My project is particularly concerned with what factors influence decision-makers, such as yourself, in their choice of service providers to the company.

Other projects have looked at the provision of goods and products and so I am concentrating only on producer services such as accountants, designers, lawyers, consultants, financiers, IT specialists and other service providers.

I am interested in what you think influences companies when they are choosing who will provide them with services.

Q1 Could you please tell me which companies you use for services?

{Note: List companies back to interviewee.} .

[This question ensures that the manager is focused on producer services and provides information which can be cross-checked with later statements to provide validation, e.g. "we choose companies that are local" - investigation proves/disproves this)]

Q2 I need to get some idea of how important these are to your business. Can you give me a rough idea of your annual expenditure with each company?

{If no, then: OK, but could you put them into **rough** categories, for example are any of them less than £100?}

{If no then: Could you simply rank them in order and suggest the proportion of total services spending each one represents?}

[By defining expenditure the relative importance of suppliers is appreciated]

Q3 Can you think back to the first time you used company *x*? What led you to choose this company?

[The key decision-making question]

Q4 Are all decisions made by you, or is there some form of discussion with other managers?

[By understanding the internal decision-making process, insight, may be gained into additional factors influencing this individual's choice]

Q5 How long have you worked for this company?

[This question aims to collect indigeneity data]

Q6 and did you work in this area before working here?

    Q6b [If a straight "no" is given] Where did you work then?

[This question aims to collect indigeneity data]

Q7 What factors do you think influence your choice of producer services?

[This question cross-checks the earlier question - *"why did you choose"* - by generalising the question]

Q8 Have you always lived locally?

    Q8b [If a straight "no" is given] Where did you live previously?

[This question aims to collect indigeneity data]

Q9 Do you ever meet any of these people outside of work? [Make it clear which companies are being referred to - list if necessary.]

[This question aims to collect indigeneity data plus general data]

Q10 What do you think influences other managers in their choice of producer service providers?

[This question cross-checks the earlier question - *"why did you choose"* - by introducing 'other' people.]

Q11 Do you believe that small business behave differently to large companies, when choosing service providers?

    Q11b [If a straight "yes" is given] In which ways do they differ?

Q12 How about different types of company, do they behave differently?

Thank you for your help. It is anticipated that further conversation will be situation-specific)

Following the first interview the guidelines were revised. Changes are indicated by an <u>underline</u>*.*

Introduction

Thank you for agreeing to participate in my study. As you will already be aware from the letter I sent you previously, I am particularly keen to hear the views of people working within small companies.

The information collected will then be used in developing a questionnaire to collect data from **other** companies.

My project is particularly concerned with what factors influence decision-makers, such as yourself, in their choice of service providers to the company.

Other projects have looked at the provision of goods and products and so I am concentrating only on producer services such as accountants, designers, lawyers, consultants, financiers, IT specialists, <u>insurance services, rental property</u> and other service providers.

I am interested in what you think influences companies when they are choosing who will provide them with services.

Q1 Could you please tell me which companies you use for services?

{Note: List companies back to interviewee.}

Q2 I need to get some idea of how important these are to your business. Can you give me a rough idea of your annual expenditure with each company?

{If no, then: OK, but could you put them into <u>rough</u> categories, for example are any of them less than £100?}

{If no, then: Could you simply rank them in order and suggest the proportion of total services spending each one represents?}

Q3 Can you think back to the first time you used company *x*? What led you to choose this company?

Q4 Are all decisions made by you, or is there some form of discussion with other managers <u>or partners</u>?

Q5 How long have you worked for/owned this company?

    <u>Q5b and the other managers/partners?</u>

Q6 and did you work in this area before working here?

    Q6b [If a straight "no" is given] Where did you work then?

    <u>Q6c and the other mangers/partners?</u>

Q7 What factors do you think influence your choice of producer services?

Q8 Have you always lived locally?

    Q8b [If a straight "no" is given] Where did you live previously?

    <u>Q8c and the other managers/partners.?</u>

Q9 Do you ever meet any of these people outside of work?

Q10 What do you think influences other <u>companies</u> in their choice of producer service providers?

Q11 Do you believe that small business behave differently to large companies, when choosing service providers?

    Q11b [If a straight "yes" is given] In which ways do they differ?

Q12: How about different types of company, do they behave differently?

Thank you for your help.

Following the second interview the guidelines were revised. Changes are indicated by an underline.

Introduction

Thank you for agreeing to participate in my study. As you will already be aware from the letter I sent you previously, I am particularly keen to hear the views of people working within small companies.

The information collected will then be used in developing a questionnaire to collect data from other companies.

My project is particularly concerned with what factors influence decision-makers, such as yourself, in their choice of service providers to the company.

Other projects have looked at the provision of goods and products and so I am concentrating only on producer services such as accountants, designers, lawyers, consultants, financiers, IT specialists, insurance services, rental property and other service providers.

During the interview I will make very brief responses, and this may seem a little unusual. The point is that I am interested in your thoughts and my silence or stilted response is only a result of my attempts to avoid any bias or influence that more lengthy dialogue could bring.

I am interested in what you think influences companies when they are choosing who will provide them with services.

Q1 Could you please tell me which companies you use for services?

{Note: List companies back to interviewee.}

Q2 I need to get some idea of how important these are to your business. Can you give me a rough idea of your annual expenditure with each company?

{If no, then: OK, but could you put them into **rough** categories, for example are any of them less than £100.?}

{If no, then: Could you simply rank them in order and suggest the proportion of total services spending each one represents?}

Q3 Can you think back to the first time you used company *x*? What lead you to choose this company?

Q4 Are all decisions made by you, or is there some form of discussion with other managers or partners?

Q5 How long have you worked for/owned this company?
       Q5b and the other managers/partners?

Q6 and did you work in this area before working here?
       Q6b [If a straight "no" is given] Where did you work then?
       Q6c and the other mangers/partners?

Q7 What factors do you think influence your choice of producer services?

Q8 Have you always lived locally?
       Q8b [If a straight "no" is given] Where did you live previously?
       Q8c and the other managers/partners?

Q9 Do you ever meet any of these people outside of work?

Q10 What do you think influences other companies in their choice of producer service providers?

Q11 Do you believe that small business behave differently to large companies, when choosing service providers?
       Q11b: [If a straight "yes" is given] In which ways do they differ?

Q12 How about different types of company, do they behave differently?

Thank you for your help.

Appendix 6 - Revised Guidelines (3rd revision)

Following the seventh interview the guidelines were revised. Changes are indicated by an underline.

Introduction

Thank you for agreeing to participate in my study. As you will already be aware from the letter I sent you previously, I am particularly keen to hear the views of people working within small companies.

The information collected will then be used in developing a questionnaire to collect data from **other** companies.

My project is particularly concerned with what factors influence decision-makers, such as your self, in their choice of service providers to the company.

Other projects have looked at the provision of goods and products and so I am concentrating only on producer services such as accountants, designers, lawyers, consultants, financiers, IT specialists, insurance services, rental property and other service providers.

During the interview I will make very brief responses, and this may seem a little unusual. The point is that I am interested in your thoughts and my silence or stilted response is only a result of my attempts to avoid any bias or influence that more lengthy dialogue could bring.

I am interested in what you think influences companies when they are choosing who will provide them with services.

Q1 Could you please tell me which companies you use for services?

{Note: List companies back to interviewee.}

Q2 I need to get some idea of how important these are to your business. Can you give me a rough idea of your annual expenditure with each company?

{If no, then: OK, but could you put them into **rough** categories, for example are any of them less than £100.?}

{If no, then: Could you simply rank them in order and suggest the proportion of total services spending each one represents?}

Q3 Can you think back to the first time you used company *x*? What lead you to choose this company?

Q4 Are all decisions made by you, or is there some form of discussion with other managers or partners?

Q5 How long have you worked for/owned this company?

       Q5b and the other managers/partners?

Q6 and did you work in this area before working here?

       Q6b [If a straight "no" is given] Where did you work then?

       Q6c and the other mangers/partners?

Q7 What factors do you think influence your choice of producer services?

Q8 Have you always lived locally?

       Q8b [If a straight "no" is given] Where did you live previously?

       Q8c and the other managers/partners?

Q9 Do you ever meet any of these people outside of work?

Q10 What do you think influences other companies in their choice of producer service providers?

Q11 Can you think back to the first time some of your main customers approached you? How did they get to know about you?

{If there is any confusion prompt: did you know them personally, were they recommended by another of your customers, do you both attend and social or civic activities?}

Q12 Do you believe that small business behave differently to large companies, when choosing service providers?

       Q11b [If a straight "yes" is given] In which ways do they differ?

Q13 How about different types of company, do they behave differently?

Thank you for your help.

Appendix 7 - Questionnaire

This is a scale copy of the questionnaire, reduced in font/box size to fit within this thesis.

Company Questionnaire - Bodmin and surrounding area

1. Company name?:	

2. What is your position/job?:	

3. Please give an indication of the type of business you are involved in (e.g. Motor Mechanic, Solicitor, etc.)	

4. How many employees do you have? Please include yourself.
(FT is over 30 Hours per week)

	All year	Typical hours per week (e.g. 40)

Seasonal Industries Only | The Season is ....to..............

	Off- Season	Typical hours per week (e.g. 40)	Peak Season	Typical hours per week (e.g. 40)

5. What are your annual total sales?	£

| 6. How many separate business premises do you have in this town (within 10 miles of town centre)?
Please include your home if you do a substantial amount of your work there (e.g. self-employed builder)	Number of Premises _____ One of these is my home Y/N	7. When was your company/business founded?	Originally	At this site
			Previous Location	

8. If the business is a branch or franchise what percentage of decision making is at a local level?

	% of Total
Goods	

Services	

If services are 0% you have completed all of the questionnaire you need to. Please return it in the envelope provided.

9. Company History. Has the company changed its main product or service and/or its head office location since it was founded (note: product/service indicates a fundamental shift)?

No	

Yes

	Date of Product Change	From Product	To Product	Head Office Location Date	From	To

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10. Which structure best describes this business - mark more than one if required?
   Please ring the number of partners/directors where appropriate.

Branch	Head Office	Ltd. 1 2 3 4 5 6	PLC.	Sole Trader	Partnership 1 2 3 4 5 6	Franchise	Family: Generation: 2nd 3rd 4th	Other:

11. Has the company changed its structure since its foundation (e.g. from sole trade to partnership, **partnership to Ltd. Ltd to sole trade, etc.)?**

No	

Yes							
	Date of change.	From	To		Date of change.	From	To

12. Could you please give details of the decision-makers, including yourself, who would be involved in decisions concerning choice of business services (choice of accountants, banks, lawyers, designers, insurance, etc.)?

Note: Please indicate, by repeating if necessary, If decision is shared between managers.

	Role	Has decision over following suppliers	Joined Firm	Age (now)		Location (Of previous business/job)	Previous Location (Domestic)
For example	Operations Manager	Sub-contract engineers	1971	35	m	York	York
For example	Sole Trader	Everything	1980	35	f	Exeter	Bodmin
You							

13. What qualifications/experience do you have? Please tick more than one if required.

Number of year's experience	GSCEs, O' Levels, CSEs, NVQ 1, 2	City & Guilds or other craft related qualification	A' Level, NVQ 3	Nationals	Higher Nationals, NVQ 4	Degree, NVQ 5	Post-Graduate

14. What is your level of computerisation and use of technology: (please use blanks for additional information).

Computerised							
Contacts		e-mail		Word Processing			
Order Book		Web Browsing		Spreadsheets			
Accounts		Web Page		Project management			
Invoices		Network / LAN		Graphics			
Presentations		Database		DTP			

If you provide services using the Internet/Telephone what % of your business is done in this way? ....%

---

15. Where are your markets located?

Location	Proportion of your sales %
Within 10 miles of town	
Rest of County	
Rest of South West	
Rest of UK	
Rest of Europe	
Rest of World	
Total	100%

16. Which cities/towns - please include your town?

	Location	Proportion of your sales %
e.g.	Plymouth	
Total		100%

---

17. Are you or your company a member of any trade or commercial/civic organisations? (E.g. Chamber of Commerce, Federation of Small Business, Federation of Master Crafts Men, etc.)

Organisation	Date Joined	Organisation	Date Joined

If you are happy for me to contact you in the future to discuss this research further please put your name in this box.

18. Who provides you with business services and, in the case of franchises and branches is this decision made at a local level?

Please complete the cost column - even if the figures are estimates.   **Please ignore services that you do not use.**

Service, please add others in the blanks provided or on another piece of paper.	Can this decision be made locally Y/N	Service Company Name (e.g. Midland Bank)	Town	Estimate of average annual cost of this service	Year of first using	Name of Previous Provider (if applicable)	Town	Reason for changing service provider (if appropriate)
Accountant								
Lawyer								
Bank								
Marketing Consultant								
IT Consultant								
Rent								
Insurance (liability)								
Insurance (Property)								
Financiers								
Couriers								
Building/maintenance								
Stationery								
Cleaners								
Designers								
Advertising								
Others? (Please use another sheet if required)								
Total:				£				

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Appendix 8 - Justification for Individual Questions in Questionnaire

Within this appendix a justification for each of the questions in the questionnaire is presented.

SME Characteristics

Question 1 Company name

Each firm was asked to include their company name on the questionnaire. There are two alternatives to this. The questionnaires could be generated with the company name already displayed. This would provide additional complications in the printing of the questionnaires. Additionally, if for some reason the present name differs from the name available to the researcher, rather than correct this mistake, the company may either return the questionnaire unanswered, uncorrected or not return it at all. Alternatively, the questionnaire could be anonymous.

Whilst increasing the possibility of returns, anonymity presents several problems. Although the company name is not provided, it may be possible to ascertain company identity from the data provided, thus creating an ethical problem. The company would be under the false impression that the questionnaire was anonymous (i.e. the subject would be misled). To overcome this ethical difficulty, the questionnaire would need to be structured such that it was not possible to establish company identity from the data given, thus losing valuable data. Alternatively the subject could be informed that it would be possible to identify them from the data given. This would obviously negate not asking their name.

In addition to the ethical problem, anonymity creates a problem when verifying data. If the company name is given, it is possible to check all or some of the data obtained. This validation can be either against publicly available data or by means of 'follow up' interviews (this would only be practicable with a sample of the data collected). Also a lack of anonymity may encourage respondents to be thoughtful and accurate concerning their replies.

Question 2 What is your position/job?

The questionnaire must have been completed by a decision-maker authorised/empowered to make decisions concerning the supply of services to the company.

Question 3 Please give an indication of the type of business you are involved in (e.g. Motor Mechanic, Solicitor, etc.)

The researcher uses of the Standard Industrial Classification (SIC) allows assessment of inter-industry differences and interdependencies. Marshall (1989b) and others have highlighted important changes in the industrial base of the UK whilst indicating that the interplay between manufacturing, producer service and private services is not fully understood.

Question 4 How many employees do you have?

The number of employees can define the size of a company. Opportunity is provided within the questionnaire to specify those working part-time, temporarily or seasonally where appropriate. In addition, average weekly working hours were sought for each of these categories (part-time, temporary, seasonal, permanent). From this it is possible to estimate total hours per week worked.

Question 5 What is your total annual sales?

Annual turnover provides an alternative measure of company size. Whilst number of employees has a direct impact on the local labour market, turnover has a potential indirect multiplier effect. The importance that the company has within the local area is based, in part, in the area's reliance on it as an employer and with the company's purchasing strength. As this comes from its turnover, companies with higher turnovers will offer the local area more opportunities in terms of local multipliers, *providing* the company can be persuaded to purchase locally. By collecting data on turnover, it was possible to test, for example, whether multiple

lower turnover companies offer more opportunities in terms of localised spending than single large companies.

Question 6 How many separate business premises do you have in this town (within 10 miles of town centre)?

It was found that some of the firms contacted during the survey were small business operating out of domestic properties. Also it was found that some businesses has more than one property in the town. Information concerning both was collected using the questionnaire. The 10-mile radius (mentioned in the question) follows that used by Curran and Blackburn (1994) and Thomson (1981).

Question 7 When was your company/business founded?

By collecting data on the age of the company, the time that the company has occupied its present location and its previous location, it is possible to test whether age, time spent at present location and distance from previous location affect choice of producer services. The assumption is that those firms arriving in the area with existing producer service providers change to localised services (for convenience and because of local influence) after a certain amount of time.

Question 8 If the business is a branch or franchise, what percentage of decision-making is at a local level?

In the situation where the company is either a branch or a franchise, it may still be that decision-making power regarding sourcing producer services is transferred to a local level.

Question 9 Company History. Has the company changed its main product or service and/or its head office location since it was founded (note: product/service indicates a fundamental shift)?

To complement questions 6 and 7, and to provide data that can be used to clarify the history of the organisation and thus add further validity to other data

collected (e.g. the company may actually have altered SIC), information concerning product history is collected. Opportunity is given for the firm to indicate when more than one change has occurred, thus enabling the organisation to be classified in terms of 'foot-loose' or 'product-loose' if required.

Question 10 Which structure best describes this business - mark more than one if required?

Branch	Head Office	Ltd. 1 2 3 4 5 6	PLC.	Sole Trader	Partnership 1 2 3 4 5 6	Franchise	Family: Generation:	Other:

As the research investigates the relationship between a firm's characteristics and its choice of producer services, firm type may have a bearing on the decision made. Firm's stating that they are PLCs were further investigated and removed from the data due to their unique decision-making processes (they are not SMEs). Segal Quince Wicksteed (1998) found that those large firms that did purchase locally tended to be ones that were *not* locally owned, challenging some of the perceived wisdom in this area.

Question 11 Has the company changed its structure since its foundation (e.g. from sole trader to partnership, partnership to Ltd, Ltd to sole trade, etc.)?

As with questions 7 and 9 concerning location and product it is considered important to establish whether historic factors may be influencing present decisions. Alterations to firm type may lead to changes in producer service decisions due to additional decision-makers being introduced (or removed).

Question 12 Could you please give details of the decision-makers, including yourself, who would be involved in decisions concerning choice of business services?:

Space was provided for both the subject and his or her co-decision-makers details concerning present position, date at which they joined this firm, age, sex, previous geographic location, both in terms of previous employer and home address.

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This data (with the exception of age and sex) was used to explore the significance of indigeneity.

Question 13 What qualifications do you have?

In order to establish whether it is the decision-maker's level of education that is influencing the producer service purchasing decision, as opposed to other characteristics of both the decision-maker and firm, data is collected on qualifications.

Question 14 What is your level of computerisation and use of technology?

In an attempt to gain insight into the influence of technology on producer service sourcing decision-makers data was collected which was used to assess the technology levels within a given firm. Although different industries have different levels of technology, the data allows intra-industry comparisons to be made

Question 15 Where are your markets located?

Question 16 Which cities/towns - please include your town?

The geographic distance between the company and its customers was also considered. If local factors (networks) have an influence on decision-making, then both the market location and the physical location are expected to influence choice of producer service.

Question 17 Are you or your company a member of any trade or commercial organisation?

Given the role trade organisations have in business networking, the influence trade organisations have on decision-makers is worthy of consideration. It is possible to explore relationships between membership of certain organisations and certain types of behaviour.

Question (no number) If you are happy for me to contact you in the future to discuss this research further, please put your name in this box.

A final unnumbered question appears in the Firm's Characteristics section of the questionnaire asking if future contact was possible. This question is unnumbered so as to separate it from the data collection instrument. The data was not used during data analysis but was instead used to identify companies that could be contacted to allow for data verification and further qualitative interviews.

Integration of SME in Terms of Producer Services

Question 18 Who provides you with producer services and, in the case of franchises and branches is this decision made at a local level?

Data is collected on the name and location of providers, spend with providers, previous providers (name and location) and reasons for change. In addition, number of years with present provider is collected and an opportunity for franchise firms and branches to indicate whether this is a decision they make is provided. From this data, it was possible to calculate both distance between provider and subject and the significance of this supplier in terms of cost (as a percentage of total producer service spend).

Appendix 9 - Questionnaire Development Log

First Update

Changes to wording of:

Q3: Addition of "(FT is over 37 hours per week)".

Q4: Addition of "(within 10 miles of town centre)" and "Please include your home if you do a substantial amount of work there (e.g. self-employed builder)".

Structural Changes:

Q4: Addition of box "One of these is my home Y/N".

Q11: Boxes increased in size.

Q12: Removed.

Second Update

Changes to wording of:

Q11: Addition of "Note: Please indicate, by repeating, if Choice is shared between two or more individuals". Additional example included.

Q3: Addition of "Please include yourself".

Q10: Boxes changed to read "NONE" instead of "YES".

Structural Changes:

Q7: Addition of Y/N boxes.

Q9: Addition of Y/N boxes.

Third Update

Changes to wording of:

Q11: "Note: Please indicate, by repeating, if Choice is shared between two or more individuals" altered to read "Note: Please indicate, by repeating if necessary, if decision is shared between managers."

Q15 Added: "Are you or your company a member of any trade or commercial/civic organisations? (E.g. Chamber of Commerce, Federation of Small Business, Federation of Master Crafts Men, etc.) "

Structural Changes:

Question font size reduced to 8 (Times New Roman Bold).

Boxes shaded to light translucent grey.

Boxes repositioned to reduce size of overall questionnaire.

The phrase "Please turn over" added to the bottom of the page to allow for printing on both sides of the paper (reduces number of pages to 2 from 4).

Fourth Update

Structural Changes:

Question font size increased to 9 for questions (Times New Roman - Bold).

Question box shading lightened to lowest setting (and translucent).

Question 6: Box for "Previous Location" added.

Question 8: 'Ringable' numbers added for number of partners/directors.

Question 16: "Other:" added to list of service and an option to included "% of total service spend" instead of actual amount provided. Total added to bottom of 'Service Spend' column. Addition of "or on another piece of paper" to first column and next to "Other" at the bottom of the first column.

Fifth Update

Structural Changes:

Additional box added towards the end of questionnaire entitled: "If you are happy for me to contact you in the future to discuss this topic further please put your name in this box."
Changes to wording of:
Question 16: Extra categories added: Couriers, Building/maintenance, Stationery, Cleaners, Designers, Advertising

Sixth Update

Changes to wording of:
Question 9 (8): "give" becomes "ring the".
Question 11 (10):" how much purchasing decision" becomes "what percentage of decision".
Question 12 (11):"Details of the decision-makers, including yourself, who would be involved in decisions concerning choice of producer services providers (choice of accountants, banks, lawyers, designers, insurance, etc.)." becomes " Could you please give details of the decision-makers, including yourself, who would be involved in decisions concerning choice of business services (choice of accountants, banks, lawyers, designers, insurance, etc.)?"
Question 12 (11): " Previous Job" becomes "Age"

Question 18 (16): " Average Annual Cost **or** % of total service spend." becomes " Average annual cost of this service as a % of total service spend."

Structural Changes:

Additional question added:

Question 2: "What is your job/position?"

All subsequent questions renumbered.

Question 11 (10): Boxes for "NONE" "ALL" "UNDER" removed.

Additional question added:

Question 13: "What qualifications do you have? Please tick more than one if required."

Years of experience	GSCEs, O' Levels, CSEs, NVQ 1, 2	City & Guilds or other craft related qualification	A' Level, NVQ 3	Nationals	Higher Nationals, NVQ 4	Degree, NVQ 5	Post-Graduate

All subsequent questions renumbered.

Addition of box to question 14 (12):

If you provide services using the Internet/Telephone what % of your business is done in this way? ....%

Seventh Update

Changes to wording of:

Question 4: Full time hours set at over 30 to match Liskeard and Holsworthy surveys.

Question 12: Wording altered to read "Previous Location (domestic)" and "Location (Of previous business/job)"

Question 13: The word experience added to question. "Years of experience" altered to read "Number of years experience".

Structural Changes:

Question 4 has additional information added to seasonal industries question "The Season is ....to...........".

Question 9 has additional box : "Family: Generation: 2nd 3rd 4th "

Question 12 has new column entitled "Sex"

Question 18 has new column asking " Reason for changing service provider (if appropriate)" and new box asking " What is your total amount spent on services per year?:"

28 April 1999 60 pilot questionnaires sent out to equal numbers of randomly chosen (using sampling function in MS Excel spreadsheet) firms in Helston and Bodmin. A4 envelope

used, with accompanying letter, A3 (folded) questionnaire (creating 4 pages) and reply paid envelop (small).

4 May 1999 Aquatech called to say that filling in questionnaire now was not possible as all decision-makers were away (for a couple of weeks)

Eighth Update

Question 18 wording changed to: "Who provides you with business services and, in the case of franchises and branches is this decision made at a local level? Please complete the cost column - even if the figures are estimates. Please ignore services that you do not use."
Question 18 column changed to "Estimate of average annual cost of this service"
Accompanying letter re-written.

Wednesday, 19 May 1999 60 pilot questionnaires sent out to equal numbers of randomly chosen (using Business Directory) firms in Wantage and Thame. A4 envelope used, with accompanying letter, A3 (folded) questionnaire (creating 4 pages) and reply paid envelop (small).

Ninth Update - Final

Question 11 moved to 8 and has additional phrase " If services are 0% you have completed all of the questionnaire you need to. Please return it in the envelope provided." Subsequent questions renumbering: 11→8, 8 → 9, 9 → 10, 10 → 11
Accompanying letter re-written.

20/10/02

General Manager
«Company»
«Address1»
«Address2»
«Address3»
«City»
«county»
«PostalCode»

Dear Sir/Madam,

As part of my research for a doctorate with the University of Plymouth I am conducting a survey of businesses. My work looks at the relationship between firms and the people that supply them with services. Ultimately the research will help us better understand the important relationship between companies and their surrounding area.

Enclosed is a brief questionnaire. I would be extremely grateful if you could complete it and return it to me in the reply paid envelope provided.

I can assure you of complete confidentiality and that none of the information you provide will be passed on to any third party. Your details will not be entered onto any database for marketing purposes. I will analyse and use the data personally and your name/company name will not appear in any report, paper or presentation.

If you would like to know more about this research please contact me here at the Business School.

Yours sincerely,

Bryan Mills

(Please note that the questionnaire needs to be completed by one of the firm's key decision-makers.)

20/10/02

General Manager
«Company»
«Address1»
«Address2»
«Address3»
«City»
«county»
«PostalCode»

Thesis: Economic linkages within the rural economy

Dear Sir/Madam,

It is widely acknowledged that firms play a vital role in local economic development. My research for a doctorate with the University of Plymouth looks at the interplay, relationships and links between firms and the people that supply them with services. Ultimately the research will develop a better understanding of the factors that influence the important relationship between companies and their surrounding area.

Enclosed is a brief questionnaire. I would be extremely grateful if you could complete it and return it to me in the reply paid envelope provided within 7 days. All completed questionnaires will be entered into a draw for **two £25 cash prizes**.

I can assure you of complete confidentiality and that none of the information you provide will be passed on to any third party. Your details will <u>not</u> be entered onto any database for marketing purposes. I will analyse and use the data personally and your name/company name will not appear in any report, paper or presentation.

If you would like to know more about this research please contact me here at the Business School.

Yours sincerely,

Bryan Mills

(Please note that the questionnaire needs to be completed by one of the firm's key decision-makers.)

(The computerised draw will take place in September, winners will be contacted by post, names available on request)

Appendix 12 - Variables Included in Significance of Difference Analysis

1. Number of hours worked per year (all staff)

2. Turnover (sales)(£s)

3. Highest educational qualification of decision-maker

4. Level of computerisation (index based on list of 15 uses of technology)

5. Spend on services (£s)

6. Main decision-maker's years with firm

7. Main decision-maker's age (years)

8. Main decision-maker's distance from previous job (miles)

9. Main decision-maker's distance from previous domicile (miles)

10. Second decision-maker's years with firm

11. Second decision-maker's age (years)

12. Second decision-maker's distance from previous job (miles)

13. Second decision-maker's distance from previous domicile (miles)

14. (Output Market) Proportion of total sales within 10 miles (%)

15. (Output Market) Proportion of total sales within rest of county (%)

16. (Output Market) Proportion of total sales within rest of region (%)

17. (Output Market) Proportion of total sales within rest of UK (%)

18. (Output Market) Proportion of total sales within rest of Europe (%)

19. (Output Market) Proportion of total sales within rest of World (%)

20. % of sales in named (by respondent) towns (%)

21. Percentage total services bought mail order (%)

22. Percentage total services bought same town (%)

23. Percentage total services bought not in town but within 100 miles (%)

24. Percentage total services bought within rest of county (%)

25. Percentage total services bought within rest of region (%)

26. Percentage total services bought within rest of UK (%)

27. Percentage total services bought within rest of Europe (%)

28. Cost of service per year (accountant) (£s)

29. Cost of service per year (lawyer) (£s)

30. Cost of service per year (bank) (£s)

31. Cost of service per year (marketing consultant) (£s)

32. Cost of service per year (IT consultants) (£s)

33. Cost of service per year (insurance (liability)) (£s)

34. Cost of service per year (insurance (property)) (£s)

35. Cost of service per year (pounds spent on financiers) (£s)

36. Cost of service per year (couriers) (£s)

37. Cost of service per year (maintenance using builders) (£s)

38. Cost of service per year (stationery) (£s)

39. Cost of service per year (cleaner) (£s)

40. Cost of service per year (designers) (£s)

41. Cost of service per year (advertising) (£s)

42. Distance to accountant (miles)

43. Distance to lawyer (miles)

44. Distance to bank (miles)

45. Distance to marketing consultant (miles)

46. Distance to IT consultant (miles)

47. Distance to insurance (liability) (miles)

48. Distance to insurance (property) (miles)

49. Distance to financiers (miles)

50. Distance to couriers (miles)

51. Distance to builder (miles)

52. Distance to stationery retailer (miles)

53. Distance to cleaner (miles)

54. Distance to designers (miles)

55. Distance to advertising company (miles)

Appendix 13 – Individual Service Models

Local Accountant

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
SIC group			10.8326	6	.0937	.0000	
Agriculture	-2.6922	1.5237	3.1219	1	.0772	-.0862	.0677
Manufacturing	- .5059	1.4720	.1181	1	.7311	.0000	.6030
Retail	- .5372	1.2609	.1815	1	.6701	.0000	.5844
Hotel	.3621	1.4473	.0626	1	.8024	.0000	1.4364
Business Services	- .8450	1.3474	.3933	1	.5306	.0000	.4295
Other	-3.3848	1.4351	5.5626	1	.0183	-.1536	.0339
Distance from prev.	- .5899	.3078	3.6736	1	.0553	-.1053	.5544
Output in County	-3.4856	4.7818	.5313	1	.4660	.0000	.0306
Output in Region	-3.4544	4.7811	.5220	1	.4700	.0000	.0316
Output in UK	-3.4878	4.7818	.5320	1	.4658	.0000	.0306
Output in World	-3.5232	4.7829	.5426	1	.4613	.0000	.0295
Total Hours	-1.7358	.6644	6.8264	1	.0090	-.1787	.1763
Total Sales	.9296	.5238	3.1501	1	.0759	.0873	2.5336
County	-2.0912	.8759	5.7006	1	.0170	-.1565	.1235
TOWN			3.5587	2	.1687	.0000	
Bodmin	- .0829	.8327	.0099	1	.9207	.0000	.9204
Thame	2.0000	1.0628	3.5415	1	.0599	.1010	7.3889
Working from Home	1.7608	.8781	4.0210	1	.0449	.1157	5.8173
Type			2.4775	3	.4794	.0000	
Plc, etc.	11.7217	35.6114	.1083	1	.7420	.0000	123214.95
Ltd	-1.1272	.8549	1.7386	1	.1873	.0000	.3239
Sole trader	.1997	.7958	.0630	1	.8019	.0000	1.2210
Age DM2	.0492	.0179	7.5932	1	.0059	.1924	1.0504
Qualifications DM1	.9625	.6542	2.1648	1	.1412	.0330	2.6183
Computerisation	.6212	.3132	3.9330	1	.0473	.1131	1.8612
Output in Town	-3.4598	4.7810	.5237	1	.4693	.0000	.0314
Output in Europe	-3.4773	4.7814	.5289	1	.4671	.0000	.0309
Member of nat'n'l org.	- .8896	.5878	2.2906	1	.1302	-.0439	.4108
Constant	350.2443	478.2821	.5363	1	.4640		

DM refers to decision-maker 1 is main

Local Law firm

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
Distance from prev.	-.7561	.3001	6.3486	1	.0117	-.1994	.4695
Years with firm DM1	.0503	.0265	3.6137	1	.0573	.1214	1.0516
Age DM1	-.0590	.0354	2.7754	1	.0957	-.0842	.9427
Output in Region	-.0236	.0148	2.5494	1	.1103	-.0709	.9767
Constant	2.8782	1.6721	2.9630	1	.0852		

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Local Bank

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
SIC group			10.0574	6	.1223	.0000	
Other	1.6620	1.3068	1.6174	1	.2035	.0000	5.2698
Agriculture	3.0702	1.7755	2.9901	1	.0838	.0774	21.5462
Manufacturing	2.8493	1.6565	2.9587	1	.0854	.0761	17.2760
Retail	3.1806	1.4792	4.6233	1	.0315	.1260	24.0602
Hotel	1.9996	1.7559	1.2969	1	.2548	.0000	7.3862
Business Services	-.0712	1.2539	.0032	1	.9547	.0000	.9313
Time at Location	.0393	.0230	2.9252	1	.0872	.0748	1.0400
Distance from prev.	-1.9005	.6294	9.1164	1	.0025	-.2075	.1495
Output in County	-.0318	.0132	5.8170	1	.0159	-.1519	.9687
Output in Region	-.0346	.0153	5.1425	1	.0233	-.1379	.9660
Output in UK	-.0187	.0115	2.6465	1	.1038	-.0625	.9815
Output in World	-.0334	.0256	1.7064	1	.1915	.0000	.9671
Total Sales	-1.2353	.4043	9.3370	1	.0022	-.2107	.2907
Number of premises	1.3934	.6194	5.0612	1	.0245	.1361	4.0284
Working from home	-1.3918	.9020	2.3809	1	.1228	-.0480	.2486
Number of HOC*	1.5274	.8434	3.2795	1	.0701	.0880	4.6061
Type			1.4343	3	.6975	.0000	
Plc., etc	10.2858	24.7455	.1728	1	.6777	.0000	29312.192
Ltd	-.0216	.8530	.0006	1	.9798	.0000	.9786
Sole Trader	-.8055	.7546	1.1394	1	.2858	.0000	.4469
DM1 distance prev. job#	-.5834	.2114	7.6167	1	.0058	-.1843	.5580
Computerisation	.8320	.3897	4.5576	1	.0328	.1244	2.2980
Constant	13.1635	4.3894	8.9937	1	.0027		

*Number of Head Office Changes of Location
#Main decision-maker's distance from previous job

Local Provider of Insurance (liability)

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
Age DM1	.0577	.0328	3.0915	1	.0787	.0977	1.0594
Output in County	1.1951	3.1194	.1468	1	.7016	.0000	3.3039
Output in Region	1.1890	3.1195	.1453	1	.7031	.0000	3.2837
Output in UK	1.1926	3.1193	.1462	1	.7022	.0000	3.2956
Output in World	1.0396	3.1265	.1106	1	.7395	.0000	2.8281
Working from home	1.0117	.5423	3.4801	1	.0621	.1137	2.7504
Output in Town	1.1899	3.1194	.1455	1	.7029	.0000	3.2867
Output in Europe	1.1570	3.1195	.1376	1	.7107	.0000	3.1803
Member of local org	-1.3710	.8304	2.7262	1	.0987	-.0797	.2538
Constant	-123.321	311.9636	.1563	1	.6926		

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