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FACTORS IMPACTING ON
TECHNOLOGY ACCEPTANCE
FOR THE MICRO/SME
ELECTRONICS RETAILER

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Factors impacting on technology
acceptance for the micro/SME
electronics retailer

Abstract

Factors impacting on technology acceptance for the micro/SME electronics retailer

The UK micro/SME (known here as SME) retail sector is very important to the economic well being of the country. Its ability to generate jobs as well as income makes it a key part of the drive towards economic growth, and as such it is supported by government through a variety of initiatives. One initiative in 2003 aimed to energise and invigorate practitioners into using internet based technologies more fully in their business practices. This supported the widely held belief that the internet can and does enhance and improve business efficiency. It also suggests that SMEs were not fully engaging with the technology and that the government felt that it was not at the desirable level. This thesis looks at the issues surrounding technology acceptance for the SME and in particular internet adoption in the retail sector.

This work explains technology acceptance and the main determinants and moderators connected with this in an organisational setting providing the practitioner with insight into why some technologies are embraced and others underutilised, or not adopted at all. Previous academic work in this area has tended to focus on the larger organisation. This thesis uses the technology acceptance literature to explore the situation of the SME. Through qualitative and quantitative research the specifics of the SME situation relating to technology acceptance are explored with the determinants and moderators being evaluated and changes made where appropriate. The specific internet based technology of online procurement is used to measure levels of acceptance and the issues relating to it.

The result is an adapted model that better reflects the technology acceptance situation of the SME retail organisation. In the model three of the original constructs remain, however the moderators have been changed to reflect the SME and the relationships the constructs have with the moderators are also developed. As a new addition to the

field it can be seen from the developed model that the frequency of re-ordering is an important determinant not only of online procurement but technology acceptance in general. This work will benefit practitioners in SME retail and also the wider SME field when it comes to evaluating whether or not to accept a new technology and how this is best achieved.

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Chapter 1

1.1 Introduction

Global interconnectivity is a tsunami event, a tidal wave of cataclysmic change sweeping the world

Siegal, 1999, p.12

Innovation is an accepted part of the development of any modern organisation. The frequency of organisational change has increased as information technology (IT) has developed. In the competitive environment of today the aim of introducing a new technology will be to improve the operations of the organisation and impact positively on bottom line profits. Therefore it is essential to be able to have some method of understanding whether or not a new technology is likely to achieve the benefits that are anticipated from its introduction. The capacity of a specific technology to do what it is designed to do may be taken as given but the willingness or ability of organisational members to adopt it may not. If the factors impacting on the likelihood that a technology will be adopted are clear, then it will be possible to evaluate the likely success when a new technology is being considered. The ability to evaluate success should lead to improved decision making and the right decision as to whether adoption should proceed or not.

If making the right decision regarding technology adoption is important to the large organisation it is equally as important to the micro and small to medium enterprise (known collectively as

SME in this research). The evaluation process is likely to be less rigorous, and the decision making team smaller for an SME but the implications are just as serious, or even more so given the likely level of their resources. It would therefore be useful for an SME to understand the factors that contribute to the success or otherwise of the introduction of a new technology.

In aiming to evaluate how the SME is likely to successfully accept a specific technology, a technology needs to be chosen. In the context of a large organisation academics will be able to research the factors leading to acceptance when a new technology is introduced. Valid measurements can be undertaken using the example and the various factors evaluated in a reasonably limited timescale. With SMEs it is unlikely that the companies in question will be adopting the same technology at the same time. This raises issues with regard to how adoption of technology can be measured in the context of the SME. For the purposes of this research the adoption of online internet based procurement has been chosen as a new technology whose impact on the SME can be evaluated. However the adoption of this particular technology by practitioners may or may not have already taken place, and indeed in some cases may never happen. It is useful to clarify the expressions of *adoption* and *acceptance* at this stage. Adoption is the actual use of a particular technology, whilst acceptance is seen as an agreement to use although this might not necessarily lead to adoption if the technology is not available for use.

From its early inception in the clandestine world of the US military, what has become known as the internet has developed into a world wide phenomenon. A number of innovations around the initial basic concept have led the internet to the point of being arguably the most important method of communication available today. A

number of business processes have been made more efficient by utilising internet technologies. One of these is the purchasing of items required for the business to operate in online environments. This can be any number of items, such as paper, that are required by the organisation for its efficient operation, or the purchase of goods which are then added to another product, such as tyres purchased by an automobile manufacturer. In the case of retail, stock needs to be procured for re-sale in the particular outlet or outlets – this process can be undertaken in an online environment and for the sake of this thesis will be known as *online procurement*. The online procurement technology is likely to be in the form of a new service offered by one or more of the suppliers to their downstream supply chain partners, the retailers. They will see this as a way of streamlining their operations and providing a better service to their customer, the retailer. The specific software application may differ from supplier to supplier and the retailer may have a variety of different interfaces depending on the number of suppliers they use and whether these suppliers offer online procurement or not. The way the retailer views this new offering and their acceptance or otherwise of it, is the core of this research.

1.2 Justification of the research

The academic area of technology acceptance has grown as the use of technology has become more central to the operations of the organisation. Research activity has focused on creating a model that outlines the factors that lead employees to behave in the way they do when faced with a new technology, usually a specific software application. The stated objective of this research has

both practical and academic implications. In a practical context the allocation of scarce resources to any new project needs to be evaluated as thoroughly as possible, the use of a viable model can assist in this process. In the context of academic research, constructs providing insight into behavioural intention are continually improving to gain a better understanding of the factors involved and how those factors impact in differing circumstances.

The development of technology acceptance as an area of academic study will be fully reviewed in chapter 3 but it should be mentioned at this point that the seminal work in this area is encapsulated in the Technology Acceptance Model (TAM) devised by Davis (1989) and relating to the field of *information systems* (IS) and impacting upon the field of organisational behaviour. This research by Davis developed from earlier work by Azjen and Fishbein (1960s onwards) in the field of *social psychology*. A flurry of activity followed TAM and an extended model was developed in 2000 (TAM2), again devised by Davis with the assistance of co-author, Venketesh. A number of differing theories relating to technology acceptance were developing in parallel with the TAM models and the constructs of eight of these were considered in the [Unified Theory of Acceptance and Use of Technology](#) (UTAUT) model devised by Venketesh, Davis, Morris and Davis (2003). An adapted version of UTAUT, relating to the specific case of the SME retailer, provides the model to be tested to see if it applies to the SME retailer as part of this thesis. The UTAUT model constructs are as follows:

- performance expectancy
- effort expectancy
- social influence

- facilitating conditions
- gender
- age
- experience
- voluntariness of use

The extensive work undertaken in this area has predominantly looked at the issue of technology acceptance from the perspective of the employee of the large organisation faced with a new software application, and how they react to it. The number of studies looking at the factors that influence technology acceptance among small to medium enterprises is far more limited. One of the reasons behind this could be that data collection is more straightforward in the case of large organisations. When a decision has been taken to introduce for example, a new piece of software into a large organisation, recipients of this will tend to receive it at approximately the same time allowing researchers the opportunity to study their reactions to it. In the case of the SME there are not likely to be innovations of any type adopted by all practitioners at the same time. Instead technologies are likely to diffuse gradually over time. In some cases these innovations may relate directly to a particular industry, and in others the innovation may have general applications that can be utilised by any business. This research has chosen to evaluate online procurement to allow it to gauge technology acceptance amongst SME retailers.

This thesis proposes that SME companies have different forces acting on them compared to the large organisation and as such their reactions to new technology will differ. This means that they will require a different model to identify how they are likely to react to adopting new technology and that the influencing factors will be particular to the SME. As the focus of the study is on the retail

sector the results will relate to the experience of that group in particular. However the findings will have wider and important ramifications for SMEs in other sectors.

Despite the extensive literature in this area the SME has been mainly ignored therefore the development of a new model aimed at this sector will provide new insight. The significance of this research is therefore that if a model can be devised that is predictive of behaviour amongst SMEs, the suppliers, software companies and SMEs themselves will have a clearer view of the likelihood of new technologies being accepted, and what factors are likely to influence this process. This should provide a clearer picture of SME reactions to technology and inform the various interested parties. The gap this research aims to fill is therefore the current lack of attention paid to the SME sector in relation to their acceptance of technology, given the fact that the current literature is focused on the larger organisation.

1.3 Objectives

The general research areas for this thesis relate to behaviour, the theoretical underpinning of which was devised by Ajzen and Fishbein through their Theory of Reasoned Action (1975) and Theory of Planned Behaviour (1991) Models. These models provided the theoretical grounding that led to TAM (1989) and subsequent models. The measurement of behaviour in the context of a new technology being introduced into an organisation is seen as essential to allow managers to make good decisions in the adoption of new technologies; it is also however not easy to measure accurately. In further focusing the measurement of behaviour and technology to apply to the SME retail sector the following objectives have been devised:

- to develop and test a model of technology acceptance in the SME sector that will allow researchers and practitioners to accurately gauge the influencing factors of the uptake of a new technology when it is introduced. This has important implications for technology acceptance theory, as well as understanding the reactions of the SME sector to technological change
- to determine how suppliers can best serve their b2b (business to business) clients in an online environment.

The overall research aim is:

Identify the factors that will serve to influence the level of acceptance of an online procurement system introduced by a supplier to SME retailer practitioners.

Specific research questions to be addressed.

1. Are the four constructs outlined in the UTAUT model (2003) appropriate in the context of SME technology acceptance?
2. Do gender, age and experience impact upon the likelihood of technology acceptance in the SME?
3. Does the relationship with the supplier, the size of the product and the frequency of reordering impact upon the likelihood of technology acceptance in the SME?

1.4 Methodology

The methodology of this thesis revolves around the design of a revised version of the UTAUT (2003) model, aimed at outlining the factors that may predict the behaviour of those involved when faced with a new

technology. Current models focus on predicting the likelihood of technology acceptance among employees in the larger organisation. The newly devised model will introduce new factors that are applicable to the particular situation of the SME retail practitioner with the aim of reflecting the specific case of the SME.

The development of the model will commence with exploratory interviews with SME retail practitioners in the Aberdeen area. Influencing factors relating to their acceptance and use of technology will be determined. The information gleaned from this will inform a quantitative questionnaire.

The questionnaire will be sent to a representative sample of SME retail practitioners across Great Britain. It will include general socio-demographic questions and look at the issues relating to the various constructs of the model using Likert scales. The data resulting from this will be analysed using the appropriate statistical tests. The results will identify the constructs for a revised model of technology acceptance.

1.5 Limitations and key assumptions

A non-probability sample was adopted as given the nature of the market place it was impossible to create a definitive list of all those who would fall into the category being measured. It is possible therefore that certain types of retailer practitioners in this area may have been excluded.

Despite the categorisation of SMEs being clearly laid out in both national and supranational legal terms the reality may not be quite so clear, however every endeavour was made to make sure participants in both the quantitative and qualitative studies undertaken could be described as being small to/or medium enterprises.

Given that the actual software involved in an internet based online procurement system may differ from one supplier to another this research is not measuring a homogeneous technology. It is also introduced to differing retailers at different times. It must be stressed that the aim of the research was to gain insight into the factors that would lead to the acceptance of a technology; in this case online procurement. That said the aim was to gain a wider understanding of the issues of technology acceptance in retail SMEs and ultimately not just one specific type of software, even though the focus was on online procurement.

1.6 Structure of the thesis

The review of the relevant literature begins with chapter 2 and an overview of the impact of technology on the SME business environment in the UK and looks at the similarities and difference between the issues faced by this group and those of larger organisations. It then looks at the impact of the internet on the retail sector and specifically the retail SME, finishing by discussing the relationship between supply chain partners in the online world

before going on to the chosen methods of measurement in chapter 3.

Chapter 3 looks at the development of technology acceptance literature and then looks in detail at the constructs used to test behaviour and how this has developed to the UTAUT model devised by Venkatesh et al. (2003). A detailed view of the constructs relating to the UTAUT model will be analysed and the success to date of its ability to predict behaviour evaluated. This chapter shows that there are sufficient differences to merit a new approach to measuring technology acceptance amongst SMEs and ends by outlining the hypotheses that have been developed. This is the end of the literature review and is followed by an overview of the methodology in chapter 4.

Chapter 4 presents the research objectives and hypothesis designed for this study. It also discusses the qualitative and quantitative methodology adopted and the rationale behind these. Data collection procedures and the data analysis undertaken are also outlined. This then leads on to the results section in chapter 5.

Chapter 5 outlines the results from the qualitative and quantitative primary research and the findings from the quantitative tests undertaken. These results are then discussed in chapter 6.

Chapter 6 looks at the meaning of the results in the context of the literature and the hypotheses outlined in chapter 4. Considering these points a model of technology acceptance for the SME is presented at the end of this chapter.

Chapter 7 discusses the conclusions drawn from this research and implications of this study for retail practitioners, academics and future research.

1.7 Chapter summary

This chapter has introduced and discussed the reasons why technology acceptance amongst SMEs is a valid academic area to study and why it is important. It has also discussed the rationale behind choosing the particular type of technology to be measured and why this is seen as valid in the context of what the thesis is trying to achieve. To test this proposal hypotheses and a model have been developed from existing literature and applied to the specific situation of the SME in the area of retail.

Chapter 2

Technology Impact on the Small to Medium Business in the UK

2.1.1 Introduction

SMEs are... 'the engine of the European economy. They are an essential source of jobs, create entrepreneurial spirit and innovation in the EU and are thus crucial for fostering competitiveness and employment.

Verheugen, 2007, www.europa.eu

This chapter discusses the small to medium enterprise (SME) sector and the impact of technology, specifically the internet, upon it and the general UK business community. There are a variety of issues impacting upon the adoption and use of technology in today's business environment. Research relating to technology acceptance has tended to focus upon the experience and problems arising in the larger enterprise. This chapter aims to show some of the issues specific to the SME and their approach to technology acceptance, and to suggest that these merit a new method of measurement.

2.1.2 Chapter outline

The starting point for this chapter is a clear definition of the term SME, and its contribution to the UK economy. This is followed by a brief history of the development of computer IT and the internet. The historical context is seen as important given the impact it has on shaping attitudes towards technology usage. A detailed look at b2c and b2b developments is presented giving an academic

perspective on the main issues involved. The final two sections focus on the specifics of the SME retailer and buyer/supplier relations.

2.1.3 Terms of reference and definitions

There are some concepts and terms associated with internet usage that may require clarification and definition. For the purposes of this research the terms *IT* and *internet* are generally interchangeable despite their obvious differences in a wider context. It is worth clarifying between the terms e-commerce and e-business. E-commerce is the use of the internet, and specifically the world wide web (www), in undertaking transactions between a business and its customer (b2c) or a business and another business (b2b). The terms internet and www will be used interchangeably throughout this thesis. There are other links that exist such as consumer to consumer (c2c) and business to government (b2g); however for the sake of looking at e-commerce and retail the first two are adequate. B2c and b2b are said to constitute a virtual market place, one which has no physical form merely a link between computers that use graphical interfaces to convey the information of the deal. E-business, on the other hand, is the next step on the road to a fully internet integrated organisation and means that the company is entirely linked through the internet medium (Vassos, 1996). Van Hooft and Stegwee (2001) define e-business as

a secure, flexible and integrated approach to delivering differentiated business value by combining the systems and processes that run core business operations with the simplicity and reach made possible by internet technology.

The implication is that the internet can and should permeate all aspects of the organisation if gains from technology usage are to be maximised. Siegel (1999) suggests that e-business is where the organisation and its customers become more closely integrated and their needs and aims fuse to a point where the communication bottle neck between the employees and customers is eliminated. Communication would appear to be the link between the business definition outlined by van Hooft and Stegwee (2001) and the customer orientated definition put forward by Siegel. In both cases the use of the internet is bringing together the component parts of the business and allowing them to communicate with each other and with supply chain partners.

Feverish business activity that came with the development of the internet spawned many new ideas and companies; these became known as *dot coms*. These can be loosely defined as those companies that started up on the back of the *online revolution*, adopting new methods of internet based working practices. In many cases internet technology appeared to offer advantages to the start up company not hindered with the expenses of traditional (bricks and mortar) organisations. These types of organisation are not central to this research but *do* impact on the way practitioners view business usage of the internet.

This chapter is central in setting the scene for this research thesis. Some of the information is general but provides necessary background to the topic. The chapter starts by looking at the issues in their wider context and gradually focuses this down to the specifics of the research topic. It begins by looking at the definitions and role of the SME in today's business environment.

2.2 Defining the SME and evaluating its importance in the context of the UK

2.2.1 Introduction

SME is an abbreviation for Small and Medium sized Enterprises. There is now a clear international framework for defining an SME. The qualifying guidelines set out by the UK Government and the European Union (EU) will be adopted in this thesis to assist in the process of defining and choosing the sample for the primary research. Clear guidelines exist to the parameters of the SME in the UK today and these legal definitions provide guidance in matters relating to areas such as taxation and employment law, as well as government support available.

2.2.2 What is a UK SME?

There cannot be one single definition of an SME due to the diversity of the modern business. A clear description of the key characteristics of the SME comes from the Bolton Committee in its report on small firms in 1971. The report states that to qualify as an SME, a firm should be 'an independent Business, managed by its owner or part owners and having a small market share' (Bolton Committee Report, 1971). There are some factors to consider however, the main one being that size is relevant to the sector in which the business is operating. This means that a firm can be small in relation to a sector where the market is large and there are many competitors, whereas a firm of similar proportion can be considered large in another sector with fewer players and/or smaller firms. It also states that in some cases it may be more appropriate to define the SME either by the number of employees in the sector and in others, by the level of turnover in the sector. Bolton (1971) lays down the following criteria for the SME;

- they have a relatively small share of their marketplace
- they are managed by owners or part-owners in a personalised way, and not through the medium of a formalised management structure
- they are independent, in the sense of not forming part of a larger enterprise.

Some more quantitative definitions have been added to this and can be found in section 248 of the Companies Act, 1985. This illustrates that to be considered *small*, a business must satisfy at least two of the following criteria;

- a turnover of not more than £2.8 Million
- a balance sheet total of not more than £1.4 million
- not more than 50 employees.

To be considered a medium company, the firm must satisfy at least two of the following criteria;

- a turnover of not more than £11.2 million
- a balance sheet total of not more than £5.6 million
- not more than 250 employees.

These quantitative figures require readdressing on a regular basis given the impact of inflation. To provide a more constant measure the Department of Business Enterprise and Regulatory Reform (BERR) use the following employee numbers based guidelines to determine the size of a firm.

- Micro firm, 0 – 9 employees
- Small firm, 0 – 49 employees (includes micro)
- Medium firm, 50 – 249 employees
- Large firm, over 250 employees

In the context of the European Union and the increasingly close ties and harmonisation between member states, the EU has sought to develop a clear cross European definition of what the SME is. The aim of this exercise has been to improve ‘consistency and effectiveness and to limit distortions of competition’ (The New SME Definition, 2005, p.6). The European Commission set the following criteria laid out in table 2.1 in February 1996.

CRITERION	MICRO	SMALL	MEDIUM
Max. # of employees	9	49	249
Max. annual turnover	n/a	€7mill	€40mill
Max. annual balance sheet total	n/a	€5mill	€27mill

Max. % owned by one or several Enterprises not satisfying the same criteria	n/a	25%	25%
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Table 2.1 E.C. SME definitions

The most recent definitions of the SME come from the European Commission Report *The new SME definition, User Guide and Model declaration (2005)*. The definitions are outlined in table 2.2.

Enterprise category	Headcount: Annual Work Unit (AWU)	Annual turnover	Annual balance sheet total
Medium-sized	< 250	< = E50 million	< = E50 million
Small	< 50	< = E10 million	< = E10 million
Micro	< 10	< = E2 million	< = E2 million

Table 2.2 E.C. SME definitions 2

Companies are defined in the context of this by choosing either the *Annual turnover* or the *Annual balance*. In comparing these updated figures to the previous 1996 figures we see that there are increases in the thresholds as would be expected with inflation, also *Micro* enterprises are given a specific figure for the first time. It is worthwhile outlining these changes as some of the companies in this research may well fall into this latter category.

In the context of this paper the sample companies chosen for the purposes of the primary research will need to qualify as SMEs under the above European requirements, these being the most current available.

2.2.3 The importance of the SME

The contribution of the SME to economic performance is widely recognised as significant (Greenan et al., 1997; [a] Hill, 2001; Moy and Lee, 2002). In terms of the UK 'SME's play a vital role in the economy, providing new ideas, products, services and jobs' (www.strategy.gov.uk). The role of the SME has been particularly

important in the context of the UK 'where unemployment consequent upon industrial readjustment has been particularly marked' ([b] Hill, 2001, p.172). The resultant loss of these industrial jobs has led the government to 'encourage a new firm formation and to create what has been termed *an enterprise culture*' (ibid). Dixon et al. (2002) state that there are 3.7 million SMEs in the UK and that these produce 40% of the gross domestic profit (GDP) of the UK. They go on to say that the annual turnover of this group is approximately one trillion pounds and that the 12 million people employed in SMEs makes up some 55% of the private sector workforce. Figures from Quayle (2003) suggest that the SME sector contributes approximately 70% of the UK GDP and nearly 90% of employment. Despite disparities in these figures they all outline the importance of the sector to the UK economy, a point recognised by government who aim to simplify taxation, provide clear information and provide grants to encourage SME start ups and growth. The key governmental organisation that exists to support UK SMEs is the Small Business Service (SBS). This agency of the DTI aims to;

- champion a culture that prizes and fosters enterprise, and help businesses start and develop as their capabilities grow
- make sure that government support services (including access to finance) are accessible, relevant and of high quality
- make special efforts to release the enterprise of ethnic minority groups, women entrepreneurs and others who have such potential to contribute to UK business.

www.sbs.gov.uk, 2006

A myriad of support exists for SMEs and although most of this 'falls within the responsibility of Member State or regional and local agencies, who are best placed to

engage with them’ (DTI, 2004), European support is also available. The European Social Fund (ESF) is an example of this and by way of example one area covered by them is education. Under the ESF Objective 3 the organisation runs a ‘number of measures to develop the skills of people in SMEs’ (www.esf.gov.uk, 2006).

2.2.4 The retail SME

The Bolton Committee outlined the following definitions in table 2.3 for different types of small business.

Sector	Definition
Manufacturing	200 employees or less
Construction	25 employees or less
Mining and Quarrying	25 employees or less
Retailing	Turnover of £50 000 or less
Miscellaneous	Turnover of £50 000 or less
Services	Turnover of £50 000 or less
Motor Trade	Turnover of £100 000 or less
Wholesale Trades	Turnover of £200 000 or less
Road Transport	Five vehicles or less
Catering	All excluding multiples & brewery managed houses

Table 2.3 Adapted from Shoniregun, 2004

The above table shows the different definitions between the different types of small business and how they were to be measured according to the Bolton Committee (1971). This research is concerned with the retail SME which is clearly defined above as having a turnover of £50 000 or less (in today’s terms this would be approximately £600 000), these figures relate to 1971 and therefore need updating. The latest attempt at clarifying the SME outlined above, does not mention the retail sector specifically but

instead gives general guidance as to which company falls into the SME category.

2.2.5 Link to this research

The relevance and importance of the SME has been outlined, as has a clear definition of exactly how a company is measured to evaluate whether or not it is an SME. The importance of the SME sector to the UK and European economies validates that this as a pertinent area in which to be undertaking research. The clarification of the boundaries of what is and what is not an SME is important in establishing which companies should be surveyed in the primary research. The next section aims to look at how general technology has developed and the impact this has had on business.

2.3 Technology development background

2.3.1 Introduction

The word *technology* can be applied to human endeavours dating back to the dawn of civilisation and as such is obviously not a new phenomenon. Today the term technology is most commonly coined in relation to the use of computers and the digitisation of information. This leads to the expression *information technology* (IT) which although theoretically relating to any technology that assists in the efficient dissemination and spread of information, mainly tends to focus upon the increasingly efficient methods of spreading digital information to where it is required. The computer has been the most recognisable component of the IT revolution and its impact on the business world profound. This section of the thesis aims to outline the impact that computer technology has had on the world of work outlining the factors that have influenced current usage of the PC in business.

2.3.2 Background

The well documented rise of Bill Gates, Microsoft and the personal computer (PC) has had extensive ramifications for the worlds of business and entertainment since the 1970's. Computer technology was not new at this time indeed its development can be traced back to the nineteenth century, with the work of Charles Babbage often being cited as the starting point. However the move from cumbersome and complex main frame computers to a smaller more flexible system raised the profile of the computer from a niche big industry product to a mainstream technology as ubiquitous as the television. This point was not fully appreciated by the big companies led by IBM who dominated the main frame computer market creating an opportunity quickly taken by the fledging Microsoft and its visionary and determined CEO, Bill Gates. Indeed it was IBM who inadvertently propelled Microsoft on its way to becoming the largest company in the world by not fully recognising the importance of the PC and allowing a platform for MS-DOS (the Microsoft operating system for the PC) to expand in conjunction with their hardware products. This in turn allowed for an unprecedented level of adaptation and growth, not only in the PC market but also in business in general as increasingly computer programmes on PCs took over the mundane work processes traditionally done by hand. The explosion of PC usage also led to a myriad of new companies and products emerging, one of these being the internet (see 2.4) which is the central technology being measured in the context of the SME retailer in this thesis.

2.3.3 Technology and the SME

One of the central issues of this research is the SME and the impact of internet upon them. This topic will be examined in more detail in section 2.5, however it is worthwhile providing some background on the impact the PC had prior to focusing on the internet. The advent and development of the PC allowed SME companies to implement IT

into their processes. The costs involved with earlier systems meant that only big business could afford to adopt them, the PC allowed smaller companies to get involved and make cost savings in the way they operated. The motivation for this adoption would have come from internal sources in some instances but in others, external factors provided the catalyst to introduce IT into the SME. The retail sector has been at the forefront of developing the use of electronic data interchange (EDI) technology (Humphreys, 2006) which was used to allow for the passing of digital information from one source to the next (Macdonald, 1994). This could be done via a third party via value added networks (VANs) (Lankford and Johnson, 2000; Lancaster et al., 2006), or directly between supply chain partners. The advantages of EDI, the term being coined in 1985 ([b] Bamfield, 1994) were seen as 'savings in time, operating costs, and inventories whilst improving stock positions' ([a] Bamfield, 1994, p.7) and leading to less personnel and paperwork requirements when transferring information between supply chain partners (Fiorito et al., 1995).

Tesco were particularly proactive in this area (Ferne, 1994; Pache, 1995) and encouraged, or even coerced their supply chain partners (Angeles, 2000), many of whom were SMEs, to purchase the necessary computer systems to run these networks. The drive towards this process was seen not only in retail but also in the travel market (Reinders and Baker, 1997) where agents needed to install the necessary hardware to enable them to communicate electronically with the global distribution systems (GDSs) such as Sabre and Galileo.

These proprietary EDI networks outlined here can be viewed as the forerunner to the internet (Humphreys et al., 2006) as they were the first attempts at the movement of digital information between

supply chain partners - the internet provided an open network that could similarly carry digital information at a fraction of the cost (Lankford and Johnson, 2000).

The issue here is that the push for investment and development of computer usage for the SME has come from a variety of sources. In some cases this may have been viewed as a way of becoming more efficient (Ritchie and Brindley, 2005) in others a degree of coercion may have been felt from supply chain partners (Angeles, 2000) – either way this has created the need for potentially difficult and complex managerial decisions to be made relating to technology adoption in SMEs.

2.3.4 Links to this research

This section has aimed to provide a brief overview of the development of the PC in business and its impact on the SME sector. A clear understanding of the issues relating to PC usage provides insight into the factors impacting on current usage and as such is a useful addition to this research. Issues relating to the adoption of EDI, as a forerunner to the internet, have been outlined. The next chapter looks at the impact of the internet.

2.4 Internet development background

It shouldn't be too much of a surprise that the internet has evolved into a force strong enough to reflect the greatest hopes and fears of those who use it. After all, it was designed to withstand nuclear war, not just the puny huffs and puffs of politicians and religious fanatics.

Caruso, www.quotes.ubr.com, 2006

2.4.1 Introduction

The internet has been in existence, in one form or another, for as long as forty years. Its development and meteoric rise are so closely aligned to the PC that it is difficult to separate the development of one from the other particularly over the last 15 years. The aim of this section is to take a brief look at the history and development of the internet and to make general comment on its impact on business. The various areas of general literature linked to this area will be examined, with a more focused approach taken in the latter sections of this chapter. The conflicting views of the impact and influence of the internet will also be debated and a view taken on this to support the approach taken in this thesis.

2.4.2 A brief history of the internet

The Internet was *born* in the 1960s. The initiating research was undertaken by the Advanced Research Projects Agency (ARPA) under the directorship of J.C.R. Licklider. The suggestion is that the research was driven directly by the USSR's development of Sputnik in 1957 which galvanised the US into action (digital.com). ARPA, a branch of the U.S. defence department, created an experimental network designed to support military research. In particular the research aimed to build networks that could continue to operate even if certain areas of it were not working, with information being routed to the desired destination by an alternative path. This meant theoretically that in the case of, for instance a nuclear attack where certain terminals were lost the network would continue to function by routing itself around the lost terminals as quickly as possible – although in practice this probably would not have been the case. The ability of computers to link and access electronic documents was known as hypertext with the term first being coined by Ted Nelson in a paper to the ACM 20th national conference in 1965 (www.netvalley.com 2006 [a]). From these early developments

came the first computer network, ARPANET which was first publicly demonstrated in 1972 (digital.com, 2006).

Building on ARPANET by the 1980s it was possible to devise Local Area Networks (LANs) allowing for the transmission of digital data over an area of a few square kilometres. This expanded rapidly to cover increasingly larger geographical distances. The various technologies that had been developed to support different LANs were changed to allow them to speak to each other, thus creating the internet as we know it today. The word *internet* is sometime seen with a capital 'I' as it suggested a specific entity, more recent authors have tended to use a lower case 'i' as general meaning has widened encapsulating more than just the connections between the computers – the latter approach is adopted here. The term *internet protocol* appears to have been coined for the first time by representatives of the European Laboratory for Particle Physics in Switzerland (known as *Centre European pour la Recherche Nucleaire* or CERN) in the early 1980s. It was also at CERN in 1990 where the first web server and client machines were built. This supported what has become known as the *world wide web* (www), which was a software application developed by Tim Berners-Lee using *hypertext transfer protocol* (HTTP) and hypertext links. He also developed the *uniform resource locator* (URL), which created a specific address for each page. The www project was originally developed to provide a system which could easily access from any desktop computer, information stored anywhere in the world (www.netvalley.com [b]). This serendipitous development fundamentally changed the way information could be organised, presented and accessed on the internet and thus made way for the internet revolution.

The next generation of the development of the internet followed quickly when Marc Andreessen and Eric Bina developed NCSA Mosaic at the University of Illinois, and then subsequently left in 1994 to found Netscape. The graphical web browsers Mosaic and Netscape Navigator were introduced after this and quickly spread through the burgeoning internet community. Due to their intuitive nature and graphical interface, these browsers made the www and the internet more appealing to the general public. Coupled with the increasing dominance of the personal computer (PC) mainly developed by Microsoft (see 2.3), the stage was now set for the internet to take up its dominant position, and to be hailed by some as the most important development in communication since the printing press (Hoffman and Novak, 2003).

Even a brief history of the internet would be incomplete without mentioning the *browser wars* and the dot com slump of 2000. Bill Gates had to hastily add a new chapter to the second edition of his book *The Road Ahead* (1996) to include a piece on the influence and impact of the internet. Even he had been surprised by the speed of uptake of the internet and quickly got his engineers onto designing a browser to compete with Netscape. MS Explorer arrived soon after and as an integrated part of the MS suite was quickly adopted by users worldwide. The success of the new browser over its rivals led to many antitrust court battles against Microsoft on both sides of the Atlantic - however interesting this is it is out with the scope of this study. The dot com boom occurred when there was wild speculation in many technology shares in the stock markets of the world in the run up to 2000. The inference was that the internet could change fundamentally the way in which business was undertaken. Despite this being true, its ability to do everything was over optimistic (Golotto and Kim, 2003). Reynolds (2000) notes that

'...the apparently unreal world of Internet stock valuations in the latter part of 1999 had led to substantial and unrealistic

expectations about the growth of b2c e-commerce in particular, the downward step change in high technology stocks in the Spring and Summer of 2000 led many to assume that the danger to the old economy was over and a return to historic stability was in the offing.'

Reynolds (2000, p.1)

The bubble eventually burst in the early part of 2000 and worldwide markets crashed and the value of many technology shares based on internet usage faded with many of the major players dying out altogether such as the online US grocer Webvan in 2001. The dot com boom and slump are now assigned to the history of the internet and its development, however it has made people generally more cynical and perhaps realistic as to what the internet can, and cannot do (Schlenker and Crocker, 2003). This cynicism is important as it can have a bearing on perceptions of internet usage, a point picked up later in this chapter.

2.4.3 The internet today

The framework for the internet was clearly set out in the 1990s and remains the same today. However a variety of things have occurred to assist in its development and to spread it further around the globe. As a starting point for this it is necessary to clarify exactly what the internet is made up of. The main component parts of the internet were initially recognised as;

- *e-mail*, allowing the sending of text messages and attached files to other users (the letter 'e' in front of any word denotes a relationship with the internet)
- *newsgroups*, providing chat zones for users to communicate on a broad range of topics and interests

- *world wide web* (www), providing web sites that can have graphics, sound and moving images, and be linked to other sites around the world.

Although the ability to communicate via e-mail and usenet newsgroups made the internet popular in the early days of its development, it was the www that sparked the interests of the general public at a time when the sale of PCs was moving to a point of critical mass. The onset of multi-media applications adding pictures and sound to the standard PC, made possible by the advent of more powerful computers, opened up a myriad of possibilities that could be exploited for home entertainment and education. The commercial possibilities similarly showed great potential and many individuals and companies were soon trying to develop profitable business models based around the technology. The coming together of these and many other products created the platform for one of the most important and dynamic business concepts ever. The introduction of this technology to the general business environment has created, and will continue to create, fundamental changes in the way business is done. The changes created by the internet have, as mentioned above, led some to suggest the emergence of a *New Economy* (Siegel, 1999) built around, and based on the internet and more specifically, the www.

2.4.4 Internet usage in business

The internet lowers search costs, reduces barriers to entry and helps shorten the supply chain. These features should help boost productivity, lower profit margins and help cut the equilibrium rate of unemployment.

Wadhvani, S., 2000

The scope for improving business by utilising the internet is well documented (Chapman et al., 2000; Raymond 2001; Schlenker and Crocker, 2003; Jeffcoate et al., 2003). However, along the road to attempted e-business success there have been many casualties and there are likely to be more in the future (Jentzsch and Miniotas, 1999; Ring and Tigert, 2001). For those organisations whether large or SME who get it right there are likely to be rewards in cutting costs (Sharma and Bhagwat, 2006), finding new business (Sparkes and Thomas, 2001) and teaming up with new business partners to better serve customers (Lajara and Lille, 2004).

Initial attempts at devising b2c (business to consumer) models centred on providing company information for the consumer. Known as *brochureware* this was quickly discredited by those who took the internet seriously as a marketing tool, as it did not come near to utilising the various benefits of the new medium (Chung-Shing, 2001). Chaffey (2002) identifies the following five points that differentiate the internet from other existing mediums of communication.

1. *It is predominantly a pull medium rather than a push medium*, traditionally the company *pushes* the information, with the internet the customer is searching or *pulling* the information from the medium.
2. *It is a digital medium that enables interaction*, customer interaction is greatly enhanced through the use of digital information, this allows companies to forge closer relationships with customers and send them offers on items they are likely to be interested in (Gronroos, 2000; [a]Hill, 2001).
3. *It offers potential for one-to-one or many-to-many rather than one-to-many communications*, there are opportunities for one-to-one relationships between company and customer that were not possible before. The traditional one-to-many relationship can be used but the one-to-one is likely to be more effective, however this is not an easy process and to date not many companies have achieved it. (Merrilees and Tiesson, 1999).

4. *The medium changes the nature of standard marketing communications such as advertising*, according to Chaffey (2002) the web site can be viewed as similar in function to the advertisement as it can inform, persuade and remind customers about the offering. This also operates in the b2b context (Eid et al., 2006).
5. *Changes to the distribution channel and marketplace enabled by the digital media*, the barriers to entry for companies using web technology can be very low and can disrupt markets through disintermediation and reintermediation which is the taking away and adding of parties into the supply chain (Xing and Grant, 2006).

These changes are fundamental to the way in which companies do business and have impacted on the internal and external operations of most organisations to varying degrees.

2.4.5 Intranets and extranets

Both intranets and extranets use internet technologies and will store information and allow two way communications. They differ from the internet in that they are usually password protected, so access to them is limited to those who have a correct password. The intranet is usually used for dissemination and communication between employees of a company. The extranet is usually used as a link between a company and its trading partners, allowing them to access pertinent information and communicate, often through a specially designed interface (web page), with whomever they need to within the company. In reality, the definitions of these www platforms are not as clear cut as they may initially appear, this is because they will be designed around the needs of the organisation and therefore differ depending on those needs.

2.4.6 A rationale for internet usage and competitive advantage through IT usage

...industry titans such as Bill Gates, the boss of Microsoft, regale the world's leaders with the promise of friction-free capitalism.

The Economist, May 10, 1997, p.59

The prevailing wisdom in modern western government economic thinking harks back to the writings of Adam Smith and his treatise on self regulating market economies, *An inquiry into the Nature and Causes of the Wealth of Nations*, 1776. In this book Smith states that

It is the highest impertinence and presumption ... in kings and ministers, to pretend to watch over the economy of private people, and to restrain their expense... They are themselves always, and without any exception, the greatest spendthrifts in the society. Let them look well after their own expense, and they may safely trust private people with theirs. If their own extravagance does not ruin the state, that of their subjects never will.

p.25

What this suggests is that, governing bodies should not get in the way of commerce by introducing rules and regulations, and that the greater the general understanding and knowledge of markets and prices of goods, and the clearer the avenues for communication between buyer and seller; the more efficient the market is likely to be.

The Internet is a nearly perfect market because information is instantaneous and buyers can compare the offerings of sellers

world-wide. The result is fierce price competition, dwindling product differentiation, and vanishing brand loyalty.

Kuttner, *Business Week*, 1998, (3577) p.20

Despite the fact that not all of these points have necessarily come to fruition, the unique characteristics of the internet have led commentators to suggest that we are closer to the utopian markets suggested by Adam Smith than ever before. Brynjolfsson and Smith (2000) argue that this perception has led to the belief that 'the internet will lead to a market where retailer 'location' is irrelevant, consumers are fully informed of prices and product offerings, and all retailers make zero economic profit'. (p3) The reality has however been slightly different. For instance the power of branding appears to be as important on the internet (Lindstrom, 2001) as it is in the traditional business world. Research by Brynjolfsson and Smith (2001) focuses on the selling of books and CDs stating that there is 'still a dominance amongst certain heavily branded retailers' (p30). This would suggest that the impact of the internet has not fully led to the entirely open markets hoped for, however it would appear that in many areas there are improvements over the traditional methods used. This is similar to a variety of issues involving the internet where the initial wild enthusiasm has since been tempered to a realistic point that reflects the ability of technological change to enhance the business but not entirely overthrow what has come before it. One other issue worth mentioning is the fact that practitioners are moving away from the idea of identifying these changes as e-business as the internet has become so entrenched in business practices as to be described purely as *business*.

At a practical level the internet is used extensively in organisational marketing allowing a closer working relationship between the buyer and seller to be established and developed. This has revolutionised thinking in marketing allowing 'non-linear

communication in which there is free flow and exchange of information...' (Rowley 2002, p.87). Timmers (2000) outlines the following characteristics that impact on marketing communications;

- 24 hour online
- interactive
- multimedia
- one-to-one and/or micromarketing
- ubiquity
- integration
- global availability.

This thesis takes the view that the efficient use of internet technology within the organisation should lead to a variety of benefits accruing, regardless of the business type and/or size.

2.4.7 Competitive advantage and the decision making process

A rationale behind the adoption of internet technologies to support the workings of a company would include a study of how a competitive advantage (Clemons and Row, 2000; Chircu and Kauffman, 2000) can be established. Defined as the ability to earn a ROI (return on investment) that is *persistently* above the average for a given industry, this would provide the incentive for many companies to pursue a programme of IT adoption especially where the new technology or technical model to be adopted may be untested by competitors. In this situation the risk of change may be perceived to be worth taking if the organisation is able to leverage themselves into a long, or even short, term position of competitive advantage. This academic area has been developing since the 1980's with Porter's *Competitive Strategy*, 1980 and *Competitive*

Advantage, 1985 (also McFarlan, 1984). Two clear schools of thought have emerged from this; firstly is the Porter (2001) based view of strategic positioning, whereby the organisation will position itself in an appropriate sector of an industry by analysis of the five forces model (figure 2.1); the second view is one based on resources, where the organisation aims to develop and exploit its unique capabilities (Hamel and Prahalad, 1989).

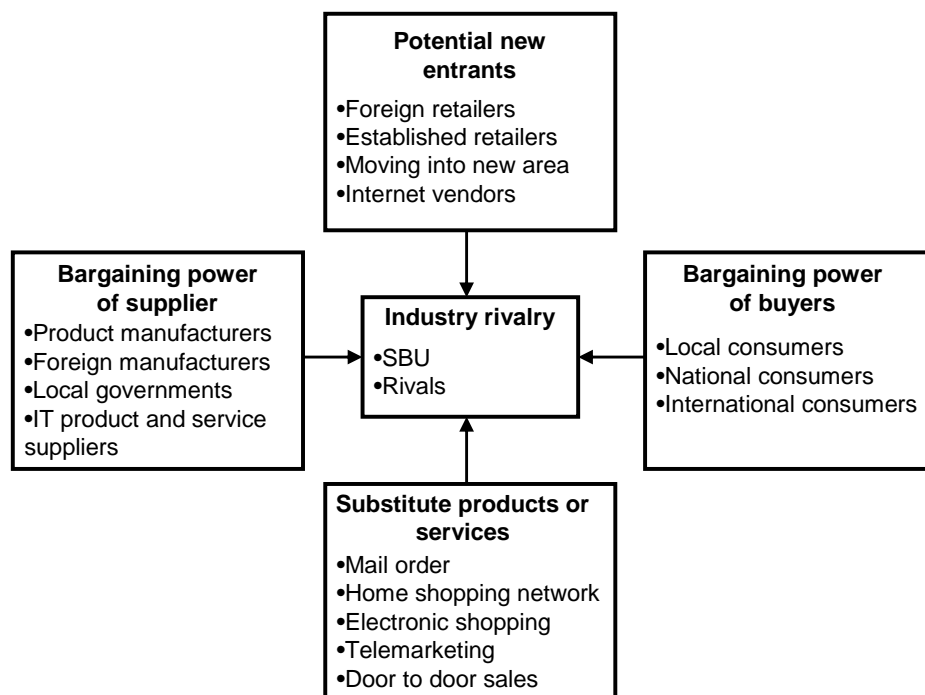


Figure 2.1 Porter's Five Forces related to the US retail sector. Model adapted from Porter, 1980 by Gallivan, 2001, p.78

This model portrays the pre-internet world set out by Porter in 1980 and taken as the established wisdom in business. This particular adaptation reflects the experience of the retail sector. Porter (2001) views the internet as a complement to modern business but not one that fundamentally changes the forces operating on a company in the context of strategy. He sees the key question as the deployment of the internet in the organisation as non-deployment is

not an option, this he argues makes the need for what he calls a *return to fundamentals* suggesting that traditional methods of strategy are more important than ever. Porter argues that the wider availability of information outlined in reference to Adam Smith, actually works against the companies through a loss of competitive advantage. The model below (Figure 2.2) readdresses the Porter model in the context of the internet and outlines the negatives to competitive advantage.

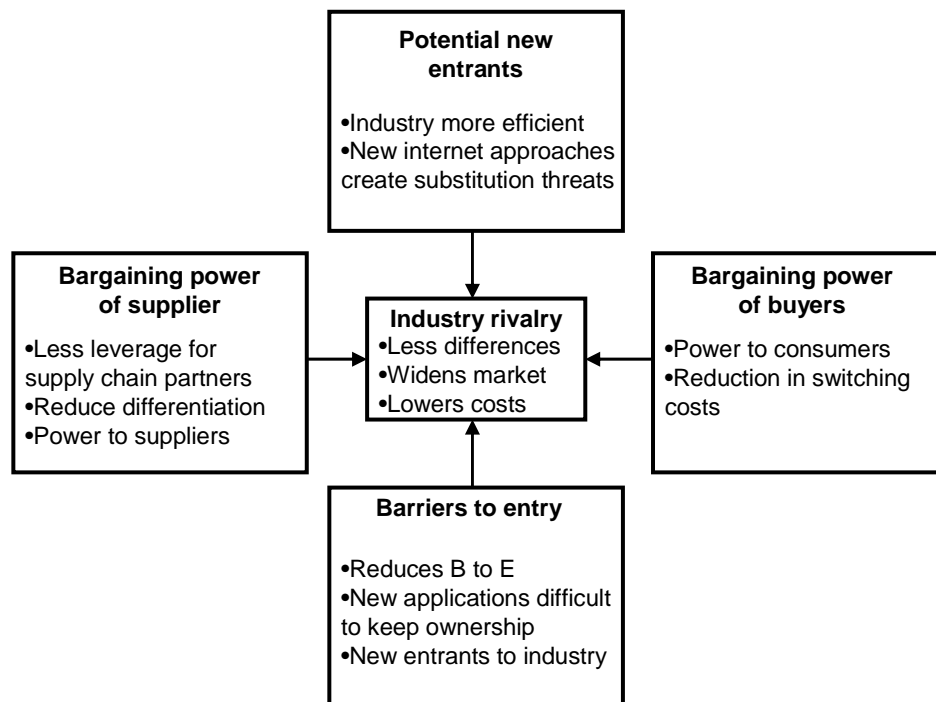


Figure 2.2 Porter's Five Forces in the context of the internet. Model adapted from Porter, 2001, p.67

The model appears to outline mainly negative impacts accruing to business in their use of the internet and a general loss of competitive advantage. Tapscott (2001) suggests, contrary to Porter, that the entire infrastructure for wealth creation is changing. He further predicts that customer value propositions will lead to the creation of virtual companies leading to a decline in the large proprietary organisations that dominated the twentieth century. Thus the disadvantages outlined by Porter in his revised model

(2001) will according to Tapscott be the very advantages that the modern company will be based around.

This second school of thought looks to: identify what competitive advantage actually is; know when it is achieved; and outline where the adoption of IT will lead to it occurring in an organisation. Mata et al. (1995) establish which areas of IT may lead to competitive advantage and why. Five potential areas are outlined that might achieve this;

- customer lock-in
- access to financial capital
- proprietary technology (patents, copyrights, etc.)
- technical IT skills (e.g., software developers)
- managerial IT skills (e.g., IT managers, business unit managers, the ability to collaborate in order to identify and deploy effective IT).

Despite the fact that none of these can assure a company of long term competitive advantage, it can be suggested that in terms of economic theory the use of the internet as a business platform has the ability to make markets more efficient. The irrational nature of the consumer and the organisations themselves can still hinder the ability to maximise improvements that the internet can deliver. Using a basic model of decision making (Hoyer and McInnis, 2000, p13) the following stages and how they might be assisted by the use of the internet can be identified (Constantinides, 2004).

- *Problem recognition and information search* - perceiving a need and researching a particular product of interest can be assisted using online searches within company web sites for information and also web sites which compare one product to another or provide reviews (Smith and Rupp, 2003).

- *Judgement and decision making* - comparing prices should be easier, therefore finding the cheapest vendor should be straight forward. This ties in with the work of Smith (1776). Many retailers are now sending their products throughout the country and often throughout the world, enhancing the choice of consumers.
- *Post-decision processes* - the ability to contact the company via their web site should be a straightforward process. In cases where there maybe feelings of cognitive dissonance (some form of dissatisfaction with the purchase), further information searches using the internet and supporting the attributes of the product purchased, may resolve this. Companies can also adopt real time chatting system to provide customers with the opportunity to air their grievance (Cho et al., 2003). Where there is no satisfaction and cognitive dissonance continues, the internet provides the perfect platform for disaffected consumers of a particular product to come together to form some kind of pressure group - without the internet this would be a long and potentially expensive process.

Whichever viewpoint is taken on competitive advantage the benefits to business through internet usage are clear, even if the fundamental impact of it and if these benefits are fully utilised is still open to debate. The internet therefore appears to provide a variety of advantages over traditional methods of commerce, although depending on the perspective the increased competition could be viewed as a disadvantage. Power (2002) suggests that future research in this area will need to identify and track trends in the usage of the internet in organisations. From this he predicts that in time it should be possible to identify whether the use of the internet will be of strategic importance or merely peripheral to the success of organisations. This thesis takes the view that the internet will be of strategic importance. Despite this there are some issues constraining the potential of the internet.

2.4.8 The internet and the consumer

The above would suggest a theoretical underpinning that suggests why the internet should be adopted by companies and consumers. There are however some resistors that have slowed down this process.

- Security over the internet is one of the main barriers to business on the internet (Hawkins et al., 2000; George, 2002). Purchasing online has received attention from the media particularly in relation to security when passing credit card details and other information when purchasing (Hutchinson and Matthew, 2003). Whether this is the case or not there remains a perception that security is still an issue.
- The more people use the internet the cheaper products are likely to become. However there are restrictive costs involved with getting online: buying a computer; buying a modem (if one is not already present in the computer); choosing a ISP (Internet Services Provider) with a possible monthly charge; and incurring higher phone bills due to *online time*. More and more people are getting online but it is still financially out of reach, or at least restrictive for many and the need for greater social inclusion still exists (Bennett, 2004).
- Download times continue to cause problems due to a lack of adequate bandwidth. Computers have increased their capacity for many years but new applications are always appearing that require more power. The ability of the home user to download this information in a reasonable time is still limited by the phone lines that connect them to their ISP. This is a major potential bottle neck and one that puts consumers off using the internet as a retail channel. Various broadband products are currently appearing in the UK market, costs for this tend to be over £20 per month and it is not available in all geographic areas of the UK (Allred, 2006).

These issues are not insurmountable and improvements are being made all the time. However cultural change does take time and some customers will always prefer to go out and search for things themselves and speak face to face with vendors. Also,

different types of products will be more or less popular in an online context depending on a variety of issues including cost and familiarity - a point picked up later in this section.

2.4.9 Links to this research

The history of the internet is outlined here to provide a flavour of the influence it has had on the way business operates, a point picked up on later in this chapter. The reason for including this information is because the development and history continues to have an impact upon user attitudes whether they be end use customers or business customers. Many of the issues above relate to the retail sector but equally to other businesses. The next section looks at the specifics of the retail sector and some of the research that has been conducted in this area relating to the use of the internet.

2.5 Retail and the Internet

The brave new internet has changed the retail game. New balls please.

www.imrg.com (2005)

2.5.1 Introduction

There are a variety of similarities across industries in the way business uses IT and the internet. A view has been offered in the previous sections of this chapter (see 2.3 and 2.4) outlining the general issues relating to business and its use of IT and the internet. The rest of this chapter mainly focuses on the specifics of the retail sector. The extent to which the internet has necessitated fundamental change in the way business operates depends on

which view point you take. However even those who do not see its evolution as a paradigm shift in business thinking, acknowledge the internet as a highly significant and important addition to business (Porter, 2001). The retail sector has appeared at certain times to lag behind internet development, and at other times, to be driving it. Either way, the internet has become a central part of the running of a retail organisation (Murtaza, 2004).

2.5.2 The development of the internet in retail

According to Wang (2000) electronic commerce has existed in the form of EDI (see 2.3) and electronic funds transfer (EFT) in the retail sector since the 1970s. There has been a generally cautious approach in retail to the adoption of IT into management practices (McGoldrick, 2002). However by the end of the last century the influence of IT had spread across the whole of the retail value chain. Today the role of IT has changed from being on the periphery of the retail organisation assisting in logistics and operations management, to enabling and informing new strategies and increasingly influencing the structure of the industry (McGoldrick, 2002).

The internet has in turn played an increasing part in the development of retail and has made its presence felt particularly in the workings of the retail supply chain. Cook and Walters (1991) define the retail companies' objectives as the use and manipulation of; merchandise, customer service, trading format and store environment and customer communications. Other crucial elements exist such as; marketing, finance, property, personnel, systems, operations and distribution. However these are seen as support strategies to the main objectives of the business. At its most basic the retailer will aim to present goods to the public in such a way that they will hopefully find attractive, thus making them want to

buy the goods that are stocked – elements relating to this can be described as business to consumer or end user (b2c). In support of this role the retailer is an intermediary in a potentially lengthy supply chain (b2b) that can include; farmers, mass manufacturers, merchants and craftsmen to name but a few. As part of this chain the retailer will be involved in purchasing from the appropriate companies the goods it requires. This relationship with suppliers is an important one and has generally seen an extensive shift over the past 15 years that has led to a strengthening of the retailers' position (Clarke, 2000).

Given its dynamic nature it is not surprising that a great deal of literature has been generated relating to the development and impact of the internet. Lee and Whang (2001) point out that while the most obvious manifestation of the arrival of the internet has been the emergence of electronic commerce as a new retail channel, the likelihood is that the more profound effect in the long run will be in b2b interaction, especially relating to the supply chain (see 2.6). The area of the small retailer and the effect that the internet has had on their relationships with their suppliers has received less attention from academics and this will be covered in a later section (see 2.7). Despite the attention the internet has enjoyed amongst the academic community, due to the rigours of the academic process it has often lagged behind what has been happening in terms of practical applications. Reynolds (2002) suggests that 'rarely has the academic world, the conventional provider of rigorous analysis, lagged so far behind the world of practice' (1997, p.1). This creates an obvious danger of academic research being viewed as obsolete before it gets to those it is designed to assist.

According to Raymond (2001) an organisation's propensity to innovate is conditioned by the opportunities provided and the constraints imposed by its environment. The retail sector throws open a myriad of possibilities in the use of IT and in turn possibilities for academic research. The rest of this chapter looks at

this usage from various angles commencing with a general overview and then a more detailed appraisal.

2.5.3 Subsets of e-retail

When attempting to gauge the impact of technology on any large area it helps if it can be broken down into more manageable parts. In defining the term e-retail this thesis takes the view that the term represents *all* business undertaken by a retail organisation using the internet whether b2c or b2b. In the case of e-retail an obvious split occurs between b2c and b2b, even though in reality it is difficult to split the influence and impact of the two entirely (Burt and Sparks, 2003). Despite the main thrust of this thesis relating to b2b, it is useful to discuss the development and implications of b2c as attitudes towards technology are generally shaped by the experiences of individuals in both these areas – particularly when it comes to internet adoption and usage. The suggested definition of retailing would mention the selling of items from a business to another party - traditionally the end user or non-business customer – otherwise known as b2c. A wider definition would include interaction between businesses (b2b). For the purposes of this thesis the definition adopted relates to the experience of the retailer who serves the end user customer (b2c), and also takes into consideration the relationship they have with their various supply chain partners (b2b). This section aims to provide an overview of the current impact of IT and the internet on the retailer with a rationale and framework, with the latter sections picking up aspects of this in more detail. Also included in this section is an overview of business models and categorisation of different types of retailers allowing for cross referencing throughout the rest of the section.

Electronic information flows in retail

The need for timeous and efficient communications between supply chain partners, including the end user is an essential requirement of the modern retailer. The use of electronic means of communicating supply chain information has been seen as a method of improving efficiencies and providing competitive advantage (Ritchie and Brindley, 2005). The operational needs of the retail organisation require efficient information flows between not only suppliers and retailers but also their distribution centres, regional offices, stores, transport companies and even customs and external agencies where appropriate (McGoldrick, 2002). The following diagram, figure 2.3 shows some of the possible links within the supply side functions of the retail organisation using computer technologies. These links will exist where the use of technology can improve upon traditional methods.

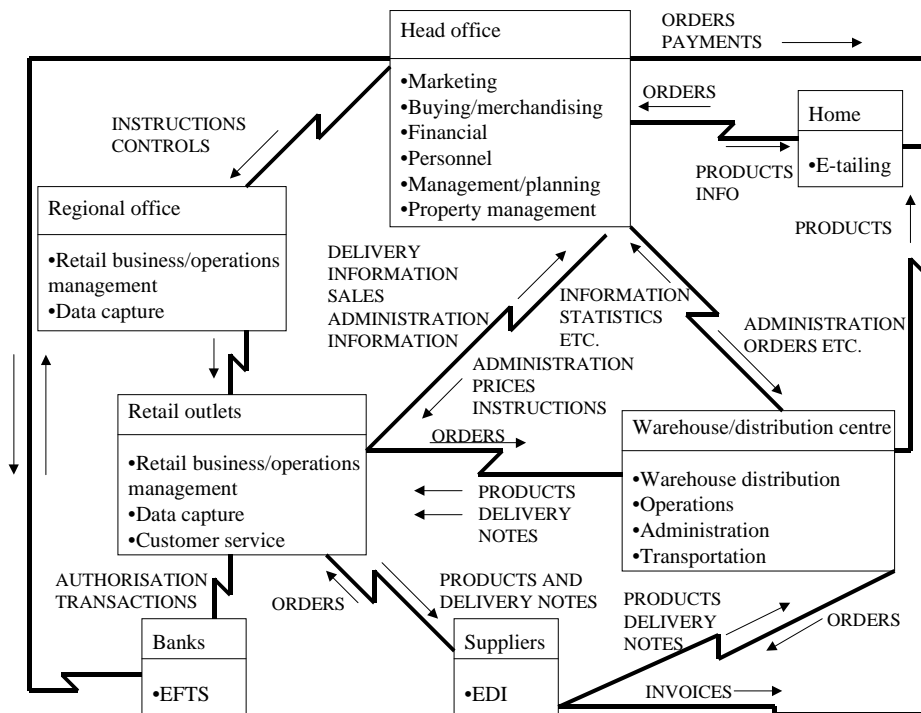


Figure 2.3 McGoldrick, Internet links in retail, 2002, p.13

This represents a comprehensive view of many of the information flows that exist between retailers and their suppliers and other related organisations such as banks. The organisation represented in figure 2.3 is likely to be a larger company, however the flows of information should be reasonably similar to those of a smaller

retailer only in some SME cases elements such as warehousing and transportation may be outsourced.

b2c

The b2c area initially had a higher academic and practical profile than b2b due to the fact that it was seen as the public face of e-commerce (Duffy and Dale, 2002). In the top right of the diagram there are the elements that relate to online shopping of *home* and *e-tailing*. These aspects could be described as b2c as they relate to the information flows between the retail organisation and the end user. Also included in this is the direct link with the customer bank accounts which allows for the flow of money which in turn allows the whole process to work quickly and efficiently. This relationship will be looked at in detail in section 2.6. There are a variety of areas of academic research and despite the focus of this research being on b2b, b2c does have a bearing as attitudes are likely to be influenced by any experience a user has of the internet, be it as an end user (b2c) or a business user (b2b).

b2b

The rest of figure 2.3 is taken up by functions that could loosely be described as b2b. These include the movement of electronic information internally within the organisation from local stores to warehouses. Also included are electronic links to supply chain partners, in this case merely called *suppliers*, although this could be to all supply chain partners. Finally, the relationship with other external partners such as the banks, are outlined. This can represent a b2c or a b2b function depending on which part of the information flow you are looking at.

The diagram tends to support the assertion (Lee and Whang, 2001) that the development of methods of electronic communication in

b2b has greater potential than b2c as there are more information flows and more parties to be informed. As a rationale as to the adoption of electronic commerce in the supply chain this thesis suggests that the supply chain should be improved in terms of efficiency and the development of new business practices by migration onto the internet (Ritchie and Brindley, 2005). McCormack and Kasper (2002) suggest that the historical company based on legal and organisational structures is giving way to the inter-connected supply chain webs that represent 'the new business configurations and the key competitive levers in the economy' (p.133). Section 2.7 looks at the b2b functions of the retail organisation, the implications for the supply chain and their relationship with the internet.

2.5.4 Internet models used in retail

A more detailed way of categorising different methods of IT and internet usage is by looking at the various types of internet based business models. A breakdown of this by Rappa (2006) is provided in appendix 1. What can be seen from this is the sheer number of different types of models that exist. Also it is worth noting that these can fall into either the b2c and/or b2b categories mentioned above. Other categories also exist such as those purely related to consumers (c2c) and those involved in government activities (g2c, g2b, g2g) although, these are out with the remit of this study.

2.5.5 Categories of online retailers

The retail sector as a business category is extensive. There are a variety of ways that the activity of retailers can be evaluated. One of these methods would be by looking at the size of a retail organisation. An overview of the SME category is provided in section 2.2. Research undertaken by Doherty et al. (1999) represented in table 2.4, gives a breakdown of the different types of retail organisation based on product offering.

1. Food and consumables :	<i>Grocery</i> , including supermarkets and hyper-markets
2.	<i>Convenience stores</i>
3.	<i>Specialist food retailers</i> , e.g. bakers and confectioners
4.	<i>Alcohol related</i> , including off licences
5. Clothing and accessories:	<i>Clothing retailers</i> , including female, male and children
6.	<i>Footwear retailers</i> , including fashion and work wear
7.	<i>Jewellery retailers</i> , including accessories
8. Home:	<i>Furnishing retailers</i> , including hard and soft furnishings
9.	<i>Electrical goods</i> , including brown and white goods and computers
10.	<i>DIY</i> , including gardening
11. Leisure and entertainment:	<i>Sports retailers</i> , including sportswear and equipment
12.	<i>Toys retailers</i> , including games, hobbies and crafts
13.	<i>Books, music, stationery and video retailers</i>
14.	<i>News</i> , including newsagents and CTN's (confectionery, tobacco and news)
15. Health and beauty:	<i>Health and beauty</i> , including chemists and opticians
16. Home shopping:	<i>Home shopping</i> , including catalogues and mail order directories
17. Mixed stores:	<i>Mixed stores</i> , including department stores and variety retailers

Table 2.4 Different types of retail organisation, Doherty et al., 1999, p25

In researching an area such as this a broad approach can be adopted by looking at all elements of the retail sector, alternatively a more focused approach can be taken. The categorisation in table 2.4 allows the researcher to pinpoint a particular field of interest and outline the impact of the internet on a particular field. This is necessary as the needs may differ markedly from one area to another. This research focuses on the SME retailers in category 9, *Electrical goods, including brown and white goods and computers*. A justification for this will be outlined in the methodology chapter (see 4.3.2).

2.5.6 Levels of uptake

UK retailers have built up an enviable reputation in retailing and supply chain management, providing the ideal framework in which to apply (the new internet) channel.

Doherty et al., 1999, p.22

According to the IMRG (2006), online selling in relation to retail sales was nearing 7% in the UK by 2005. They also state that at this time between 2002 and 2005 online sales increased by 1,500% with a corresponding increase of sales per month from £82 million to £1,373 million. Despite successes, many traditional retailers have been relatively slow to embrace internet technology wholeheartedly (Marciniak and Bruce, 2004). McGoldrick (2001) suggests that despite uptake being initially sluggish, due in part to the negative impact of failures, by the end of the millennium the influence of IT could be felt across the whole of the retail value chain (Burt and Sparks, 2002).

The extent of uptake in the use of the internet as a general business and marketing tool can be difficult to pinpoint. Statistics are quickly out of date often before they are published (Reynolds, 2001). Early studies such as Doherty et al. (1999) found only 5% of retailers were actively offering a transactional service supporting direct sales. Other online activities were pursued by organisations in areas such as; online marketing, public relations, debating forums, online payment competitions and interactive advertisements. The

highest numbers of active web sites were in groceries, electrical goods (the focus of this study) with little activity in specialist foods, footwear and jewellery. The level of quality varied across the survey with high quality examples noted in book retail and wine merchants and poorer quality sites being registered amongst fashion and furnishings. The various categories within retail and their different experiences relating to the use of the internet are examined in greater detail later in this chapter.

Power (2002) suggests that statistics from Australia indicate that only 28% of companies connected to the internet used it for the procurement of goods and services. This was supported by statistics from the US and some of the reasons behind the reluctance are outlined below.

- Moving onto the internet could lead to uncontrolled growth
- Fear of alienating intermediaries
- Satisfaction with current business arrangements
- Concerns about levels of understanding of the technology
- Time and expense of reengineering processes
- Fear that products would not be suitable for trading via the internet.

Hart et al. (2000) suggest that since businesses have been permitted to use the internet, speculation about its potential as a new marketing channel have been rife, but exact current figures are difficult to come by. Ellis-Chadwick et al. (2002) suggest that the majority of retailers (72%) have taken the preliminary step of URL registration with only 18 percent developing an on-line sales ordering capacity. Their research goes on to suggest that it is the largest organisations, with over 300 outlets, that are the most likely to have a fully developed transactional web site. The increase in transactional web sites from Doherty et al. (5%) in 1999 to Hart et

al. (18%) in 2002 provides some insight into the level of change over that period of time. These figures are directly comparable because they come from the same writing team of Ellis-Chadwick, Doherty and Hart (1999 onwards).

2.5.7 Factors relating to uptake

By looking at the factors that affect uptake we can have some indication of the likely increases in organisational internet usage in the future. In figure 2.4, Doherty et al. (1999) outline some of the factors that are likely to influence this uptake.

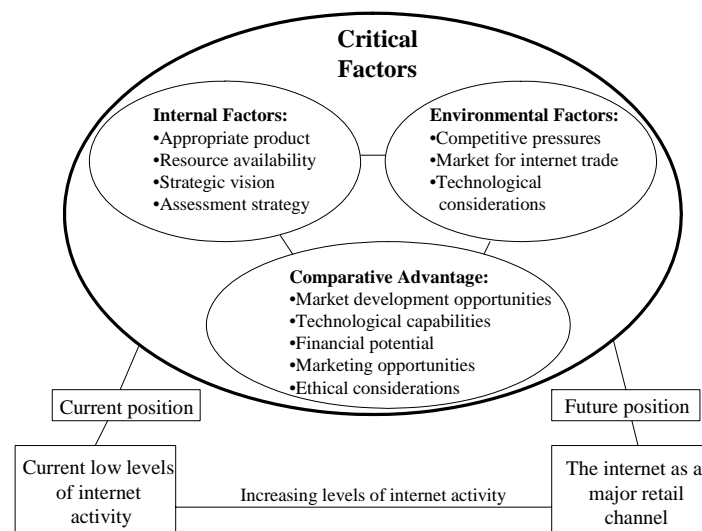


Figure 2.4 Factors relating to uptake, Doherty et al., 1999, p.26

- *Internal factors*, the researchers found that costs involved were high and that in many cases senior management remained unconvinced as to the worthiness of a fully interactive site. The main issue was the assessment strategy and general concern that the potential could not be fully evaluated. The more retailers that introduce fully transactional sites, the easier it should become to evaluate success and choose the correct model to follow. At the time of

this research however, it was judged that the inhibitors outweighed the facilitators - hence the low figure recorded for the number of transactional sites.

- *Environmental factors*, some issues arise here regarding the readiness of the customer to fully embrace the internet, and the technical ability of the internet to support transactions. The media has both helped and hindered the use of the internet by providing stories hyping the technology whilst simultaneously voicing concerns over its usage, for instance on security issues.
- *The internet's comparative advantage*, the research suggests that retailers have positive perceptions of the internet's potential to deliver a comparative advantage over the traditional retail channels. These perceptions related mainly to the reach of the internet and the new services that it can support. However at the time of the research these were seen as marginal and this would suggest why the numbers actually involved with the transactional web sites was so low.

These issues are included to outline the factors that influence the end user, however they will impact on the business user and as such are a useful addition for this thesis.

2.5.8 Projections for future uptake

Hart et al. (2000) point out that the levels of internet uptake in the US are considerably higher than those of the UK, but it would be wrong to assume that the UK will automatically follow the same pattern as the US. Despite its global connectivity, the future potential for retailing on the internet could also be dependent on cultural and organisational factors. It is not possible to predict the future but Hart et al. (2000) make some observations based on their research findings;

- all retailers must embed their plans within a coherent, enterprise wide retail marketing strategy
- rigorous market research will need to be undertaken to assess objectively the potential opportunities offered by the internet, as well as threats from the industry competition - this may lead to some retailers merely having a *shop window* presence on the internet and not going down the road of a transactional site
- retailers developing innovative and flexible web sites will be able to establish a two-way communication channel with their customers to support their research, advertising and promotional activities
- having established an on-line relationship the retailer can then decide the best way forward, perhaps it may not be appropriate to have all the stores products on line
- where traditional retailers do decide to have a fully transactional web site they will need to be aware that the virtual store has different requirements to the traditional one.

The IMRG (2005) has forecasted that by 2012 online sales in the UK will have expanded by 320%. This will make them worth more than £60 billion per annum, representing almost 20% of all retail sales. These statistics and the others provided above give insight into general attitudes towards the internet in the UK and perceptions of future implications.

Limitations of the internet in retail

Despite the obvious advantages of the use of the internet as a new channel there are also restrictions which limit the potential or create threats.

- *Logistics.* The fundamental flaw in applying the value system to the internet as a retail channel is the often overlooked issue of logistics, i.e. actually getting the product to the customer. Establishing a new logistical infrastructure to service the needs of internet customers may yet prove to be

the biggest barrier to its immediate development as a retail channel. It is therefore likely to be the mail order and direct marketing operators who are best positioned to initially exploit the commercial potential of the internet, owing to being non-store based, and having established direct distribution systems. This leaves a potential contradiction whereby in attempting to bring the consumer closer to the producer or retailer, additional intermediaries are involved to fulfil the process, thus potentially pushing up the price. This research is not concerned with logistics as such, however they will obviously feature in the overall marketing picture.

- *Disintermediation.* This has occurred in retail due to the increasing power of the retailers. The internet allows for producers to market directly to the consumer thus potentially allowing for further disintermediation. The internet has the ability to change the balance of power within electronic channels of the various retail sectors. This is less likely to be a problem for the major retailers due to the extent of their infrastructure, logistics, supplier relationships, brand image and loyalty.
- *Virtual merchants.* As a new channel, the internet has distinct advantages over traditional channels in reducing barriers to entry. Location and expensive shop fronts may become less of a concern than they were in the past, but lowering these barriers may open the door to more competition. Virtual merchants can easily adopt the newest internet based methods to bypass traditional distributors, posing a threat to traditional players.

Identifying what is likely to happen in the future is a complex and ultimately impossible task given the range of existing possibilities and the potential for radical future change. The SME retailer has to make a variety of decisions on IT/internet adoption based on the limited information available to them.

2.5.9 Links to this research

This section has outlined some of the background relating to uses of the internet in the retail sector. The next section will look in more

detail at the specifics of the b2c relationship and the use of IT and the internet to support the processes associated with it. It will also provide a rationale as to why it is important to discuss elements of b2c despite the fact it is not core to this research, by making a link between b2c and b2b elements of the retail business.

2.6 Retail and the internet, b2c

2.6.1 Introduction

Initial academic interest in the area of retail and its relationship with the internet tended to focus on b2c elements (Duffy and Dale, 2002). Retail organisations have used the internet in a variety of ways to improve the way they interface with their end use customers. IT in general and internet technologies have been able to improve methods of retaining information on customers and move towards a point where relationship marketing becomes a reality. Despite this important development it is the internet as a new retail channel that has revolutionised how the modern retail business operates and how customers shop. This is developing all the time and constantly becoming more ubiquitous and mobile. This section outlines some of the main areas relating to the impact the internet has had on how companies interface with their customers and how the technology can improve the way they do business.

2.6.2 Customer information

Hart (2000) suggests that the 1990s were considered the era of database driven customer management. Electronic Point of Sale (EPoS) is where information is gathered electronically at the tills using bar coding and optical scanners, and information is sent automatically to enable central systems to replenish merchandise (McGoldrick, 2001). Bar coding systems have been present in retail for many years and are identified by Lucas et al. (1994) as a

technology that uses a printed bar and space pattern to represent numbers and letters that when decoded provide important merchandise information. The most common system uses employs 13 digits, the first two of which are for the country of origin, the next five for the supplier, another five for the product and the last one to minimise scanner errors. Today over 90% of UK grocery produce (Nielsen, 2001) have barcodes on them.

McGoldrick (2002) outlines the benefits of the EPoS systems as the following;

Logistical

- immediate recording of sales and rapid flow of information
- stockholding can be reduced as less need for 'safety stock'
- orders to suppliers can be automatically suggested or triggered (sales based ordering - SBO)
- deliveries can be better scheduled to reduce loading area congestion.

Costs/productivity

- faster checkouts, therefore lower labour costs
- knowledge of transaction flows facilitates tighter labour scheduling
- staff performance, at least in quantitative terms, is monitored
- cost management is facilitated
- no item price marking required (in most countries/states)
- better stock control leads to more productive use of space for selling.

Buying

- buyers' records constantly updated, showing trends by product and store
- less reliance on external data sources
- data can be sold to or shared with manufacturers or other parties

- forecasts can be based on detailed knowledge of seasonal and local trends.

Customer service

- bigger assortment, due to better stockturn, and less out-of-stocks
- reduced queues at checkouts
- itemised receipts
- fewer checkout errors (usually)
- additional time-saving if used with EFTPoS (Electronic Funds Transfer at Point of Sale) payment systems or on-line authorisation of credit.

Marketing Strategy

- immediate feedback after adjustments in prices, product mix, displays, advertising or promotions
- experiments and product trials can be conducted and monitored quickly
- purchase patterns can be analysed to improve store layouts and inform category management decisions
- loyalty cards extend the scope of recording and analysis, providing further scope for relationship marketing.

As can be seen the benefits are considerable and these relate to both customer orientated functions and those involved with business relationships. Customer information gleaned from bar coding and EPoS systems can in turn link in with EDI/internet systems. This is also the case with Electronic Funds Transfer - at Point of Sale (EFT-PoS) systems, which allow transactions to move financial resources directly from the purchaser's bank account to the retailer's bank account (Abdul-Muhmin, 1998). The internet has become the central platform for these once disparate technologies (Hart et al., 2000). On their own these developments afforded the retailer greater access to information, but organisational responses

to this were generally reactive and product orientated. The internet potentially offered the company the ability to 'target and interactively communicate with consumers individually' (Hart et al., 2000, p.955) throughout the buying process. Despite the potential of this powerful innovation early internet efforts focused on what is known as *brochureware*, (see 2.4.4) which is the static provision of marketing and company background information (Lee, 2001). This communicates information to the customer in the traditional one-to-many way only via a new channel, the internet. It does not however utilise the ability of the internet to communicate with customers to gain greater insight into customer wants (Carey and Gerk, 2002). The ability of the retailer to use these technologies and integrate them via the internet has not only dramatically improved the quality and quantity of customer information coming through to them it also has given them greater power in their relationship with suppliers as they have the best information available and can use it to their advantage (Clarke, 2000). This has made the possibility of relationship marketing a reality.

2.6.3 Relationship marketing

Traditional marketing efforts focused on targeting large groups of consumers who had in some way shared needs or interests. This idea known as segmentation was viewed as a powerful marketing tool allowing the organisation to respond to the needs of a niche group of customers. Segmentation has developed to smaller and smaller niche groups and this has led to marketers viewing the possibility of marketing to the individual customer. This notion of *relationship marketing* or *one to one marketing*, is not a new one (Gronroos, 1994) but it has become increasingly to the fore in the development of online relationships in the business to consumer (b2c) marketplace. Relationship marketing has been defined by Gronroos as being to,

identify and establish, maintain and enhance and, when necessary, terminate relationships with customers and other stakeholders, at a profit so that the objectives of all parties involved are met; and this is done by mutual exchange and fulfilment promises.

1994, p16

Implicit in this definition is the need to know who your real customer/s is/are but also to know those who aren't. This marketing approach can be seen as a subset of customer relationship management (CRM) which is identified by Zeng et al. (2003) as an all encompassing business process involved in all aspects of a business transaction, including the following.

Relationship management, instant service, one to one solutions, direct online communications

Sales force automation, automation of sales promotion analysis, automatic tracking of clients history – coordinating sales, marketing, call centres and retail outlets towards sales force automation

Use of technology, enabling new technology and skills to deliver value for real time customer data availability, applies customer data availability and data warehousing technology to provide key performance indicators

Opportunity management, manages unpredictable growth and demand providing good forecasting models integrating sales history and projections.

(Zeng et al., 2003, p.1)

Accurate measurement of exactly who your customers are is essential whether in b2c or b2b environments. Technology has developed to allow for a closer understanding of the end use customer via two way communication. In the context of this thesis

the relationship between buyer and seller is important and will be looked at more closely in section 2.9. In the meantime it is worth noting that as internet enabled communications between supply chain partners becomes more operationally efficient, whether in b2c or b2b, it will carry with it an expectation of all those involved that they can communicate, and therefore have the power to influence, those that supply them.

2.6.4 A new retail channel

The internet has constituted a new retail channel that now sits, at times uneasily, along with the more traditional channels of the retail outlet (also known as bricks and mortar) and the catalogue (Steinfeld, 2002). In the early 1990s a number of companies began to provide goods and services for sale online (Chaffey et al., 2000), this has since proliferated leading to a new and powerful retail channel (see 2.5.6). The ability to shop from home is not new, however the flexibility of the internet allows for a superior pictorial presentation of goods, the ability to purchase online and an unprecedented level of choice. Au and Ho (2002) suggest that if online shopping becomes more popular and online marketing more effective, manufacturers may feel they have an increasing rationale to bypass the traditional brick-and-mortar distributors and cooperate with cyber intermediaries to set up virtual retail stores to sell their products.

The impact of this new retail channel has received extensive attention in the academic journals (Reynolds, 2002; Ahmed et al., 2006; Singh et al., 2006). Doherty et al. (1999) outline the following points relating to the internet as a new channel in retail.

- *Accessibility*, current rates of domestic PC uptake and the enhanced ability of the new computer technologies to communicate has led industry experts to believe that the use of the internet will expand exponentially. The

development of broadband is also influential and ties in with accessibility and usage (Duffy, 2004).

- *Direct communications*, with the use of two way communication between buyer and seller the internet enables enhanced targeting and segmentation opportunities for those retailers who have the know how and technology to closely monitor consumer behaviour (Hart, 2000).
- *Cost savings*, although unlikely, the internet could ultimately replace the high street altogether by satisfying all shopping needs online, from home. This would severely alter the current structure of retail (Steinfeld, 2002) but could benefit some retailers via substantial transaction cost savings.
- *New markets*, with the ability to communicate via internet communications, the potential markets for retailers are greatly enhanced. It is an opportunity to gain additional sales, either through existing customers or through attracting new ones via a whole new global marketplace. Despite some potential pitfalls (Reynolds, 1997) these new communication opportunities provide the potential and easy access for brand positioning and diversification into new product areas (Ward and Lee, 2000).

Despite the many successes of internet retail there have been many notable failures as well (Burt and Sparks, 2002) especially in the internet grocery market with companies such as Webvan (Ring and Tigert, 2001). The internet has however created the structure for a new and powerful retail channel that continues to gain ground on the more traditional channels. The development of this part of the market is important as the first experience many business users have with the internet is as an end use customer themselves. Their perception of their experience as a customer is likely to impact upon their attitude towards the internet for use as a business tool and as such is worth mentioning here.

2.6.5 Mobile

The 'm' in *m-commerce* stands for mobile. This next generation of applications allows the user to access various services on the internet from their mobile phone allowing them greater freedom from the *traditional* online shopping constraints of the PC. Although the use of mobile commerce is currently in its infancy it is likely to have major ramifications for the retailer in the future (De Kervenoael, 2006). This has been enhanced by the introduction of third generation (3G) WAP (Wireless Application Protocol) phones. These new mobile phones can access the internet allowing users greater flexibility in how they utilise the internet and the services it offers. Uptake is currently low leading some analysts to suggest that these technologies are struggling to find a market (McGoldrick, 2002). However successful m-commerce eventually is, it does lend further support to the ubiquitous nature of the internet and the range of possible future uses.

2.6.6 Links to this research

This section has taken a brief look at the impact of the internet on the retail sector relating to the relationship with the end user. Technologies that improve the processes undertaken by the retail sector have been in existence for some time, however the introduction of the internet to support existing technologies and develop new ones has had wide ranging implications on the sector and how it interfaces with its end user customers. Although this research focuses on the business relationships and the impact of the internet, it is necessary to discuss the b2c elements due to their impact on general user behaviour and perception of all things internet. Despite the different functions of b2c and b2b it is in reality problematic to pull them apart (Burt and Sparks, 2003). The next section looks at the impact of the internet on usage and development relating mainly it to the b2b relationship in the retail sector.

2.7 Retail and the internet, b2b

2.7.1 Introduction

As mentioned the initial surge in academic interest in the area of retail and its relationship with the internet tended to focus on b2c elements. However the level of attention given to b2b developments has increased dramatically and is today seen as the more influential in relation to its current and future impact on business (Lee and Whang, 2001). This section outlines some of the main areas relating to the impact the internet has had on how retail companies do businesses with their business partners. The section looks at some of the historical context for retailers and the use of electronic information and examines the use of the internet and the reasons behind migrating to internet based systems.

2.7.2 Background

The development of b2b models is generally viewed by management as a method of gaining real competitive advantage (Lu and Antony, 2003). An array of b2b academic models and practical applications have been developed and the correct choice of these for a particular business type is seen as a central precondition for a successful e-business strategy (Ng, 2005). From the list provided (appendix 1) by Rappa (2006) it can be seen that there is a selection of b2b models that would be appropriate for the retail sector, indeed the sector has been at the forefront of developing many of these.

There is now an extensive body of literature relating to b2b usage of the internet. Some academics have focused on the general b2b relationship (Gattiker et al., 2000; Power, 2002; Serve et al., 2002; Tassabehji et al., 2006). Others have focused on supply chain issues arising with adoption of internet technologies in the supply chain (Janssen and Sol, 2000; Chircu and Kauffman, 2000; Yen et al., 2003; McCormack and Kasper, 2002; McLaren et al., 2002; Swafford et al., 2006). It is not an easy exercise to pull apart the various functions relating to b2b internet usage, the following headings are general in nature and many links exist between them. The starting point ties in with the historical development and the impact of EDI.

EDI

EDI (outlined in 2.3) predates the internet as we know it today but performs a similar role of allowing the sending of electronic information from one source to another (Lucas et al., 1994). As such it has been utilised to assist in the smooth running of the supply chain by speeding up the flow of information and therefore merchandise, from distributor to retailer and back again (Fynes and Ennis, 1993). The evolution of the internet has meant cheaper set up costs and enhanced capacity for the movement of electronic data compared to those experienced under EDI. A new web based format XML has emerged and is set to precede EDI. XML documents are typically sent via the internet and therefore merely require a PC and internet access. The older transmission methods associated with EDI are being replaced by internet protocols such as FTP, telnet and email, although standards for these media are still emerging.

EDI networks relate to one to one closed links between companies and value added networks (VANs) that act like an electronic mail

box, with information being picked up by the appropriate parties. EDI documents provide a structure for the passing of electronic information and despite their restrictive structure are in fact quite flexible. EDI however has been viewed as both costly and technically prohibitive (Angeles, 2000). The internet's enhanced capacity, more general protocols and the fact that it runs over a PC with a modem, has reduced costs and thus brought the use of electronic methods of inter-company communication within the budget of the small company (Chan and Swatman, 2000).

Those who led the way with EDI adoption have been able to utilise this understanding and knowledge in their use of the internet. According to Loughlin (1999), until recently EDI was seen as the dominant IT force in the management of the retail b2b supply chain. The draw back, especially for the smaller retailer/supplier has been the expense of the hardware involved in EDI. EDI has also struggled with finding common protocols so all systems can *speak* to each other. Although in the early stages of development, the internet has allowed a cost effective way for all involved in the retail process to be connected electronically and have real time information at their disposal. Using the internet as a conduit for EDI will, according to Lankford and Johnson (2000), draw smaller retailers and suppliers into embracing EDI, leading to efficiencies throughout retail supply chains. They go on to suggest that, private or propriety, VANs will continue to exist where this is deemed appropriate, the advantage of these networks being that they are completely private whereas the internet is open and therefore can possibly be breached. The establishment of internet-EDI or I-EDI also leads to closer partnerships between players, including competitors, and to the automation of the entire supply chain. (Angeles, 2000) The main decisions in EDI currently revolve around whether to adopt it, and if it is decided to adopt, then if the more

traditional platform should be used (VANS) or whether this should be moved on to web based systems. The following quote looks at the advantages that might accrue.

Analysts said moving to web EDI (I-EDI) will change the b2b strategy of suppliers in the retail sector. It will bring cheaper and easier support of supply chain systems for top-tier enterprises, but can increase costs for those lower down the supply chain.

www.computerweekly.com

To avoid confusion the concept of *I-EDI* will be referred to as the *internet* for the purpose of this thesis. The movement of information is paramount to the success of the supply chain. The internet further enhances the possibility for clear, quick and accurate electronic communication which was pioneered via the EDI systems. Use of electronic communications in business is thought to generally lead to;

- less administration
- lower stockholding
- fewer buying errors
- fewer markdowns
- better stockturn.

This translates to bring the consumer;

- increased assortment
- reduced out-of-stock
- improved customer service
- swift seasonal adjustment
- quick response to trends.

According to Reynolds (2000) there was a growth in interest relating to the application of internet protocols to supply chains and to the transactions taking place between retailers and their suppliers. The aim was to take advantage of the points mentioned above and marked a move away from the closed EDI standards to the more open model of extranet usage. The move to a more open system, and in the case of for instance Tesco to a one-to-many exchange, was not a huge leap for the organisations involved. However the changing relationships with partners and in some cases competitors was always going to be more of a culture shock for existing retailers. EDI has been crucial in the development of the supply chain with companies realising the importance of the supply chain and how it is managed.

2.7.3 Supply chain management

Supply Chain Management (SCM) looks at managing the supply chain of an organisation as efficiently as possible. Serve et al. (2002) outlines the specific goals of SCM as coordinating processes in order to reduce waste, reduce the order to delivery cycle time, develop a flexible response throughout the supply chain, and to reduce unit costs. The following table 2.5 aims to outline the benefits of supply chain integration.

<i>Dimension</i>	<i>Elements</i>	<i>Benefits</i>
Information Integration	<ul style="list-style-type: none"> • Information sharing and transparency • Direct and real-time accessibility 	<ul style="list-style-type: none"> • Reduced bullwhip effect • Early problem detection • Faster response • Trust building
Synchronised Planning	<ul style="list-style-type: none"> • Collaborative planning, forecasting and replenishment • Joint design 	<ul style="list-style-type: none"> • Reduced bullwhip effect • Lower cost • Optimised capacity utilisation • Improved service
Workflow Coordination	<ul style="list-style-type: none"> • Coordinated production planning and operations, procurement, order processing, engineering change and design • Integrated, automated business processes 	<ul style="list-style-type: none"> • Efficiency and accuracy gains • Fast response • Improved service • Earlier time to market • Expanded network
New Business Models	<ul style="list-style-type: none"> • Virtual resources • Logistics restructuring • Mass customisation • New services • Click-and-mortar 	<ul style="list-style-type: none"> • Better asset utilisation • Higher efficiency • Penetrate new markets • Create new products

	models	
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Table 2.5 Supply chain integration dimensions, Lee and Whang, 2000, p.3

Supply chain management is described as the following.

Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, SCM integrates supply and demand management within and across companies.

Council of Supply Chain Management Professionals online, 2006,
www.cscmp.org

From this definition it can be seen that the remit is wide and that it has organisational implications both internally and externally. Folinas et al. (2004) outline the aims of the supply chain in the new business internet era as a way of securing short term economic benefits whilst gaining long term competitive advantage. Lancaster et al. (2006) adopt the term E-SCM and describe this as an effort to increase communication speed and information flow through the whole supply chain. Lu and Antony (2003) point out that enthusiasm for the possibilities of internet enabled supply chains has at times masked the possible downsides, but also argue that 'indifference and ignorance of the b2b marketplace on business environment and business survival could be lethal' (p.173).

A good deal of work has been undertaken on the supply chain and the impact of the internet upon it (Janssen and Sol, 2000; Chircu and Kauffman, 2000; Yen et al., 2002; McCormack and Kasper, 2002; McLaren et al., 2002; Swafford et al., 2006). Humphreys et

al. (2006) identify the following benefits to companies of using e-supply chains;

- reduces procurement costs (2.7.5)
- it is less costly to place an order
- likely to be fewer errors in ordering.

These points suggest a rationale for adoption which will be explored further in this section (2.7.7). It is difficult to pull apart the various functions relating to b2b internet usage and given the nature of the supply chain it tends to impact on everything a retail business does. In an attempt to isolate it the external impacts will be discussed in this section. Other elements of internet usage in b2b retail including internal supply chain issues are covered in this section.

2.7.4 Identifying supply chains/networks

The experience a company has with its supply chain will be dependent on the product that it is involved with. The word *network* is sometimes used in this context to widen the definition of the supply chain and to infer a more important and strategic concept rather than a linked linear chain (Lamming et al., 2000). Figure 2.5 outlines a matrix which indicates how different types of supply networks may function depending on the product and where the emphasis of effort should be.

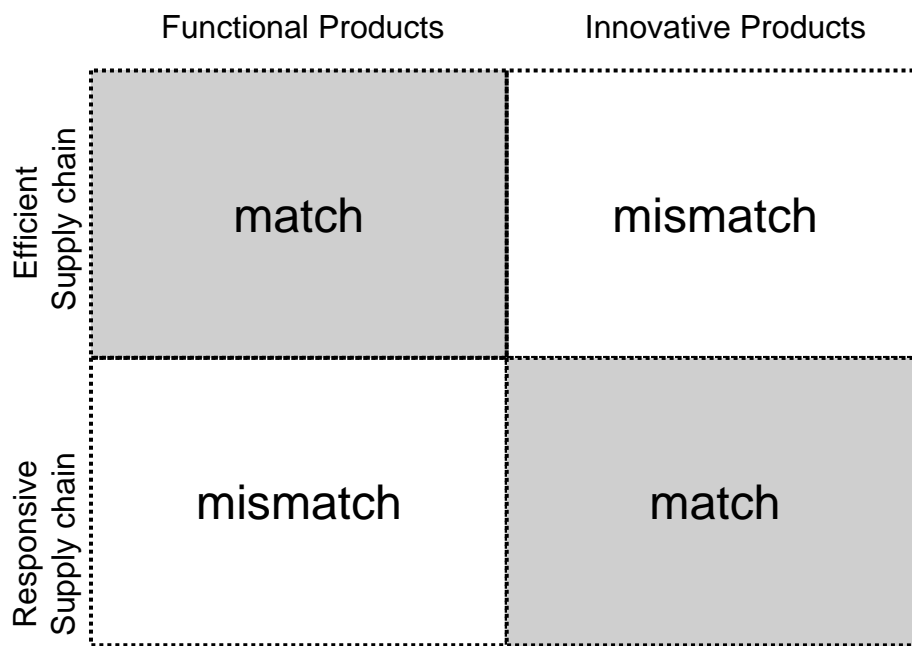


Figure 2.5 Matching Supply Chains with Products, Fisher, 1997, p.111

Fisher (1997) states that *functional products* include staples people purchase in any retail outlet and as such tend to have predictable demand and long lifecycles. He goes on to state that *unique products* tend to have unpredictable demand and shorter lifecycles and as such the supply network has to operate in a different way. Fisher goes on to suggest that a supply chain needs to achieve two fundamental objectives: firstly, the physical function is about converting raw materials ultimately into finished products; secondly is market mediation which is about ensuring there is demand for the product when they get to market. The supply chain of the functional product is going to be easy to predict given the nature of the product and access to extensive sales data and this means the focus of effort is therefore on minimising physical costs. With unique products the opposite is true, the physical costs are less important than getting the product to the market place at the right time and in the right quantities. Also margins will be generally higher than in the

case of functional products, therefore the operational efficiency of the chain is less important. Fisher suggests that the matrix (figure 2.5) allows managers to plot product families and therefore supply chain priorities.

Lanning et al. (2000) provide further clarification on the importance of the product when designing a supply chain. Their work suggests that different types of supply networks exist and that greater efficiencies will be gained from matching the right product with the right network. They adopt the term *innovative-unique* and bring in characteristics to evaluate levels of complexity. They offer the following table (2.6) to clarify supply chain needs.

Characteristics	Supply network of innovative and unique products	Supply networks of functional products
Higher complexity	<i>Competitive priority:</i> speed and flexibility, innovation, quality supremacy	<i>Competitive priority:</i> cost reduction, quality sustainability, service
	<i>Sharing of resources and information:</i> large amounts of non-strategic information enabled by IT – problematic when involving sensitive information and knowledge	<i>Sharing of resources and information:</i> large amounts of non-strategic information enabled by IT – generally unproblematic: may include cost breakdowns and strategic knowledge
Lower	<i>Competitive priority:</i>	<i>Competitive priority:</i>

complexity	speed and flexibility, innovation, quality supremacy	cost by (high volume production), service
	<i>Sharing of resources and information:</i> problematic exchange of sensitive information and knowledge – IT less critical	<i>Sharing of resources and information:</i> generally unproblematic - may include cost and strategic knowledge – IT less critical

Table 2.6 Adapted from Lamming et al., 2000, p.683

Their research suggests that 'the complexity of the product being supplied is significant; supply networks of complex products are more complex to manage as a consequence of the large number of components and hence actors involved' (p. 682). This leads them to conclude that the need for information technology is greater in complex networks compared to those that are less complex. This suggests that the use of IT, be it EDI or internet, is more important in the supply networks of products with high complexity whether they be unique or functional. This work is an important addition to this thesis because it provides a framework in which to look at different types of retailer via their product offering. It thereby suggests that the choice of product type examined in the primary research will influence the technology needs of the chosen retailer. The specifics of the buying process using the internet is called e-procurement and is examined next.

2.7.5 e-Procurement

The e-Procurement market, practically unknown just five or six years ago has in a short space of time exploded, fragmented, and subsequently imploded into a plethora of inadequate initiatives and investment driven frenzy.

The concept of e-procurement is central to this research as it is the specific process undertaken by the SME retail organisation that is being analysed in the context of the proposed model. Procurement in this context relates to the purchasing of something for a company (dictionary.com, 2006). As such it represents a specific task undertaken as part of the supply chain. Improvements to the business can be reaped via online procurement because it simplifies the process of finding new lower priced suppliers and generally is a more efficient method of undertaking business (Humphreys et al., 2006).

In the context of retail, procurement can be split into; stock for resale, and the purchase of other items the business might require. The difference between the processes of buying between these two functions is on the surface quite obvious. Purchasing for stock is likely to be a recurring event often with the same product being purchased over and over, this is discussed in 2.7.4 under *supply chain networks*. A product for the business will tend to be a one offs or purchased infrequently, and as such has different research and purchasing needs. This research is more concerned with purchase for stock and will therefore focus on this area.

The ability of online purchasing to create savings for business is well documented in current research (Humphreys et al., 2006; Lancaster et al., 2006). A proliferation of new business models exists to improve traditional methods of procurement through the use of internet based technologies (Rappa, 2006). The variant of the *merchant model* outlined in Rappa's list is the most likely type a small retail would adopt. This is where there is a direct relationship between the retail organisation and their supplier(s) and where

existing practices are migrated on to an internet based system. Another breakdown of b2b models is provided by Humphreys et al. (2006) and identifies the following four;

- *established buyer-supplier relationship*, where an existing buyer and seller who are known to each other use electronic commerce to support their buying and selling activities
- *supplier-orientated marketplace*, in this model both business and end-user customers will use the same supplier marketplace, this may include an auctioning facility (www.clearance-comet.co.uk/)
- *buyer-orientated marketplace*, this is where a company looking for suppliers establishes a web site that allows potential suppliers to look at what the company requires and to bid to supply it
- *business-to-business intermediary*; this is also known as the *hub* or *exchange* and is where a third party provides a virtual marketplace for buyers and sellers to meet and do business.

This research focuses on the first model type as it is the most appropriate for the retail SME as it is anticipated that this is the most likely used in the companies being examined. There is however some that use business-to-business intermediaries, these are examined next.

2.7.6 Virtual markets

Vertical hubs, vortals and e-hubs are all names for virtual market places that exist to bring buyers and sellers together in a virtual environment. Without physical constraints the communication process is greatly enhanced and has the potential to lead to huge savings in the supply of goods. However due to the extensive stock market fall in 2000 many exchanges went out of business as their market capitalisation tumbled. The dominant virtual market place in

the UK is Agentrics who recently took over GlobalNetXchange which was put together by retailers Carrefour-Promodes and Sears, and software giant, Oracle. Quite a few exchanges have developed with traditional market players' partnering with technology companies to develop a new company. This approach can also be seen in the example of Avendra in the hospitality sector which includes hotel giants Marriott and Hyatt amongst others, and a technology partner, GoCo-op. The next step is to look at why and how companies move their supply chains to new internet based methods.

2.7.7 A rationale for process migration

Yen and Ng (2003) outline the move by companies to migrate their business activities into an online environment. They state that these changes have necessitated new terms to explain these online processes such as: electronic supply chain (e-SC); electronic procurement (e-procurement) and electronic logistics (e-logistics). Van Hoek (2001) describes the e-SC as the physical dimension of e-business 'with the role of achieving base level operational performance in the physical sphere' (p. 22). The inference here is a meeting between the physical (e.g. logistics and procurement) processes that still exist, and the virtual movement of the necessary information to support it.

One of the problems of the traditional supply chain is described by Forrester's bullwhip effect (van Hoek 2001). The theory suggests that problems with knowing how much to order increases as there are more layers in the chain. Faced with uncertainty suppliers will anticipate demand and this lack of specific understanding will impact on their suppliers, and so on. The resultant effect tends to lead to waste and chaos. Electronic linking between partners on the supply chain should provide a clearer indication of needs and lead to

efficiencies. Van Hoek (2001) goes on to suggest that to maximise benefits of the e-supply chain it is necessary to have all supply chain partners involved in the use of e-SC solutions.

Folinas et al. (2004) adopt a well used approach to IT and internet integration in business. The model (figure 2.6) shows how the supply chain relationships may evolve with the greater use of the internet.

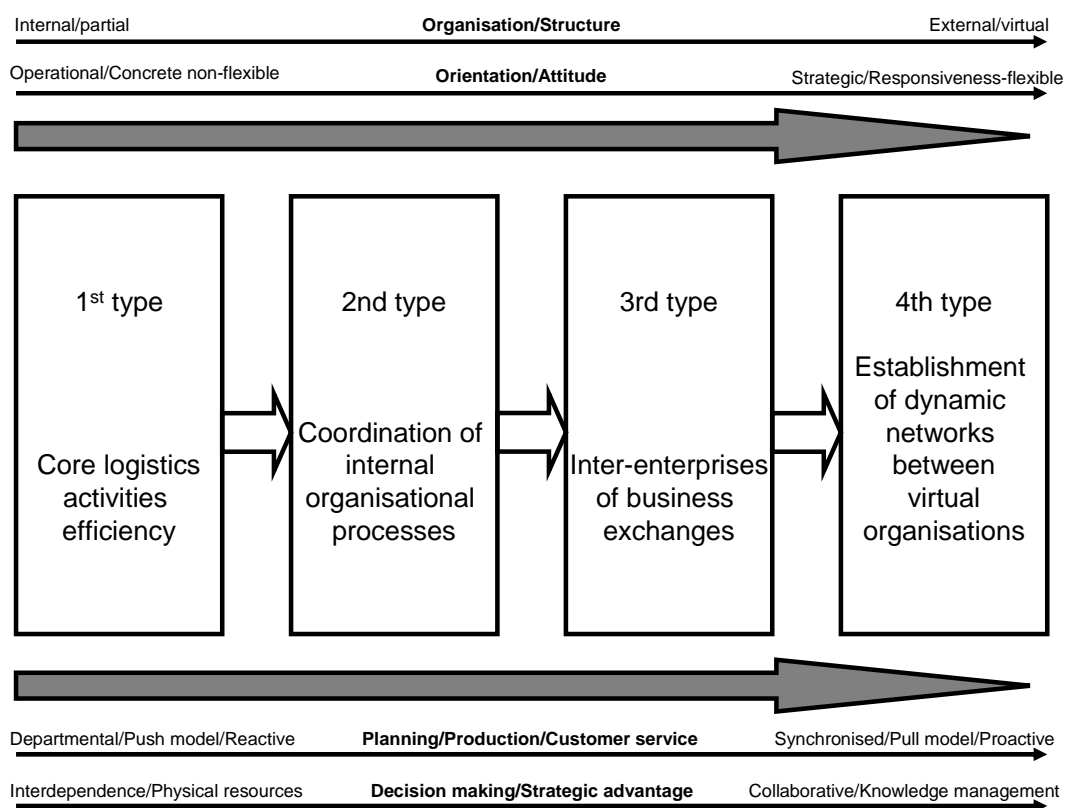


Figure 2.6 The evolution of supply chain, Folinas et al., 2004, p.280

The first two types presented here relate to one specific company whereas the second two relate to a cluster of companies. *Type 1* relates to the initial efforts of a company in the application of supply chain techniques. This is achieved through logistics improvements and specifically by leveraging its total volume over a smaller base of suppliers (Folinas et al., 2004). This offers internal improvements but not ultimately much strategic advantage. *Type 2* is where

companies develop internal support information systems between departments. This has the effect of integrating business operations and improving efficiencies in distribution and transportation management, although planning and execution decision are still taken at enterprise level. Type 3 is a more dynamic approach that allows for the expansion of partnerships beyond the boundaries of the organisation. The reaching of this stage should assist in minimising the bullwhip effect by improving communication throughout the supply chain. *Type 4* as the final stage represents full network connectivity between supply chain partners. Companies reaching this point have joint aims and objectives with their external partners and may undertake joint strategic planning relating to product development (Safeway and Birds Eye). As more companies move to internet based methods of communication to fulfil the needs of their supply chain the impact will be felt on partners throughout the chain, some may benefit others may lose out.

2.7.8 Impact on the supply chain

The impact of the internet has been felt throughout supply chains leading to extensive realigning of traditional supply chains. The traditional *intermediary*, also known as the *middleman* or *broker* facilitates transactions between buyers and sellers by offering value-added services such as;

- aggregation – volume purchasing
- distribution of products
- product information
- quality checks
- warranties
- transaction processing
- enhanced levels of knowledge and expertise.

Chircu and Kauffman, 2000, p.26

All these points are important in relation to the link between the SME retailer and their suppliers (see 2.8). When the internet began to be used for business purposes it was widely suggested that many services would become obsolete given the ability of the technology to aid communications. Changes created by the internet in supply chains have led to disintermediation and reintermediation. Mills and Camek (2004) describe disintermediation as the point where 'established physical agents are removed in favour of decreased costs to the buyers and sellers' (p.714). Intermediation represents the contrary position where new supply chain partners are introduced, thus theoretically lengthening the supply chain. Reintermediation is described by Chircu and Kauffman (2000) as the process through which a competitor that has become disintermediated due to the internet, is latterly able to compete again as an electronic intermediary (perhaps by reinventing themselves as a value adding part of the supply chain). One further issue worth mentioning is stock control, as even though it is an internal function it can have close links to external supply chain partners. Chircu and Kauffman (2000) go on to suggest that there is not sufficient empirical evidence to support mass disintermediation. However, these effects on the supply chain are on-going and are likely to continue to change as new business models evolve and as everyday culture becomes more attuned to the internet.

2.7.9 Stock control

The holding of stock can be a highly complex process with potentially thousands of different products with different shelf lives and storing requirements. As an area of study it is closely linked to the supply chain. Technology has played a major part in the management of these systems which now in many cases

incorporates internet technology as well (McGoldrick, 2002). *Promotion, display* and *sell* are mostly undertaken within the outlet itself although this too has expanded to include the internet. The delivery of goods has also been influenced by the internet and the online shopping boom. Credit and financial facilities are now more readily available thanks to the use of technology, especially EFTPoS systems which provide the retailer with direct access to their customers accounts.

2.7.10 Links to this research

This section has outlined the issues relating to the supply chain and the impact the internet has had upon it. As can be seen there have been many changes brought about by the migration of these processes online and that this is generally viewed as a superior way of doing business compared to traditional methods. The next section looks at the specific situation of the SME retail organisation and the impact the internet has had upon it.

2.8 The Retail SME and the internet

2.8.1 Introduction

The definitions of the SME are clearly outlined in section 2.2. The rationale behind the adoption of clear criteria that separates organisation into distinct groups relating to their size is that their needs differ. A great deal of theory looking at any aspect of business reflects on big business and the ways in which *it* operates, the SME sector is however often overlooked. There are similarities between big and small business in the way their decision making processes work, but there are also significant differences. This section aims to identify the particular situation of the SME and specifically the retail sector. This section starts by looking at general governmental support and the assistance it provides the SME sector in the UK, it then looks at the specific differences of the SME retail sector relating to its adoption of IT and the internet.

2.8.2 Government SME support

One of the main roles of government is to support industry at all levels to ensure the economic well being of the country, therefore by clarifying organisations into distinct groups they should be better placed to provide the type of support needed by specific groups. Big business tends to have a few people (normally the top tier of management) pursuing the external interests of that company on behalf of the stake holders. They tend to be powerful given the income their company generates, the tax it pays and the number of people they employ. This power will extend to their influence of those in local, national and even supranational government. The top management are likely to be members of specific lobby groups, such as the Institute of Grocery Distribution (IGD), and non-specific ones such as the Confederation of British Industry (CBI). This further extends their influence amongst legislators. The smaller business is unlikely to have this level of influence as they generally make less money and employ less people. Government is however aware of the importance of the SME sector to the economic well being of the country (Jutla et al., 2002; Stockdale and Standing, 2004) and therefore provide a variety of ways in which the smaller business is supported and represented.

The use of internet technology in the running of an SME is seen as one way of creating competitive advantage and increasing efficiency in operations (Ritchie and Brindley, 2005). However, according to Elizabeth Judge writing in the Times (14 Jan 2003), the UK Government is attempting to 'revive flagging business interest in the internet'. This is achieved via a new web site, that shows how SME companies 'tackle the tricky process of integrating the internet and broadband into their operations', (The Times, 14 January 2003) and the benefits they reap, or the issues they need to address. This appears to be a long way from the promised nirvana of only a few years ago when Siegel (1999) suggested that the internet represented a *Tsunami event* that would change those businesses that embraced it entirely, and leave those who didn't on the corporate rubbish heap. It is also an important point in relation to this research when looking at the levels of adoption and the issues behind it. Other government targets have related to SME use of broadband with the following targets;

- to raise connectivity to 1.5 million SMEs

- one million SMEs ordering and paying online by 2001
- to achieve parity relating to the DTI five-stage adoption ladder.

DTI Business in the information age, 2000

These targets were generally met but many SMEs have not progressed past these levels of adoption and integration.

2.8.3 The unique nature of SMEs

The differences that exist between SMEs and their larger counterparts are important considerations for this research. Research relating to the SME and the internet is generally far more limited than that relating to larger companies. Southern and Tilley (2000) outline the following problems relating to developing research into the internet in SMEs as;

- lack of analytical clarity on SMEs and how they should be viewed, leading to a limited understanding of the relationship between small firms and internet
- lack of knowledge relating to how SMEs respond to internet opportunities and if indeed they see it as an opportunity
- little known as to why and how SMEs use the internet.

This suggests a need for research in the area of SME adoption and use of IT and the internet (Quayle, 2003; Fillis et al., 2004). Dixon et al. (2002) state that what applies to large firms in the area of IT and the internet does not necessarily apply to the SME. They suggest that;

- large firms often use the internet to co-ordinate and communicate across different organisational levels, whereas SME usage is more for less formal communications
- SMEs will use the internet as tools to support specific organisational tasks such as administration and accounting,

rely on standard, off the shelf solutions, and on external support.

Other differences exist with the nature of the management of the SME. The owner/manager is generally going to be a key underlying influence in the adoption and use of IT (Southern and Tilley, 2000). Blackburn and McClure (1998) present the following typology of owner managers.

Enthusiasts	Pragmatists	Artisans
High IT skills	Low IT skills	Low IT skills
Positive attitude	Pragmatic	Unconvinced attitude
IT Mgmt. focus	attitudes IT Mgmt. focus	IT operations/administration focus

This provides a framework for the differing attitudes towards the use of IT by owner/managers. The implications of this are that these factors will directly influence the uptake of IT in any given SME organisation. Ritchie and Brindley (2005) conclude their research by suggesting that the main impediments to the slow uptake of IT in SMEs are due to employee skills and knowledge rather than operational factors.

2.8.4 The retail SME

Byrom et al. (2002) opine that the world of the small retailer has changed dramatically over the last 30 years. In another article by the same writing team they outline six competitive pressures impacting on the retail SME;

1. increasing competition from larger retailers
2. legislation changes such as planning, weights and measures and minimum wage
3. economic factors such as interest rates
4. lack of investment, research, training etc.

5. population shifts
6. innovations in technology and especially e-commerce.

Byrom et al., 2000, p. 371

Issues relating to independent retailers and technology are outlined by Baron et al. (2001). Their research suggests that 47% of respondents have EPoS systems and that 15% have a website. The general view amongst those surveyed who did not have a web site was that setting one up would be both difficult and costly – this was a contrary view point to those who had already done so. A variety of government initiatives, such as that discussed by Judge (2003) above, have aimed to increase IT and internet knowledge and uptake in the retail SME sector, although success has been limited.

According to Greenan et al. (1997) the modern SME has to be continuously improving what they do and how they do it, and focusing on quality. IT and specifically the internet can assist in achieving this no matter what the size of the company. The modern SME manager has to be able to identify, analyse and manage risks and crises from a variety of differing sources and contexts (Ritchie and Brindley, 2000). Quayle (2003) states that if SMEs want to stay in business they may have to adhere to their more powerful supply chain partners. Research undertaken by Quayle (2003) identifies innovation as low on the priority list of the SME. Quayle uses a matrix (figure 2.7) devised by Powell (2000) and suggests that the SME tends towards *high customer dominance*, and a *strategic focus* that relates to *cost* (bottom left quadrant).

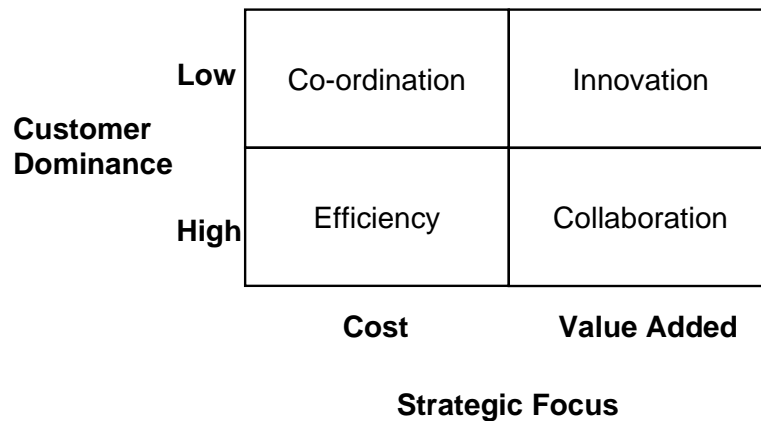


Figure 2.7 Competitive scenarios for SMEs, Powell cited in Quayle, 2003

This further suggests that there is not likely to be a drive toward innovation as the efforts of SME managers are focused on reacting to customer needs and cutting costs. This leads him to state that 'e-commerce represents a significant challenge' (p.85) for the SME. With the adoption of online procurement there should be the possibility of reducing costs, however Quayle states that the SME sector generally does not appear to recognise this fact and uptake has been generally slow (Wagner et al., 2003; Fillis et al., 2004). On the other hand (Ritchie and Brindley, 2000 and 2005) believe that SMEs are well advanced in their strategic thinking relating to the use of the internet although the main thrust of this relates to marketing and not development of procurement and b2b relationships. This appears to lead to the conclusion that the modern SME needs to innovate through IT and its use of the internet, and that in some areas the pace of this is slow. One area where the SME should be able to benefit from the use of IT and the internet is via their supply chain, the specifics of which are discussed next.

2.8.5 Supply chain and the retail SME

The literature relating to SME retailers is not surprisingly limited in comparison to that which looks at the general b2b environment (Qualye, 2003). Taking EDI (see 2.3 and 2.7) as a starting position from which to look at electronic information flows in the SME retail sector, a look at the general literature (Eid et al., 2002; Power, 2002; Lu and Antony, 2003) suggests that there is likely to be a trickle down effect creating a positive impact for the small retailer. Using internet based methods the impact should be even more favourable. Research by Hawking and Stein (2004) suggests that small and medium companies are leading in the area of e-procurement, although this did not specifically look at the retail sector and does differentiate between direct and in-direct e-procurement, the latter being the use of e-marketplaces. Power (2002) suggests that the slow take up of EDI in the small and medium business sector is due to 'the cost and difficulty of implementation' (p 573).

Despite there being less in the literature relating to EDI and SMEs, some academics have focused their research in this area (Angeles, 2000; Lankford and Johnson, 2000; Weber and Kantamneni, 2002). The use of EDI has not been extensive in the small business arena, apart from arguably the travel agent sector. High start up costs has generally precluded SME retailers from getting involved unless persuaded or coerced by more powerful supply chain partners (Angeles, 2000). With the ability of the internet to provide similar functionality at a fraction of the cost, b2b e-commerce has become more widespread. According to Lankford and Johnson for 'small and medium sized firms....the internet puts EDI within (their) reach' (2000, p.27). Angeles (2000) supports this and adds to it by stating that the power in electronic marketplaces has moved from the hub companies to the smaller and mid-sized firms (see 2.7).

The traditional VAN (value added networks) based system will continue as larger companies will require this type of closed network for security reasons. For the smaller company the prospect of internet based communications should provide cost savings, and is likely to feature in some form or another in their future development. Angeles (2000) identifies the following advantages of using the internet for communicating with supply chain partners;

- quick response
- high through-put
- other applications are available
- inter-connections are transparent
- can be layered over existing applications
- software is widely available
- inter-organisational communication is available through distributed directory services
- allows interoperability
- produces reference implementations
- provides a means of extending the reach of trading partners
- customer service and productivity can be enhanced.

Adapted from Angeles, 2000

These advantages may suggest that changes in this area are happening now and will continue to bring about change. In the context of the SME retailer these technical advantages may be perceived as being less important or it may be that they are not fully aware of them.

Ritchie and Brindley (2000) suggest there is a move away from the more traditional linear supply chain relationship (figure 2.8) towards a more 'amorphous' model (figure 2.9).

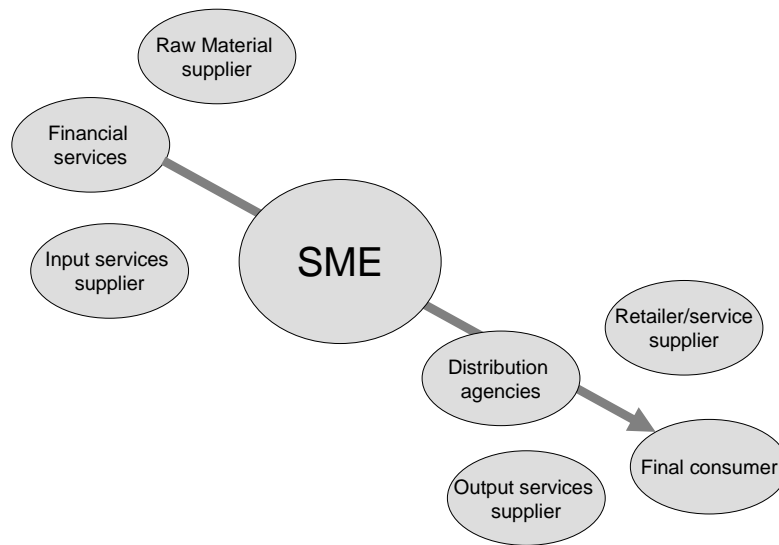


Figure 2.8 Linear supply chain model, Ritchie and Brindley, 2000, p.579

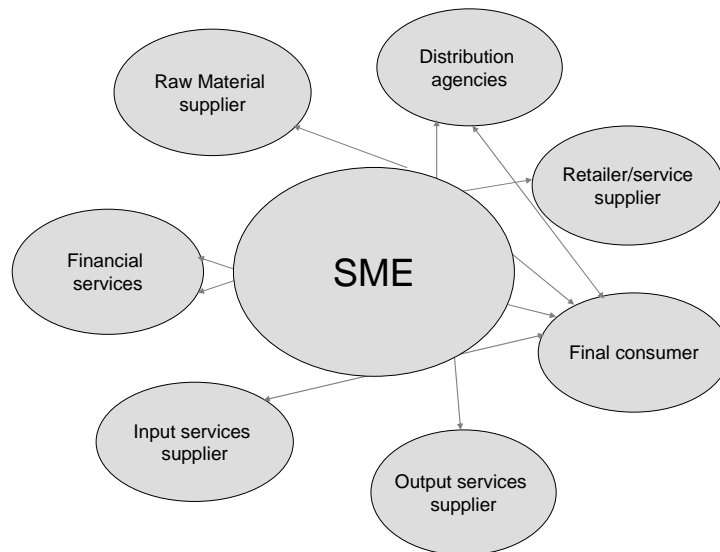


Figure 2.9 Amorphous supply chain model, Ritchie and Brindley, 2000, p.580

Their research looks at how the links between businesses are becoming closer, a recurring theme in the general literature (Zeng et al., 2003), but focus on the SME sector. They go on to state that

'an implicit assumption in the predictions of the amorphous supply chain model is that the SME will recognise the potential competitive benefits from changing the existing network and commercial relationships' (2000, p.578). This implies that the small retailer will actively pursue new relationships to enhance their business and that these are likely to take the form of the development of new relationships based on the use of technology. Despite the vague nature of this model it does suggest a change scenario for the SME.

According to Ritchie and Brindley (2000) the impact of the internet on the SME relating to the supply chain will have positive and negative impacts. Theoretically the smallest company can trade globally, but the resultant effect of this is that other small companies can do the same and steal the market share of others. Ultimately and despite the fact that some SMEs may gain through internet investment, others may not (Jentszsch and Miniotas, 1999). This very general comment is perhaps the most accurate statement than can be currently made in this area.

2.8.6 E-procurement and the SME

E-procurement is the specific activity within the supply chain of purchasing for the requirements of the business (see 2.9). Mullane et al. (2001) see advantages for the smaller firm in the use of e-procurement suggesting that it is not merely the domain, and for the advantage of, the large organisation. Their research provides a number of reasons and pitfalls for the SME getting involved in online b2b exchanges. Similarly to the above it stresses the operational issues rather than the decision making process issues. Despite the larger companies leading the way in this area McGaughey (2002) in his paper on benchmarking agrees with Mullane et al. (2001) that more and more, smaller companies are reaping the benefits of b2b e-commerce within this area. Ritchie and Brindley (2000) add to

this that service sector businesses tend to be more advanced in their strategic development using the internet. They go on to suggest that the focus of internet activity is however more towards marketing communications and sales generation, rather than how they run their business-to-business relationships. In general it would appear that there is not a clear consensus as to the level of uptake in the general SME community relating to e-procurement (Fillis et al., 2004). The literature does however suggest that there are obvious benefits to the small company in migrating to online procurement in terms of efficiencies. Supply chain change does however have potential drawbacks for the SME.

2.8.7 Disintermediation

Findings from Reinders and Baker (1998) looking at the impact of the internet on SME retailers (travel agents) suggested the likelihood that some SME supply chain partners would be disintermediated (2.7) out of the supply chain altogether. Chircu and Kauffman (2000) similarly explore the levels of disintermediation brought about by the internet in the retail travel sector but surmised that the expected level is likely to be lower than initially anticipated, and that indeed reintermediation would occur (see 2.7). This less than anticipated effect of the internet in relation to disintermediation can also be identified in the wider retail SME sector. In their paper Mills and Camek (2004) argue against the idea of mass disintermediation but go on to suggest that it would be more likely to occur for those companies with a weak relationship with their manufacturer/supplier or where an industry is based around a single distributor. Despite the case study research by Mills and Camek (2004) being based on an industrial company, their findings appear to ring true for retail SMEs as well, in that the

relationship with the supplier is an important determining factor. This is discussed in section 2.9.

2.8.8 The b2c

The main thrust of this thesis looks at the uptake and development of b2b communications by small retailers. The b2c environment (see 2.6) is also important as it has put the retail SME under pressure from new competitors. With these new competitors emerging with the onset of the internet it is fairly likely that they are using the internet to conduct their b2b relations as well. This is further justification of the need for the traditional SME retailer to develop their use of technology.

2.8.9 Future

One of the issues that this research sets out to look at is whether the changes currently occurring both in large business and those in the SME sector outlined above are applicable to the specific SME retail sector. Angeles (2000) suggests that the future will see the development of the value chain and the further expansion of intranets to extranets and then supranets (agglomerated extranets), all aimed at improving the flow of information and shrinking cycle times. These ideas may appear far removed from the experiences of the traditional SME retailer. Trying to draw together what could be and what is, is a further aim of this research.

2.8.10 Links to this research

The use of b2b e-commerce is becoming more widespread, especially given the reduction in costs afforded by the internet. The literature suggests that the pace of change appears to be accelerating and that this is already impacting on the SME sector. The literature relating specifically to retail follows a similar pattern identifying these changes. Fillis et al. (2004) suggest that

'understanding the attitudes, motivations, values and subsequent behaviour of the owner/manager are central to understanding how and why e-business is accepted and implemented by some smaller firms and not by others' (p.180). Quayle (2003) suggests that further research is needed on SMEs and their electronic supply chain management capability - this research aims to go some way to filling that gap. The final part of this chapter looks at the issues relating to the relationship between the buyer and seller and the likely impact this will have on the adoption and use of IT and the internet.

2.9 Buyer seller relations in the SME

Parties identify commitment among exchange partners as key to achieving valuable outcomes for themselves, and they endeavour to develop and maintain this precious attribute in their relationship.

Morgan and Hunt, 1994, p.23

2.9.1 Introduction

The importance and influence of the supplier and buyer (see 2.4) is outlined in seminal work undertaken by Porter (1980 and 1985). Where the supplier is powerful they will be able to dictate terms, the same being true of the buyer. Given the importance of the relationship it is not surprising that there is an extensive body of research relating to larger firms and the nature of the relationship between buyer and seller (Moorman et al., 1992; Morgan, 1994). There is similarly extensive literature looking at the linked academic areas of CRM and relationship marketing (see 2.6.3). The adoption and use of electronic commerce has 'added a whole new dimension to discussions of business relationships' (Morgan, 2003, www.in-cites.com). Wagner et al. (2003) suggest that Network relationships are also very important in the SME sector. Where on one hand this

may assist in the process of migration onto e-commerce usage in the supply chain, it may also have the effect of stifling it as the existing traditional method of personal service may be lost. This section aims to look at the factors impacting on the relationship of business partners and how academics have attempted to rationalise this.

2.9.2 Defining the relationship

For a relationship to work well both parties need to benefit (Lancastre and Lages, 2004). The need for cooperation between firms is seen as a necessary pre-requisite for developing a successful and meaningful e-commerce exchange between supply chain partners (Wagner et al., 2003). Lancastre and Lages (2004) suggest a conceptual model developed from Morgan (2000) that outlines three dimensions in building a successful relationship and looks at the impact of IT and the internet upon these factors.

- *Economic*, by working together greater economic benefits are achieved; where IT and the internet are used economic benefits will accrue in the form of savings on acquisition costs.
- *Resources*, closer relations through linking resources lead to convenient and rapid procurement and ultimately an improved value chain; this is further enhanced by IT and the internet.
- *Social contents*, current and future compatibility is based on sharing similar cultures, clear communication and partner's behaviour; use of IT and the internet is likely to bring companies even closer.

In attempting to identify and qualify the relationship that exists between business parties, two central issues of *relationship commitment* and *trust* can be identified. Morgan and Hunt (1994) suggest that these two variables are those that create strong personal relationships and it is therefore likely that they will do the

same in a business environment. Their importance is derived from fact that it is these issues that preserve relationships and stop parties from entering into shorter term relations that merely offer short term benefits (Lancastre and Lages, 2004).

Dawson and Shaw (1989) devised a table to identify the 'factors making for stability in relationships' (p.48) between retailers and suppliers. Their research focused on multiple retailers and is therefore different to this research but in outlining the following nine points provides some guidance as to how retailer/supplier can be viewed is provided.

1. *High and consistent quality* – likely to be driven by the supplier as the retailers are in most cases unlikely to communicate with each other.
2. *Need for flexible response* – an increasing requirement given a more dynamic market place.
3. *Joint product development work required* – unlikely in an SME context although company representatives may ask for opinions and feed this back.
4. *Specific delivery systems required* – this is where e-procurement would be discussed and as such is looked at in detail later in this research.
5. *Frequent contact through frequent ordering* – a point that is once again picked up later in this research.
6. *Wide product ranges required from a limited number of suppliers* – this would be the case for many SMEs and the internet would further highlight the ability to seek out more suppliers from a wider geographic area.
7. *High physical degrees of product differentiation* – this is less likely to be the case for the SME as the internet opens up the potential for new suppliers, however this will be specific to the retail sector.

8. *Strong manufacturer brands* – still an issue despite the development of the internet, and certainly a factor in most SME retail market places.
9. *Number of suppliers* – very variable across the differing retail sectors.

Dawson and Shaw, 1989 (p.48-9)

Despite these points relating to multiple retailers there is resonance with the relationships experienced between the SME and their suppliers. The main difference would appear to be where the power lies and although there appears to have been a shift of power from manufacturers to retailers in multi retail environments, this does not appear to be the case with smaller retailers (see also Porter 2.4.7).

2.9.3 Relationship marketing and SMEs

The area of relationship marketing has developed since the early 1990s (Lawson-Body and Illia, 2005) and proliferated with the onset of the internet. Similarly to the research undertaken on the large companies, the relationships and impact of CRM (see 2.6) has been identified in the SME literature. Wagner et al. (2003) suggest that for e-information exchange to work well the prerequisite is that there is clear cooperation between partners. Lajara and Lille (2004) sought to identify how relationships work between small manufacturers and their suppliers. They identify three main reasons (see Stuart, 1993) that would lead a firm to form a strategic partnership;

1. the competitive pressures in the business environment
2. the importance of the inputs to be purchased for the products
3. the firm's resources and capacities.

The likelihood an SME retailer will form a strong partnership with its suppliers will be dependent upon the type of goods and/or services it offers, and to take a general position on this topic would be naïve as the relationship between supplier/manufacturer and the retailer can differ greatly from one case to the next.

2.9.4 Relationship commitment

Morgan and Hunt (1994) define relationship commitment as 'an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it' (p.23). This commitment extends over time and takes the view of long term benefits over short term gains (Lawson-Body and Illia, 2005). The following benefits of relationship commitment in an organisational context are outlined by Morgan and Hunt (1994);

- decreased turnover of suppliers
- higher motivation
- better recruiting and training practises
- organisational support.

These internal benefits are seen to have a similar impact when related to external partnerships. Lancaster and Lages (2004) suggest the following inter-company benefits that accrue with a committed long term relationship. They suggest that suppliers gain greater access to information assisting in product development. Buyers on the other hand;

- receive relevant on-time market and product information
- better assortment choice
- more efficient service delivery.

This leads them to state that 'both parties receive valued contributions from each other, each partner has a strong motivation to build, maintain, strengthen and deepen the relationship' (p.9). Commitment is seen as central to the relational exchanges between a company and its supply chain partners (Morgan and Hunt, 1994) and this can be enhanced using the internet. Lawson-Body and Illia (2005) view the relationship commitment within the SME being enhanced by the internet, as there is the potential to construct meaningful business relationships globally using the technology.

2.9.5 Trust

In this context trust is defined by Moorman et al. (1992) as 'a willingness to rely on an exchange partner in whom one has confidence' (p.315). This statement contains two elements. The first relates to a belief or sentiment that an exchange partner is trustworthy and can be relied upon. The second is where trust is seen as a behavioural intention reflecting that a partner can be relied upon to perform certain role responsibilities (Lawson-Body and Illia, 2005). Morgan and Hunt (1994) discuss the importance of confidence in the relationship which in turn impacts on both belief and behavioural intention. On a practical level trust is central to a good long term relationship as it is not possible to cover all aspects of a relationship through a written agreement, therefore trust needs to exist to ensure parties are working in each others interests and not against them. If trust can be developed using the internet then the SME should be able to expand its number of meaningful business relationships and establish trust with these partners, moving them away from their traditional geographic constraints.

2.9.6 Risk

In a business context the concept of risk can be defined in many different ways. Gummesson (2004) looks at the role of leadership and identifies it as a risk taking activity also requiring action, vision, common sense and intuition. He goes on to suggest that a 'risk-free and predictable business in a market economy, created by to-the-point metrics cannot exist; it is an oxymoron' (p140).

Wilson's (1995) definition is 'the risk that a buyer incurs due to supplier failure to produce quality goods, on time delivery, or any of the other things that can go wrong and cause difficulties for the buying organisation' (p.3). He uses the following model to outline operating risk.

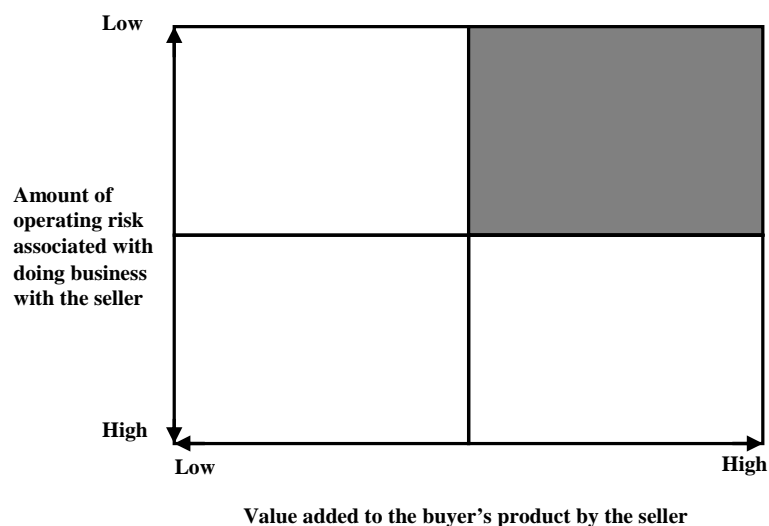


Figure 2.10 Wilson (1995), p.3 Classifying potential partners

Wilson suggests that the firm that falls into the top right hand quadrant will represent a low risk and therefore represent the best scenario for a supplier relationship. In the context of the SME retailer their ability to choose those suppliers that fall into this category may be limited, however they will often have long term relationships and these would tend to gravitate to this position.

Leek et al. (2003) discuss risk in the context of information exchange and suggest that the sharing of information can reduce the perceived level of risk in the relationship. They also discuss the risk of changing suppliers in the context of internet development and suggest that there is logic to change but also a perceived risk, especially when a new supplier is foreign. Despite the fact that internet based communications are very effective their ability to fully replace face to face meetings is still in doubt. Leek et al. (2003) suggest that some retailers may be sufficiently content with internet based communication to confidently replace existing suppliers with those that are more geographically disparate, but others may not. They suggest that 'these buyers may expect less frequent personal contact with foreign suppliers than domestic suppliers and are prepared to put up with that situation' (p.123). This point is important to this research and as such will be addressed in the primary research.

2.9.7 Data web integration

The idea behind data web integration suggests that the web site of a company should be integrated into its database system thus allowing cross-organisational and analytical analysis. This service, that connects supply chain partners using the internet as a platform, can enhance the CRM capabilities of the SME (Lawson-Body and Illia, 2005). These will work most efficiently and create the greatest loyalty when the integrated database works well for both buyer and seller (Lawson-Body and Illia, 2005).

2.9.8 Links to this research

The relationship between supply chain partners is important to the well-being of the organisation. This is particularly the case of the retail SME who are reliant upon their suppliers to provide attractive well priced products in the right quantity and at the right time that

they are needed. A close business relationship that has both commitment and trust will provide long term benefits for SMEs and their supply chain partners. The internet has changed the concept of the supply chain extensively providing the SME organisation with the ability to initiate and sustain new relationships with geographically disparate suppliers.

2.10 Chapter Summary

2.10.1 Introduction

This chapter aimed to pull together a number of disparate concepts and ideas that relate to the research topic. As the thesis looks at the expansive academic areas of; SMEs, the retail sector, and the impact of the internet, it was deemed necessary to give an overview of the issues relating to these areas prior to focusing on the specific themes outlined in the title.

2.10.2 Overview of the chapter

This first section outlined the importance to the UK economy of the SME and therefore the need to assist this sector in being as productive and efficient as possible in the face of increasing international pressure. An overview of technological change in respect of computer usage, and latterly the internet was then presented. This general overview indicated the importance of the way technologies in general have developed and the impact this has had, and continues to have, on shaping attitudes towards IT and the internet and its many uses in business.

The specific experience of the retail sector and the impact the internet has had upon it was then discussed serving as a basis for the more focused view relating to the SME retail experience. The chapter finished by exploring the impact of business relationships on SME companies and how these influence the workings of a company and help guide strategy (if there is such a structured approach within an SME) relating to internet development and usage.

This chapter set out to provide some of the reasons as to why this research needs to be undertaken in this area. From the literature the general picture emerges of extensive research relating to all aspects of acceptance of technology in larger companies, but far less so when it comes to their SME counterparts. Also identified here are the reasons as to why the SME has to be looked at differently when considering the issue of technology acceptance. This is due to the fact that they often operate in a different environment with different forces working upon them and as such have different needs. The information contained in this chapter will be used in conjunction with the information into the specific technology acceptance literature in the following chapter when developing the primary research and discussing the implications of the findings.

Chapter 3

The Development of Technology

Acceptance Models

We live in a society exquisitely dependent on science and technology, in which hardly anyone knows anything about science and technology

Sagan, 2006

3.1 Introduction

The aim of this chapter is to provide a clear account of the developments in the literature relating to the study of how technology is accepted by individuals in an organisational context. The focus will be on the academic work that has led directly to the UTAUT (see 3.7) model as this is the foundation for the new model presented as part of this dissertation.

There are many ways in which academics have attempted to measure and analyse why an individual chooses a particular course of action over another - in the case of this research the use or otherwise of a specific technology. Information systems (IS) literature has made a variety of attempts at explaining user acceptance of technology. Models have evolved from a variety of areas with roots in information systems, psychology and sociology (Venkatesh et al., 2003). The constituent parts of such a decision are likely to relate to; the individual themselves, the technology', and the organisation and its environment. Looking firstly at the individual; their chosen behaviour can be judged on internal factors, external factors or both. Relating this question to the specific

technology might depend on the; complexity of it, the perception of it, and the perception of what will be achieved by adopting it. In an organisational context; the level of support, and the overt and/or covert pressure put on the individual to adopt will impact upon the eventual behaviour. With all these factors playing a part in the final adoption decision we can look at theories from many different academic disciplines that would attempt to gauge some or all of the factors involved. It is important to ensure that as many theories as possible are taken into consideration when attempting to make a final decision as to which underpinning principles are adopted to resolve the research question.

The UTAUT model is part of a range of theories that can be traced back many years. It is important therefore to put it into context by outlining the theoretical underpinning that has led to it. It is similarly important to clarify a rationale as to why the UTAUT model was chosen as the theoretical underpinning for this study, and why it was deemed the most appropriate for the SME retailer. This is outlined in section 3.7. The adapted version of this model will be derived from qualitative primary research which will then be tested using quantitative methods.

3.2 The Theory of Reasoned Action (TRA)

3.2.1 Introduction

The Theory of Reasoned Action (TRA) developed from work undertaken by Ajzen and Fishbein commencing in the 1960's. Based on earlier studies in the field of social psychology, the development of the models can be traced back more than 70 years (Thurstone, 1929; Allport, 1935; Doob, 1947; Rosenberg and Hovland, 1960; Wicker, 1969). Ajzen (1991) states that 'explaining human

behaviour in all its complexity is a difficult task' (p.179), it is therefore not surprising that the development of this academic area has taken a long time - a process that is set to continue.

This particular model is seen as the starting point for this research for two reasons, firstly, as it provides the initial concise framework that identifies the core constructs that lead an individual to a specific behaviour. Secondly, because it has been adopted extensively and applied and adapted to other academic fields. In all these areas, research generally supports the original assumptions made by Ajzen and Fishbein in the model (Davis et al., 1989; Thompson and Panayiotopoulos, 1999; Xu and Paulins, 2005). This is why it is still widely used in both academia and business today.

3.2.2 The aims of TRA

The theory aims to 'predict and understand an individual's behaviour' (Ajzen and Fishbein, 1980, p.5). It provides insight into how people decide to perform a specific behaviour and suggests that when choosing to undertake or not undertake a specific behaviour, people will firstly consider the implications of their actions. This suggests that people will have premeditated intentions and will generally act upon them. The theory attempts to predict and understand behaviour and attitudes by looking at behavioural intentions as the main predictors of behaviours rather than the more traditional approach of looking at attitudes. The model is concerned with the rational, volitional behaviours; that is the behaviours over which the individual has control (Thompson et al., 1994).

The two main drivers to these intentions are seen as; firstly, the individuals attitude towards the behaviour and secondly, the perceived social pressure associated with the behaviour. Ajzen and Fishbein suggest that 'while knowledge of a person's attitude can tell us little as to whether she will perform a particular behaviour, it can tell us something about her overall pattern of behaviour' (1980, p.18). They defend the move away from attitude by suggesting that 'certain behaviours are so dependent on the situational context as to be virtually unpredictable from measures of attitude' (Ajzen and Fishbein, 1980, p.25). In the context of IT the model 'captures the internal psychological variables through which numerous external variables studied in IS (information systems) research achieve their influence on user acceptance and may provide a common frame of reference within which to integrate various disparate lines of inquiry' (Davis et al., 1989, p.984/5). In understanding behavioural intention

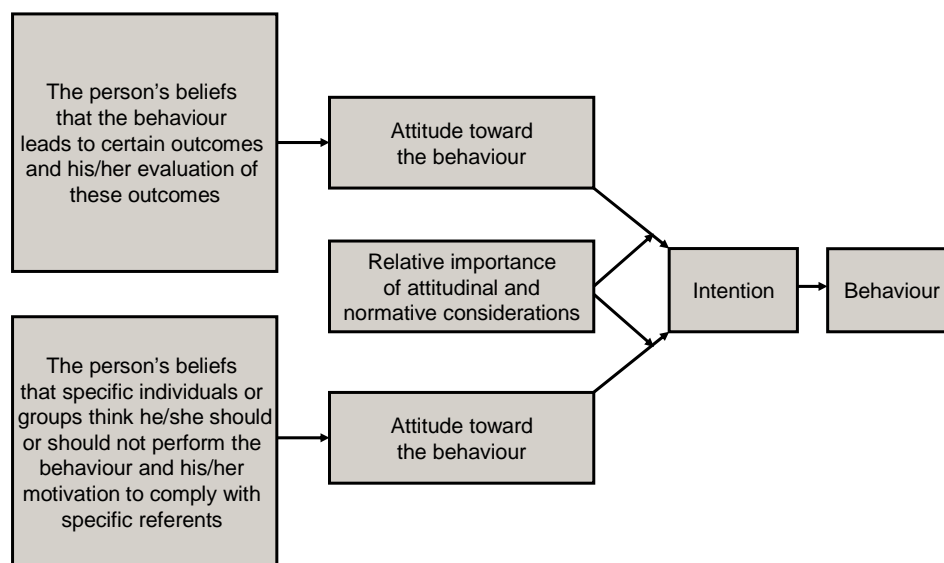
through the adoption of the model it should be possible to better predict the way in which people will act when faced with the adoption of a new technology in their workplace.

3.2.3 The theory

The theory has the following constructs;

- *Attitude*, the strength of the perception that the benefits will lead to a positive outcome
- *Subjective norm*, the level of risk and reward relating to normative behaviour they associate with that choice
- *Intention*, how they intend to behave
- *Behaviour*, how they behave.

In a simple form the model can be portrayed graphically as in figure



3.1.

Figure 3.1 - The Theory of Reasoned Action, Ajzen and Fishbein, 1980, p.150

The model outlines that there are four criteria for behaviour: the action, the target at which the action is directed, the context in which it occurs and the time at which it is performed. These criteria

can relate to a single context or a range of contexts and a specific or range of times.

The work of Fishbein, and latterly with Ajzen, differed from previous work in the way that it focused on the overall behavioural intention rather than the more traditional methods that focused merely on attitudes. According to Ha (1998) the model introduced normative influences and a causal link between the two antecedents and intention. By providing relative weights of the subjective norm and the attitude relating to a particular issue, an ability to predict and gain some understanding of a person's intention can be gleaned. The theory states that attitudes are a function of beliefs and that if a positive outcome from undertaking a given behaviour is predicted then the likelihood will be that a favourable attitude is held towards it. These so-called *behavioural beliefs* are weighted in relation to the *normative beliefs* held by the individual in relation to the given act (Ajzen and Fishbein, 1980).

The authors also identify what they call the *salient beliefs*, these are the beliefs that are seen as the most influential and important. As these beliefs are uppermost in the mind of the individual the authors assume that the first five to nine mentioned are likely to be the salient ones, that is the ones that will be acted upon. It is asserted that 'to understand why a person holds a certain attitude toward an object it is necessary to assess' these beliefs about that particular object and that this can be achieved by asking the person to describe the attitude object using a free response format' (Ajzen and Fishbein, 1980, p.63). The importance of these *salient beliefs* is that these are the ones likely to influence the actions of an individual.

The theory is normally used in conjunction with quantitative research methods where the researcher will use a forced choice scale (usually Likert) to identify attitudes towards a behaviour and the subjective norm. Once this information has been computed the theory provides a single score that suggests the degree to which a person is favourable or unfavourable to a particular attitude object, and these scores can reflect different aspects of beliefs, intentions or actions (Ajzen and Fishbein, 1980). In general the theory is seen as parsimonious as it is simple and has the ability to predict and explain.

3.2.4 Link to this research

The link between intention and the ability to predict behaviour are important to this thesis as it aims to understand likely future behaviour regarding the uptake of a specific technology, (online procurement). In the context of the TRA it is suggested by Ajzen and Fishbein that;

- a. the measure of intention has to correspond to the behavioural criterion in action, target, context, and time,
- b. a measure of intention will predict behaviour only if the intention does not change before the behaviour is observed.

Ajzen and Fishbein, 1980, p.51-2

It is essential to use an appropriate measure of intention and where possible measure it prior to the behaviour. In the case of this research this is not possible given the differing times that adoption *has* taken, or *will* take place. Intentions therefore need to be measured with the condition that the event either has, or will happen. This is seen as a valid form of measurement for this research. It is generally felt that other external factors would lead people to act in a way that did not necessarily reflect their attitudes to a particular issue (Ajzen and Fishbein, 1980). In the context of

technology uptake, a practitioner may not be interested in using a specific IT application for their business but may feel pressure to do so by external influences. It is suggested that the importance of these external factors is such that their omission from the TRA leads the researcher to adopt a less general approach than what the model offers.

In the context of the SME retailer TRA is limited as in some cases the practitioner will not have total control over their behaviour and attitudes. The realisation of this in the context of other scenarios led to the development of the next model the Theory of Planned Behaviour (TPB, 1988) by Ajzen.

The TRA has however proved itself through longevity, and by the fact that it has been developed to provide the basis for many other models in the area of behavioural measurement, including that of the Technology Acceptance Model (Davis et al., 1989). For these reasons its inclusion here is appropriate as part of the academic development process of technology acceptance. The next section will identify the development of the TPB and its implications for this research.

3.3 The Theory Planned Behaviour (TPB)

3.3.1 Introduction

As can be seen in section 3.2 the TRA is deemed a useful and indeed essential tool as a starting point when looking at understanding what influences behaviour. However to answer some criticisms relating to the TRA, and through further research, Ajzen developed a second model in 1988, the Theory of Planned Behaviour (TPB).

3.3.2 The aims of TPB

This model added to the existing model by providing a new construct, that of *perceived behavioural control*. According to George (2004) this was felt necessary because of the original 'model's inability to deal with behaviours over which individuals have incomplete volitional control' (p.199). Volitional control is that a person may choose to fulfil a particular task affecting their intention and behaviour. To accommodate this change the adapted model included the construct of *perceived behavioural control*. Another expression used to convey this idea is that of *self efficacy* (Bandura, 1997) which appears as a construct in subsequent models in this research. The basic premise relates to the idea that if two people have the same level of intention to engage in a specific behaviour but one has more confidence in their abilities, it stands to reason that the confident person will be more likely to succeed than the person who has doubts relating to their own abilities (Ajzen, 1991).

3.3.3 The theory

The main constructs of the model are similar to those of the TRA, however Ajzen reappraises these and provides greater depth on them, and for this reason it is useful to reiterate these expanded definitions from the previous section (3.2). They are as follows.

Behavioural Beliefs - this is the *subjective probability* that the specific behaviour will produce the anticipated outcome (Ajzen, 2004). An individual may hold many behavioural beliefs relating to a specific behaviour however only a small number, the salient beliefs, are likely to be accessible at a given moment (see 3.2). An assumption is therefore made that these more *accessible beliefs* combine with the values relating to the individual of the expected outcomes, to determine the likely attitude toward the given behaviour.

Attitude toward the Behaviour – this is the degree to which the undertaking of a particular behaviour is given a positive or negative value. Attitude toward a specific behaviour is gauged by the total set of accessible behavioural beliefs (again, those that are salient) linking behaviour to various outcomes and other attributes. Ajzen (2004) provides an equation to indicate this relationship with the strength of each belief (b) being weighted by the evaluation (e) of the outcome or attribute.

$$A \propto \sum b_i e_i$$

Normative Beliefs - refer to the expected behavioural perceptions of important referent individuals or groups who have an influence and impact on how the individual is likely to act. This group will normally include a husband/wife, family and friends, however in a wider study the group could include; teacher, doctor, supervisor, and co-workers. It is assumed that these *normative beliefs* combine with an individual's motivation to comply with the different referents and thus determine the prevailing *subjective norm*.

Subjective Norm – relates to the perceived social pressure to engage or not to engage in a specific behaviour. The assumption is that the subjective norm is determined by the complete set of accessible normative beliefs concerning the expectations of the individuals or groups that make up the important referents. The equation outlined by Ajzen (2004) looks at the strength of each normative belief (n) that is weighted by motivation to comply (m) with the referent individual or group in question, and these are aggregated as follows.

$$SN \propto \sum n_i m_i$$

Control Beliefs – relate to the expected presence of factors that may

either facilitate or impede the performance of a specific behaviour. An assumption is made that these so called *control beliefs* are combined with the perceived power of each control factor to determine the prevailing perceived behavioural control. The perceived power of each control factor to get in the way of, or assist performance of the specific behaviour will contribute to the perceived behavioural control, and be directly linked to the person's subjective probability that the control factor is present (Ajzen, 2004).

Perceived Behavioural Control – this is the new addition to the model that aimed to counter some of the criticisms levelled at the original TRA. It looks at people's expectations of their ability to perform a specific behaviour and is similar to constructs in other models which are sometimes referred to as *self efficacy* (Bandura, 1997). The inference here is that people have preconceived notions of their personal ability to achieve specific objectives, and that this perception whether right or wrong, will play a major role in their behaviour. Ajzen (1991) states that contrary to earlier interpretations of control (Rotter, 1966) in the TPB, perception can differ across situations and actions depending on the specific behaviour in hand. It is assumed that perceived behavioural control is determined by the total set of accessible control beliefs, these being the beliefs about the presence of factors that may facilitate or impede performance of the behaviour. The strength of each control belief (c) is weighted by the perceived power (p) of the control factor, and the products are aggregated, as shown in the following equation.

$$PBC = \sum c_i p_i$$

Intention – this construct is carried over from the original model and relates to the intention of an individual to undertake a given

behaviour. Ajzen (1991) states that 'intentions are assumed to capture the motivational forces that influence a behaviour' and therefore indicate 'how hard a person is willing to try to perform the behaviour' (p.181). This leads him to postulate that the harder a person is willing to try the more likely they are to perform a given behaviour. Or put another way this is the cognitive representation of a person's readiness to perform a given behaviour, and it is considered by Ajzen to be the immediate antecedent of behaviour. The *intention* is therefore based on the *attitude toward the behaviour*, *subjective norm*, and *perceived behavioural control*. In evaluating the result each predictor is weighted for its importance in relation to behaviour and the particular population of interest.

Behaviour - is the observable response in a given situation with respect to a given target. In studying the behaviour of the individual, observations can be added across different contexts and times to ultimately produce a more broadly representative measure of behaviour. In the TPB, behaviour is a function of the compatible intentions and perceptions linking to the *actual behavioural control* (Ajzen, 2004).

Actual Behavioural Control - refers to the extent to which an individual has the necessary skills, resources, and any other prerequisites needed to undertake a specific behaviour. The successful performance of any behaviour is dependent not only on a favourable intention but also on a sufficient level of behavioural control.

The TPB model is outlined in the following figure 3.2.

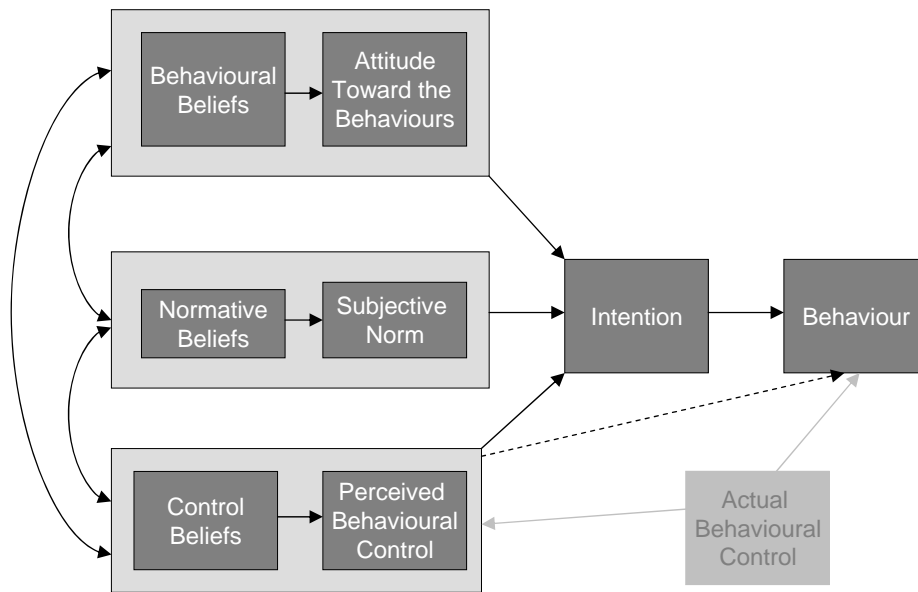


Figure 3.2 The extended TPB model, Ajzen, 2003, www-unix.oit.umass.edu

3.3.4 Link to this research

The TPB has successfully been used in areas relating to the retail sector (George, 2002; King and Dennis, 2003; George, 2004). This suggests that it is a useful addition to a literature review looking at the prediction of behaviour in the context of the SME retailer. Other studies have used it to measure technology usage (Jaruwachirathanakul and Fink, 2005) with Fusilier and Durlabhji (2005) suggesting that it appears to provide a respectable explanatory framework (p.235) for this area of study. It would therefore appear also be an appropriate framework in the context of internet procurement adoption.

3.3.5 Limitations

Ajzen (1991) views the TPB as a worthwhile addition to the area of social and behavioural sciences suggesting that it 'provides a useful conceptual framework for dealing with the complexities of human

social behaviour' (p.206). However he concedes that the exact relationships between behavioural beliefs and attitudes, between normative beliefs and subjective norms, and between control beliefs and perceptions of behavioural control, remains unclear. Amongst other academics the theory is generally well received (George, 2002; King and Dennis, 2003; George, 2004; Jaruwachirathanakul and Fink, 2005; Fusilier and Durlabhji, 2005). Chang (1998) compared the two theories (TRA and TPB) in a study on unethical behaviour and concluded that the TPB provided a better predictive framework. The theory is not however without its critics. Ogden (2003) outlines what she perceives to be problems with the theory when used in the context of health psychology, although these arguments she suggests could be levelled relating to any area where the model is being used. Ogden (2003) states that the testing of the theory mainly relates to those looking for a positive outcome and asks if data could 'be collected that would lead to the model being rejected' (p.425). In their response to this point Ajzen and Fishbein (2004) suggest that if 'all three factors failed to predict intention, the TPB would be disconfirmed' (p.432). The argument therefore appears to be that if academics felt that the theory was unviable they would state that in their findings, and due to the fact that most agree that it provides a reasonable framework that assists in the understanding of behaviour, suggests it has validity. The same issues could be related to the models use in the context of online procurement adoption amongst SME retailers. Taking a positive attitude towards the theory is likely to result in some aspect of the model providing insight in the measurement of the problem in hand, whereas a negative attitude could result in the model being discounted all together. As with any model of this type involved with measuring behaviour it is likely to provide general guidance but not specific answer to the problem. Given the specific nature of the question being asked and the fact that models have

been developed to look specifically at technology acceptance it is logical to continue searching for a more targeted approach to the problem in hand.

The TPB is generally seen as a positive development on the TRA but remains a very general framework. The next step is to look more specifically at the area of technology acceptance and how the basic ideas behind the TRA and TPB constructs were adapted to look at the specific issues surrounding the acceptance of technology in the workplace, culminating in a technology acceptance model (Ndubisi and Jantan, 2003).

3.4 Technology Acceptance Model (TAM)

3.4.1 Introduction

Many attempts have been made to construct a workable theory using behavioural intention in an attempt to predict behaviour. TRA and TPB are perhaps the most recognised of these models and they have been applied in a variety of different areas of academic and practical interest. The area of this research relates to the adoption of technology, it is therefore useful to look at the specific adaptations of the TRA and the TPB in relation to developments in this area.

The Technology Acceptance Model (TAM) can be traced back to the doctoral dissertation of Davis in 1986. Two papers published in 1989 further raised the profile of the model. Davis et al. (1989) looked at user acceptance of computer technology by comparing two models, those of TAM and TRA (Ajzen and Fishbein, 1975,

1988). A second paper by Davis (1989) tested the advocacy of perceived usefulness and perceived ease of use, the main constructs of TAM, relating these to the acceptance of information technology. TAM has gone on to become generally viewed as a model that is the 'most robust, parsimonious, and influential in explaining IT/IS behaviour' (Lu et al., 2003, p.207).

According to Davis et al. (1989) the field of information systems (IS) have looked to social psychology for a theoretical foundation to analyse use behaviour in IT adoption. The TRA (see 3.2) of Ajzen and Fishbein (1975) has proven successful in its prediction and explanation of behaviour and has been applied in a variety of different areas. This was adapted by Davis (1986) to specifically explain computer usage behaviour in the new TAM. The marriage of the proven TRA social psychology model and over ten years of IS research into technology acceptance is justification for TAM and it is seen by its author as a credible method of modelling computer acceptance (Davis et al., 1989).

3.4.2 The aims of TAM

TAM sets out to 'provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behaviour across a broad range of end-user computer technologies and user populations, while at the same time being both parsimonious and theoretically justified' (Davis et al., 1989, p.985). In relation to the many external factors that are likely to influence technology adoption TAM aims to look at the impact of these on internal beliefs, attitudes and intentions (Davis et al., 1989). TAM uses constructs designed for earlier studies and adapts them to the specific needs of technology acceptance. In a more practical context and with the current levels of organisational IT spend, the need to attempt to predict user uptake of computer systems is essential for

organisations in establishing not only specific IT choices, but a strategic IT direction as well.

3.4.3 The theory

The model suggests that 'individuals evaluate the consequences of their behaviour in terms of perceived usefulness and base their choice of behaviour on the desirability of the usefulness' (Liao and Landry, 2000, p.2). TAM is graphically represented by the following figure 3.3.

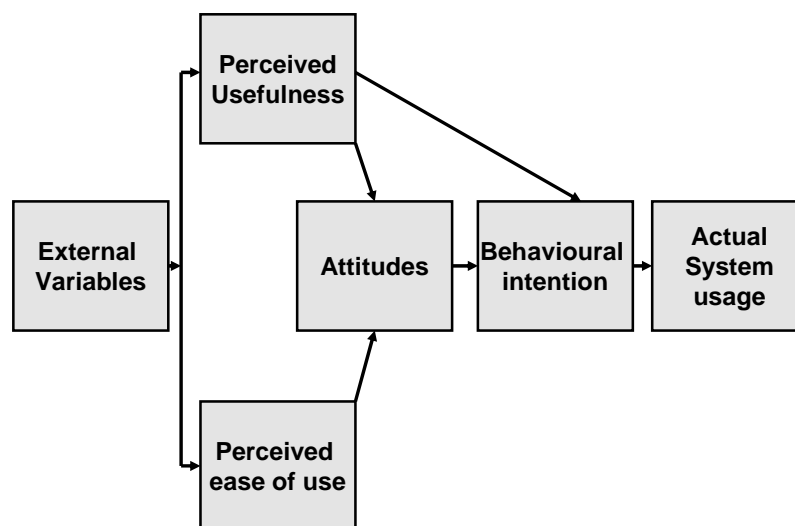


Figure 3.3 Technology Acceptance Model, Davis, 1989, p. 331

The main elements of the model are;

- *ease of use* (EOU) is the user's perception of the amount of effort needed to use a particular system. Davis (1989) suggests that where there is a choice between two systems, the one that is perceived to require the lesser effort to use is likely to be the one that is chosen. Other models investigating this academic area have used a similar construct (Davis et al., 1989). The input of other models is explained further in the section on UTAUT. (see 3.6)

- *perceived usefulness* (U) is the user's perception of the degree to which using the system will improve their performance in the work place. Increased performance is generally linked with the expectation of intrinsic and/or extrinsic rewards (Vroom, 1964)
- *attitude* towards using the system (A). The two constructs outlined above lead jointly to the attitude towards the usage
- *behavioural intention* (BI) determines actual usage. This is jointly determined by both A and U.

Davis suggests that 'perceived usefulness is a strong correlate of user acceptance and should not be ignored by those attempting to design or implement successful systems' (Davis, 1989, p.334). This study also indicates that people will tend to act in line with their beliefs regarding performance. TAM further postulates that computer usage is determined by BI and suggests this is jointly determined by A and U. This differs from the TRA as the subjective norm is not included as it was seen as difficult to disentangle from BI, although it was tested for in the original TAM research. The direct effect of a belief such as U on BI goes against TRA. Davis et al. (1989) suggest that the U-BI relationship relates to how people in an organisational setting will form intentions toward behaviours that they believe will increase their job performance and consequently lead to extrinsic benefits (Vroom, 1964). The relationship therefore 'hypothesises that people form intentions towards using computer systems based largely on a cognitive appraisal of how it will improve their performance' (Davis et al., 1989, p.986). The authors further postulate that the following relationships exist;

- $BI = A + SN$
- $A = U + EOU$
- $U = EOU + \text{External Variables}$
- $EOU = \text{External Variables}$

External variables can account for a variety of different factors peculiar to specific situations. For instance U can be influenced by the proficient marketing of a product. The influence of external factors is developed further in future models relating to technology acceptance.

The similarities between the models are apparent and obvious given that TAM is directly based on TRA. It is therefore useful to outline the specific differences between them, generally these fall into the two following camps.

1. In TRA beliefs are specific to the chosen context and cannot be generalised. In TAM, U and EOU are seen as fairly general in their application and therefore can apply to general populations.
2. TRA sums up all beliefs into one construct whereas TAM splits these into two very different constructs, U and EOU, allowing greater flexibility relating to the specific area of technology acceptance.

These points would tend to suggest that for measuring the specific area of technology acceptance TAM is a more useful tool than both

TRA and TPB. The findings for Davis et al. (1989) suggest that TAM provides a superior method of predicting IT usage compared to TRA and that the model is generally a useful tool for predicting user information technology acceptance (Venkatesh and Davis, 2000; Hwang and Yi, 2002; Money and Turner, 2004).

3.4.4 Links to this research

Since TAM was first developed there has been an explosion of corporate computer usage and communications world wide (Lu et al., 2003). This has led to a high level of usage for TAM and its various offshoots as increasing amounts of money have been poured into IT developments. There are many academic studies in a variety of areas relating to the uptake IT, using this model (Rawstorne et al., 1998 – medical practitioners Malhotra and Galletta, 1999 – social influences; Lu et al., 2003 – wireless internet; Ndubisi and Jantan, 2003 – SME's;) and the updated TAM2 (see figure 3.4 below). Despite the original model being designed for use in an organisational context it has been adapted to cover a myriad of different areas relating to the use adoption of IT in a variety of different settings. Some of these, relating more closely to this research, are mentioned below.

TAM and internet usage

Keat and Mohan (2004) suggest that it is no surprise that TAM has been modified to explain electronic commerce acceptance (McCloskey, 2003). This is a further important development of the original models as the intention to use the internet to replace traditional methods is essential to the development not only of companies selling their wares online, but also those who wish to adopt more efficient ways of doing business. As such this brings the theoretical development of TAM closer to the requirements of this thesis.

TAM and SMEs

The model has been adapted in a few cases to look at the situation of an SME. According to Ndubisi and Jantan (2003) current research looking into the uptake of technology amongst the small to medium firm has focused on TAM because it assists in understanding the relationship between users perceptions of the benefits and usability of their systems. A practical application of the TAM by Ndubisi and Jantan (2003) is presented below (figure 3.4). Their research looks into small and medium

sized enterprises in Malaysia and aims to identify the level of computing skills and the extent of technical backing for a new system.

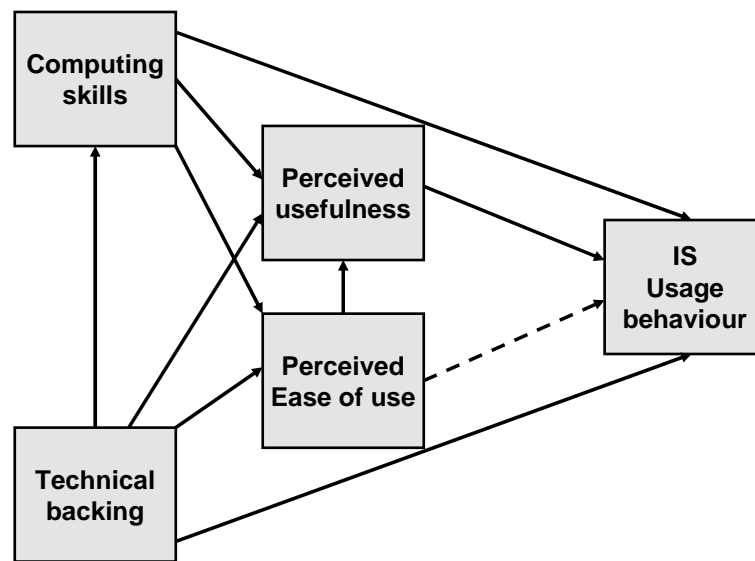


Figure 3.4 A practical application of the TAM, Ndubisi and Jantan, 2003, p.445

The adapted model above is merely one example of many ways that the original TAM has been altered to relate to a specific context. The addition in the Ndubisi and Jantan (2003) model of technical backing is a point picked up in Davis' own adaptation of the original model, TAM 2 (see 3.5). There is not a great deal of work on the SME and technology acceptance, but the work that has been done is obviously of use in relation to this thesis.

TAM and mandatory usage

Rawstorne et al., 2000 used both TAM and TPB to look at mandatory usage of an IS in the area of health care. Despite this work being in a different area this is also important in the context of this research, as suppliers may seek to force the usage of a procurement system onto a retailer. Although there is little evidence of this so far it is possible that more pressure will be brought to bear in future. The models relating to behavioural intention and

more specifically, technology acceptance tend to assume that behaviour is under a person's volitional control (Ajzen and Fishbein, 1980), this is not necessarily the case in the context of an employee faced with a new computer system being introduced at their workplace. The findings of Rawstorne et al. (2000) suggested that both models predicted two of three behaviours, but found that the models struggled to measure multiple behaviours that were similar but different. Their findings led them to believe that further study into the application of these models was necessary, especially as more mandatory organisational adoption of IS is likely in the future.

The many applications of TAM suggest a well respected framework achieving the objectives laid out for it by Davis et al. (1989) for it to be both parsimonious and theoretically justified. Although limited the framework has been adopted in the context of the SME and has clearly provided a positive contribution to this specific area. There is however some recognised limitations to the framework.

3.4.5 Limitations

Venketesh (2000) suggests that parsimony was both the strength and weakness of TAM, recognising that the general nature of TAM means that it cannot provide more meaningful information on the opinions of users relating to a particular system (Lu et al. 2003). Muthitacharoen and Palvia (2001) suggest that neither TRA nor TAM could be used to explain for instance why, when faced with a group of behaviours that could yield a similar outcome, an individual chooses one behaviour over another. To support this point the Davis and Venkatesh (2000) state that if a better understanding of perceived usefulness could be achieved then organisations could be guided to provide better support to increase technology acceptance. To provide more clarity on these limitations the model was further

developed by Davis and Venkatesh in an extended version known as TAM2.

3.5 Technology Acceptance Model 2 (TAM 2)

3.5.1 Introduction

A number of developments have occurred in the academic literature with the aim of creating the most accurate model for measuring the acceptance of technology in an organisational context. A further development of the preceding model TAM, was undertaken by Venkatesh and Davis (2000), known as TAM2. Issues relating to the original model were addressed and a more comprehensive model was presented.

3.5.2 The aims of TAM2

The aim of TAM2 was to keep the original TAM constructs and add to it a number of new constructs representing areas that might have a direct influence on the acceptance or otherwise of a technology offered in an organisational context. Venkatesh and Davis (2000) state that the new model should extend the existing model to 'include additional key determinants of TAM's perceived usefulness and usage intention constructs, and to understand how the effects of these determinants change with increasing user experience over time with the target system' (Venkatesh and Davis, 2000, p.187).

Similar to its predecessor this model has been tested and adapted by academics in studies covering a variety of scenarios (Chismar and Wiley-Patton, 2002; Spacey et al., 2004). The new extended version of the model has been well accepted by the academic community and is seen as a positive step towards attempts to

rationalise the acceptance of technology in an organisational setting.

3.5.3 The theory

The model uses as its core the existing TAM model and focuses on expanding upon the influencing factors relating to *perceived usefulness*. Venkatesh and Davis (2000) describe these new additions as 'social influence processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use)' (Venkatesh and Davis, 2000, p.187). The new model is graphically portrayed in figure 3.5.

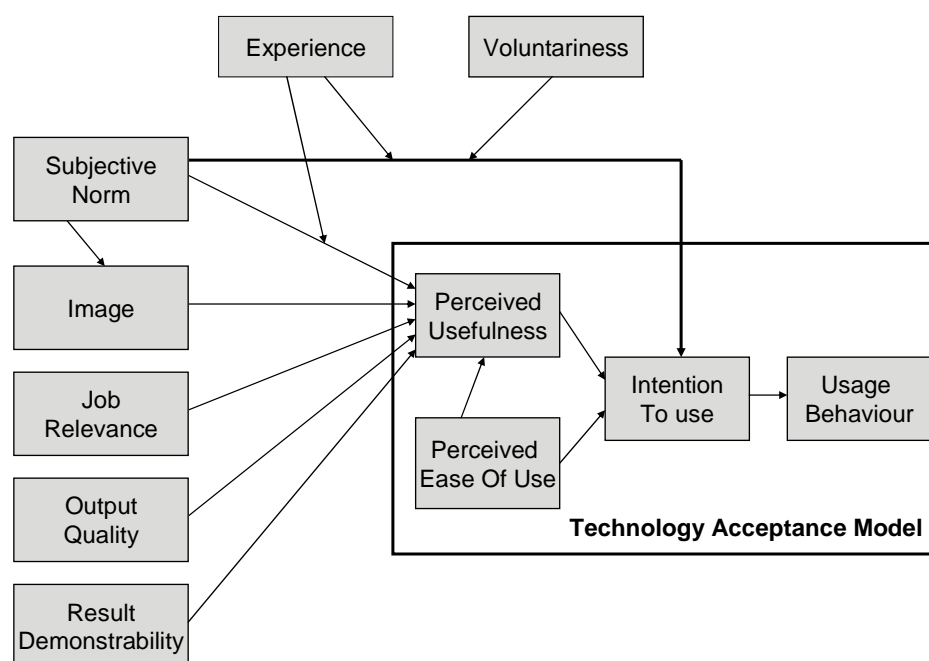


Figure 3.5. TAM 2, Venkatesh and Davis, 2000, p.451

The additions to TAM and why the authors decided to include them are outlined below.

Target system – Venkatesh and Davis (2000) talk about a *target system* as some kind of IT hardware or software that is going to be introduced into a company. The reactions and perceptions of people working in an organisation are looked at in the context of the *target system* in an attempt to evaluate its likely uptake and acceptance.

Subjective norm – relates to social pressure and is present in TRA (Ajzen and Fishbein, 1975) and explicitly in TPB (Ajzen, 1988). It is determined (see 3.3.3) by the complete set of accessible normative beliefs concerning the expectations of the individuals or groups that make up the important referents. Although considered and disregarded for TAM, it was acknowledged by the authors at the time that more work into *subjective norm* was required (Venkatesh and Davis, 2000). Following further academic research (Mathieson, 1991; [a] Taylor and Todd, 1995) the authors decided to add this construct into the newly developed model. An example of the type of question that would be used to judge this in a questionnaire would be, ‘...people who influence my behaviour think that I should use the system’ (Venkatesh and Davis, 2000, p.201).

Despite the inclusion of *subjective norm* there is still some controversy over its role, therefore the authors included additional constructs to support it. *Experience* and *voluntariness* are included as moderating variables and provide further support to the *subjective norm* construct.

- *Experience* relates to the level of familiarity that staff have with new types of systems. As the *experience* of people increases in relation to the use of systems, their ability to use these systems and their level of confidence is likely to increase. This should in turn lead to lower dissonance relating to the introduction of new systems and in turn a higher likelihood of acceptance.

- *Voluntariness* is described as whether or not an individual has the choice to choose to use a new system or not (Rawstorne et al., 2000). *Subjective norm* has been seen to have 'had a significant effect on intention in mandatory settings but not in voluntary settings' (Venkatesh and Davis, 2000, p. 199). This issue is important to this research and is further discussed in 3.8.

Image and social influence – in most areas of life people will be influenced by what their peer group thinks. Various studies have looked at the social pressure felt by individuals in the work place the most famous of which is the Hawthorne study (1933). Other influential models such as Maslow's Hierarchy (1943) suggest the importance of status and image as a motivating factor in life in general, and this can and has been related to a work context (Maslow, 1965). In TAM2 the authors suggest that the '*subjective norm* will positively influence image because, if important members of a person's social group at work believe that he or she should perform a behaviour, then performing it will tend to elevate his or her standing within the group' (Venkatesh and Davis, 2000, p.189). *Job relevance* – this relates to the 'degree to which the target system is applicable to his or her job' (Venkatesh and Davis, 2000 p.191). Put another way, this construct looks at the issues that the target system is aiming to address and how important and central these are perceived to be by the individual in the workplace. The individual is likely to have the clearest idea as to the usefulness of a proposed system and where a system is seen to be likely to successfully assist in an important element of the job it is suggested that acceptance will be higher.

Output quality – a further consideration when looking at a specific system will be how well the system achieves the objective(s) that it

aims to achieve. It is suggested that where output quality is high this will have a positive impact on the perceived usefulness of the system.

Result demonstrability – it is suggested that tangible results need to be forthcoming for the system to be perceived as useful. Davis and Venkatesh (2000) suggest that 'individuals can be expected to form more positive perceptions of the usefulness of a system if the covariation between usage and positive results is readily discernable' (p.192).

Perceived ease of use – this construct remains from the original model and looks at how easy a user believes a system will be to adopt. The inference here is, as in TAM, that where it is thought a system will be easy to use this will have a positive impact on the *perceived usefulness*.

3.5.4 Links to this research

TAM2 aims to provide a fuller picture of the issues relating to acceptance in an attempt to answer the criticism of the parsimonious nature of its predecessor, TAM. It is documented as providing an appropriate structure and has been adopted in a variety of areas (Venkatesh and Davis, 2000; Chismar and Wiley-Patton, 2002; Spacey et al., 2004). The model has been used to look at the use of the internet but this is generally related to b2c models (Pikkarainen et al., 2004) as opposed to the b2b focus of this thesis. The issues facing the SME regarding acceptance and TAM2 have generally received less attention in the literature.

TAM2 takes the debate relating to acceptance further. By adding new constructs a more detailed evaluation is possible as is a clearer view of the issues and the impact of them. TAM2 could have been a suitable framework on which to base this research had the research

team not gone a step further in 2003 and put forward a further development, that of a unified theory of acceptance and technology usage (UTAUT). Several of the constructs outlined in TAM2 have been used in UTAUT, these will be outlined in the next section and discussed in the context of the retail SME.

3.5.5 Limitations

Many of those undertaking studies relating to IS usage have suggested additions to the TAM and TAM2 models; these include Venkatesh et al. (2003) and the UTAUT (see 3.7). For the purposes of this research it is proposed that an extended version of the UTAUT model be developed to reflect the specific situation of the SME retailer. The rationale behind the changes and therefore by definition the limitations of UTAUT in the context of this thesis, is discussed (see 3.7) following a brief overview of other academic models in the area of technology acceptance (see 3.6).

3.6 Other models relating to technology acceptance

3.6.1 Introduction

So far in this thesis a clear development of the models relating to how academics have attempted to rationalise the issue of technology acceptance in organisations, has been presented. There are other models from other disciplines that have attempted to evaluate the same problem, some of which are considered in UTAUT (see 3.7). Some constructs and or theories are however not used in this model and are worth a mention in the context of this area, these are outlined in this section.

3.6.2 Task-technology fit model (TTF)

As already outlined in this chapter, information systems (IS) research has attempted to more fully comprehend linkages between IS and individual performance. The basis for taking on an IS should be that the technology: (1) must be utilized and (2) must be a good fit with the tasks it supports. The task technology fit model takes a different perspective on technology acceptance - this is outlined below.

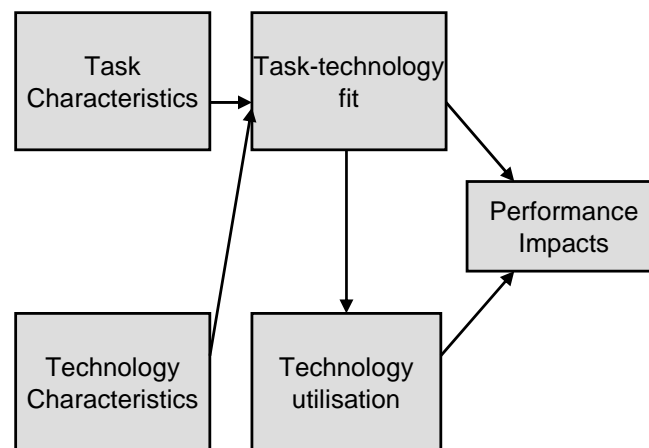


Figure 3.6 The task technology fit model, Benslimane et al., 2002, melody.syr.edu

The above represents the basic TTF model (Goodhue and Thomson, 1995). The main aim is to match the capabilities of the technology to the demands of the particular task, or put another way, the ability of the IT to support a task. This is similar to the *job relevance* and *output quality* constructs adopted in TAM2. As with the TAM2 constructs this model suggests that IT will only be of use if the functionality from the new system available to the user, fits with the activities of the user.

3.6.2.1 TTF and TAM

Dishaw et al. (2002) looked at the relationship between the above TTF and the TAM. This is expressed diagrammatically below figure 3.7.

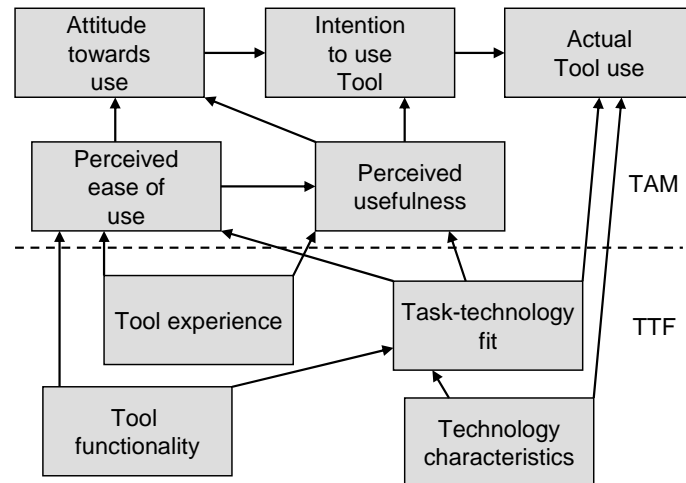


Figure 3.7 Integrated TAM/TTF model Dishaw and Strong, 2002, p.1022

Dishaw et al. (2002) argued that by combining the two models they were able to capture behaviour relating to IT usage (TAM), and perceived value of adopting IT. ‘Both aspects, attitude toward the IT and rationally determined expected consequences from using the IT, are likely to affect users’ choices to use IT’ (Dishaw et al., 2002, p.1022).

A further construct, Computer Self Efficacy (CSE) is added to this model. Developed by Compeau and Higgins (1995) it examines users’ beliefs regarding their ability to perform a specific task using a computer package. There are three general dimensions to this: magnitude of the ability; certainty or strength of the belief; and generalizability of the ability. This is also outlined in the UTAUT model (see 3.7).

3.6.2.2 Use of the model

Benslimane et al. (2002) looked at the task-technology fit model in the context of www-based procurement. To carry out this analysis using this framework they required;

1. the identification of the tasks corporate buyers carry out during the procurement process
2. the definition of www functionalities
3. the evaluation of fit between task requirements and www functionalities

4. the expected consequences of such fit.

These points relate to the points in the original model that feed into the *performance impacts* on the right hand side.

The tasks corporate buyers are required to undertake for organisational procurement are: the identification of suppliers; the selection of a vendor; and the execution of the transaction. In modelling this process the straight re-buy would need to be distinguished from the modified re-buy and the new buy. This role will be highly formalised in the context of the large retailer but perhaps informal in the context of the smaller retailer, and may well be more influenced by company representatives.

3.6.2.3 Links to this research

In the context of this research this model TTF and the extended model including TAM and self efficacy could perhaps provide a good basis for the study. However, it is rejected because the small to medium retailer is unlikely to be consciously looking for a new technology to resolve their problem and are more likely to be reacting to the aims of their suppliers. *Self efficacy* is an issue and is outlined in UTAUT. The need for a model that identifies psychological impacts is likely to be more appropriate for this research given the overall aims and the target group.

3.6.3 Theory of diffusion of innovations (DoI)

This model is described in the section on UTAUT (see 3.7), however it is deemed sufficiently important as to merit a fuller explanation here. The foundation work in this area was undertaken by Rogers in his *Diffusion of Innovations* (1995). The theories surrounding this concept relate to the market development for products, aiming to describe patterns of adoption, explain the mechanism, and assist in predicting whether and how a new invention or innovation will be successful. According to Clarke (2004) the theory is at its most useful as a descriptive tool, not so strong in its explanatory power, and even less useful in predicting outcomes and providing guidance as to how to accelerate the rate of adoption.

Rogers' (1995) suggests that 'diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system' (p.5). The main elements to this model are; innovation, communication channels, time and the social system, all of which leads to the model in figure 3.8 below.

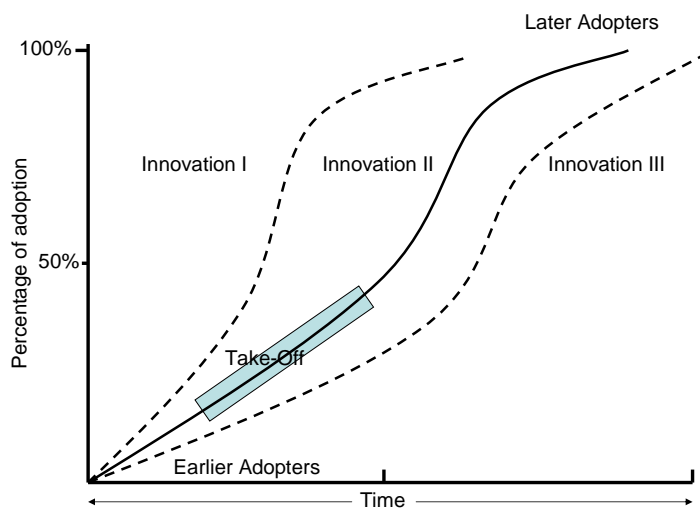


Figure 3.8 Diffusion of Innovation, Rogers, 1995, p.7

Given that these decisions will not be authoritative or collective, each member of a certain social system will face his/her own innovation-decision that is likely to follow this 5-step process.

1. Knowledge – person becomes aware of an innovation and has some idea of how it functions.
2. Persuasion – person forms a favorable or unfavorable attitude toward the innovation.
3. Decision – person engages in activities that lead to a choice to adopt or reject the innovation.
4. Implementation – person puts an innovation into use.
5. Confirmation – person evaluates the results of an innovation-decision already made.

The basic innovation decision will be made on a cost benefit analysis which will be based on uncertainty. The suggestion is that if there was certainty this would lead to a straight forward decision making process. If it is anticipated that an innovation will enhance the utility or value an individual receives, then it is likely to be adopted. Other factors that are likely to influence the adopter are; if it is difficult to use, the newness and unfamiliarity, if it will work, how others might react. These are all elements outlined in TAM and TAM2. Personal characteristics will dictate different reactions towards technology adoption - hence diffusion exists. The standard approach to adoption is based on the following personality types; 1) innovators, 2) early adopters, 3) early majority, 4) late majority, and 5) laggards. If a new technology is introduced successfully to the initial two groups then a domino effect is likely to occur through the remaining groups. Innovation diffusion is based on 'the notion that technological innovations embody 'information: some capacity or 'essence' that is largely responsible for determining their rate of adoption.' (Tatnall, ecommerce.lebow.drexel.edu, 2001)

This group of theories can be looked at in the context of different perspectives, which clearly reflect the different ways in which technology may be diffused, whether intentionally or unintentionally. Innovation decisions can be one of the following;

- *optional*, where an individual or organisation has a real opportunity to adopt or reject the idea
- *collective*, where a decision is reached by consensus among the members of a system
- *authority-based*, where a decision is imposed by another person or organisation which possesses requisite power, status or technical expertise.

In the context of this research this immediately begs the question as to whether or not a small to medium retailer can be said to exist in a social system that would be significantly populated such that it would effect innovation adoption. This might perhaps be the case if the social system was seen as a loose collective of individuals representing a certain product category. In the case where there is not a sufficiently significant group, innovation decisions could be said to be 'optional'.

3.6.3.1 Link to this research

Tatnall and Lepa (2003) used this theory to look at the extent and reasons behind internet uptake by old people in Australia. The aim was to look at all causal factors human and non human (e.g. computer, modems, web browsers). Underlying this is the understanding that it is the social factors more than the technological that lead change. Diffusion of Innovation relates to this research in that it has an ability to analyse a particular situation given a technological development. However its predictive ability is less impressive. It could therefore provide an overview of the current situation regarding the uptake of internet technologies amongst the small retailer but would not explain the factors that had led to this point or the likely impact on future usage.

3.6.4 Actor (Actant) Network Theory (ANT)

According to this theory (Callon, 1991; Latour, 1997) an actor is any individual or non-human entity that is able to make its presence *individually* felt. Tatnall (2001) suggests that an actor is made up *only* of its interactions with other actors. The theory is based upon the following three principles.

- *Agnosticism* - impartially between actors in a controversy.
- *Generalized symmetry* - explanations of conflicting viewpoints in the same terms (human/non-human).

- *Free association* - abandonment of a prior case study and distinctions between human and non human.

Tatnall, 2003, p.59

Latour (1997) argues that in this model the movement of a specific innovation through time and space is in the hands of people each of whom may react in a different way, that is; accept it, modify it, deflect it, betray it, add to it, appropriate it, or let it drop. The adoption of an innovation therefore comes only as a consequence of the actions of everyone in the chain of actors that are in any way involved in it. Latour (1997) goes on to suggest that each of the actors will shape the innovation to their own ends and therefore instead of a process of transmission we have a process of continuous transformation.

Transformation has four aspects (moments).

1. *Problematization* - Actors define nature of problem and roles of actors. The problem is defined in terms of those attempting to bring in changes (enrollers) and those who are meant to accept them (those being enrolled) – the problem is therefore redefined or *translated*. If these conventions/rules resulting from this process are accepted, this will lead to the formation of a stable network.
2. *Interessement* – a series of processes that attempt to impose the identities and roles defined. Leading to the disbanding of existing networks in favour of those defined by the enrollers.
3. *Enrolment* – establishment of solid networks with one set of actors imposing their will on others, and the 'others' yielding to this.
4. *Mobilisation* – wider acceptance occurs eventually but not all will 'get on board'.

3.6.4.1 Links to this research

This concept links to this research in the context of their attempt to understand the influencing factors leading to adoption. Networks are important in the context of the retailer as they are with anyone in business. Various players within this retailers network are likely to be influential on their decision making, however the aim of this research is to focus on the individual retailers as opposed to the wider networks in which they operate, this approach would therefore be discounted. This is also a more qualitative approach that has been adopted in the context of IS (Mähring et al., 2004; Allen, 2004) but is still mainly at the exploratory stage.

3.6.5 Reflections on these models

The search for the perfect framework on which to base an academic piece of work is always going to be a difficult exercise. Any of these approaches could have been adopted, although some reasons are provided as to why they were not. The decision to base the research on the UTAUT (see 3.7) model is based on the fact that it appears to fit closest to the requirements of this thesis. It also has been reached by the most testing academic rigour and the inclusion of a wide range of theories in the area of technology acceptance.

3.7 Unified Theory of Acceptance and Use of Technology (UTAUT)

3.7.1 Introduction

In 2003, previous contributors to this area Venkatesh et al. produced a paper aiming to come to a 'Unified View', relating to user acceptance of information technology. At the centre of the model is intention, and/or usage as the key dependent variable, with the goal of understanding usage as the dependent variable

(Venkatesh et al., 2003). UTAUT is adopted in this thesis as the core underpinning supporting an adapted methodology in the area of user acceptance and SME retail.

3.7.2 The aims of UTAUT

The Venkatesh et al. (2003) paper aims to empirically compare eight of the most prominent models relating to user acceptance in IT and integrate elements from all of these in the construction of the new model (UTAUT). The model is designed to further develop the area of acceptance by merging the most respected and cited academic models in the area. According to the authors, the model, UTAUT 'outlines more than 70% of the variance in intention' and leads them to suggest that the new model brings them to a point where they believe they may be 'approaching the practical limits of our ability to explain individual acceptance and usage decisions in organisations'. (p.471). In developing UTAUT the authors also identified any issues relating to the eight models that were combined in its creation allowing for an examination of the shortcomings and discussion on how to improve upon them.

3.7.3 Background to the theory

The following models aggregated to create the new model are as follows.

1. Theory of Reasoned Action (see 3.2).
2. Technology Acceptance Model and TAM2 (see 3.4 and 3.5).
3. Motivational model – looks at intrinsic and extrinsic motivational factors
4. Theory of Planned Behaviour – (see 3.3).
5. Combined TAM and TPB – combining the predictors of TPB and perceived usefulness of TAM to produce a hybrid model.
6. Model of PC Utilisation – Thompson et al. (1991) adapted an earlier model on the theory of human behaviour (Triandis,

1977), using the following constructs: job-fit; complexity; long-term consequences; affect towards use; social factors; facilitating conditions.

7. Innovation Diffusion Theory (see 3.6).
8. Social Cognitive Theory – Compeau and Higgins (1995) developed an earlier model on the theory of human behaviour (Bandura, 1986), using the following constructs: outcome expectations – performance; outcome expectations – personal; self-efficacy; affect; and anxiety.

Some of the chosen eight models have already been outlined however others have not. It is therefore necessary to provide a synopsis of these latter models.

3. Motivational Model

Research in the area of psychology has supported this theory as an explanation for behaviour (Vallerand, 1997). In the context of IS Davis et al. (1992) applied motivational theory to technology acceptance. The core constructs were *extrinsic* and *intrinsic motivation* (Vroom, 1964). *Extrinsic motivation* relates to the achievement of goals external to the task itself, for instance job performance, pay or promotion. Those motivated to achieve extrinsic gains will focus on the rewards and not the task. *Intrinsic motivation* relates to the doing of the task, the undertaking of that task will be sufficient reward in itself in providing the necessary motivation.

5. Combined TAM and TPB

This model is obviously a combination of the two individual models (see 3.4 and 3.2). As such the core constructs are as per TRA and TPB with perceived usefulness from TAM being utilised in the new model.

6. Model of PC Utilisation (MPCU)

This model originated in the work of Triandis (1977) and the theory of human behaviour. The model was later adapted to the specific field of IS looking at optional PC utilisation by Thompson et al. (1991), hence MPCU. The authors suggest that the consideration of all beliefs, as in the case of the work of Ajzen and Fishbein (1960s onwards), does not assist in the process of understanding behaviour. Instead they suggest using the work of Triandis, that these 'intentions are determined by feelings people have toward a behaviour (affect), what they think they should do (social factors), and by the *expected consequences* of the behaviour' (Thompson et al., 1991 p.126).

Its use has subsequently been expanded to look at individual acceptance throughout a range of information technologies with a focus on usage behaviour rather than intention. The following core constructs, many of which are familiar, are identified in the model;

- *job-fit* – the perception that using a specific technology can enhance the performance of a particular job
- *complexity* – the perception that a specific technology is relatively difficult to understand and adopt
- *long term consequences* – perception that usage and adoption may have future pay-off
- *affect towards use* – relates to feelings associated with the adoption of a particular technology
- *social factors* – relates to how the individual understands and reacts to the subjective culture of their reference group and the way they interact with individuals within the group
- *facilitating conditions* – the perception that environmental objective factors make a particular act easy to achieve. In

the context of technology acceptance this would relate to the availability and perceived usefulness of support facilities relating to the specific technology.

7. Innovation Diffusion Theory (IDT)

The basis of this theory is in sociology and relates to the work of Rogers (IDT, 1995). This was mentioned in section 3.6 but is developed and contextualised further here. Since its inception in the 1960s the theory has been used in a variety of areas to analyse how innovations diffuse through a society. The theory was adapted to the field of IS by Moore and Benbasat (1991) to look specifically at individual technology acceptance;

- *relative advantage* – the perception that a new technology will be superior to the previous one
- *ease of use* – the extent to which the technology is seen as being difficult to use
- *image* – the extent to which the use of an innovation is perceived as enhancing the image of an individual within an organisation
- *visibility* – the extent to which the use of this technology will be apparent to others
- *compatibility* – the extent to which an innovation is consistent with present values, needs and past experiences
- *results demonstrability* – the extent to which tangible results are evident and apparent to others
- *voluntariness of use* – the extent to which the uptake of the technology is voluntary.

8. Social Cognitive Theory (SCT)

Social cognitive theory is a powerful tool in the analysis of human behaviour (Venkatesh et al., 2003). Compeau and Higgins (1995) adopted SCT to look at performance relating to computer utilisation.

Their work can be extended to look at acceptance and IT in general. In the context of UTAUT, SCT is looked at from the perspective of its ability to predict individual acceptance related to intention and usage behaviour (Venkatesh et al., 2003). The constructs are outlined below;

- *outcome expectations - performance* – relates to the consequences of the behaviour and the performance from this. Specifically, the expectation of performance deals with outcomes relating to the job (Compeau and Higgins, 1995)
- *outcome expectations - personal* – the consequences relating to personal behaviour, dealing with esteem and sense of accomplishment (Maslow, 1943)
- *self efficacy* – ability to use a technology to achieve a job related task
- *affect* – a persons liking for a particular behaviour
- *anxiety* – emotion or anxiety relating to the performance of a particular behaviour.

As can be seen from the constructs of the *new* models, there are several similarities with those that have already been discussed. Where there are differences, be they major or minor, the UTAUT theory has aimed to encompass those that are deemed to be central to the aims of the model. The criteria on which they have based these choice decisions is by a review of the competing models in the area coupled with the judgement of Venkatesh et al. (2003) on which are the most influential.

3.7.4 The theory constructs

Direct determinants. Venkatesh et al. (2003) identify four direct determinants from the accumulated eight models.

- *Behavioural intention*, the model predicts that the moderators (except facilitating conditions) will influence behavioural intention. This is how people will intend to behave.
- *Use behaviour*, denotes actual usage.
- *Performance expectancy*, this construct is evident in earlier models, starting with TAM (1989) where it is called *perceived usefulness*. This is defined as 'the degree to which an individual believes that using the system will help him or her to attain gains in job performance' (Venkatesh et al., 2003, p.447). Performance expectancy is seen by the authors as the strongest predictor of intention of all the constructs.
- *Effort expectancy*, this construct is evident in earlier models, starting with TAM (1989) where it is called *perceived ease of use*. This is defined as 'the degree of ease associated with the use of the system' (Venkatesh et al., 2003, p.450).
- *Social influence*, this construct is the same as *subjective norm* and as such dates back to TRA (1975) and is defined here as 'the degree to which an individual perceives that important others believe he or she should use the new system' (Venkatesh et al., 2003, p.451).
- *Facilitating conditions*, this constructs includes aspects from several of the models although the specific term used varies. This is defined in this research as 'the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system' (Venkatesh et al., 2003, p.453). Unlike the previous three constructs that are direct determinants of behavioural intention, facilitating conditions is a determinant of usage behaviour (Venkatesh et al, 2003; Carlsson et al., 2006; Baron et al., 2006).

Moderators These are; experience, voluntariness, gender, and age. Venkatesh et al. (2003) identify four moderators which have proved significant in conjunction with the eight models and are included in the final model. In the context of this research the role of the moderators is central to the efficacy of the final model. Some of these moderators are used in the eight models, the details of which are outlined below.

- *Experience*, this relates to the experience of the individual and the impact this is likely to have on the user. It is not explicitly included in; TRA, TAM, TPB, but is in the other models.
- *Voluntariness*, this looks at whether potential users are allowed to choose to use the new technology application or not. This is an important determinant relating to acceptance but is mainly ignored in the eight models.
- *Gender*, Hogg and Garrow (2003) suggest that men and women consume and process information differently, they also state however that caution should be taken when identifying the differences between genders in academic research.
- *Age*, as we progress through our lifecycle our priorities change and as such our reaction to the adoption of technology is similarly, likely to alter over time.

3.7.5 Limitations of the eight models

As has been seen the development of academic work in this area has progressed over several years. Given the nature of what these models are trying to achieve there are not surprisingly limitations to them. The aim of this study is to, where possible, resolve these limitations by developing a new model that reflects the specific

situation of the SME retailer. The following five limitations of earlier work are identified.

1. *Technologies studied* – earlier technologies that have been examined have tended to be relatively simple technologies as opposed to more complex ones that would actually provide managers with a risky change scenario. In the case of this research the internet is obviously not new, and neither is the average user interface that difficult to follow.
2. *Participants* – most studies have been undertaken using students, the new study uses data collected from employees of organisations, as will the study for this research.
3. *Timing of measurement* – the research undertaken by Venkatesh et al. (2003) is done during the acceptance period as opposed to before or after, in the case of this research there will not be consistency regarding this point as users will be at different stages of acceptance.
4. *Nature of measurement* – the research of Venkatesh et al. (2003) 'tracks participants through various stages of experience with a new technology and compares all models on all participants' (p.437).
5. *Voluntary vs. mandatory contexts* – Venkatesh et al. (2003) looks at both of these, the research to be undertaken will also aim to cover both.

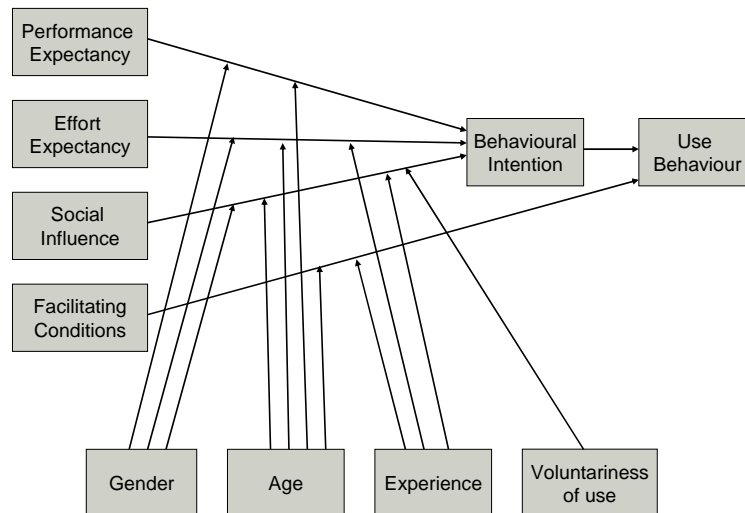


Figure 3.9 UTAUT Venkatesh et al. 2003, p.447

The model outlined in figure 3.9 unifies the theoretical perspectives in existing literature to incorporate four moderators looking at the dynamic factors of: the organisational context; the user experience; and demographic characteristics. A variety of academics have adopted the new model looking at as diverse areas as: occupational therapist acceptance of ICT (Schaper and Pervan, 2005); voice over IP networks or VoIP (Zhang et al., undated); wireless LAN technology (Anderson and Schwager, 2003); electronic programme guides EPG (van Setton et al., 2006); electronic negotiations for inter company communications (Kohne et al., 2005); robotic interfaces (Saini et al., 2005); and mobile services (Knutsen, 2005; Carlsson et al., 2006).

3.7.6 Links to this research

It was suggested at the start of this section that Venkatesh et al. (2003) felt that they were nearing the practical limits in explaining acceptance in organisations. The argument for a revised model as suggested by this thesis is that approaches become more specific to a certain industry or problem. This suggests an obvious progression

through the general models depicted by Ajzen and Fishbein (1960s onwards), through the more targeted TAM, TAM 2 and UTAUT, onto more focused models such as that designed for this thesis. The particular issue presented here is looking at the use of the internet for procurement in the retail SME sector. A new model to represent this will be developed from UTAUT. Such a model should provide insight into the adoption of IT in the SME retail sector and as such should be of use when making other decisions relating to IT uptake in this area.

3.7.7 Limitations

The limitations of the model relate only to the needs of the more specific area this thesis is aiming to explore. The UTAUT model seeks to consolidate the work done in the area of IS and technology acceptance by bringing together the various models that have attempted to provide the best framework to explain it. The models presented here come from a variety of academic backgrounds and give an indication of the lengths gone to by academics to find the best framework and as such a clear guide to the importance of the need to be able to measure the acceptance of new technologies in an organisational context. This particular model was chosen as the underpinning for this research as it appeared to provide the most comprehensive model to date by using a combination of the best aspects of the most highly respected approaches.

Baron et al. (2006) do not dispute the claim made by the authors suggesting that UTAUT explains 70% of variance but ask what happens in relation to the other 30% that is not explained. In their own research looking at text messaging the authors point out that the technology fell into that 30% where the model (UTAUT) would not have been able to explain acceptance.

The next section looks at the constructs of the new model that will be tested as part of this thesis. Included in this section is the hypotheses designed to establish the explanatory ability of the new model.

3.8 The Hypotheses

3.8.1 Introduction

The main objective of this thesis is to develop and test a model of technology acceptance for the retail SME sector. The aim of the model is to allow researchers and practitioners to accurately gauge the influencing factors of the uptake of a new technology that they are considering introducing in a SME organisation. Within the primary objective is the need to establish the influence of the chosen factors on retail practitioners. To analyse the constructs and to assist in the development of an extended model that is appropriate in the context of this topic, hypotheses have been developed which are discussed below.

Given the fairly recent addition of the UTAUT model (2003) only limited research has been undertaken since its inception on the specific constructs it uses. This section aims to provide an overview of the research in this area providing insight into the viability and importance of the constructs adopted and their link with this research via the development of existing hypotheses. New hypotheses appropriate for this research topic are also developed here and a rationale provided to support their inclusion. Supporting research is also discussed with work chosen that focuses on the specifics of the UTAUT model (2003). From the model four major

factors are identified along with a number of moderator variables. The first issues to discuss relate to Behavioural Intention and Use Behaviour.

3.8.2 Behavioural Intention (BI)

The UTAUT model suggests that intention to behave in a certain way is influenced by PE, EE and SI. BI then will lead to use behaviour, i.e. acting in a certain way in relation to the adoption of technology. This can be seen in the original Azjen and Fishbein TRA model (1975) as intention. The inference here is that the results of the various factors above will lead to an intention to act in a certain way. The link between this construct and Use Behaviour (see 3.8.3) is that just because someone intends to act in a certain way does not mean that they necessarily will act in that way. As mentioned below there may be factors that stop them from acting as they wish, for example in the case of this research the supplier may not offer an online procurement system.

3.8.3 Use Behaviour

This comes from the behaviour construct of the initial model undertaken by Azjen and Fishbein (1975), with the word *use* being added on in the later TAM models denoting the specifics of technology acceptance and how/if it is used. This relates to the eventual outcome of the proposed adoption and in the case of this research may be a perceived interest to utilise the technology in future or not. In the model outlined above use behaviour is linked to availability of use from the supplier, the point being that someone may intend to behave in a certain way but in the context of this research will not be able to because there is no system available. The model aims to measure this as its output. The four major factors that lead to behavioural intentions (BI) and use behaviour are as follows.

3.8.4 Direct determinants

The direct determinants of the models are as follows.

- *Performance expectancy*
- *Effort expectancy*
- *Social influence*
- *Facilitating conditions*

3.8.4.1 Performance Expectancy (PE)

This is the perceived gains that will be achieved by utilising a new system. This factor derives from the perceived usefulness construct of the original TAM model (1989). In the context of this research it should allow for an understanding of how practitioners view the likely ability of the technology to make their company more efficient. This construct is different in the case of this research because the main person using the technology is likely to be the owner or manager. Riemenschneider et al. (2002) outline that IT adoption decision making in a small business is likely to be made by a single individual. Where this is the case the individual is likely to have different motivations to those of an employee when it comes to IT adoption. Hence to balance this, new moderator variables have been added to introduce factors that will influence the eventual technology adoption in this particular environment.

According to Venkatesh et al. (2003) PE is seen as the 'strongest predictor of intention and remains significant at all points of measurement in both voluntary and mandatory settings' (p.447). Venkatesh et al. (2003) also note that the 'strength of the relationship varies with gender and age such that it is more significant for men and younger workers' (p.467). Undertaking research into mobile technology Knutsen (2005) suggested that the

responses aiming to measure PE were moderated by the impressions respondents had of EE. He goes on to suggest that PE is a strong determinant of attitudes towards mobile services. Research undertaken by Carlsson et al. (2006), also looking at mobile acceptance, found that PE had a significant positive effect on intention. Research linking online investing and personality traits (Wang and Yang, 2005) found that PE gleaned significant results suggesting a link between it and certain traits. Work on the acceptance of weblog systems (Li and Kishore, 2006) identified significant results with PE in conjunction with factors relating to experience, rejecting only the hypothesis looking at gender. Louhu et al. (2006) aimed to evaluate the significant factors affecting acceptance of code reading applications (such as bar codes). In this study the hypothesis looking at PE was accepted, with age and gender identified as having an effect. The hypotheses relating to this construct are as follows.

H.1. The influence of performance expectancy on behavioural intention will be moderated by age

This hypothesis is abridged from work by Venkatesh et al. (2003) and it is anticipated that this relationship will exist here. Although gender was included in the original work by Venkatesh et al. (2003), this is not included in this research as the respondents were overwhelmingly male to the extent that any analysis on gender lines would be meaningless.

H.2. The influence of performance expectancy on behavioural intention will be moderated by the level of perceived IT experience (self efficacy) the user has

Previous studies have examined the idea of self efficacy (Compeau and Higgins, 1995) and its impact on adoption (see 3.6). It is hypothesised that those who perceive themselves to have a high

level of IT experience will have a greater expectation of improved performance from a new technology.

H.3. The influence of performance expectancy on behavioural intention will be moderated by the frequency of re-ordering and the value of the product

The frequency that a retailer is required to reorder stock is seen as a potential issue that would impact on the need to use an online system. The value of the product is seen as also having a potential influence over the need to use online procurement given that more expensive, bespoke products are likely to be ordered less frequently. There is no direct research in these areas and their rationale comes from general observations. This is a new addition to this academic area gleaned from the initial qualitative study but the frequency of re-ordering and product value could be said to have an impact on the relationship (see 2.9). It hypothesises that where there is a need for constant re-ordering of stock from suppliers the performance expectancy will be higher, having a positive effect on behavioural intention.

H.4. The influence of performance expectancy on behavioural intention will be moderated by the strength of the relationship between the retailer and supplier

This introduces another new construct looking at the relationship between the SME retailer and the supplier (see 2.9). It looks at the influence of the relationship between the supplier and retailer related to the perceived need and likely adoption of online procurement by the retailer. The underpinning and rationale behind this hypothesis comes from the literature outlined in section 2.9, and suggests that the type of relationship is likely to be influential and therefore may impact upon IT adoption. This hypothesis states that where there is perceived to be a strong relationship with a

supplier there will be a higher *performance expectancy* leading to a positive behavioural intention, and vice versa.

3.8.4.2 Effort Expectancy (EE)

This construct looks at the perceived effort that will be required to learn a new system which is being introduced into an organisation, and become proficient in it. This construct is part of the UTAUT model (2003) and is similar to *perceived ease of use* which was one of the constructs in the original TAM model (1989). It was also part of the original work of Azjen and Fishbein (*attitude toward the behaviour*) and their TRA (1975) and TPB (1988) models. Its inclusion in TAM was aimed specifically at the adoption of technology within the organisation. If a technology is difficult to learn then it will potentially put users off becoming fully conversant with the system or not learning to use it at all, assuming they have this option. In the context of this research if a new online procurement system introduced by a supplier was perceived to be too complicated to adopt then this would logically limit its usage. The initial qualitative research suggested that use of these systems, which was itself limited, was in most cases, voluntary. This would therefore suggest that if a system was introduced and the perception was that it was difficult to use, in many cases owner/managers would decide not to use it. The fact that online procurement software may differ from supplier to supplier does not provide a homogeneous application for comparison, instead it must be taken as given that online procurement systems are designed to be intuitive and therefore reactions to their introduction would depend on the perception of the new user and not the specific piece of software itself.

Venkatesh et al. (2003) suggest that the impact of EE on intention is 'moderated by gender and age such that it is more significant for women and older workers, and those affects decrease with experience' (p.467). In his paper looking into mobile technology EE Knutsen (2005) suggested that EE was a strong determinant of general attitudes towards mobile technology. Knutsen (2005) did not use SI or FC in his model. Carlsson et al. (2006) also found EE to be a strong determinant of intention to use, achieving similar results to those for PE (mentioned above). Research by Wang and

Yang (2005) found EE to be a weaker determinant than PE. The work by Li and Kishore (2006) supported all hypotheses in their research. The work by Louhu et al. (2006) supported the hypothesis looking at EE, with once again, age and gender impacting upon the use intention. The hypotheses relating to this construct are as follows.

H.5. The influence of effort expectancy on behaviour intention will be moderated by age

This hypothesis is altered slightly from the original hypothesis from the Venkatesh et al. model (2003) as it discards gender for the reasons given above. It is hypothesised that *age* will have a negative effect on the perceived effort required to adopt a new technology, and as such the *behaviour intention*.

H.6. The influence of effort expectancy on behaviour intention will be moderated by the level of perceived IT experience (self efficacy) the user has

This hypothesis comes from earlier work undertaken by Venkatesh et al. (2003). It is hypothesised that the perceived level of *IT experience* a person has will have a positive effect on the extent of effort they believe will be required to adopt a new system, and thus on *behaviour intention*.

H.7. The influence of effort expectancy on behaviour intention will be moderated by the strength of the relationship between the retailer and supplier

In this hypothesis *effort expectancy* is related to one of the moderator variables which are outlined below. The nature of the relationship came out as an important factor in both the literature (see 2.9) and the qualitative research, this suggested that where a close relationship existed human interaction may be very important. It is therefore hypothesised that where the relationship between supplier and retailer are close,

communication channels will be deemed to be important and there may be strong work/social ties between an owner/manager and a company representative (rep). In this case the *effort expectancy* may be higher because a method exists that the owner/manager is content with and may not wish to change, therefore perceived effort will be considered to be higher.

3.8.4.3 Social Influence (SI)

This is stated as the degree to which a person perceives that referent others, those whose opinions they rate highly, believe he or she should use a particular system (Venkatesh et al., 2003). This can be seen in the initial Ajzen and Fishbein TRA model (1975) under the heading *subjective norm*, a construct which suggested that people would be drawn to a particular course of action due to pressure, perceived or otherwise, put upon them by others. The idea of *normative beliefs* was introduced in the Azjen and Fishbein TPB model (1988) and looked at the beliefs of others living/working around the individual and the effect they may have upon them. This then fed into the *subjective norm* to provide an overall construct leading to *intention* and then *behaviour*.

It is important to have some idea of the impact of the views of those around them on the decision making of the individual. In the context of this research this is less obvious than in the case of looking at larger organisations because those adopting, or otherwise the technology are likely to be in charge as either owners or managers. It could therefore be suggested that to find these 'important others' who might have an impact on the behaviour of an owner/manager we would need to look out with the organisation as well as within it. It is possible that the competition may influence the retailer and lead to some form of social influence. Another possibility may be younger/junior members of staff better versed

with the operation and possibilities of new technology, showing them how to use a system or acting in a quasi technology support role (evidenced from the qualitative interviews).

The work by Venkatesh et al (2003) suggests that all four moderators outlined below impacted on SI. In the work undertaken by Carlsson et al. (2006) the link with intention was not as strong as for PE and EE. Wang and Yang (2005) found significant relationships between SI and certain personality traits. The work on the acceptance of weblog systems (Li and Kishore, 2006) identified some significant results with SI but not on all the factors tested. The research by Louhu et al. (2006) rejected the hypotheses linking SI and use intention in their research on code reading applications.

H.8. The influence of social influence on behavioural intention will be moderated by age

This hypothesis was adapted from Venkatesh et al. (2003). It hypothesises that as people age their receptiveness to the social influence of others upon their behaviour will change. Specifically related to this research it looks at the moderating impact age has on the intention (BI) to adopt online procurement in relation to the external influences (SI) that come to bear on a retail practitioner when considering adoption.

H.9. The impact (influence) of social influence on behavioural intention will be moderated by experience

This hypothesis was adapted from Venkatesh et al. (2003) and looks at the impact experience has upon SI and its influence on BI. The relationship suggests that those who perceive themselves to be more IT literate will be influenced differently by those around them than those who perceive their skills to be weaker. Put another way the impact of referent others such as employees and family will impact differently for those who have high perceived IT skills compared to those with low perceived IT skills.

3.8.4.4 Facilitating Conditions (FC)

This is the degree to which an individual believes that there is an organisational and technical infrastructure existing to support the use of a new system (Venkatesh et al. 2003). The origins of this particular factor are from the model of PC Utilisation (Thompson et al. 1991) adapted from an earlier model (Triandis, 1977) on the theory of human behaviour (see 3.7). The need for the organisation to successfully support any IT adopted will be a determining factor on general adoption. Past experience of the efficacy or otherwise of the facilitating conditions within an organisation are likely to affect employees and their performance expectancy. Issues arising here may relate to the ability of the company to support the technology and iron out any issues that may arise. Again this is likely to be more complex in the case of the small retailer as they may need to receive IT support from out with the organisation, whether via the supplier or some other external service such as an internet service provider (ISP).

Venkatesh et al. (2003) found that FC was 'only significant when examined in conjunction with the moderating effects of age and experience' (p.467). The study by Carlsson et al. (2006) did not find a significant direct relationship between FC and intention to use mobile devices. Wang and Yang (2005) found there to be a significant relationship between FC and certain personality traits. Similarly to the above the work by Li and Kishore (2006) identified some significant results but rejected some of the hypotheses measured. The work undertaken by Louhu et al. (2006) rejected the hypothesis aiming to establish a link between FC and an intention to use code reading applications.

H.10. The facilitating conditions will not have a significant influence on behavioural intention

This is the same hypothesis as used by Venkatesh et al. (2003). It is anticipated that the conditions available to facilitate the support of technology within an organisation will not significantly influence the behaviour of those who are presented with a new technology to adopt.

H.11. The influence of facilitating conditions on usage will be moderated by age, such that the effect will be stronger for older participants

This is a hypothesis used by Venkatesh et al. (2003). It suggests that the perceived need for IT support, in whatever form it takes, is likely to be perceived as being of greater importance to the older user than the younger. It is inferred therefore that younger users are likely to be less anxious about this as they feel that given their experience and confidence in IT usage they will be able to, or believe they will be able to, cope with any problems that are likely to arise.

H.12. The influence of the facilitating conditions on usage will be moderated by the nature of the relationship with the supplier

This hypothesis uses one of the moderator variables designed for the new model and suggests that the nature of the relationship with the supplier will influence how the *facilitating conditions* are perceived by the retailer. The suggestion here is that if a close relationship exists then retail practitioners will feel confident about receiving the necessary support from suppliers should any IT issues arise (see 2.9). It is suggested here that the relationship will have a significant impact upon the perceived need for FC.

3.8.5 Hypotheses linked to Use Behaviour

The final two hypotheses are from previous research (Venkatesh et al., 2003) and look at usage. The first looks at the idea that the

availability of a system will impact upon use behaviour. This is pertinent to this research given the nature of the system being examined. The second looks at BI and its link to actual usage.

H.13. The availability of use will have a significant influence on use behaviour

This hypothesis perhaps suggests the obvious by outlining the fact that if no online procurement system is available then *use behaviour* will not be undertaken. Availability here might mean no system, one or many, as the retailer is likely to have a variety of suppliers and these may all act differently. The number of suppliers would play a part in this and this will be evaluated in the context of this hypothesis. This hypothesis therefore suggests that use behaviour will be diminished where there is no system available to use.

H.14. Behavioural intention will have a significant positive influence on usage

This hypothesis suggests that where a system is available behavioural intention to use such a system will have a significant positive influence on whether the system is actually adopted. This attempts to bridge the gap between the point where an individual perceives online procurement to be a good idea but hasn't yet adopted, and where that person actually does adopt.

H15. The frequency of reordering will have a significant influence on behavioural intention

The final hypothesis suggests that where there is a need for extensive reordering of stock for procurement that the behavioural intention to use online procurement will be greater to ease the process of ordering.

3.8.6 The moderators

The moderators in the model have already been mentioned in the hypotheses outlined above. Further details on the initially proposed moderators are discussed below. The initial list was as follows.

- *Gender*
- *Age*
- *Experience*
- *Frequency of re-order*
- *Value of product*
- *Close supplier relationship*
- *Voluntariness*
- *Availability of use*
- *Retailer marketplace*

3.8.6.1 Gender

Gender is perhaps the most common entry into any questionnaire along with age. The psychological differences between the genders are nearly as well documented and accepted as the physiological differences. In reality the psychological differences can be difficult to measure and less obvious than might be expected (Hogg and Garrow, 2003). In the context of technology acceptance the general expectation would be the average male would be more likely to adopt a technology than would a female. Venkatesh et al. (2003) suggest that the genders attach differing importance to the constructs detailed above. For instance they suggest that PE will be more salient for men as they tend to be more task orientated whereas EE tends to be more salient for women. As mentioned above gender is problematic in the context of this research as the proposed target group are predominantly male and as such the number of female respondents is likely to be limited.

3.8.6.2 Age

Age is similar to gender in its ubiquitous inclusion in the typical questionnaire. This demographic information can be used for general purposes but is a central part of the model identified as the underpinning in this research. The obvious implication of age in relation to the acceptance of technology is that as we get older we become less responsive to change and are therefore less likely to adopt a new technology voluntarily. Knutsen (2005) states that in relation to the adoption of mobile phone services, it would be expected that younger people would have a higher performance expectancy than would older people. Similarly to gender, age impacts on the different constructs outlined above in different ways. Age is included in the UTAUT (2003) model as primary findings suggested that their inclusion and those of the other moderator variables, improved the level of accuracy for the model as a whole (see literature review section 3.7). Roger's *Diffusion of Innovation* (1962 onwards) suggests that uptake of new technologies/ideas will run through various stages beginning with 'early adopters' through to 'late adopters' providing a rationale as to the speed of technological uptake whether in terms of an organisations adoption or in more general terms (3.6). Venkatesh et al. (2003) suggest that 'older workers are more likely to place increased salience on social influences' (p.453). The authors also suggest that both PE and EE will be moderated by age.

3.8.6.3 Experience

Experience in the use of technology is seen as a precursor to acceptance. The implication is that if someone has extensive experience in using a particular technology they will be more likely to adopt a similar technology or one that uses the same platform such as a PC. In the context of the work by Venkatesh et al. (2003) experience is with the specific system being measured. In this

research the concept of experience is taken in more general terms as not all respondents to the questionnaire will be at the same level of adoption. Computer Self Efficacy (CSE) which can be seen as a similar variable to experience was added to the Task-technology fit model (Goodhue and Thomson, 1995) by Compeau and Higgins (1995) when developing their model. Its inclusion in the final model is an acceptance that the level and experience of IT usage is likely to influence overall acceptance as it is likely to impact on the extent of effort required to become proficient on a new system.

3.8.6.4 Frequency of re-order

This new variable applies to the particular nature of the SME retail sector, and more specifically the small retail sector where the number of products ordered over a time period is not necessarily high and may therefore have an effect on the perceived efficacy of using a particular b2b online procurement system. The inclusion of this particular variable is derived from the qualitative research undertaken which appears to indicate that retailers felt that if they were not needing to order frequently then the need for a b2b internet link was not necessary to the successful running of their business. This was particularly evident amongst those retailers who dealt mainly in higher value items such as furniture (see 3.8.6.5). There is a link to this in the literature relating to the relationship (see 2.9) and how that operates, however this is not conclusive. Measurement of this is problematic requiring some form of benchmark e.g. order less/more than once a week. This research will aim to identify whether or not a link exists between the frequency of re-ordering and the constructs outlined in the hypothesis.

3.8.6.5 Value of product

In the case of SME retail the normal expectation relating to product value would be that the higher the value of the product the higher the margin and the lower the turnover. More expensive products may also be more bespoke and therefore the likelihood of continual reordering products of these expensive and exclusive products is not likely to be the norm. No specific link has been established in the literature between the type/size/value of products and the impact of this may have upon the main constructs of the UTAUT model. It may be possible to put some kind of value

on items but many retailers such as the retail type chosen for this research, those offering electrical goods, may stock larger branded items where there is a lower turnover, and lower value support products such as cable which is turned over more rapidly. This research will aim to identify whether or not the value of the product is influential in the decision to adopt or otherwise online procurement.

3.8.6.6 Close supplier relationships

This is another new variable added to make this model specific to the SME retail sector. As mentioned earlier, the larger retailer will have a degree of control and influence over their suppliers and in many cases will lead the drive towards the digitisation of the b2b procurement process (e.g. Tesco through EDI see 2.3). The smaller retailer would not act in this way and is therefore likely to adopt, or not, a b2b procurement system introduced by their supplier, if and when the supplier decides to do so. The nature of the relationship can change dramatically from one retailer to another, and for one supplier to another. There is a perception of the closeness of the relationship, held by the retailer. There are also specific links between the companies that can be evaluated via questions such as;

- do they have an online ordering facility with their suppliers?
- How many of their supplier are they linked to?
- Is personal contact central to the ordering process, if so, how important?

This research will aim to identify whether or not the relationship between the retailer and the supplier has a significant impact upon the likelihood that online procurement will be adopted. It is not clear at this stage of the research whether this relationship would be positive, where those who have a close relationship are more likely to adopt, or negative.

3.8.6.7 Voluntariness

If someone has to adopt a technology in a work scenario then they will generally do it or face the consequences – perhaps the loss of a job. If however the acceptance is voluntary a range of psychological

pressures may be put on an individual to make them adopt, or perhaps not. A sliding scale of psychological pressure can be brought to bear to ensure adoption and this will depend on the circumstances of a particular case. In the case of this research most retailers will be allowed to adopt or not online procurement, in a small number of cases adoption may be mandatory.

3.8.6.8 Availability of use

In some instances a supplier may not have set up an online procurement system and as such will not be in a position to offer it to their clients. In other situations it may be that the retailer does not have the facilities to use online procurement and although this situation is becoming less and less likely it is likely to still exist. In these situations BI might be high but actual usage cannot obviously proceed.

3.8.6.9 Retailer marketplace

This is the final new variable that relates specifically to the retail SME sector. The nature of the marketplace is likely to influence on the level and enthusiasm for the uptake of b2b online procurement systems. This point may relate closely to the *frequency of re-order/value of product* as one is likely to influence the other. The chosen area for this research is SME retailers and this may need to be focused further to a specific group. A closer focus may impede this moderator as comparison of different types of market place may not be possible.

This section has outlined the hypotheses that have been developed from the literature review and the initial qualitative primary research. The next step is to identify the methodology (chapter 4) with the results of this being outlined in chapter 5.

3.9 Chapter Summary

3.9.1 Overview

The aim of this part of the literature review was to provide an overview of the current literature relating to the measurement of behaviour and how this has developed as an academic area of study over recent years. In general terms a clear development of academic work can be seen from general theories that can be adopted in a variety of situations to more specific models that attempt to answer behavioural issues relating to more specific topics. The focus of this section is therefore to show how and why these changes have occurred and outline the various theories and concepts influencing the changes. It finishes by outlining the constructs of a new model and the hypotheses that will be tested as part of this thesis.

The starting point for this research was the work by Ajzen and Fishbein (1960s onwards), commencing with the theory of reasoned action (1975) and leading on to the theory of planned behaviour (1988). The work of these academics is core to this thesis as it represents the initial efforts of constructing robust theories aiming to explain the complexities of human behaviour and the factors impacting upon it. The models have proved themselves over time and are generally seen as parsimonious in their approach and simple to adopt. A number of adaptations have been created from both of the original models and as has been seen these have covered a variety of disciplines. Some of the research on acceptance looking specifically at the area of retail and technology has been included to provide a taste of the contextualised academic work. The use of behavioural intention is a constant theme throughout the new theories that have developed since the inception of the TRA. Many of the other constructs from these two

models have remained in some form to be used in the more focused models that have developed.

From these initial models the literature review moves on to provide a critique of the work of Davis (1986, 1989) and the first model relating specifically to technology acceptance, TAM. This area of study was increasing in importance driven by the practical need to have more and better ways of evaluating IT systems being adopted in an organisational context. The proliferation of technological developments and the insatiable drive towards digitisation has meant this process has continued to the present day and shows little sign of abating. The core constructs of TAM allows a clearer view of the specifics of behaviour relating to technology acceptance and the model itself has been extensively tested and adapted with favourable results. TAM2 further expands the constructs to provide more detail, specifically relating to the *perceived usefulness* construct and the factors leading to it.

Further models are explored culminating in the UTUAT model (Venkatesh et al. 2003) which analysed the most regarded models in the area of acceptance and developed a new model based on what it perceived as the most useful constructs. This model will be used as the basis in the development of a new model aimed at analysis of the specific area outlined by this thesis.

3.9.2 Link to this research

The aim of this chapter is to provide an overview of the literature and how it relates to the specific area being researched in this thesis. The lifecycle of technology acceptance literature has reached a highly developed stage and this has been outlined in this section. The current stage in the development relates to the adaptation of these models to increasingly focused areas of research. This thesis

reflects this movement and aims to enhance the literature relating to this area by focusing on a specific area and the influence of technology acceptance upon it.

The main themes relating to technology acceptance that this thesis aims to cover are: the link to the SME; the impact of the retail sector; and the use of online procurement systems. As can be seen from this review of the literature the development process is at a point where this level of detail is both appropriate and necessary to take the literature forward to the specifics of the methodology, this will be examined in the next chapter.

Chapter 4

Methodology

4.1 Introduction

The aim of this chapter is to outline the methodological approach adopted to fulfil the objectives set out for this thesis and to provide argument as to the method adopted. The methodology chapter will begin by providing a rationale as to the methods used followed by an overview of the initial qualitative research, which along with the literature surveyed informed the quantitative study. As one of the main objectives of this thesis is to present an adapted model of technology acceptance for the retail SME sector the actual process that led to the design of the model will be identified, as will the hypotheses. This chapter will then go on to discuss the administration of the quantitative survey undertaken and the level of responses that were received from it. This will be followed by a discussion of the design of the questionnaire. The final part of the chapter will look at the methods adopted in the analysis of the data obtained from the questionnaires.

4.2 Methodological approach

The Scottish Enlightenment author David Hume (1711-1776) stated that research is the 'abstract reasoning concerning quantity or number and experimental reasoning concerning matter of fact and existence, all else being sophistry and illusion' (1748, p.23). The idea of methodology relates to the *philosophy of science* and under the influence of *positivism* and *post positivism* has been further reduced to the idea of scientific method (Delanty and Strydom, 2003). Hume is normally seen as the founder of the movement which looked to judge things from a purely scientific perspective, and to measure them where possible (ibid). The name, *positivism* comes from the French philosopher Comte (1798-1857) who felt that looking at things scientifically was an improvement (a *positive* step) on judging the human condition in the context of abstract concepts such as religion (Babbie, 2001). The positivist approach adopts scientific method in an attempt to answer questions and is

generally seen as 'reductionistic, logical, having an emphasis on empirical data collection, cause and effect orientated, and deterministic based on a priori theories' (Creswell, 2007 p.20). This fits well with this research given that the qualitative research into the SME sector will be used in conjunction with the existing (a priori) theory of the UTAUT model by Venkatesh et al. (2003). In undertaking qualitative followed by quantitative research the aim is to reduce the empirical data collected to a more manageable form, and in this case use it to then inform a new model aimed at representing the chosen group. Bryman (2004) goes on to suggest that the positivist stance on method suggests that hypotheses are generated that can be tested thus allowing the explanation of laws to be assessed (see 3.8).

The aim therefore is to establish expected relationships via the secondary research and the qualitative study establishing pertinent hypotheses, then use the empirical data collected from the quantitative methods to test an adapted new model of technology acceptance for the SME. Taking an approach of what can be described as *logical positivism* or *logical empiricism* will help guide the methods adopted in this research. This approach which has its beginnings in the work of Hume (1748), developed between the two world wars in Europe and adopted an anti metaphysical stance stating that research should be undertaken and looked at purely in the context of scientific reasoning.

4.3 Initial qualitative research

Exploratory qualitative research was undertaken between May and July of 2004. This was developed after the initial search of literature had revealed a variety of models that could be utilised to measure technology acceptance in the retail sector. The gap identified in the literature was the general lack of work undertaken in the SME sector

in the technology acceptance field. Given its current diffusion through the industry the use of online procurement was a suitable application to look at as a method of measuring technology acceptance.

4.3.1 A rationale for qualitative research

The main study in this research is quantitative. However to inform the questionnaire it was deemed appropriate and in line with a *logical empiricist* viewpoint, to undertake some initial qualitative research to assist in the development of the main quantitative research. Creswell (2007) suggests that qualitative research is undertaken ‘because a problem or issue needs to be explored’ (p.39). He goes on to state that ‘we also conduct qualitative research because we need to have a *complex*, detailed understanding of the issue’ (p.40). This is the case in this research as the nature of the SME differs from that of the larger organisation and as such creates a complex scenario that needs as much clarification as is possible prior to any quantitative study being undertaken.

The methodological approach taken here uses inductive logic to establish themes that relate to acceptance in the SME sector. Inductive logic states that a good inductive argument ‘should provide some *degree of support* for the conclusion, where such support means that the truth of the premises indicates with some *degree of strength* that the conclusion is true’ (Stanford Encyclopaedia of Philosophy, 2007, www.stanford.edu). Related to this research this suggests that details from facts discovered from the qualitative study can ultimately be related to general principles, in this case, the newly developed model. It also suggests that ‘as evidence accumulates, the *degree* to which the collection of true evidence statements comes to *support* a hypothesis, as measured by the logic, should tend to indicate that false hypotheses are probably false and that true hypotheses are probably true (Stanford Encyclopaedia of Philosophy, 2007, www.stanford.edu). As such it was deemed that initial qualitative interviews would be required to support the findings from the secondary research and thus allow for an informed questionnaire.

An option that was discounted, was the use of focus groups which would have perhaps teased out a number of other issues than those gleaned from the individual interviews. Focus groups work most successfully when the interaction between those being interviewed is likely to yield the best information and they are not hesitant to speak and exchange views (Creswell, 2007). Given the nature of the participants and the fact that they might be in competition with each one another led to this method being discounted as it was felt that they may be reticent in relation to sharing their business practices. Also on a practical level the likelihood of assembling a group of SME owner/managers for a focus group would be highly problematic given the constraints on their time. A further option would have been to conduct telephone interviews. This was discounted for the quantitative part of the study as access to potential participants was not deemed problematic as long as the research was conducted at their retail outlet. The next step was to choose appropriate participants for the qualitative stage.

4.3.2 Retail classifications

As there are a wide number of different types of SME retail organisations, a classification (see 2.5.5) outlined by Doherty et al. (1999) was identified to assist in the process of narrowing the search for interviewees. The list identified the range of retail types, and as this was so extensive it was necessary to focus in on a particular area. Within this classification the *Home* group was chosen. It was chosen for the following reasons;

- it appeared to represent a number of retail types that would potentially contain a high number of SMEs
- it suggested a clear list of retail types that would be easily identified
- it contained a good mix of retail types that would hopefully throw up a number of different issues in relation to internet usage and online procurement in relation to their perspective product type.

This specific group consisted of the following.

- Furnishing retailers, including hard and soft furnishings
- Electrical goods, including brown (household electrical

entertainment appliances) and white (other household appliances) goods and computers

- DIY, including gardening

From these three categories a number of representative retailers were approached and asked to participate in personal interviews relating to their use of the internet in their business operations. Of those approached some made no use of the internet and had no intention of doing so. Insight from these practitioners would have proved interesting in relation to the adoption of the internet however as they were not using the internet they would not be in a position to comment on the adoption of a particular software application that utilises the internet as a method of delivery. Because of this these retailers were ultimately discounted as they would not be in a position to shed any light on the proposed research question.

4.3.3 The interviewees

Ten willing SME retailers were eventually found and of these ten (see appendix 2): two were furnishing retailers; seven were electrical retailers; and one was a florist (representing gardening). The reason behind the imbalance was that retailers in the first and third groups were approached but were not interested in participating as they did not use the internet at all and had no intention of doing so and as such were discounted for the reasons provided above. For instance in the case of SME florists most would purchase stock directly from lorries that drive over from Holland and act as moving wholesalers thus negating the need for any internet involvement in the procurement process. The florist interviewed was the only one who utilised the internet for business purposes purchasing items on the internet for his business. Despite this use of the internet, similarly to the others, he would purchase stock directly from lorries coming over from Holland. Despite the majority of interviewees coming from those selling electrical goods, the following different types of retailers from within this classification were chosen;

- four sold audio visual equipment
- two sold furniture
- two sold musical instruments and sheet music
- one sold audio visual equipment and musical instruments

- one sold flowers.

Of the ten companies that were interviewed three were franchises and the others were all independent. The general mix was felt to be representative of this classification of retailers and it was deemed sufficient to glean a wide variety of views, opinions and experiences. The general purpose of this exercise was to explore the reasons behind the use of technology and the implications of this for adoption. This was to be achieved by adopting the structures of the UTAUT model (Venkatesh et al., 2003) whilst allowing interviewees as much free reign as possible to elaborate on the specific issues they had in their use of technology and particularly online applications.

4.3.4 The interviews

The personal interviews were semi-structured to gain as wide an understanding of the various issues involved as possible. Questions were developed from existing theories from the literature search as well as questions relating to the particular experience of the retailer and their use of technology. The aim was to provide the interviewer with a structured set of questions based on existing theoretical approaches (see appendix 3) whilst allowing the interviewee the flexibility to raise any issues they felt might be pertinent. The process aimed to provide insight into the applicability of existing theoretical constructs (UTAUT) whilst teasing out some of the differences that might exist between the retail types and the fact that they were an SME and not a large organisation. These differences could then be tested through quantitative research to study whether or not they would be influential in the process of adoption. The final list of questions can be seen in appendix 4. The range of answers suggested a variety of different experiences in this area and clearly suggested that the issues faced would differ greatly from sector to sector.

The interviewees were specifically chosen as they were the main decision makers, normally the owner or retail manager. This was essential as they would be the individual that would normally guide adoption decisions within the specific SME. Where another member of staff was available but not the main decision maker, this retailer was discounted.

4.3.5 Analysing the results

The interviews were taped and transcribed fully. A content analysis was then used to evaluate the findings and determine themes (appendix 13). Bryman (2004) suggests that content analysis at its most basic aims to 'quantify content in terms of premeditated categories' (p.183) and as such fits in clearly with the use of the UTAUT constructs and elucidating responses to support or otherwise these. Content analysis can also be used as a tool to 'allow categories to emerge out of data' (ibid.) and this process was also used in the analysis of the qualitative data to identify new themes specific to the retail SME sector. This method of content analysis is sometimes known as *qualitative content analysis*, the results of which are discussed in section 5.2. The results from the initial qualitative research were then used to help inform the main questionnaire.

4.4 Quantitative research survey method

This research has aimed to develop a new model of technology acceptance appropriate to the SME retailer based on the work of Venkatesh et al. (2003). The research methods adopted mirror previous work undertaken in the area. The method of delivery in this instance does differ as research in this area has mainly been undertaken in larger firms where questionnaires could be reasonably easily distributed and collected. In the case of the smaller firm the geographic spread that exists precludes the personal provision of a questionnaire to a potential recipient at a time where all are considering adoption. The questionnaires therefore need to be sent to the appropriate people. The traditional method has been by post although surveys are now commonly undertaken using e-mail. In the case of this research it was decided that a postal questionnaire would be a more appropriate method as

return rates are generally twice as high as those using e-mail (Carling, 2004; VanDenKerkhoff, 2004) and it might allow for the opinions of those who do not utilise e-mail to also be explored. The initial step in testing and sending out the questionnaire was the pilot.

4.4.1 The Rationale for quantitative research

Given that existing academic work in the area had developed (a priori) a model for technology acceptance (UTAUT 2003), the aim of the quantitative research was to verify this and any developments to it to reflect the nature of the SME. Bryman (2004) suggests quantitative methods as a research strategy can be said to emphasise the following in that it;

- entails a deductive approach to the relationship between theory and research, in which the accent is placed on testing theories
- has incorporated the practices and norms of the natural scientific model and of positivism in particular
- embodies a view of social reality as an external, objective reality.

Bryman, 2004 p.19

Much of the previous research in this area (Davis, 1989; Venkatesh et al, 2003) has been conducted using quantitative research methods and as such this provides a strong rationale as to why this should be adopted here. In conjunction with the previous qualitative research it was felt that the dual approach would glean the best results of establishing new factors relating to the specifics of the SME (qualitative) and using the support of existing research to assist in the development of a new model (quantitative).

4.4.2 Pilot

A quantitative questionnaire was developed from the literature. Two pilots were undertaken to try and ensure the highest level of accuracy, consistency and comprehension. The first pilot was given to ten university lecturing staff who were specifically requested to look for inconsistencies, grammatical errors and questions that were, for whatever reason, difficult to follow. Their feedback was valuable and raised several points, some of which were incorporated in the final questionnaire.

The second pilot was undertaken amongst retail practitioners from East, West and Mid Lothian. All the practitioners from these locations who were part of the target population (see 4.4) were sent a questionnaire. This deliberately covered practitioners from cities (principally Edinburgh) and rural areas in case there were any differences between them. All of the eligible practitioners from these geographic areas who fell into the target population were sent a questionnaire. The disappointing response of 10.5% (4) flagged up a potential problem of getting the necessary number of replies to the questionnaire for the main survey. Those that were successfully returned were all filled out accurately and with no obvious problems relating to either comprehension or design. The finalised questionnaire is shown in appendix 5.

One questionnaire was returned by the Royal Mail as being not known at the address, bringing into question the accuracy of the database being used. However when rechecked the address was on other web sites and the outlet was part of a small chain. Therefore it is not entirely clear as to why this was not delivered but given the appearance of the address elsewhere on the www would suggest that the database was not to blame.

A follow up letter was sent using slightly more emotive language in an attempt to coax practitioners to respond. This was however also unsuccessful, with no responses to this being forthcoming. This created a degree of concern as the chosen method of delivering the questionnaire was the only option. Internet based methods of communication had been discounted as they would not reach non-users, and return rates are generally worse with e-mail surveys rather than postal ones (Carling, 2004; VanDenKerkhoff, 2004).

4.4.3 Improving the response rate

Given the poor response rate from the pilot, the literature was re-examined as to how this could be increased. Edwards et al. (2005) survey into response rate research suggests the following main headings relating to methods of increasing responses;

- monetary incentives
- recorded delivery
- teaser on the envelope - e.g. a comment suggesting to participants that they may benefit if they open it
- more interesting questionnaire topic
- pre-notification
- follow-up contact
- unconditional incentives
- shorter questionnaires
- second copy of the questionnaire at follow-up

- mentioning an obligation to respond
- university sponsorship
- non-monetary incentives
- personalised questionnaires
- use of coloured as opposed to blue or black ink
- use of stamped return envelopes as opposed to franked return envelopes
- assurance of confidentiality
- first class outward mailing.

Edwards (2005) also suggested that the odds of response are reduced when;

- the questionnaire includes questions of a sensitive nature
- questionnaires began with the most general questions
- participants are offered the opportunity to opt out of the study.

A structured approach to sending out a postal questionnaire is outlined by Dillman (1998 and 2000) suggesting the following;

- pre-approach letter – this can also be a phone call and aims to indicate to recipients that their cooperation is appreciated and to create a sense of positive anticipation
- cover letter – provides further opportunity to put across how appreciative you are of their participation, also provides necessary contact details
- thank you postcard/letter – this is the first of a series of reminders, the postcard being seen as perhaps a more user friendly first reminder compared to a letter
- second reminder – will include replacement questionnaire and strong tone of insistence
- third reminder - may require a different approach such as a phone call.

As part of this structured approach Dillman (2000) also identifies the following time scale;

- day 1 – send pre-approach letter
- day 4 – send questionnaire and cover letter
- day 11 – send first follow-up
- day 25 – send second follow up
- third reminder - according to deadline.

The above structure was adopted for the purposes of the survey. Three geographic areas were chosen (see 4.4) and for ease of management, questionnaires were sent to each area in sequence (see Gantt chart, appendix 6). The sequential approach allowed for greater monitoring and reaction to responses, and was ultimately easier to manage given the high volume of mail going out and coming in. It was decided not to phone recipients initially but instead to gauge the success of the adopted structure and use of the phone later if it was necessary. MS Planner was utilised to assist in the timing of the information going out to adhere as closely as possible to the timings suggested by the Dillman Approach (1991 and 2000).

4.4.3.1 Use of incentives

The use of incentives has been identified and adopted extensively as a method of increasing questionnaire response rates regardless of the method of delivery (phone, e-mail, post, face to face). The personal motivation for completing a survey in the absence of a tangible incentive could be due to a general interest in the topic and the results, or the desire to assist those undertaking the study to help them achieve their aims. By adding a tangible incentive a new group may feel motivated to undertake the study. This could be due to: personal gain, where there is a possibility of winning something; or altruistic, where a financial contribution is made to charity. Whatever the incentive there will be a financial requirement to cover whatever reward is provided. This tends to work well in surveys where the general public is involved however Jobber and Sanderson (1983) suggest that although these inducement techniques may work well in this area does not necessarily mean they will do the same amongst commercial populations.

Research undertaken by Aadahl and Jorgenson (2003) looked at the impact of providing a lottery incentive in an attempt to increase response rates. Their findings suggested that despite contributing to a quicker response the lottery incentive had no major impact on the overall response rate. Other studies however contradict this with work undertaken by Thomson et al. (2004) suggesting that one large prize (in the case of their research six bottles of Champagne) generated a higher response rate than the possibility of winning more small prizes (six individual bottles of champagne). Their work does suggest that one big prize undertaken via a lottery can substantially impact upon the final response rate achieved.

Given the initial poor response it was decided that 6 bottles of Heidsieck Brut Hérítage NV Champagne (at an approximate cost of £80) would be offered as a prize in a lottery consisting of all respondents.

4.4.3.2 Coloured paper/ink

Several studies have been undertaken into the use of coloured paper to increase recipient return rates in postal questionnaires. Studies in the impacts of different colours (*green versus white* - Gullahorn and Gullahorn, 1963; Pucel et al., 1971; Fox et al., 1988; *pink versus white* – Matteson, 1974; *yellow versus white* - Crittenden and Hawes, 1985; *blue versus white* - Jobber and Sanderson, 1983) have tended to show that 'colour questionnaires have a positive effect on mail survey response rates' (Phipps et al., 1991 p.485). The colour of the ink used in the survey can also have a positive effect on response rate according to some surveys (Smith, 1977, Sharma, 1967).

The suggestion as to why this happens is, according to Jobber (1986) that coloured paper is more conspicuous than white on the desk of the recipient and therefore less likely to get lost amongst other papers. There appeared to be little to lose in adopting a coloured paper strategy, therefore the findings from the Phipps et al. (1991) was followed for the purposes of this research and the first questionnaire sent out was on green paper. The use of coloured ink was not adopted as it would incur greater expense requiring a colour printer and might have had implications for recipients with dyslexia.

4.4.3.3 Stamp addressed envelopes

It is normal in a postal study to include some form of prepaid envelope such that the information can be sent back to the researcher. Some studies (Linsky, 1975; Duffy and Martin, 2000) have suggested that the likelihood a respondent will reply to a postal survey may be influenced by the method of prepaid envelope adopted suggesting that use of an actual stamp as opposed to a prepaid envelope will encourage a higher response rate. The rationale behind this is, according to Duffy and Martin (2000), that the perception of the recipient is that the researcher will lose out financially if the stamped envelope is not returned. Linsky (1975) goes on to suggest that more than one stamp will further increase the rate of return, presumably for the same reason. Actual findings of the research undertaken in a study on twins in Australia by Duffy and Martin (2000) stated that '10% [were] more likely to return questionnaires without further prompting than their co-twins who received the envelopes with single stamps'(p.72).

For the purposes of this survey a multi stamp approach (use of a number of stamps as opposed to one) was taken to increase the response rate as this would not have a negative financial impact. It could be suggested that the recipients, i.e. people running small to medium businesses, are likely to be very focused on their costs and therefore could feel more predisposed to reply.

4.4.3.4 Use of the phone

The phone can be a powerful tool in assisting with response rates as it can create a relationship between the researcher and the recipient leading to the latter feeling a sense of responsibility to the project having discussed it over the phone. It was decided not to use the phone to call recipients of the pilot even after the poor return. This decision was taken because the few recipients that did return the survey filled it in without issue suggesting that there was nothing wrong with the questionnaire. The problem appeared to be the lack of motivation of the recipients to fill it in. With the various ideas

from the literature outlined above being adopted it was decided to keep the use of the phone in reserve for after the second reminder if the numbers were still low. This would ensure the best use of time due to the least number of phone calls having to be made and allow the researcher to talk to the most reluctant of the recipients. Ultimately, given the positive return rate on the main survey it was felt that telephone follow up calls were not needed. Despite the fact that there is no definitive cut off percentage point where a return rate goes from poor to good, research has suggested that when using the telephone costs can outweigh benefits. Hassol et al. (2003) who on using the telephone as a follow up yielded only a small additional response (13% of all completed surveys) but consumed 23% of total costs, suggested it as a 'very costly method for boosting survey completion rates as a relatively small and final increment' (p14).

4.4.4 Non-respondents

The issue of non-respondents as a non-sampling error is an important one in any research (Bryman, 2004). Despite the overall percentage of useable returns being sufficient it does suggest a large percentage that for whatever reason decided not to respond. Finding out why a recipient of a questionnaire has not responded can be a difficult exercise for obvious reasons. In the case of this research there appears to be no obvious reason as to why a person sent the questionnaire did not return it other than they decided not to, despite a number of incentives which are outlined above. For instance the number of responses from the different geographical locations chosen was similar across the three groups. Given the adequate nature of the number of returns, the time constraints and the lack of an obvious explanation as to why some responded where others did not, it was decided not to attempt to contact non-

respondents to find out why they did not respond or to see if they represented a particular group.

4.4.5 Overview of the process

There is abundant literature available in the area of questionnaire response rates and how these can be maximised. Evaluating this in attempt to have the best result means the researcher has to make some choices. One of those choices relates to how much they, their organisation or a sponsor is prepared to spend. The use of a prize can have a positive effect on responses and the size and number of prizes is similarly seen as influential. The following methods were chosen.

- Use of the Dillman Approach and timescale
- Case of 6 bottles of Champagne in a lottery of respondents
- Coloured paper for initial questionnaire
- Multiple stamps on return envelopes

These were all aimed at providing a maximum return following the problems experienced in the pilot. The final result was a satisfactory overall rate of returns of 47.6%. Given the adoption of multiple methods it is not possible to say which was most effective but the rationale behind this exercise was to achieve a good response rate and ultimately this goal was met.

4.5 Distribution and sample

The initial qualitative research undertaken suggested a wide variety of views and experiences from even a narrow classification of retailers. It was therefore decided that the distribution of the questionnaire would need to be aimed at a more focused group.

4.5.1 Target population

The following comments reflect thoughts on the groups and a rationale for the narrowing of these three down to one.

- *Furnishing retailers, including hard and soft furnishings* – the companies spoken to in this group did not use online procurement and had no plans to do so due to the nature of their business, they were therefore excluded as group.
- *Electrical goods, including brown (household electrical entertainment appliances) and white (other household appliances) goods and computers* – the companies from this group generally had IT experience and some had used online procurement. As the sector appeared to be in the transition between non-use and use of online procurement this

suggested they would be the best group to use for the purposes of this research.

- *DIY, including gardening* – the SME DIY retailer has tended to die out as the major retailers (B&Q, Wickes) took over. The case of gardening is similar with only the florists being heavily represented in the SME sector, they are discounted for the reasons provided above. The population is ‘the aggregate of all the elements, sharing some common element of characteristics, which compromise the universe for the purpose of the marketing research problem’. (Malhotra, 2002 p.345). The target population is ‘the collection of elements or objects that possess the information the researcher seeks and about which the researcher will make inferences’ (ibid.). It was decided to re-address the categories initially chosen for the qualitative research at this stage.

The richest information from the qualitative study had come from those in the electrical classification it was therefore decided to use this group as a target population. However to enable the creation of a pertinent database some further clarification was required as to who exactly would be targeted for the purposes of this research. To assist in the creation of a sampling universe of recipients three online search engines providing contact information on UK business were looked at these were as follows;

- Yell.co.uk (online version of the Yellow Pages)
- D&B UK
- Kellys

All three allow key word searches and create categories under which companies are listed. They all provide a service that is slightly different as outlined in table 4.1 below.

Database Name	Categories chosen
Yell	<ul style="list-style-type: none"> • Hi-Fi dealers • TV, DVD, Video & Radio Shops • Electrical Appliance Retailers • TV, Video & Radio Servicing • DVD & Video Services
D&B UK	<ul style="list-style-type: none"> • Retail • Hi-fi • TV • DVD

	<ul style="list-style-type: none"> • Electronic
Kellys	<ul style="list-style-type: none"> • Audio systems • Audio Visual Equipment and Accessories • DVD players • Televisions • Video recorders

Table 4.1 Search engine analysis

The coverage provided by Yell (the online version of the yellow pages) is the widest with 3.5m users according to Yell (2006). The 'key word' categories adopted by Yell provide the closest match for the categories outlined by Doherty et al. (1999) as they focus on a retailer type as opposed to an actual product as the other two do. As the aim of the research was to build a database of retailers it was decided that the Yell search engine would be the best one to use and the other two, D&B and Kellys, would be discounted to avoid any duplication of retailers. Yell describe themselves as the following.

Yell is a leading international directories business operating in the classified advertising market through printed, on-line and phone media in the UK and the US. Yell creates value by putting buyers in touch with sellers through an integrated portfolio of simple to use, cost effective advertising solutions.

www.yellgroup.com/

Using more than one search engine would have led to extensive double counting. The two chosen categories on the Yell.com database were *TV, DVD, Video & Radio Shops, Home cinema and Hi-fi dealers*. These groups were chosen from the qualitative research findings outlined above and all those falling into these two categories throughout the UK were initially considered. Further analysis of the databases used is outlined in appendix 7.

4.5.2 Sampling frame

'Ideally we would like to consult everyone likely to be influenced by or to have an effect on our decision but, in practice; we will usually have to compromise' (Baker, 2003, p.171). Existing research in the

area of technology acceptance has used target populations from large organisations. Because of this no issues relating to the choice of probability or non-probability would have needed to be made as all users of the new technology in the company were known, and therefore the researchers were in a position to ask all the target population. In the SME sector however it was decided that a geographic spread would be required to get a large enough number to analyse and to paint an accurate picture. In the case of this research the exact target population was impossible to fully identify for the following reasons.

- This is a dynamic changing market place so even if there was confidence that all the population had been identified, it is likely that in a very short period (probably less than the time it would take to distribute the survey and get the results back) the population would have changed.
- The Yell database used for the survey allows retail outlets to choose their own category (with guidance from the producers of the database), they may put themselves into different categories especially if they stock multiple product types.
- Not all retailers will be part of the Yell database. This could be through choice, because they are not aware of it or because they haven't got around to doing it.
- Some may have a part of their outlet in the desired category but might register themselves as something different that reflects the rest of their business.

Given these issues a non-probability sample was chosen. Judgemental sampling, where the researcher uses their own judgment to select the population elements believing them to be representative of the population of interest, was adopted in choosing the sampling frame. According to Malhotra (2002) 'this sampling technique is most appropriate in research in which broad population generalisations are not required' (p.354). This was the case in the context of this research where the aim was to test an academic model and not to make general comments regarding the population. An extension of judgemental sampling is quota sampling.

A non-probability sampling technique consisting of two-stage restricted judgmental sampling was used. The first stage looked at 'developing control categories or quotas of population elements. In the second stage, sample elements are selected based on convenience or judgement' (Malhorta, 2002, p.354).

The first stage of this process was to identify the categories outlined above in the Yell database. The second stage was to choose a sample based on geographic areas that would provide a fair representation of the target population.

4.5.2.1 Geographical spread

According to the census figures (2001) from the National Statistics web site the combined population of England, Wales and Scotland is approximately 57 million. In looking at the populations of Aberdeen and Sheffield and the number of retail outlets coming under the chosen Yell search engine categories, in the case of these two cities there were approximately 25000 people to one retail outlet of this type. Extending this figure to the populace would suggest a figure of 2280 retail outlets of this type in the given area of England, Wales and Scotland. This provides merely a rough guide, however given the non-probability nature of the target population it is sufficient. It is important for the researcher when undertaking a quantitative study that it can be said that the findings can be generalised beyond the restraints in which the research was undertaken (Bryman, 2004). The methods adopted here aimed to ensure generalisability by sampling a high number of potential respondents from across a wide geographical spread of the UK. From the rough estimates outlined above 20% of the potential population were in the sample and these were taken from throughout the UK.

According to Letslink UK (www.letslinkuk.net) Great Britain (United

Kingdom without Northern Ireland) can be split into 11 distinct geographic areas (see appendix 8). To fit the rationale for the sample outlined the following three geographic areas were chosen;

- Yorkshire and the Humber
- South West
- Scotland

All three areas have populations of approximately five million and the combined populations of these geographic areas represents c.26% of the population of Great Britain (GB). Therefore in asking all retail outlets (discarding national chains) falling under the chosen categories outlined in the Yell database in these three geographic areas it was felt would provide a suitably balanced picture of the experiences of SME retailers across GB. The geographic spread is also significant as; one area is the furthest north, one the furthest south and the other is in the middle of GB. Similarly all regions include large cities (Bristol, Leeds, Glasgow) and rural areas, again providing a good mix. This is outlined in appendix 9. Further economic and geographic analysis of the three areas is undertaken in appendix 10 as further justification for their choice. An abridged version of this is presented below in the two tables below (see 4.2 and 4.3).

Main area	Populati on
1. North East	2,539
2. North West	6,805
3. Yorkshire and the Humber	5,009
4. East Midlands	4,252
5. West Midlands	5,320
6. East	5,463
7. London	7,388
8. South East	8,080

9. South West	4, 999
10. Wales	2, 903
11. Scotland	5, 057

Table 4.2 UK regional analysis

Main area	Regions	Population
3. Yorkshire and the Humber	<ul style="list-style-type: none"> • North Yorkshire 	5,009
9. South West	<ul style="list-style-type: none"> • Cornwall • Devon • Dorset • Gloucestershire • Somerset • Wiltshire • NE Somerset • North Somerset • South Gloucestershire • Isles of Scilly 	4, 999
11. Scotland	<ul style="list-style-type: none"> • Borders • Grampian • Highland • Lothian • Shetland • Strathclyde • Tayside • Western Isles 	5, 057

Table 4.3 Analysis of chosen areas

Once the target population was finalised a database was built using the chosen categories from the Yell online search engine. The database originally included 443 retailers, (see appendix 11) although some companies were discounted as they were too large and others were found to be entered twice on the database. The total target population was finally calculated at 422. The Dillman method (see 4.3) was used to provide a structured approach to each potential recipient.

4.6 Questionnaire design

An extensive quantitative questionnaire (appendix 5) was developed to allow for testing of the hypothesis and the new model. The review of the literature and the qualitative research undertaken led to the design of hypotheses and a revised model of technology acceptance relating to the SME retail sector. The key respondent for the research was the owner/manager – the person making the key decisions for the retail organisation. Questions 4 and 5 aim to evaluate that the key respondent *has* in fact completed the questionnaire. The questionnaire was developed along the lines of the model using the main constructs to form groups of questions. Mainly ordinal scales of measurement were adopted.

4.6.1 Demographic information

The initial questions dealt with the following demographic information;

- age
- gender
- education

Age and *gender* formed part of the model constructs as well as providing general demographic information. Measurements of age were mainly in tranches of ten years, however the first group 18-30 was wider given the expectation that not many owner/managers would be younger than 20. The question on educational attainment provided general socio-economic information and also linked to the construct of *experience*. Questions 4 and 5 looked at;

- position in the company
- whether they were the main decision maker.

As well as providing insight into the socio-economic position of the respondents, the main relevance of these questions related to the need to reach the right people within their companies who were able to make decisions relating to technology acceptance. To record their answer in both these questions respondents were provided with a box to tick as to their position within the company.

4.6.2 IT usage

Questions 6 to 9 related to the past and current experience of IT usage of the respondent, and all relate to the *experience* construct in the model. Past experience was measured by identifying the length of involvement of using computers and the internet in both a business and leisure setting. The scale used for these questions related to the number of years of usage. The current perceived ability, tying into the idea of self efficacy outlined in the literature was also measured providing the respondent with a single choice from a set of statements. Questions 10 to 12 probed for the favoured channel method relating to communication, procurement and other business purchases. The measurement used allowed respondents to rank their preferences for each channel method leaving blank any they felt were inapplicable.

4.6.3 About the company

Questions 13 and 14 allowed for a qualitative answer and were used to verify that the company fell into the category of being an SME. Questions 15 and 16 aimed to identify the internal and external capabilities of the organisations computer systems. Questions 17 and 18 used scales to measure the size and value of goods and this related directly to the *value of product* construct in the new model. Questions 19 to 26 used scales to measure the number of suppliers used and the frequency of ordering, and how the respondent perceived the closeness or otherwise of the relationship with their suppliers (one of the model constructs). Also highlighted among these questions was the current and future level of usage relating to online procurement. This related to the behavioural intention outcome of the new model.

4.6.4 Original constructs

Questions 27 through to 59 related to the main constructs from the original model, these were;

- Performance expectancy

- Effort expectancy
- Facilitating conditions
- Social influence

These were all represented by between 4 and 7 questions using a five point Likert scale. The original work in this area had used Likert scales as a way of gauging the perceptions of respondents and therefore these were deemed appropriate in this instance. Different levels of scales have been adopted by different researchers, although mainly five point (Spacey et al., 2004; Wang and Yang, 2005) and seven point (Li and Kishore, 2006; Ngai et al., 2007) scales have been used. The choice of a five point scale was taken as it was felt that a more complex looking survey (with say seven or nine point scales) would put busy retail practitioners off compared to a simpler five point scale. The questions for each of these constructs were given a heading with a brief description of how to answer the question.

4.6.5 Qualitative questions

The two final questions were open ended allowing for qualitative answers. The first asked the respondent to fill in their own description of their company, the aim of which was to ensure that the target population sample were those being surveyed. The final question asked the respondent for any comments they had about their current use of IT and their future use. The aim here was to get rich information that might be important to the respondent that was not covered in the questionnaire.

4.7 Response rate

Of the 422 questionnaires sent out, 191 useable questionnaires were returned. The following table (4.4) outlines the number of

responses received and how long it took for them to be returned. It then outlines the impact of first reminder, as suggested by the Dillman method (4.3). Also highlighted in the table is the number of questionnaires that were returned due to changes of address or companies going out of business. Finally, the overall percentages from each geographic area are provided along with total percentage returned.

Day	SW	Yorkshire	Scotland	Overall
1	23	13	14	50
2	15	11	11	37
3	7	5	13	25
After day 3	14	11	17	42
First reminder	11	14	12	41
Returned as wrong address etc (RWA)*	8	8	4	20
Total received	70	54	67	191
Total sent	154	121	147	422
% of all sent	45.4	44.6	45.6	45.3%
Total sent less RWA	145	113	143	401
% of possible returns	48.3	47.8	46.9	47.6%

Table 4.4 Percentages from each geographic area

* includes those that came back from the Royal Mail (retailer closed down); those who refused to fill it in but returned it with a message (felt that they were not able to fill it in); those who have multiple outlets and therefore only filled in one (where an owner/manager of say three shops had filled in one questionnaire to represent all three).

In a survey of 16 academic studies undertaken by Armstrong and Lusk (1987) business replies on postal questionnaires ranged from 5.6% to 66.3%, with an average of 34%. In this context the overall return figure of 47.6% was not only better than expected given the problems experienced with the pilot survey, but also well above the average outlined in the Armstrong and Lusk (1987) research. It also appeared to vindicate the elaborate lengths gone to, to increase the level of returns.

4.8 Data analysis

The approach undertaken for the primary research was initially to take a qualitative viewpoint and then to feed the lessons learnt into a quantitative study. Once the quantitative results were collated a variety of statistical tests were undertaken to gauge any significant results found.

4.8.1 Qualitative data

The analysis of the qualitative primary data (4.2) was initiated by fully transcribing the interviews. In an effort to categorise the information, a basic content analysis approach was taken where the main themes were identified and the respondents answers collated. Content analysis is defined as a quantitative and objective measurement of a communication (Bryman, 2004). It can adopt a measurement of words, characters or themes. In the case of this research the measurement used is themes, a reasonably

straightforward exercise given that the question design was around specific theoretical approaches. The content analysis broke the 30 questions of the structured interviews down into the following eight themes.

1. The product
2. The company
3. The decision maker
4. The supplier/s
5. Supplier relations
6. IT
7. Competition
8. Image

The information gleaned from the qualitative interviews was compared to the theories that were initially looked at specifically UTAUT (Venkatesh et al., 2003), to indicate retrospectively how close or otherwise they would match the situation experienced. The experience of the individual organisations were then looked at to evaluate the impact their category of retail business (furnishing, electrical goods and DIY) had on their perceived need for internet procurement and their decision making process in the context of adoption. Once the interviews were completed the decision was taken to focus on a narrower group of SME retailers as outlined in 4.5.1.

4.8.2 Quantitative data - descriptive

The 198 returned questionnaires (see 4.5) provided the raw data which was then inputted into the software Statistical Package for Social Sciences (SPSS). According to Ghauri and Gronhaug (2002) descriptive statistics allow 'the researcher to summarise and organise data in an effective and meaningful way' (p.125). The results of the descriptive statistics are outlined in section 5.3.

4.8.3 Reliability

An underlying assumption (Ghauri and Gronhaug, 2002) is that results to one question are generally inadequate to capture the construct unless there is only one way of asking the question. When undertaking analysis it is useful to first check if the questionnaire is reliable (Field, 2005). Cronbach's alpha is a reliability coefficient that is used when you want to evaluate whether the items on a test are consistent with one another in that they represent only one construct (Salkind, 2004). Groups of questions relating to the main constructs were created to test specific aspects of the model. In some cases the general meaning of the question was inconsistent, where this was the case the results had to be reversed. The results of these questions were collated to provide an overall viewpoint of the answers given to a specific construct. To check the questionnaire's internal consistency a Cronbach's alpha reliability test was undertaken. The results of this coefficient can vary from 0 to 1 and for the purposes of this research if a value of 0.6 or less was recorded this was seen as an indication of unsatisfactory internal consistency reliability. The results are outlined in 5.4.

4.8.4 Factor analysis

Given the large number of variables, data reduction techniques were adopted to assist in the process of analysis. Previous research in the area, and specifically the UTAUT model (Venkatesh et al., 2003), established many of the core constructs or factors. The previous research in the area has also tended to adopt a factor analysis approach (Davis, 1989; Venkatesh and Davis, 2000; Chismar and Wiley-Patton, 2002; Pikkarainen et al., 2004). Factor analysis aims to explain variability amongst random variables that are observed, and look at these in terms of fewer unobserved random variables known as factors. Observed variables can be modelled as linear combinations relating to the factors thus allowing

for the determination of the extent 'to which each variable is simultaneously considered in relation to all others'(Ghauri and Gronhaug, 2002, p.165). Specific factor loadings can be generated from the linear relationship between the two; these identify the correlation between the original variable and this specific factor (ibid).

As already mentioned, earlier studies developed the constructs of the UTAUT model (Venkatesh et al., 2003). This is therefore an exercise in theory-testing and not theory-generation and as such it is necessary to undertake a *confirmatory factor analysis* in order to determine the *goodness of fit* of the existing model constructs.

Principal axis factoring with varimax rotation was used, this was in line with previous studies (Chismar and Wiley-Patton, 2002; Pikkarainen et al., 2004). Eigenvalues of greater than 1.0 were registered. A Bartlett's test of sphericity was undertaken to confirm that the variables within the factors were correlated. Finally a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was undertaken to indicate whether there was a practical level of common variance. The results are outlined in 5.4.

4.8.5 Preferred methods of communication and procurement

Questions 10 to 12 looked at the preferred methods of communication and procurement of respondents when doing business with suppliers. The results for each question needed to be treated as five individual sets of results as the aim was for respondents to rank their preferred methods. The questions were analysing the choices of favoured methods of communication relating to the three different business needs of;

- communication with suppliers
- procuring stock

- and procuring items for the business.

To assist in the comparison of the data an average of these three was undertaken by recoding the different variables. Once a variable has been defined the researcher may wish to combine two or more original categories into one category (Kinnear and Gray, 1997) or ignore a category that has limited responses, thus simplifying the results and making them easier to test. Five columns were manually fed into one to give the average score for the preferred method of communication for the three situations represented in the questions. Once the descriptive results were complete a Friedman test, non-parametric, was used to evaluate mean ranks for each group. According to Salkind (2004) the Friedman test is a two-way analysis of variance that compares the overall differences between two or more related samples on more than one dimension (Salkind, p.270). This computation is calculated by inputting the results into non-parametric tests looking at several related samples. The results are outlined in 5.5.

4.8.6 Combining construct values

Individual mean values for the following main constructs were evaluated.

- Performance Expectancy (PE) – questions 37 - 42
- Effort Expectancy (EE) – questions 43 - 46
- Social Influences (SI) – questions 47 - 54
- Facilitating Conditions (FC) – questions 55 - 59

As each of these constructs required a numerical value that could be tested against other variables, a single column of results was required for each. Once again where the outcome of the question was inconsistent, the results had to be reversed (questions 40 and 43). By taking the mean single variables were established for each

of the four main constructs. This resulted in separate columns being established in the data view.

4.8.7 Correlation

Correlation relates to the measurement of the linear relationship between selected variables, therefore if one variable deviates from its mean there would be an expectation that another would do the same thing if there is a relationship between them (Field, 2005). When this occurs it is known as a positive covariance, where the opposite occurs it is a negative covariance. This only works if both are measured in the same units.

The standard deviation is a standardised method of measurement which is a measure of the average deviation from the mean in the scores presented. A Pearson correlation coefficient is the SPSS default parametric measure of the differences between the individual deviations and the standard deviations. However as the scales adopted in this research are generally ordinal and although not as powerful as Pearson's, Spearman's rank correlation coefficient (denoted as ρ) is a more appropriate test as it is suitable for use with non-parametric scales. Bivariate correlation looks at the correlation between two variables and two tailed tests are used as the direction in which the correlation moves is not assumed by the hypotheses.

4.8.8 Kruskal Wallis k-sample test

This test is the non-parametric equivalent to the one-way ANOVA in that it tests for differences in the value of a variable across different groups. As mentioned above as there is differences of opinion as to whether Likert scales should be considered parametric or non-parametric. In this research nonparametric tests are adopted in measuring the results from the Likert scales. In viewing these

scales in this way two non-parametric, Kruskal Wallis (K-W) test and the Mann-Whitney (M-W), were used to test for systematic differences in responses between the various levels of different grouping variables. These non-parametric tests (assumption free) tests are sometimes seen as weaker than their parametric counterparts, but this is not always the case (Field, 2005).

The M-W test is used when two groups are being compared and the K-W test is used when the number of groups is greater than 2. A standard 5% significance level is being employed with $p < 0.05$ indicating a significant difference between the general level of responses of two or more subgroups.

4.8.9 Qualitative responses from the questionnaire

Two qualitative questions were included at the end of the questionnaire, questions 60 and 61. An overview of the narrative from these questions is included in 5.9 with a simple content analysis being adopted to rationalise the respondent remarks. Question 60 seeks to clarify the specific products that the respondent is dealing in and is used to ensure the correct type of SME retailer is taking part in the research. Question 61 asks for any additional comments relating to the issues raised in the questionnaire.

4.9 Limitations

The adaptation of the work on technology acceptance to the SME environment given their heterogeneous nature presents some challenges for the researcher. In any research the ability to have some factors that are constant can lead to more consistent results. In attempting to identify technology acceptance in the SME retail sector all factors are prone to change as each SME retailer is potentially at a different point of acceptance of any given

technology. As these SMEs are unlikely to be dictated to by a researcher s/he needs to structure questions as best as possible in an attempt to find out what s/he wishes to.

Careful consideration of the sample for the survey led to the choice of three geographically disparate areas being chosen from the UK in an attempt to get a representative picture of the situation relating to the average SME electronic retailer. It was not possible to ask all potential companies that would fall in to the chosen category due to the complexity of the market place. Despite all these efforts it is possible that the sample is not representative of the chosen group.

The level of development in IT has been dramatic since the onset of the PC and latterly the internet. The geometric progression of acceptance of the internet in both work and entertainment has been well documented but does provide a difficult change scenario for the researcher. Although the general level of internet online procurement adoption that this research is trying to measure is likely to have changed dramatically since the project began, the general reasons behind the adoption of technology have not.

Chapter 5

Results

5.1 Introduction

This chapter outlines the results of the primary research undertaken for the purposes of this study. The initial qualitative results are discussed first, followed by a detailed outline of the descriptive statistics gleaned from the quantitative questionnaire responses. This is followed by the various inferential statistical techniques adopted to further analyse the responses. The final part of this chapter looks at the qualitative responses gleaned from the questionnaire.

5.2 Qualitative research results

The initial qualitative research was undertaken to provide insight into IT usage, technology acceptance and to inform the main quantitative study. Previous research in this area has tended to use quantitative methods however it was felt that to gain general insight qualitative responses from appropriate practitioners would help in understanding the specific issues faced by the SME and allow for more focused questions in the quantitative study. The semi-structured interview (appendix 12) was undertaken with ten SME retail practitioners from the Aberdeen area. This structured method was used as proven constructs existed already in the UTAUT model (2003) and these provided guidance. The aim of this part of the research was therefore to inform both in terms of; the existing constructs, any other issues arising specific to the SME retailer, and

to provide more focused questions for the questionnaire. SME retailers were chosen from three product type groups (Doherty et al., 1999); furnishing, electrical goods and DIY.

5.2.1 The results

A content analysis was undertaken to gauge the themes. The eight main themes (see 4.8) that emerged from the questions and the responses of the ten interviewees are outlined below. A more detailed outline and analysis is provided in appendix 13 and the implications are discussed further in chapter 6.

9. *The product*, the products sold were tangible and in the case of the florist, living. Product size varied between big and small with most having a mixture. Specific issues relating to the product type were that they: required technical support; needed to be seen; and were time limited. 6 of the 10 suggested their product could be easily purchased online. However some felt that it was not appropriate given their lower level of turnover stating that 'for those focusing on price it is a volume business and they would therefore be more likely to use the internet' (Dargie Design, 2004). Most practitioners believed that online procurement was viable, however the quote above suggests that the results are by no means conclusive.

10. *The company*, 6 respondents felt their client base was accustomed to using the internet (*internet savvy*). 6 believed their client base to be price conscious. The perceived type of client was seen by 3 respondents as having a requirement of seeing and touching the physical products and 6 felt their clients' required personal service. All the retailers were located in or near the centre of Aberdeen. The number of staff ranged from 3 to around 100. The role of general decision making ranged from one to all members of staff. Procurement

decisions were taken by between 1 and 8 staff. A note of concern was voiced by one franchise manager who stated that, 'people will look round the shop and get the expertise of the staff and then buy online' (Sony, 2004). The ability of the company to use technology and some of their motivations were being explored here. What emerges is a perception of a personal link between the consumer and the retailer (2.9.3), an important aspect of the SME and the role they play, also evident from the quote is a concern over the impact the internet has upon this relationship.

11. *The decision maker*, all felt positive about the general use of IT and saw themselves as medium to high users of the internet. High internet use was experienced by two, and increasing use by 5, with the rest being neutral. 7 used the internet for communication with their supply chain partners, but only 1 of these exclusively, and only 2 stated it as their preferred method. Most stated their computer literacy was medium (5) or high (4) with only 1 stating it was low. The number of years using the internet ranged from 2 to 10 with an average of 5.3 years. Only 3 used the internet for procurement purposes and of these only 1 exclusively. Only 1 stated they could not perceive using the internet for procurement in the future. The general level of change in business practices experienced through internet usage ranged from: small (2); some (4); large (2); to always used (2). Perceptions of future usage ranged from small (2), some (2), high (4) and always used (2) with one practitioner stating that technology 'is likely to shape the future of the company' (Bruce Millers, 2004). The results suggest that there is not a negative attitude towards technology amongst the respondents however factors clearly exist that would hinder

both general adoption of IT and specific uptake of online procurement.

12. *The supplier/s*, 6 had many suppliers and 4 had only 1. 3 saw little need in finding new suppliers and 3 were franchises and therefore tied to one supplier, the remainder were interested in new suppliers. 5 felt it was easy to get new suppliers, 2 would not use new suppliers and the remaining 3 were franchises. 5 said a new supplier could be potentially beneficial, 2 said this would be of no benefit and the remaining 3 were franchises. 5 suggested there were further opportunities for international suppliers, 2 thought this unlikely and 3 were franchises. 2 had a high frequency of turnover, 4 stated there was a medium turnover and 4 had a low frequency. 5 stated that they constantly procure different items the other 5 did not. One practitioner stated that 'one or two suppliers have tried to get retailers to use the internet more extensively for ordering by offering free delivery etc, but most do not' (Top Note, 2004). What emerges from the results here is that the experiences of the retailers vis-à-vis their suppliers differs greatly and as such is likely to impact upon adoption of technology presented by the supplier.
13. *Supplier relations*, 5 felt they had a strong relationship with their supplier, 4 stated that this was mixed and one felt it was weak. All but 1 used the phone to contact their suppliers, and 3 did this through the suppliers' company representatives as well as the phone. 3 used the internet and the phone and 1 used the internet solely. All but 1 retailer felt they had a strong relationship with the suppliers' representatives. 5 stated they attended trade shows, 3 stated that they did this sometimes and 2 did not attend any. 4 stated they used representatives and the phone when purchasing their stock, 1 used both of these methods and the internet, 2 used the

phone and the internet, 2 used only the phone and another only the internet. 1 used trade shows and representatives. 6 stated that they purchased stock frequently and 4 stated that they did this only occasionally. 6 stated they received no discount when purchasing online, whilst 4 stated they did receive some discounts. 8 stated they did not perceive that their supplier had a particular desire for them to use the internet for ordering stock, whilst 2 stated they did. 3 stated there was online ordering available, one said this was direct (the only method available), 3 stated there was some online ordering and 3 said there was none. Only one stated that the supplier was driving retailers to use the internet for procurement, 6 stated there was some pressure and three stated that this was low. No clear picture emerges about the relationship between the retailer and the supplier or how they are motivating or persuading retailers to adopt online procurement with one practitioner stating that 'the customer is far more in control than ever before, the retailer supplier relationship is weak, little support is provided' (Sony, 2004).

14. IT, 5 were linked to the internet by modem, 4 by broadband and 1 had an ISDN link. 5 considered their skill level to be high when navigating their way around the internet, 4 stated it was medium and 1 low. 5 had external links to internal systems, 5 did not. 4 had no links to their suppliers systems, 4 did and 2 had some. 3 had direct links to their suppliers systems, and 1 had some, 3 had none. One practitioner stated that they 'did try integrating the systems and it did not fully work – should work, and might be done if the cash and time was available' (Top Note, 2004). A range of IT skills are evident here as is the level of current uptake of internet based technologies.

15. *Competition*, 4 stated they have high levels of competition locally, 2 perceived this as medium and 4 as low. 5 stated they have high levels of competition nationally, 3 perceived this as medium and 2 as low. 3 stated they have medium levels of competition internationally, 7 perceived this as low. 4 stated they have high levels of competition online, 3 perceived this as medium and 3 as low. 8 stated that they didn't know how their competition used the internet 2 stated they had some knowledge. 8 stated they had no perception of how their competition used the internet in their relations with their suppliers, 2 stated they had some idea. Generally it was accepted that competition was increasing with the internet; '...the use of the internet tool sharpens, more and more threats will exist. The public will become more comfortable and confident on line and more and more business will be undertaken online' (R&B Music, 2004) with some more concerned than others; '...the internet will spell the death of high street retail for electronic goods' (Sony, 2004). The perceived levels of competition once again differ amongst the respondents however their lack of knowledge regarding how the competition uses the internet was reasonably unanimous.
16. *Image*, 2 stated that they felt that the way in which they used the internet would have an important impact on the image their customers have of them, 5 felt there would be some impact and 3 felt there was no impact. 1 stated that they felt that the way in which they used the internet would have an important impact on the image their competition have of them, 2 felt there would be some impact and 3 felt there was no impact, 3 didn't know and one felt the question was not applicable to them. One practitioner suggested that 'real time upload to the B&O factory impresses customers' (B&O, 2004), another stated that in his sector he did 'like the

idea of using cutting edge technology in the way the company operates as the sector is sometime seen as being run by middle aged women cutting ribbons' (David Florist, 2004). That said, the level of perceived impact of how the retailers use technology and the impact this has upon others was generally seen as weak. This suggests that they would not be motivated by their perceived image to adopt technology.

5.2.2 Linking qualitative results to the constructs

The questions from the qualitative interview were designed to relate to constructs from the UTAUT (Venkatesh et al., 2003) model looking into technology acceptance and to take into consideration the specific issues relating to the SME retailer and their use of the internet in procurement. The *target system* is that which is to be adopted or not. In this case it relates to online procurement systems and has the added complication of being potentially different for each supplier/retailer relationship.

The following represents observations from the answers given, and these are related to some of the individual constructs gleaned from academic research and presented as they are laid out in the model. The individual respondent companies are also mentioned by name and are re-iterated below in table 5.1 (from appendix 2) to assist the reader.

Name	Type
1. Dargie Design	Furniture
2. Holburn Hi-fi	Hi-end hi-fi
3. Bruce Millers	Hi-fi and general music
4. Panasonic Shop	Hi-fi (franchise)
5. Sony Shop	Hi-fi (franchise)
6. R&B Music	Musical instruments and amplification

7. Sainsbury	Furniture
8. Top note	General music
9. Bang & Olufsen	Hi-fi (franchise)
10. David's Flowers	Florist

Table 5.1 SME retailers interviewed for qualitative research

5.2.2.1 Performance Expectancy

Perceived usefulness is defined by Davis (1989) as the extent to which someone believes that using a certain system would enhance job performance. In the UTAUT model (2003) the name is changed to *performance expectancy* but it is the same construct. Looking at enhancing job performance in the context of the owner/manager would be expected to have a wider meaning than in the case of the individual; however the performance expectancy would tend to have the same impact on behavioural intention. The extent to which it is perceived that the introduction or adoption of a new system will enhance a person or company's ability to do a job, is vital to this research. Put simply, if someone thinks that a technology can positively benefit them and gain them rewards, be these intrinsic or extrinsic, the likelihood is that this will have a positive impact on their behavioural intention. Table 5.2 below outlines the questions that related to this construct.

Performance	Is the internet essential to the running of your
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Expectancy	company?
	Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock?
	Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock?
	Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock?
	Could using the internet potentially provide a wider range of goods to your customers?

Table 5.2 Questions relating to PE

In the context of procurement there was a variety of different views relating to this. In the case of one of the companies (R&B Music), they had already trialled an online procurement system offered by their supplier/manufacturer but this was discontinued when the supplier was taken over. The owner suggested that 'most of the goods on the system were consumables, not those items that would normally require a high level of explanation or discussion. The occasional deals that came along meant that buying practices were usually fairly timid – waiting for the next good deal to come along' (R&B Music, 2004). This would suggest that the design and support of the system was limited and indeed the practitioner did not consider the system an improvement over current methods.

The type of stock appeared to be influential in relation to the performance expectancy of a procurement system. Where large items with a slow turnover were the norm, the need for online procurement appeared less appealing. One suggested that online procurement was 'not totally appropriate for this type of venture,

given the nature of the business which is very much focused on quality and not price' (Dargie Design, 2004). Another point made in relation to online ordering of new stock was stated as 'the business is tactile in nature, and therefore pictures are not necessarily enough' (ibid.) for the purposes of procurement. Other product types such as flowers have a tried and tested method of procurement. In the instance of flower shops 'the wholesaler also distributes the flowers so they are not merely providing an intangible service' (David's Flowers, 2004). A lorry comes over from Holland and the flowers are purchased directly from this, given the nature of the product this is a workable and efficient method of procurement that is unlikely, according to the florist, to be improved upon with using the internet.

As a construct, the perceptions of the performance benefits that might accrue from using an online procurement system are varied. The influencing factors tend to relate to: product characteristics (such as size, cost and tactility); levels of turnover and the nature of the relationship with the supplier. These are issues not included explicitly in the UTAUT (Venkatesh et al., 2003) model. The perception in the qualitative interviews was that in many cases the ability to enhance the job would not necessarily be achieved through the use of online procurement. This construct is included as part of the proposed new model as these perceptions are likely to have a direct bearing on behavioural intention and ultimately uptake.

5.2.2.2 Effort Expectancy

Effort expectancy is also known as *perceived ease of use* which is defined by Davis (1989) as the extent to which someone believes that using a certain system would be free from effort. It would be expected that if someone had to put a lot of effort into learning the

necessary skills to use a particular software application then they would be less inclined to do so, all other things being equal. Table 5.3 below outlines the questions that related to this construct.

Effort Expectancy	What level of computer literacy would you consider yourself to have?
	Do you enjoy using the internet?
	What year did you start using it for the purposes of leisure?
	Do you find the internet easy to navigate when looking for potential suppliers?

Table 5.3 Questions relating to EE

There is not a direct question on whether or not the respondent would find it difficult to undertake a new system or the level of effort they perceive they would require as there is no one specific target system. Instead the construct needs to be looked at through the perspective of IT experience. This in turn makes it similar to the *experience* (see 5.2.2.6) construct outlined in the UTAUT (Venkatesh et al., 2003) model. The questions aimed at measuring the construct relate to internet usage which is the platform upon which an online procurement system would be running on. The inference is that there is a link between general internet usage and the perceived effort required to learn to use a new online system. This is necessary as there will be several different types of online procurement systems available and therefore general perceptions of adoption need to be used as opposed to those relating to a specific software application. Companies involved in more technology based areas such as hi-fi were generally more internet savvy and had used the internet for longer than those in for instance the furnishing market.

Effort expectancy would appear to be a useful construct for a new model as if adoption requires a perceived high level of effort then the impact on behavioural intention is likely to be negative. It is somewhat problematic however given the non-homogeneous nature of the software application involved and related to this, the close link it has with the *experience* construct when it comes to measurement.

5.2.2.3 Social Influence

The social influence construct, known as *subjective norm* by Ajzen (1988), looks at the impact of referent others on your decision to adopt a technology or not. This has different implications in the case of the SME as these referent individuals or groups may be internal to the company or external (i.e. the competition). In the case of the larger organisations the expectation would be that referents would be largely internal, but perhaps less likely in the case of the SME given the number of people actually working there. Table 5.4 below outlines the questions that related to this construct.

Social Influence	How many people are involved in the decision making process of what stock should be procured?
	Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods?
	Do <i>they</i> utilise it for anything else in their business?

	What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it?
	What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock?

Table 5.4 Questions relating to SI

The perceived importance of internet and online procurement usage by external others was not generally seen as a major contributing factor to their action, e.g. we 'don't have much contact with other retailers' (R&B, 2004). In other cases it was felt that internet usage conveyed a desirable modern image to the public with one interviewee stating that he liked 'the idea of using cutting edge technology in the way the company operates as the sector is sometime seen as being run by middle aged women cutting ribbons' (David's Flowers, 2004 – mentioned above on p.165).

Social influence may be exerted by other members of staff who were more conversant with internet based technology. In most cases where a number of staff used the internet suggesting they would act as an influence over the main decision makers. The implications of these internal relationships and influences suggests that the use of this construct is appropriate in the case of this research, and that to a lesser extent external influences such as the competition or customers may play a part.

5.2.2.4 Facilitating Conditions

Facilitating conditions relate to a perception that environmental objective factors make a particular act easy to achieve. Here, this would relate to the availability and perceived usefulness of support

facilities relating to the specific technology (see 2.7.3). The table below outlines the questions that relate to this construct.

Facilitating Conditions	Do you have full access to the internet?
	Is this via a modem or larger connection?
	Does your internet connection run quickly and effectively?

Table 5.5 Questions relating to FC

All interviewees had access to the internet. An omission in the qualitative research is that IT support available from the supplier or IT services provider was not explored. For those with some kind of link to their suppliers they would be able to offer a view on whether they felt that support was sufficient and timeous. The need for, and perception of, appropriate support when adopting new technologies, is a necessary prerequisite for a positive behavioural intention. As a construct this would be an appropriate inclusion in the final model to be tested by the quantitative research.

5.2.2.5 Gender/age

Explicit questions relating to gender and age were not asked as the answer to the former at least, was self evident. As for age, this was perhaps an oversight and might have been useful. The age bands were generally evident and given that the target was for owner/managers, it tended to be over 30. A question on both gender and age is included in the questionnaire, although there are issues with the use of gender (see 5.2.3).

5.2.2.6 Experience

This construct relates to the experience of the individual and the impact this is likely to have on the user (see 2.7.4). As mentioned above (see 5.2.2.2) it bears a similarity to effort expectancy, especially in the context of this research where there is not one specific software application that is to be adopted. Table 5.6 below outlines the questions that related to this construct.

Experience	What year did you start using it for the purposes of the business?
	Are you a gadget person?
	Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation?
	Do you feel that in your industry it is essential to be using the internet to be able to react to customer needs?
	Do you feel that in your industry it is essential to be using the internet to be aware of what your competitors are doing?
	Do you feel that in your industry it is essential to be using the internet to maximise efficiency?
	Has the internet fundamentally changed the way you do business?

Table 5.6 Questions relating to Experience

The questions relate to a general approach people may have towards technology, based on their experiences and general attitude towards it. Several comments were made at this juncture

relating to the impact the internet has had on the general b2c marketplace and its impact - the majority of which were negative; 'some aspects have changed, customers coming in and getting demos and then buying online' (Holburn Hi-Fi, 2004). Although this is out with the remit of this research the author is aware that it can influence the way practitioners feel about the internet in general and may well impact on their behavioural intention. Most interviewees had had experience of using the internet and purchasing online. In some cases online procurement was deemed inappropriate given the nature of the business. (Dargie, Sainsbury and David Flowers, 2004)

The relationship with suppliers is also commented on in the answers to the questions on experience (this point is expanded in 5.2.3). One stated (see also p.164) that 'the retailer/supplier relationship is weak, little support is provided' (Sony Shop, 2004). This suggests a possible construct that should be included relating to the nature of the relationship and the impact this has on adoption. Where a close relationship exists this might suggest that retailer and supplier may be happy to work more closely together, this in turn would ease the adoption of an online procurement system. The actual number of suppliers a retailer has could also impact on their decision making because adopting multiple systems of online procurement would take more time and perhaps require a higher level of integration with existing systems.

The experience construct is included in the model to be tested as an understanding and appreciation of technology is likely to have a positive impact on the likelihood that a technology will be adopted.

5.2.2.7 Voluntariness of use

This relates to the extent to which the uptake of the technology is voluntary (see 2.7.3). In the context of this research this is important as the supplier may be able to influence adoption of online procurement by the retailer through persuasion or even coercion. Questions 14-18 looked at whether or not the practitioner was currently using internet procurement and the level of usage. However these questions could have been more explicit and were mainly there to measure performance expectancy (see 5.2.2.1). Most elements of user uptake were voluntary, indeed most supply chain partners had not attempted to coerce or even persuade the retailers onto new online procurement systems. The only case of this was B&O who were expected to follow processes laid out by the franchisor, the 'retailer orders directly from the factory (carry no stock), and standard from Denmark is 8-10 days' (B&O, 2004).

This is an important construct and is closely related to the relationship with the supplier as they may or may not wish to persuade retailers onto online procurement systems, which may in turn reduce their costs.

5.2.2.8 Behavioural Intention/Use behaviour

The above constructs are designed to indicate the behavioural intention and ultimately the use behaviour. The UTAUT (2003) model predicts that the moderators (except facilitating conditions) will influence behavioural intention. This in turn influences how people are likely to behave (see 3.7.4).

5.2.3 Towards a new technology acceptance model for SMEs

The UTAUT (2003) model is outlined above in the context of the qualitative research undertaken. All the constructs appear appropriate in the context of the research topic. The initial primary research provided clear insight into the issue arising for the SME in

terms of technology acceptance. It also provided an understanding of the constructs and their relationship with the SME retailer and allowed for a focusing of the questionnaire. However some additions to the model would appear to be appropriate as some issues are not addressed. The following points indicate how a model looking at the measurement of adoption in the case of SME retailers appears to differ from existing models looking at adoption in a more general context;

1. the target system is not homogeneous – this is a limiting factor but remains an observation as differing systems cannot be factored into a model
2. retailers are likely to be at different stages of adoption – this is a limiting factor but once again there is no way to factor this into the model
3. some may be able to choose whether they undertake to adopt a new system, others may not – this limiting factor is already built into the model, although is somewhat more complex in the SME scenario as one supplier may insist an online procurement system is adopted but another might not
4. there may not be a system available for them to adopt – a retailer may be keen to adopt online procurement but there may not be a system in place, they may have influence with their supplier but this will be dependent on the relationship they have with them
5. the relationship with and number of suppliers, and how this operates appears to be a deciding factor – this ties in with the point above and is not something covered in the original UTAUT (Venkatesh et al., 2003) model as the decision makers and adopters were likely to be in the same organisation, a construct relating to the type and nature of the relationship would appear to be a necessary prerequisite

6. the nature of the goods appears to be a deciding factor – this is not mentioned in the general models but would appear to be necessary in the context of retail as plainly some products lend themselves to online procurement and others do not.

The above highlight the issues relating to technology acceptance that were not covered in the existing model. The qualitative research exercise has assisted in the identification of possible constructs that would need to be added to a model to fully identify the issues relating to technology acceptance and the SME retailer. The differing experiences the retailers interviewed had with their suppliers suggest an adapted model is required to accurately reflect this area.

The information gleaned from the initial qualitative research provided many insights which are illustrated above. For the quantitative research the target audience was narrowed down to SME retailers in the television and hi-fi market. This was chosen because the various groups chosen from the Doherty et al. (1999) classification suggested diverse experiences when it comes to using the internet for procurement. The television and hi-fi market are viewed as being advanced in relation to computer usage and would therefore tend to be generally ahead of other SME retailers in less technological areas. This does have an effect on the gender factor and the ability to measure it as this particular sector would appear, from the initial qualitative research, to be dominated by males.

5.3 Descriptive statistics

This section will aim to provide a concise account of the findings from the quantitative primary research with subsequent sections identifying the use of pertinent inferential statistics for further

analysis. The descriptive statistics are laid out as per the questionnaire. The use of quantitative statistics is the norm in this area of research (Davis, 1989; Venkatesh et al., 2003). To gain a wide spread of opinion a quantitative survey was seen as the best method of providing this insight. This was only undertaken after the initial qualitative research was completed and used to inform the questionnaire.

5.3.1 Analysis

Multiple choice answers are provided in some of the questions with a Likert 5 point scale being adopted in others. Some of the questions use nominal scales and others provide a specific order, and can therefore be said to be ordinal. In the case of the Likert scale questions these would be seen in the context of this research as ordinal scales and will be treated as such when undertaking inferential tests. A total of 198 useable responses were collected (n = 198) from 417 sent out giving a 47.5% return rate. The questionnaire can be found in appendix 5.

5.3.2. Demographics (questions 1-5)

Demographic information can provide insight into how different groups react to change. In the case of this research, gender and age are outlined as core factors in the UTAUT model. The other demographic information included here relates to educational attainment and the position and responsibilities of the respondent. This may provide further insight into the nature of uptake.

(1) Age

The breakdown is mainly in 10 year gaps to gain an overview of the distribution, with the first age group being extended slightly, reflecting the fact that it would be expected that there would be fewer younger people in the role of owner or/and manager (the targeted group).

The mode is represented by the 41-50 (56 – 28.3%) category, this is closely followed by the 51-60 category (54 – 27.3%). The responses are recorded in table 5.7 below and all respondents answered this question.

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-30yrs	16	8.1	8.1	8.1
	31-40yrs	44	22.2	22.2	30.3
	41-50yrs	56	28.3	28.3	58.6
	51-60yrs	54	27.3	27.3	85.9
	61 plus yrs	28	14.1	14.1	100.0
	Total	198	100.0	100.0	

Table 5.7 Age

The distribution of age is even and as expected there is a lower incidence amongst the youngest group.

(2) Gender

A large majority of respondents were 'male' (182 - 91.9%). The 'females' were only represented by 16 (8.1%) of those asked. This is seen as an important variable in previous research but the imbalance towards males calls into question the use of statistical analysis.

(3) Education

The highest frequency from the respondents (see table 5.3.2.2) was an educational attainment of 'college level', this represented just over half 102 (53.1%) of the 192 who responded to this. Six respondents (3%) chose not to answer this question. The results are represented in the following table.

Education attainment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	School	65	32.8	33.9	33.9
	College	102	51.5	53.1	87.0
	Degree	17	8.6	8.9	95.8
	Post-graduate	8	4.0	4.2	100.0
	Total	192	97.0	100.0	
Missing	0	6	3.0		
Total		198	100.0		

Table 5.8 Education attainment

A small number (13.1%) of recipients have undertaken study at a higher education level, however the majority have studied at the further education level.

(4) Position in company

The aim of the research was to target owner/managers as they are likely to be the main decision makers. This therefore provided a means of checking that the appropriate people were answering the questions. The distribution presented in table 5.9 below, shows that with a few exceptions, the questionnaire was completed by someone within the intended target group.

Position in company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owner	92	46.5	46.9	46.9
	Owner/manager	73	36.9	37.2	84.2
	Manager	28	14.1	14.3	98.5
	Employee	3	1.5	1.5	100.0
	Total	196	99.0	100.0	
Missing	0	2	1.0		
Total		198	100.0		

Table 5.9 Position in company

(5) Decision maker

The results relating to the decision making power of the respondent support the findings of the previous question and validate the research in its aim to get feedback predominantly from those in charge of the retail outlet. The results were as follows.

Are you main decision maker

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	137	69.2	69.2	69.2
	One of them	51	25.8	25.8	94.9
	No	9	4.5	4.5	99.5
	no answer	1	.5	.5	100.0
	Total	198	100.0	100.0	

Table 5.10 Are you the main decision maker?

5.3.3. Experience (questions 6-9)

The following group of questions looks at the type and nature of experience respondents have relating to their past use of computers and specifically the internet. The extent of experience is likely to impact on general attitudes towards the use of internet based technologies such as online procurement.

(6) This question relates to internet usage levels for leisure purposes. All the respondents answered the question. The following table 5.11 indicate 13% not using the internet for leisure, given the technological nature of their business this is perhaps surprising.

How long used Int - leisure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do not use	26	13.1	13.1	13.1
	Less than a year	15	7.6	7.6	20.7
	Less than 5 years	74	37.4	37.4	58.1
	Between 5&10 years	70	35.4	35.4	93.4
	More than 10 years	13	6.6	6.6	100.0
Total		198	100.0	100.0	

Table 5.11 How long used internet – leisure

(7) This question relates internet usage levels for business purposes. One respondent (0.5%) did not answer the question. The results for 'do not use' are lower than for leisure, suggesting that some respondents only use the internet for business and not leisure. This figure still appears high for the business type being studied.

How long used Int - business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do not use	22	11.1	11.2	11.2
	Less than a year	11	5.6	5.6	16.8
	Less than 5 years	94	47.5	47.7	64.5
	Between 5&10 years	63	31.8	32.0	96.4
	More than 10 years	7	3.5	3.6	100.0
	Total	197	99.5	100.0	
Missing	0	1	.5		
Total		198	100.0		

Table 5.12 How long used internet – business

(8) This question relates to the perceived level of computer skills of the respondents. The results in table 5.13 indicate a wide spread across perceived computer skills with a modal response of *less than five years*.

Evaluate computer skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	19	9.6	9.6	9.6
	Proficient	51	25.8	25.8	35.4
	OK	92	46.5	46.5	81.8
	Poor	31	15.7	15.7	97.5
	Non-existent	5	2.5	2.5	100.0
	Total	198	100.0	100.0	

Table 5.13 Evaluate computer skills

(9) The highest response for the enjoyment of the use of IT for achieving organisational goals was 90 (45.5%). There is generally a positive attitude towards the use of IT in the achievement of organisational goals (see table 5.14) with 62.6% either enjoying

very much, or to a certain extent, the use of IT for achieving organisational goals.

Enjoy using IT for org

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very much so	34	17.2	17.2	17.2
	To a certain extent	90	45.5	45.5	62.6
	Not sure	20	10.1	10.1	72.7
	Not really	33	16.7	16.7	89.4
	No	21	10.6	10.6	100.0
	Total	198	100.0	100.0	

Table 5.14 Enjoy using IT for organisational purposes

5.3.4. Communication procurement and purchasing (question 10-12)

The following group of questions relates to the respondents preferred methods of communicating with supply chain partners for the purposes of communicating, purchasing stock and purchasing other items for their business. In each of these three questions the responses for each method were considered separately, this information is in tables 5.15 (question 10), 5.16 (question 11) and 5.17(question 12).

(10a) Phone/fax, with regard to the chosen method of *phone/fax* the 'highest' response when communicating with suppliers registered more than half of the respondents at 106 (53.5%), ranking this method as the highest.

(10b) Letter, the greatest number of responses for *letter* ranked it as 'lowest' at 42 (21.2%). On the other hand the highest frequency for this group (36.9%) was a 'non-response'.

(10c) *Face to face*, the greatest number of responses, 50 (25.3%), ranked *face to face* as 'highest'. Non-responses to this question made up the second highest frequency at 48 (24.2%).

(10d) *E-mail*, the highest ranking of responses for *e-mail* was 'next highest' at 46 (23.3%). The level of non-responses for this method was 55 (27.8%)

(10e) *Web page*, the highest ranking number of responses for *web page* was the 'lowest' at 44 (22.2%). The level of 'non-responses' for this method was 77 (38.9%).

General comparisons. As respondents were asked to rank their responses and put in N/A (measured as a non-response) if they did not use a particular method at all, the number of non-responses where neither a ranking or N/A was included is worth noting. These were as follows.

- phone/fax – 18
- face to face - 48
- e-mail - 55
- letter - 73
- web page - 77

Judging by this, the most popular method of communicating is phone/fax, followed by face to face, then e-mail. The final two are not clear cut as one has a higher mean, but the other has a higher non-response. This appears to provide a clear indication of the favoured methods for communicating with suppliers and a reasonably clear running order for the others mentioned. The primacy of phone/fax suggests that the latest technologies have some way to go to usurp the more traditional methods.

What is	Phone/	Letter	Face to	e-mail	Web
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chosen method of comm. with suppliers	Fax				face				page	
	Fre q.	%	Fre q.	%	Fre q.	%	Fre q.	%	Fre q.	%
1. highest	106	53.5	2	1	50	25.3	27	13.6	18	9.1
2. next highest	45	22.7	9	4.5	40	20.2	46	23.3	9	4.5
3. middle value	19	9.6	35	17.7	25	12.6	43	21.7	24	12.1
4. next lowest	8	4	37	18.7	25	12.6	26	13.1	26	13.1
5. lowest	2	1	42	21.2	10	5.1	1	0.5	44	22.2
6. non-response	18	9.1	73	36.9	48	24.2	55	27.8	77	38.9
Total	198	100	198	100	198	100	198	100	198	100
Mean of those who responded	1.49		2.43		1.79		1.80		2.18	

Table 5.15 Choice for communication

(11a) *Phone/fax*, the 'highest' ranking for *phone/fax* when choosing a method for procuring stock, had the highest number of responses at 107 (54%). There were 14 (7.1%) non responses.

(11b) *Letter*, the greatest number of responses was for those who ranked *letter* as the 'lowest' at 51 (25.8%), the highest frequency overall was for 'non-response' at 89 (44.9%).

(11c) *Face to face*, the highest ranking for responses was for 'next highest' at 54 (27.3%) for *face to face*. Non-respondents made up the second highest frequency at 48 (24.2%).

	q.		q.		q.		q.		q.	
Non-response	14	7.1	89	44.9	48	24.2	62	31.3	74	37.4
1. highest	107	54	1	.5	26	13.1	25	12.6	40	20.2
2. next highest	46	23.2	6	3.0	57	28.8	34	17.2	18	9.1
3. middle value	24	12.1	17	8.6	30	15.2	44	22.2	26	13.1
4. next lowest	7	3.5	34	17.2	26	13.1	31	15.7	15	7.6
5. lowest	0	0	51	25.8	11	5.6	2	1.0	25	12.6
Total	198	100	198	100	198	100	198	100	198	100
Mean of those who responded	1.51		2.30		1.95		1.81		1.71	

Table 5.16 Choice for procurement

(12a) *Phone/fax*, the 'highest' response for phone/fax, when choosing a method for purchasing other items for the business, had the greatest number of responses at 111 (56.1%). There were 17 (8.6%) non responses.

(12b) *Letter*, the greatest number of responses here was for 'lowest' at 52 (26.3%). The highest frequency overall was for 'non-response' at 81 (40.9%).

(12c) *Face to face*, the greatest number of responses is for 'next highest' at 42. Non-responses made up the highest frequency at 48 (24.2%).

(12d) *E-mail*, the greatest number of responses was for 'middle value' at 48 (24.2%). The non responses constituted the highest frequency with 63 (31.8%).

(12e) *Web page*, the greatest response was for the 'highest' at 31 (15.7%), the highest frequency for the question was the non-responses with 74 (37.4%).

General comparisons. The lowest mean is recorded by the 'phone/fax' (1.44). The levels of non response, denoting that it is not used at all in communicating with suppliers is as follows.

- phone/fax – 17
- face to face - 48
- e-mail - 63
- web page - 74
- letter - 81

Judging by this, the most popular method of procuring stock is 'phone/fax'. 'Face to face', 'e-mail' and 'web page' are not so clear cut given the levels of non-response. 'Letter' comes lowest with the highest mean and highest non-response rate.

What is chosen method of purchasing other items for business	Phone/fax		Letter		Face to face		e-mail		Web page	
	Fre q.	%	Fre q.	%	Fre q.	%	Fre q.	%	Fre q.	%
Non-response	17	8.6	81	40.9	48	24.2	63	31.8	74	37.4
1. highest	111	56.1	0	0	38	19.2	20	10.1	27	13.6
2. next highest	42	21.2	13	6.6	44	22.2	36	18.2	29	14.6
3. middle value	21	10.6	23	11.6	23	11.6	48	24.2	26	13.1
4. next lowest	7	3.5	29	14.6	29	14.6	26	13.1	22	11.1

5. lowest	0	0	52	26.3	16	8.1	5	2.5	20	10.1
Total	198	100	198	100	198	100	198	100	198	100
Mean of those who responded	1.44		2.37		1.95		1.84		1.75	

Table 5.17 Choice for non-stock items

Comparisons between the data will be discussed in the discussion chapter (6).

5.3.5 The size of the company and IT preparedness (question 13-16)

Questions 13–16 all relate to the size of the company in terms of staff and turnover, and also look at the current computerisation and connectivity available in the respondent companies.

(13) The main results (up to 10 employees) are outlined in the histogram below.

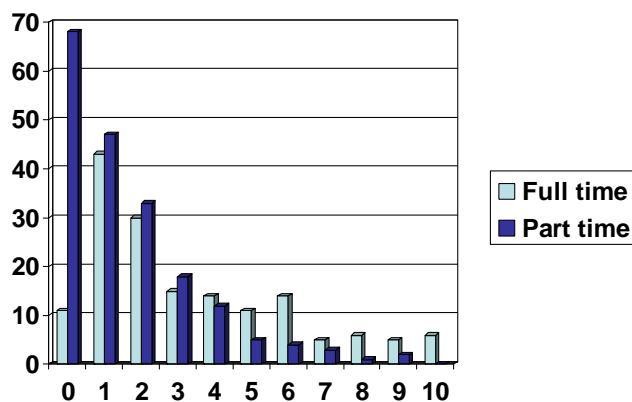


Table 5.18 Number of employees

Part time. The highest frequency for part time staff employed was 68 (34.3%) for '0', followed by 47 (23.7%) for '1', 33 (16.7%) for '2' and 18 (9.1%) for '3'. The figures thereafter reduce to 38 part time, apart from a slight rise at 9 part time staff from '1' to '2'. Of the respondents 3 (1.5%) declined to put in any answer. The mean was 1.86 with a standard deviation of 3.303 suggesting a tight grouping around the mean.

Full time. The highest frequency was 43 (21.7%) for '1' full time member of staff employed, followed by 30 (15.2%) for '2', then 23 (11.6%) for '3', then 15 (7.6%) for '4' and 14 (7.1%) for '6'. Of the respondents '0' and '5' both have 11 (5.6%). From there the scale slides down, with a couple of rises ('10', '14', '17', and '40'), all the way to '150'. Once again 3 (1.5%) of respondents did not complete this question. The mean in this instance was 8 with a standard deviation of 15.538 suggesting a wide dispersion due to the high figures for a small number of practitioners. As four of the respondents had over 100 full time employees this would skew the figures, however none had over the 249 employees limit outlined by the DTI and EU figures (see below).

The relevance of this question relates to the validation of the SME category adopted for the research. The DTI and the EU suggests the following for the SME sector including both part time and full time workers.

- micro – up to 9 employees
- small - up to 49 employees
- medium - up to 249 employees

This suggests that all the companies that responded would fall into the SME category chosen for the research. As this information mainly acts as verification of the respondent's eligibility to be in the survey, once it has been demonstrated it is not central to the research. However there may be influences and differences between larger and smaller SMEs that is why a comparison with social influences within the organisation might be of interest.

(14) Due to the sensitive nature of this question looking at sales turnover, respondents were advised that it was optional. Of the respondents 94 (47.5%) chose not to answer. The rest of the results ranged from an annual turnover of approximately £10 000 to £18m.

The lack of statistical analysis in this case does not present a problem for this research as the question, like question 13, was designed to verify that the people responding to the survey were in the SME bracket as outlined by national and supranational governing bodies. The EU (see 3.2) suggests the following for the SME sector.

- micro - not applicable
- small - up to 7m Euros annual turnover
- medium - up to 40 m Euros annual turnover

The largest annual turnover figure provided was £18m, equivalent to 26.54m Euros (19.8.05). This figure falls short of the EU limit. This suggests therefore, that all the companies that responded would fall into the SME category chosen for the research.

(15) This question asked about the link between internal systems and the internet, with 113 (57.1%) responding with 'yes'. This suggests that this percentage have internal organisational systems

linked to the internet. 72 (36.4%) respondents stated 'no', their systems did not link together and a further 13 (6.6%) did not provide an answer. The frequencies/percentages suggest that the majority of respondents have integrated systems, further leading to the fact that they could procure online if they wished (assuming their suppliers had the facility to do so).

(16) The modal response relating to information access online shows the highest frequency as 182 (91.9%) for 'yes' and 14 (7.1%) as 'no'. There are 2 (1%) non-responses. There is an overwhelmingly majority here who have access to information online. The respondents who gave a 'no' answer may not have access to the internet at all – this is an assumption as the specific question is not asked. Gaining information online is usually the first step toward integration, although it may be the only step.

This question provides insight into whether or not all practitioners could actually procure online. This question covers the basic issue of hardware and software availability within the respondent organisations. Where the necessary technology is not available there will be an obvious effect on uptake.

5.3.6 Product type (17-19)

The following questions look at the types of goods being procured by the retailers, specifically looking at the product size, cost and the frequency of reordering.

(17) The highest frequency for the approximate average value of products purchased for stock was 56 (28.3%) for '£251 - £500'. This suggests that the average products are relatively expensive with only 24.2% being equal to or less than £100. This in turn may suggest a lower turnover as the expectation would be that the more

expensive an item the less likely it is to have a high turnover. This is outlined in table 5.19 below.

Approx cost of products

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	11	5.6	5.6	5.6
£1-£5	2	1.0	1.0	6.6
£6-£50	11	5.6	5.6	12.1
£51-£100	24	12.1	12.1	24.2
£101-£250	51	25.8	25.8	50.0
£251-£500	56	28.3	28.3	78.3
£501+	43	21.7	21.7	100.0
Total	198	100.0	100.0	

Table 5.19 Approximate cost of products

(18) The highest frequency for denoting the approximate size of the products purchased was 88 (44.4%) for 'large 1 people carry'. This is outlined in table 5.20 and supports the results for the question above suggesting a larger more expensive product in general, with only 5.8% stating the approximate size of the stock they procure was 'small' or 'very small'.

Approx size of item procured

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid V Small	2	1.0	1.1	1.1
Small	9	4.5	4.8	5.8
Medium	34	17.2	18.0	23.8
Large 1 person carry	88	44.4	46.6	70.4
Large 2 people carry	54	27.3	28.6	98.9
large 2+ people carry	2	1.0	1.1	100.0
Total	189	95.5	100.0	
Missing 0	9	4.5		
Total	198	100.0		

Table 5.20 Approximate size of item procured

(19) The highest frequency relating to how often products need to be ordered was 64 (32.3%) for 'daily'. The general level of required re-ordering outlined in table 5.21 is perhaps not as high as to justify constant contact with suppliers with only 43.9% having to order stock on a daily basis or more.

How often reorder new products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	1.0	1.0	1.0
	Hourly	10	5.1	5.1	6.1
	2x daily	11	5.6	5.6	11.6
	Daily	64	32.3	32.3	43.9
	2x weekly	51	25.8	25.8	69.7
	Weekly	35	17.7	17.7	87.4
	2x Monthly	9	4.5	4.5	91.9
	Monthly	16	8.1	8.1	100.0
	Total	198	100.0	100.0	

Table 5.21 How often reorder new products

5.3.7 Relationship with the supplier and Behavioural Intention (20-36)

The following questions look at the relationship between the retailer and the supplier. They aim to evaluate how close it is perceived to be and how the use of the internet features in the b2b relationships, and in general. This collection of questions also identifies behavioural intention relating to future usage of online procurement systems. The statistical information on questions 22 – 59 are held in tables 5.24 to 5.29. The percentages presented include the non-responses so as they add up to 100%, it is however the valid percentages which are discussed in the narrative on each question as they are more pertinent in explaining the situation.

(20) The highest frequency for how often practitioners speak to their suppliers was 57 (28.8%) for 'daily'. Similar to q.19 above the results outlined in table 5.22 do not suggest a situation where retailers are in constant touch with suppliers even though 40.5% were in contact on a daily basis. The frequency of contact with suppliers would tend to suggest a closer working relationship.

How often speak to suppliers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hourly	4	2.0	2.1	2.1
	2x daily	18	9.1	9.2	11.3
	Daily	57	28.8	29.2	40.5
	2x weekly	48	24.2	24.6	65.1
	Weekly	41	20.7	21.0	86.2
	2x Monthly	12	6.1	6.2	92.3
	Monthly	15	7.6	7.7	100.0
Total		195	98.5	100.0	
Missing	0	3	1.5		
Total		198	100.0		

Table 5.22 How often speak to suppliers

(21) The highest frequency relating to the perception of the closeness of the relationship with suppliers is 74 (37.4%) for 'close' and 'quite close'. The results outlined in table 5.23 suggest the perception of a close relationship with suppliers with 92.3% suggesting their relationship is from quite to very 'close'.

How would you consider the relationship

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very close	32	16.2	16.4	16.4
	Close	74	37.4	37.9	54.4
	Quite close	74	37.4	37.9	92.3
	Not close	14	7.1	7.2	99.5
	Not at all close	1	.5	.5	100.0
	Total		195	98.5	100.0
Missing	0	3	1.5		
Total		198	100.0		

Table 5.23 How would you consider your relationship

The following results in table 5.24 relate to questions 22 – 26.

No. of suppliers	22		23		24		25		26	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
0	-	-	15	7.6	65	32.8	56	28.3	30	15.2
1	2	1.0	17	8.6	30	15.2	30	15.2	14	7.1
2-7	75	37.9	110	55.6	87	43.9	87	43.9	84	42.4
8-15	59	29.8	37	18.7	7	3.5	15	7.6	37	18.7
15+	60	30.3	15	7.6	3	1.5	5	2.5	21	10.6

Total	196	99.0	194	98.0	192	97.0	193	97.5	186	93.9
No response	2	1.0	4	2.0	6	3.0	5	2.5	12	6.1
Total	198	100.0	198	100	198	100	198	100	198	100

Table 5.24 Results for questions 22-26

(22) The highest frequency relating to how many suppliers a retailer has is 75 (37.9%) for '2-7'. There were only 2 (1.0%) who stated they only had one supplier.

(23) More than half of the respondents (110 - 55.6%) indicated that the number of suppliers offering online procurement was for '2-7'. These results were tightly focused around the '2-7' response and in providing a clearer picture of supplier relations should be looked at in conjunction with the results to the previous questions.

(24) The highest frequency for the number of suppliers offering incentives for those practitioners using online procurement was 87 (43.9%) for '2-7'. Of the respondents 65 (32.8%) stated that there were no incentives available to attempt to persuade them to use the internet for procurement.

(25) The highest number of respondents for practitioners ordering online from suppliers is 87 (43.9%) for '2-7'. Of the respondents 56 (28.3%) did not use any online procurement systems.

(26) The highest frequency recorded for how many online systems practitioners might use in the future is 84 (42.4%) for '2-7'. Of the respondents 30 (15.2%) stated they would not be using online procurement in future.

The following results in table 5.25 relate to questions 27 – 36.

	27		28		29		30		31	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Strongly agree	31	15.7	14	7.1	12	6.1	9	4.5	32	16.2

Agree	38	19.2	52	26.3	28	14.1	19	9.6	88	44.4
Neutral	65	32.8	62	31.3	93	47.0	70	35.4	37	18.7
Disagree	37	18.7	50	25.3	36	18.2	48	24.2	21	10.6
Strongly disagree	19	9.6	10	5.1	19	9.6	43	21.7	11	5.6
Total	190	96.0	188	94.9	188	94.9	189	95.5	189	95.5
No response	8	4.0	10	5.1	10	5.1	9	4.5	9	4.5
Total	198	100.0	198	100	198	100	198	100	198	100

	32		33		34		35		36	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Strongly agree	45	22.7	64	32.3	59	29.8	12	6.1	75	37.9
Agree	64	32.3	65	32.8	54	27.3	16	8.1	48	24.2
Neutral	33	16.7	28	14.1	35	17.7	43	21.7	24	12.1
Disagree	31	15.7	23	11.6	18	9.1	47	23.7	9	4.5
Strongly disagree	16	8.1	9	4.5	18	9.1	68	34.3	30	15.2
Total	189	95.5	189	95.5	184	92.9	186	93.9	186	93.9
No response	9	4.5	9	4.5	14	7.1	12	6.1	12	6.1
Total	198	100.0	198	100	198	100	198	100	198	100

Table 5.25 Results for questions 27-36

(27) The modal response for the importance of sourcing new suppliers was 65 (32.8%) for 'neutral'. Overall 36.3% of respondents felt it was important to continually source new suppliers for their business.

(28) The highest frequency for the ease of finding new suppliers was 62 (31.3%) giving a 'neutral' response. Around the 'neutral response' the 'agrees' (35.1%) and 'disagrees' (31.9%) were reasonably similar.

(29) The highest frequency for whether or not a new supplier will be beneficial is 93 (47%) for 'neutral'. With only 21.3% agreeing to this and 27.8% disagreeing this provides a contrast with the results to q.28.

(30) The highest frequency for gauging whether or not an international supplier would be beneficial for the company was 70

(35.4%) for 'neutral'. Only 14.8% of respondents agreed with this statement with nearly half (48.2%) disagreeing.

(31) The highest frequency for the benefits of attendance at trade shows was 88 (44.4%) for 'agree'. Respondents felt positively towards this statement with 63.5% in agreement.

(32) The highest frequency regarding the importance of company reps to the running of the company was 64 (32.3%) for 'agree'. With 57.7% agreeing with this statement the need for company reps is still apparent.

(33) The highest frequency recorded for the levels of competition the company experiences locally is 65 (32.8%) for 'agree'. With 68.3% of respondents agreeing with this statement it would appear that local competition is generally perceived to be high.

(34) The highest frequency recorded for the levels of competition the company experiences nationally is 59 (29.8%) for 'strongly'. Levels of competition are still perceived as being high (61.4% in agreement) but less than the previous question.

(35) The highest frequency recorded for the levels of competition the company experiences internationally is 68 (34.3%). International competition is not seen as the same threat and local and national competition in this area with only 15.1% agreeing with this statement.

(36) The modal response for the level of competition the company experiences online is 75 (37.9%) for 'strongly agree'. There are 66.1% of respondents that agree with this statement and 20.9% who disagree. The level of those who 'strongly disagree' (16.1%) is higher than those who merely 'disagree' (4.8%).

5.3.8 Performance Expectancy (questions 37-42)

The following questions outlined in table 5.26 relate directly to the Performance Expectancy construct as laid out by Venkatesh et al. (2003) in the UTAUT model. Performance Expectancy is defined in section 2.7 as 'the degree to which an individual believes that using the system will help him or her to attain gains in job performance' (Venkatesh et al., 2003, p.447). The following results relate to question 37 – 42.

	37		38		39		40		41	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Strongly agree	84	42.4	50	25.3	45	22.7	26	13.1	11	5.6
Agree	64	32.3	61	30.8	68	34.3	53	26.8	20	10.1
Neutral	24	12.1	39	19.7	59	29.8	50	25.3	31	15.7
Disagree	15	7.6	26	13.1	11	5.6	42	21.2	64	32.3
Strongly disagree	3	1.5	13	6.6	4	2.0	18	9.1	64	32.3
Total	190	96.0	189	95.5	187	94.4	189	95.5	190	96.0
No response	8	4.0	9	4.5	11	5.6	9	4.5	8	4.0
Total	198	100.0	198	100	198	100	198	100	198	100

	42	
	Freq.	%
Strongly agree	53	26.8
Agree	64	32.3
Neutral	35	17.7
Disagree	26	13.1
Strongly disagree	12	6.1
Total	190	96.0
No response	8	4.0
Total	198	100.0

Table 5.26 Results for questions 37-42

(37) The questions relating to this construct aimed to measure the advantages perceived by retailers, in their use of the internet for online procurement. The highest frequency recorded for the perceived usefulness of being able to procure online is 84 (42.43%)

for 'strongly agree'. The results suggest that most agree (77.9%) that online procurement is a positive development, even if they are not currently using it.

(38) The modal response for the perception that the type of product sold lends itself to online procurement is 61 (30.8%) for 'agree'. Of the respondents 58.7% felt that their stock could be procured online.

(39) The highest frequency recorded for whether or not respondents felt that their suppliers would like to use online procurement was 68 (34.3%) for 'agree'. The results suggest that retailers perceive that their suppliers generally wish to get their supply chain partners online (60.4% in agreement).

(40) The highest frequency recorded for the perception of how necessary it is to speak to someone when procuring stock is 53 (26.8%) for 'agree'. This question employs reverse phrasing. The results suggest differing opinions in this area with 31.7% disagreeing and 41.8% agreeing.

(41) The highest frequency recorded for the perception that the computer can replace human interaction in the b2b relationships of the company is 64 (32.3%) for both 'strongly disagree' and 'disagree' (64.6% in disagreement). It is perhaps not surprising that an SME retailer would be against this statement as they thrive on the relationships they have with people to make their business profitable. That said this does focus purely on the b2b relationships they have and the importance of them and the ability to undertake all the current functions without human contact, or even input.

(42) The modal response for the perceived importance of IT to the company is 64 (32.3%) for 'agree'. This suggests that IT is perceived to be central to the successful running of the organisation with 61.6% of respondents in agreement.

5.3.9 Effort Expectancy (questions 43-46)

The following questions relate directly to the Effort Expectancy construct as laid out by Venkatesh et al. (2003) in the UTAUT model. Effort Expectancy is defined in section 2.7 as 'the degree of ease associated with the use of the system' (Venkatesh et al., 2003 p.450).

The following results outlined in table 5.27 relate to questions 43 – 46.

	43		44		45		46	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Strongly agree	14	7.1	29	14.6	32	16.2	23	11.6
Agree	25	12.6	55	27.8	76	38.4	27	13.6
Neutral	37	18.7	48	24.2	43	21.7	55	27.8
Disagree	62	31.3	36	18.2	23	11.6	55	27.8
Strongly disagree	46	23.2	16	8.1	7	3.5	24	12.1
Total	184	92.9	184	92.9	181	91.4	184	92.9
No response	14	7.1	14	7.1	17	8.6	14	7.1
Total	198	100.0	198	100	198	100	198	100

Table 5.27 Results for questions 43-46

(43) The highest frequency recorded for the level of effort required to adopt online procurement is 62 (31.3%) for 'agree'. This question

employs reverse phrasing. The relatively large number of non respondents could be attributed to the fact that the respondents were already using online procurement and could therefore not answer the question. Of the respondents 58.7% felt that adoption would require a level of effort.

(44) The highest frequency recorded for the perceived need for training in undertaking a new online procurement system is 55 (27.8%) for 'agree'. The general perception here is that training would be required with 45.7% of respondents agreeing with the statement, although this is not conclusive.

(45) The highest frequency recorded for the perceived need for staff training is 76 (38.4%) for 'agree'. The perception here is that staff would generally require training to enable adoption of an online procurement system with 59.7% agreeing with the statement.

(46) The highest frequencies recorded for the perceived level of effort required was too high to adopt online procurement is 55 (27.8%) for 'disagree' and 55 (27.8%) for 'neutral'. The perception is that adoption of online procurement and the perceived costs inherent with this would be offset by the benefits with 27.2% in agreement and 42.9% disagreeing with the statement.

5.3.10 Social Influence (questions 47-54)

The following questions outlined in table 5.28 relate directly to the Social Influence construct as laid out by Venkatesh et al. (2003) in the UTAUT model. Social Influence is defined in section 2.7 as 'the degree to which an individual perceives that important others

believe he or she should use the new system' (Venkatesh et al., 2003 p.451). The following results relate to questions 47 – 54.

	47		48		49		50		51	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Strongly agree	20	10.1	16	8.1	14	7.1	36	18.2	44	22.2
Agree	48	24.2	64	32.3	54	27.3	81	40.9	82	41.4
Neutral	63	31.8	71	35.9	73	36.9	42	21.2	42	21.2
Disagree	41	20.7	30	15.2	36	18.2	23	11.6	15	7.6
Strongly disagree	20	10.1	12	6.1	12	6.1	9	4.5	9	4.5
Total	192	97.0	193	97.5	189	95.5	191	96.5	192	97.0
No response	6	3.0	5	2.5	9	4.5	7	3.5	6	3.0
Total	198	100.0	198	100	198	100	198	100	198	100

	52		53		54	
	Freq.	%	Freq.	%	Freq.	%
Strongly agree	16	8.1	7	3.5	18	9.1
Agree	68	34.3	62	31.3	88	44.4
Neutral	72	36.4	75	37.9	56	28.3
Disagree	26	13.1	37	18.7	21	10.6
Strongly disagree	12	6.1	10	5.1	7	3.5
Total	194	98.0	191	96.5	190	96.0
No response	4	2.0	7	3.5	8	4.0
Total	198	100.0	198	100.0	198	100

Table 5.28 Results for questions 47-54

(47) The modal response recorded for how technology influences customers is 63 (31.8%) for 'neutral'. The main results here are for a neutral response and the rest are shared out fairly evenly with similar proportions for positive (35.4%) and negative (31.8%).

(48) The highest frequencies recorded for the perceived impact of the use of technology on suppliers is 71 (35.9%) for 'neutral'. With 41.5% in agreement and 21.8% disagreeing the balance would be towards those who agree with this statement.

(49) The highest frequencies recorded for how the use of technology influences competitors is 73 (36.9%) for 'neutral'. The responses are predominantly neutral with 36% in agreement and 25.4% disagreeing.

(50) The highest frequencies recorded for the perception of dramatic change due to IT over the last five years is 81 (40.9%) for 'agree'. Overall 61.3% agreed with this statement with only 16.8% disagreeing, this is a strong response to the effects of IT in SME retail.

(51) The highest frequencies recorded for the perception of dramatic change due to IT over the next five years is 82 (41.4%) for 'agree'. This is a perception based on the experience of the last five years and its possible ramifications and with 65.6% in agreement with this statement and only 12.5% disagreeing suggests that change is generally expected.

(52) The highest frequencies recorded for those stating that if they knew competitors were adopting this system they would be more likely to explore it is 72 (36.4%) for 'neutral'. This question aims to evaluate the perceived influence of social and other relationships upon adoption of technological changes. With 43.3% agreeing and 19.6% disagreeing the results suggest a general agreement to this statement.

(53) The modal response for those stating that if members of their staff thought it was a good idea this would influence them to explore it is 88 (44.4%) for 'agree'. The results state that 55.8% agree whilst 14.7% disagree suggesting that staff will influence the decision making process of the owner/manager.

(54) The highest frequencies recorded for those stating that if family and friends thought it was a good idea this would influence them to explore it is 75 (37.9%) for 'neutral'. With 36.1% agreeing and 24.6% disagreeing the results are not conclusive but suggest that family and friends may wield some influence although this is not as high as in the case of the staff.

5.3.11 Facilitating Conditions (questions 55-59)

The following questions outlined in table 5.29 relate directly to the Facilitating Conditions construct as laid out by Venkatesh et al. (2003) in the UTAUT model. Facilitating Conditions are defined in section 2.7 as 'the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system' (Venkatesh et al., 2003 p.453).

The following results relate to questions 55 – 59.

	55		56		57		58	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Strongly agree	19	9.6	12	6.1	13	6.6	18	9.1
Agree	69	34.8	75	37.9	67	33.8	81	40.9
Neutral	60	30.3	63	31.8	59	29.8	54	27.3
Disagree	32	16.2	32	16.2	40	20.2	27	13.6
Strongly disagree	9	4.5	8	4.0	10	5.1	9	4.5
Total	189	95.5	190	96.0	189	95.5	189	95.5
No response	9	4.5	8	4.0	9	4.5	9	4.5
Total	198	100	198	100	198	100	198	100

	59	
	Freq.	%
Strongly agree	26	13.1
Agree	93	47.0
Neutral	41	20.7
Disagree	22	11.1
Strongly disagree	7	3.5
Total	189	95.5
No response	9	4.5

Total	198	100.0
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Table 5.29 Results for questions 55-59

(55) The highest frequencies recorded for those stating that they would require IT assistance over the telephone from their supplier is 69 (34.8%) for 'agree'. With 46.6% agreeing and 21.7% disagreeing the results do suggest the need for some form of telephone support from suppliers.

(56) The highest frequencies recorded for those stating that they would require IT assistance over the internet from their supplier is 75 (37.9%) for 'agree'. With 45.8% agreeing with this statement and 21.1% disagreeing with the idea that there is a perceived need for online assistance.

(57) The modal response for those stating that they would require IT assistance over their service supplier is 67 (33.8%) for 'agree'. A total of 42.3% agreed whilst 26.5% disagreed providing results very similar to the previous two questions looking at the need for support.

(58) The highest frequencies recorded for those stating that they would require further hardware assistance in case anything went wrong is 81 (40.9%) for 'agree'. With 52.4% agreeing and 19% disagreeing the result suggests that respondents generally would require further hardware assistance.

(59) The highest frequencies recorded for those stating that they would require software assistance in case anything went wrong is 93 (47%) for 'agree'. As a total of 63% agree and only 14.5.3% disagree there is a general agreement that software assistance

would be required and that the need would be slightly more than for hardware problems encountered.

This section has provided an overview of the results for the questionnaire with some general comments on these. The main analysis of this follows in chapter 6 after further analysis of the data. Narrative responses from the qualitative questions 60 and 61 are included in appendix 14.

5.4 Reliability and factor analysis

The next step in this research is to use confirmatory factor analysis to confirm or otherwise the main constructs from the previous research undertaken by Venkatesh et al. (2003). This is pertinent in the context of this research given the nature of the models used for measurement. These existing factors were initially checked for reliability and then a confirmatory factor analysis was undertaken to see if the findings from this research matched the findings from previous studies. The differences detected were then themselves measured for reliability.

5.4.1 Reliability of previous factors

To ensure that the questions used to represent the previously developed factors were reliable, a Cronbach's alpha was computed for four groups of questions relating to the constructs developed from previous research, these were as follows.

- 37-42 Performance Expectancy
- 43-46 Effort Expectancy

- 47-54 Social Influence
- 55-59 Facilitating Conditions

The questions were laid out such that some of them reflected an opposite response (reverse phrasing) on the scale to the others (questions 40 and 43). This meant that a positive response to some questions was inconsistent to a positive result to another question. Where this was the case the results from that question were reversed to ensure consistency. The following Cronbach's alpha results outlined in table 5.30 show the individual scores for the constructs.

Construct	Cronbach's alpha	Number of items
37-42 Performance Expectancy	.724	6
43-46 Effort Expectancy	.696	4
47-54 Social Influence	.838	8
55-59 Facilitating Conditions	.892	5

Table 5.30 Cronbach's alpha results

This coefficient can vary from 0 to 1 and the general acceptance level where groups of answers are deemed to be reliable would relate to a score of 0.7 and above (Malhotra, 1996) Where a value of 0.7 or less is recorded this would be seen as an indication of an unsatisfactory internal consistency reliability (Venkatesh et al., 2003). The scores gleaned from the four groups outlined here all achieve this, *effort expectancy* which would round up to .7.

5.4.2 Factor analysis

A confirmatory factor analysis was undertaken to determine the 'goodness of fit' of the existing model constructs. The aim is to see if the constructs devised by Venkatesh et al. (2003), fit with the

scenario presented here, that of the SME retailer and their acceptance or otherwise of new technology. The results outlined in table 5.31 are as follows.

Variable	FC	SI (1st)	SI (2nd)	PE	EE
I would require IT assistance via telephone from supplier (q.55)	.878				
I would require IT assistance via internet from supplier (q.56)	.848				
I would require IT assistance from service provider (q.57)	.848				
I would require further h/ware assistance (q.58)	.688				
I would require software assistance (q.59)	.720				
How I use IT influences customers (q.47)		.777			
How I use IT influences suppliers (q.48)		.708			
How I use IT influences competitors (q.49)		.777			
Has been dramatic change last 5 yrs due to IT (q.50)			.502		
Will be dramatic change next 5 yrs due to IT (q.51)			.744		
If competitors were adopting I would look into it (q.52)			.811		
If staff thought it a good idea I would look into it (q.53)			.596		
If family/friends thought it a good idea I would look into it (q.54)			.595		

Ability to procure stock online would be useful (q.37)	.696
Type of product sold lends itself to OP (q.38)	.721
Supplier would like us to use OP (q.39)	.779
Would require training to allow use (q.44)	.675
Staff would need to undertake training (q.45)	.795
Level of effort would not make it worthwhile (q.46)	.709

Table 5.31 Confirmatory factor analysis

Of the existing factors from previous research outlined in the UTAUT model (Venkatesh et al., 2003) the results above confirm some of the factors. The percentage variation accounted for by the five factors is 60.7%. The highest ranking factor is *facilitating conditions* where all five of the questions designed to measure this show significant results. The next factor is *social influence* where all of the eight questions are represented but they are split into two groups (47-9 followed by 50-4). *Performance expectancy* and *effort expectancy* are the final two factors and these are represented by three of the six questions and three of the four questions respectively.

5.4.3 Reliability of the new factors

To check the reliability of the factors analysis Cronbach's Alpha tests were undertaken on the factors established in the table above with the following results.

Questions	55-9 (FC)	47-9 (SI)	50-4 (SI)	37-9 (PE)	44-6 (EE)
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	(N = 5)	(N = 3)	(N = 5)	(N = 3)	(N = 3)
Cronbach's Alpha	.892	.838	.786	.764	.648

Table 5.32 Reliability of the factors analysis

All the tests achieve a Cronbach's Alpha internal reliability measure of more than .6. The reliability of the first two factors relating to *facilitating conditions* and *social influence (part 1)* is above .8 and would therefore be seen as strong. The second two factors relating to *social influence (part 2)* and *performance expectancy* is above .7 and would therefore be seen as good. The final factor relating to *effort expectancy* is above .6 and would therefore be seen as relatively weak.

5.5 Preferred methods of communications and procurement

The questionnaire asked respondents to rank their favoured method/s of communications and procurement, relating to both stock purchases and non-stock purchases. This created a high number of responses to the three questions posed with the results for questions 10-12 requiring to be examined individually. This created five separate sets of results for each question.

5.5.1 Ranking

A Friedman test of mean ranks was undertaken for each group. The results from this outlined in table 5.33 are as follows.

Chosen method	Communications Question 10 mean rank (score)	Procurement Question 11 mean rank (score)	Non-stock Question 12 mean rank (score)
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Phone/fax	1. (1.81)	1. (1.88)	1. (1.74)
Face to face	2. (2.61)	3. (2.89)	2. (2.91)
e-mail	3. (2.67)	2. (2.83)	3. (2.92)
Web	4. (3.83)	4. (3.03)	4. (3.12)
Letter	5. (4.09)	5. (4.36)	5. (4.30)

Table 5.33 Friedman test of mean ranks

In all three cases the preferred method is *phone/fax*. The least attractive option is again consistently the same, and that is *letter*. The *web page* is the second least attractive option in all cases. The differences between *face to face* and *e-mail* are not significant.

5.6 Correlation

In the case of this research the scales adopted are ordinal and not interval and therefore Spearman's non-parametric correlation coefficient is adopted. This test was undertaken on all the questions excepting 4, 5, 13, 14, 15, 16 which have nominal scaling and are therefore unviable and questions 10, 11 and 12 that used a different form of measurement (see 5.5). Given the nature of statistical testing there is a one in twenty chance (5%) that a result will be spurious, that is it will not necessarily be authentic.

No.	Question	Spearman'
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		s correlatio n coefficient
3	Education highest attained	-.163 *
4	How long have you used the internet for leisure?	-.218 **
8	How would you evaluate your computer skills?	.329 **
9	Do you <u>enjoy</u> using information technology to achieve organisational goals?	.227 **
17	What is the approximate average cost of the products you purchase for stock?	-.253 **
21	How would you consider the relationship	.149 *
30	An international supplier is likely to be beneficial	.178 *
42	Information technology (IT) is essential to the running of my company	.203 **
46	The level of effort required would not make this worth my while	-.165 *
47	How I use technology influences my customers	.223 **
48	How I use technology influences my suppliers	.195 **
49	How I use technology influences my competitors	.196 **

*0.05, **0.01

Table 5.34 Bivariate correlation relating to age

The results outlined in table 5.34 above are the significant results from the questions relating to age. The number of correlations suggests that age is an important determinant when looking at how the issues are perceived by respondents. It should also be noted that apart from questions 3, 21, 30 and 46, the level of significance is 0.05 suggesting significance at a lower level.

The results outlined below in table 5.35 relate to various aspects of the model.

Construct category	Question(s)
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Experience	4 8 9
Performance expectancy (37-42)	42
Effort expectancy (43-46)	46
Social influence (47-54)	47 48 49

Table 5.35 Age related to core constructs

The aspects that are not mentioned in the original model are questions 3, 17, 21 and 30. Question 3 could be linked to *experience* as it relates to educational attainment. Question 17 looks at the cost of the products being purchased which relates to one of the proposed new constructs.

5.6.1 Bivariate correlation relating to experience

The results of the bivariate correlation outlined in table 5.36 relating to an evaluation of computer skills (part of experience) are as follows.

No.	Question	Spearman's correlation coefficient
1	Age	.292 **
6	How long used internet for leisure	-.552 **
7	How long used internet for business	-.368 **
9	Enjoy using IT for organisational purposes	.570 **
26	How many online might you use in future	-.238 **
30	An international supplier is likely to be beneficial	.150 *
37	Ability to procure stock online would be useful	.142 *
40	Necessary to speak to person when procuring	-.171 *
42	IT is essential to the running of the company	.315 **
43	Could adopt with little effort	.232 **
44	Would require training to use	-.322 **
45	Staff would need to undertake training	-.153 *
46	Level of effort would not make it worthwhile	-.141 *
47	How I use IT influences my customers	.336 **

48	How I use IT influences my suppliers	.219 **
49	How I use IT influences my competitors	.312 **
50	Has been dramatic change last 5 years due to IT	.177 *
51	Will be a dramatic change over next 5 years due to IT	.208 **
55	I would require IT assistance via telephone from supplier	-.193 **
56	I would require IT assistance via internet from supplier	-.155 *

*0.05, **0.01

Table 5.36 Bivariate correlation relating to experience

Outlined above are the significant results looking at the questions relating to q.8, looking at perceived computer skills (part of experience). The number of correlations suggests that how a respondent views their computer skills is an important determinant when looking at how the issues are perceived by respondents. It should also be noted that apart from questions 30, 37, 40, 45, 46, 50 and 56, the level of significance is 0.01 suggesting a stronger significance. The results relate to various aspects of the model and are outlined in table 5.38 below.

Construct category	Question(s)
Performance expectancy (37-42)	37 40 42
Effort expectancy (43-46)	43 44 45 46
Social influence (47-54)	47 48 49 50 51
Facilitating conditions (55-59)	55 56
Experience	6 7 9
Behavioural intention	26

5.37 Experience related to core constructs

The aspects that are not mentioned in the original model relate to q.30 looking at the perceptions of the perceived benefits of finding an international partner. All the questions relating to the *effort*

expectancy construct have significant results. Five of the eight of these that relate to the *social influence* construct are seen as significant. Three of the six questions relating to *performance expectancy* are seen as significant.

5.6.2 Bivariate correlation relating to Behavioural Intention

The results of the bivariate correlation relating to behavioural intention (q.26) are outlined in table 5.38 below.

No.	Question	Spearman's correlation coefficient
1	Age	-.218 **
6	How long used internet for leisure	.194 **
7	How long used internet for business	-.386 **
8	How would you evaluate your computer skills	-.238 **

9	Enjoy using IT for organisational purposes	-.335 **
19	How often re-order new products	-.186 **
20	How often do you speak to suppliers	-.198 **
22	How many supplier do you have	.482 **
23	How many offer OP	.497 **
24	How many offer incentives if you use OP	.390 **
25	How many of these online do you use	.529 **
31	Attendance at trade shows is likely to be beneficial	-.205 **
37	Ability to procure stock online would be useful	-.142 *
40	Necessary to speak to person when procuring	.266 **
42	IT is essential to the running of the company	-.168 *
44	Would require training to use	-.145 *
46	Level of effort would not make it worthwhile	.286 **
47	How I use IT influences my customers	-.214 **
48	How I use IT influences my suppliers	-.233 **
49	How I use IT influences my competitors	-.160 *
50	Has been dramatic change last 5 years due to IT	-.157 *
51	Will be a dramatic change over next 5 years due to IT	-.222 **

*0.05, **0.01

Table 5.38 Bivariate correlation relating to BI

The results outlined above are the significant results looking at how all the other results relate to perceived future usage of online procurement (behavioural intention, q.26). The number of correlations suggests that this perception is an important determinant when looking at how the issues are perceived by respondents. It should also be noted that apart from questions 37, 42, 44, 49 and 50, the results show a higher level of significance (0.01).

The results relate to various aspects of the model, these are outlined in table 5.39 below.

Construct category	Question(s)
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Performance expectancy (37-42)	37 40 42
Effort expectancy (43-46)	44 46
Social influence (47-54)	47 48 49 50 51
Experience	6 7 8 9

Table 5.39 BI related to core constructs

The aspects that are not mentioned in the original model relate to the following questions 19, 20, 22, 23, 24, 25 and 31. Q.19 and q.20 look at the level of contact and the perceived relationship with the supplier. Q.22 to q.25 look at the number of suppliers and the use of online procurement – the correlations are not surprising here given the close link to behavioural intention. Question 31 looks at attendance at trade shows and suggests a negative correlation with behavioural intention. Five of the eight questions relating to the *social influence* construct are seen as significant. Three of the six relating to *performance expectancy* are seen as significant.

5.6.3 Bivariate correlation relating to the value of the product

The cost of the product would tend to relate to the level of turnover, especially in the SME sector. It is therefore useful to identify the levels of significant correlations outlined in table 5.40 relating to the value of the product (q.17).

No.	Question	Spearman's correlation coefficient Significant to...
1	Age	-.253 **
18	Approximate size of item procured	.495 **
21	How would you consider the relationship	-.173 *
27	It is important to continually source new suppliers	.145 *

30	An international supplier is likely to be beneficial	-.198	**
33	Has high levels of competition locally	.154	*
40	Necessary to speak to person when procuring	.149	*
42	IT is essential to the running of the company	-.160	*

*0.05, **0.01

Table 5.40 Bivariate correlation relating to the value of the product

There are 8 significant results relating to the value of the product and these tend to be at the lower end of significance (0.05).

5.6.4 Bivariate correlation relating to the size of the product

The physical size of the product and the distribution issues this creates was mentioned in the qualitative research as a barrier to online procurement. The following looks at the significant results outlined in table 5.41 below relate to the average size of products procured.

No.	Question	Spearman's correlation coefficient
17	Approximate cost of product	.495 **
31	Attendance at trade shows is beneficial	-.239 *
40	Necessary to speak to person when procuring	.192 **

*0.05, **0.01

Table 5.41 Bivariate correlation relating to the size of the product

There are only 3 significant results presented here and this is limited in comparison to the correlations relating to the other questions.

5.6.5 Bivariate correlation relating to the frequency of re-ordering

The need and frequency required for ordering stock would appear to have an influence on the need for online procurement - as mentioned in the qualitative research. The following results outlined in table 5.42 provide the significant results relating to this the frequency of reordering (q.19) and the responses to the other questions.

No.	Question	Spearman's correlation coefficient
7	How long used internet for business	-.214 **
20	How often do you speak to suppliers	.646 **
21	How would you consider your relationship	.339 **
22	How many supplier do you have	-.261 **
23	How many offer OP	.497 **
25	How many of these online do you use	-.207 **
26	How many online might you use in future	-.186 **
30	An international supplier is likely to be beneficial	.149 *
32	The use of company reps is important	.145 *
37	Ability to procure stock online would be useful	.213 **
38	Type of product sold lends itself to OP	.198 **
39	Supplier would like us to use OP	.157 *
42	IT is essential to the running of the company	.263 **
43	Could adopt with little effort	.150 *
50	Has been dramatic change last 5 years due to IT	.155 *

51	Will be a dramatic change over next 5 years due to IT	.208 **
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Table 5.42 Bivariate correlation relating to the size of the frequency of re-ordering

There are 16 significant results presented here and the majority of these are to the more precise 0.01 level. These relate to the following constructs.

Construct category	Question(s)
Performance expectancy (37-42)	37 38 39 42
Effort expectancy (43-46)	43
Social influence (47-54)	50
Experience	7

Table 5.43 Frequency of reordering related to core constructs

There are a number of significant correlations relating to the frequency of reordering and the *performance expectancy* construct, four out of six questions, and these tend to be of the higher significance level (0.01).

5.6.6 Bivariate correlation relating to the perceived closeness of the relationship

The decision on whether or not to adopt online procurement is likely to be impacted upon by the nature of the relationship. This was mentioned by respondents in the qualitative research (see 5.2.1). The following provides the results, outlined in table 5.44, relating to the perceived closeness of the relationship with the supplier.

No.	Question	Spearman's correlation coefficient
-----	----------	------------------------------------

6	How long used internet for leisure	-.150	*
9	Enjoy using IT for organisational purposes	.217	**
17	Approximate cost of products	-.173	*
19	How often reorder new products	.339	**
50	Has been dramatic change last 5 years due to IT	.145	*
56	I would require IT assistance via internet from supplier	-.147	*

*0.05, **0.01

Table 5.44 Bivariate correlation relating to the closeness of the relationship

There are only a few significant results here with no obvious pattern emerging.

5.6.7 Observations on the correlation significances

In general terms the largest number of significances is found amongst those relating to *social influence* although it should be noted that the constructs are not all represented by the same number of questions, rather they include the number felt necessary to reflect them. This is followed by *performance expectancy* and *effort expectancy*, with *facilitating conditions* having the least number of significances. The significances relating to experience (q.6-9) are evident throughout.

5.7 Comparisons of responses to questions

Two non-parametric tests; Kruskal Wallis (K-W) and Mann-Whitney (M-W) were used to test for systematic differences in responses between the various levels of different grouping variables.

5.7.1 Gauging variation (K-W)

The first test used in comparing responses by gauging variations was K-W, with the aim of establishing which results were significantly linked to others and what the implications of these links was (addressed in chapter 6). The following results were forthcoming.

5.7.1.1 Comparisons by age group (q.1)

When related to age the following show significant results outlined in table 5.45 suggests a relationship between respondents' answers to these questions and their age. Unless otherwise stated the tests are applied to all those in the range (q.27-59).

Questions	p-value
30. An international supplier is likely to be beneficial	.001
47. How I use IT influences customers	.024
48. How I use IT influences suppliers	.025
49. How I use IT influences competitors	.011
52. If competitors were adopting I would look into it	.045

Table 5.45 Gauging variation: age

The results suggest a relationship between the age of the respondents and their answers to the following: q.30, 47-49 and 52. By recoding age into three groups from the original five, a further three, q.42, 50, 51 suggest a significant relationship. These significant results suggest that age plays a part in some of the perceptions of the importance of IT, its usage and impact on others (social influence).

5.7.1.2. Comparisons by educational attainment (q.3)

The link between educational attainment and perceptions of institutional IT usage were explored by relating responses to q.27-

59. The following significant results outlined in table 5.46 were forthcoming from q.32, 42, 50, 55-7.

Question	p-value
32.The use of company reps is important to the running of the comapny	.013
42.IT is essential to the running of my company	.025
50. Has been dramatic change last 5 years due to IT	.045
55. I would require IT assistance via telephone from supplier	.036
56. I would require IT assistance via internet from supplier	.017
57. I would require IT assistance via from service supplier	.028

Table 5.46 Gauging variation: educational attainment

What these results do not tell us is the exact relationship; for example are those who have a lower educational attainment more likely to require IT support (q.55-7)? This would suggest that further statistical analysis is required to examine the relationships between educational attainment and the significant results outlined above although it is not central to this research.

5.7.1.3 Comparisons by internet usage for leisure (q.6)

The following outlined in table 5.47 looks at how long the respondent has used the internet for leisure (q.6), and whether this has an influence on their responses to q.27-59. The following significant results were forthcoming; q.37, 42, 43, 44, 46, 47-9, 55, 56 and 58. Once again the nature of the relationship is not evident

but the use of the internet for leisure does have an influence on several of the questions.

Question	p-value
37.Ability to procure stock online would be useful	.007
42.How I use IT influences my suppliers	.000
43.I could adopt this with very little effort	.013
44.Would require training to use	.001
46. Level of effort would not make it worthwhile	.004
47.How I use IT influences my customers	.001
48.How I use IT influences my suppliers	.019
49.How I use IT influences my competitors	.002
55.I would require IT assistance via telephone from supplier	.033
56.I would require IT assistance via internet from supplier	.037
58.I would further hardware assistance in case anything went wrong	.006

Table 5.47 Gauging variation: internet usage leisure

5.7.1.4 Comparisons by internet usage for business (q.7)

The following outlined in table 5.48 looks at how long the respondent has used the internet for business (q.7), and whether this has an influence on their responses to q.27-59. The following show significant results, q.30, 37, 38, 42, 43, 44, 45, 47 and 48. There are similarities to the significant results from the previous questions suggesting that leisure and business usage are linked.

Question	p-value
30.International supplier is likely to be beneficial to the company	.017
37.IT is essential to the running of the company	.006
38.I could adopt this with very little effort	.006
42.How I use IT influences my suppliers	.000

43.How I use IT influences my competitors	.001
44.Has been dramatic change last 5 years due to IT	.011
45.Will be a dramatic change over next 5 years due to IT	.000
47.If staff thought it a good idea I would look into it	.000
48.If family/friends thought it a good idea I would look into it	.028

Table 5.48 Gauging variation: internet usage for business

5.7.1.5 Comparisons by evaluation of computer skills (q.8)

The following outlined in table 5.49 looks at how respondents evaluate their computer skills (q.8) and how these results relate to q.27-59. The following significant results are forthcoming; q.37, 42, 43, 44, 46, 47-9 and 51. The results are similar to the previous two questions suggesting an obvious link between leisure and business usage, and perceived IT skill.

Question	p-value
37. Ability to procure stock online would be useful	.015
42. IT is essential to the running of the company	.000
43. I could adopt this with very little effort	.011
44. Would require training to use	.000
46. Level of effort would not make it worthwhile	.049
47. How I use IT influences my customers	.000
48. How I use IT influences my suppliers	.011
49. How I use IT influences my competitors	.000
51. Will be a dramatic change over next 5 years due to IT	.005

Table 5.49 Gauging variation: evaluation of computer skills

5.7.1.6 Comparisons by enjoyment of using IT in business (q.9)

The following outlined in table 5.50 looks at the perceived level of enjoyment in using the internet for business (q.9), and are again looked at in the context of q.27-59. The following significant results are forthcoming; q.33, 37-8, 41-4 and 46-52. There are again

similarities to the previous three questions, and some additions. This would suggest a link between usage, perceived skill and enjoyment relating to IT usage.

Question	p-value
37. Ability to procure stock online would be useful	.000
38. Type of product sold lends itself to OP	.028
41. Computer can replace human interaction in my business-to-business relationship	.021
42. IT is essential to the running of the company	.000
43. I could adopt this with very little effort	.003
44. Would require training to use	.025
46. Level of effort would not make it worthwhile	.000
47. How I use IT influences my customers	.000
48. How I use IT influences my suppliers	.003
49. How I use IT influences my competitors	.001
50. Has been dramatic change last 5 years due to IT	.000
51. Will be a dramatic change over next 5 years due to IT	.000
52. If competitors were adopting I would look into it	.041

Table 5.50 Gauging variation: Enjoyment using IT

The following table 5.51 outlines the shared significant results for q.6-9.

No.	Question
37	Being able to procure stock online would be/is useful
42	Information technology (IT) is essential to the running of my company
44	I would require training to be able to use such a system
47	How I use technology influences my customers
48	How I use technology influences my suppliers

Table 5.51 Gauging variation: Enjoyment using IT - significant results

5.7.1.7 Comparisons by approximate costs of products (q.17)

The following outlined in table 5.53 looks at the average cost of products (q.17) related to q.27-59. Significant results were forthcoming in q.30, 36, 50 and 57, the results of which are outlined below.

Question	p-value
30. International supplier is likely to be beneficial to the company	.022
36. The company experiences high levels of competition online	.038
50. Has been dramatic change last 5 years due to IT	.002
57. Would require IT assistance from service provider	.022

Table 5.52 Gauging variation: Approximate costs of products

5.7.1.8 Comparisons by approximate size of item (q.18)

The following looks at the approximate size of goods (q.18) in relation to q.27-59. Significant results were in the following, q.31, 39, 42 and 46. These are outlined below.

Question	p-value
31.Attendance at trade shows is likely to be beneficial	.001
39.Supplier would like us to use OP	.001
42.IT is essential to the running of the company	.025
46.Level of effort would not make it worthwhile	.026

Table 5.53 Gauging variation: Approximate size of item

5.7.1.9 Comparisons by frequency of reordering (q.19)

The following outlined in table 5.54 looks at the frequency of reordering (q.19) in relation to q.27-59 with the following significant results; 30, 36-8, 42and 50. These are outlined below.

Question	p-
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	value
30. International supplier is likely to be beneficial to the company	.048
36. The company experiences high levels of competition online	.030
37. Ability to procure stock online would be useful	.019
38. Type of product sold lends itself to OP	.031
42. IT is essential to the running of the company	.001
50. Has been dramatic change last 5 years due to IT	.040

Table 5.54 Gauging variation: Frequency of reordering

5.7.1.10 Comparisons by how often speak to suppliers (q.20)

The following outlined in table 5.55 looks at how often respondents speak to their suppliers (q 20), related to q.27-59 with significant results, outlined below, appearing in q.49, 50 and 52.

Question	p-value
49. How I use IT influences my competitors	.047
50. Has been dramatic change last 5 years due to IT	.026
52. If competitors were adopting I would look into it	.029

Table 5.55 Gauging variation: How often speak to suppliers

5.7.1.11 Comparisons by how would you consider the relationship (q.21)

The following looks at how respondents perceive the closeness of their relationship with their suppliers (q 21) to be, related to q.27-59 with the following significant results evident in q.37, 42 and 50.

Question	p-value
37.Ability to procure stock online would be useful	.010
42.IT is essential to the running of the company	.017
50.Has been dramatic change last 5 years due to IT	.010

Table 5.56 Gauging variation: Supplier/retailer relationship

5.7.1.12 Comparisons by questions 22-6

The following (q.22-6) outlined in table 5.57 looks at the number of suppliers respondents have (q 22) and their experience and perceptions of online procurement, related to q.27-59. The following table outlines the significant results.

No.	Significant results
22	29 36 42 47 49
23	31 39 42 50 51
24	39 44 45 46
25	37 38 39 42 44 45 46 48 50 51 52
26	37 38 39 40 42 46 47 48 49 50 51

Table 5.57 Gauging variation: Supplier/retailer relationship - significant results

The similarity of the results relating to q.25 and q.26 suggest a relationship between current use and future perceived use in relation responses to the Likert scale questions 26-59. Q.42 appears with significant results relating to all of the above except q.24. This looks at the essential nature of IT in relation to the running of the business.

5.7.1.13 Comparisons by Behavioural Intention (q.26)

The following looks at the number of online suppliers respondents feel they may use in future (q 26), related to, q.1, 3, 6-9 and 17-21. This is central to this research as it looks at the perceived behavioural intention of respondents to use online procurement in the future. The results outlined in table 5.58 show that there is significance in the results relating to q.6, 7, 8, 9 and 20. This would

suggest that those who have used IT for some time and enjoy using it are more likely to adopt further technology in future.

Question	p-value
6.How long used internet for leisure	.046
7.How long used internet for business	.000
8.How would you evaluate your computer skills	.027
9.Enjoy using IT for organisational purposes	.000
20.How often do you speak to suppliers	.026

Table 5.58 Gauging variation: Behavioural intention

5.7.1.14 Testing the construct means; PE, EE, SI and FC

The following significant results outlined in table 5.59 are forthcoming when undertaking the K-W test to the questions relating to the constructs.

Question	Sig. PE	Sig. EE	Sig. SI	Sig. FC
1.Age	-	-	.000	-
3.Education highest attained	-	-	.037	-
6.How long used internet for leisure	.035	.000	.008	.022
7.How long used internet for business	.006	.004	.000	-
8.How would you evaluate your computer skills	.012	.000	.006	.014
9.Enjoy using IT for organisational purposes	.000	.001	.000	-
19.How often do you need to order new products	.013	.032	-	-
22.How many supplier do you have	-	-	.028	-
23.How many offer OP	.019	-	.010	-
24.How many offer incentives if you use OP	-	.003	-	-
25.How many of these online do you use	.000	.003	.003	-
26.How many of these (online) might you	.001	.001	.000	-

use in the future				
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Table 5.59 Gauging variation: Construct means K-W results

The following outlined in table 5.60 looks at the number of suppliers that offer online procurement (q 23), related to q.27-59 using K-W.

Question	p-value
31.Attendance at trade shows is likely to be beneficial	.005
39.Supplier would like us to use OP	.016
42.IT is essential to the running of the company	.026
50.Has been dramatic change last 5 years due to IT	.041
51.Will be a dramatic change over next 5 years due to IT	.030

Table 5.60 Gauging variation: suppliers offering OP (q.27-59)

The following outlined in table 5.61 looks at how many suppliers offer incentives (q 24), related to questions 27-59 using K-W.

Question	p-value
39.Supplier would like us to use OP	.011
44.Would require training to use	.018
45.Staff would need to undertake training	.001
46.Level of effort would not make it worthwhile	.007

Table 5.61 Gauging variation: suppliers offering incentives to use OP (q.27-59)

The following outlined in table 5.62 looks at how many of these online suppliers respondents actually use (q 25), related to q.27-59 using K-W.

Question	p-value
37.Ability to procure stock online would be useful	.000

38.Type of product sold lends itself to OP	.001
39.Supplier would like us to use OP	.003
42.IT is essential to the running of the company	.006
44.Would require training to use	.030
45.Staff would need to undertake training	.002
46.Level of effort would not make it worthwhile	.041
48.How I use IT influences my suppliers	.033
50.Has been dramatic change last 5 years due to IT	.000
51.Will be a dramatic change over next 5 years due to IT	.013
52.If competitors were adopting I would look into it	.013

Table 5.62 Gauging variation: OP actually used (q.27-59)

The following outlined in table 5.63 looks at the number of online suppliers respondents feel they may use in future (q 26), related to q.27-59 using K-W.

Question	p-value
37.Ability to procure stock online would be useful	.002
38.Type of product sold lends itself to OP	.010
39.Supplier would like us to use OP	.012
40.Necessary to speak to person when procuring	.034
42.IT is essential to the running of the company	.001
46.Level of effort would not make it worthwhile	.000
47.How I use IT influences my customers	.015
48.How I use IT influences my suppliers	.002
49.How I use IT influences my competitors	.014
50.Has been dramatic change last 5 years due to IT	.033
51.Will be a dramatic change over next 5 years due to IT	.001

Table 5.63 Gauging variation: OP used in future (q.27-59)

5.7.1.15 Gender

The figures outlined below in table 5.64 show the significances relating to gender and the other results. The results do not appear to provide any pattern and this is not perhaps surprising given the limited number of female respondents.

Question	p-value
4.Position in the company	.012
5.Are you main decision maker	.000
15.Is your company's computerised internal system on the same system as the internet link (or can they be linked to it)	.045
19.How often do you need to order new products	.035
30.International supplier is likely to be beneficial to the company	.031

Table 5.64 Gauging variation: significances relating to gender

5.7.2 Gauging variation (M-W)

Another way of analysing this is by using the Mann-Whitney (M-W) *U* test. It is a non-parametric test which looks at whether medians between two observed samples are the same. This is a similar exercise to that above (K-W) and as such only a limited number of tests that are the most central to the research are undertaken with using M-W. These are *age* (q.1), *computer skills* (q.8) and *behavioural intention* (q.26). The following tables outline the significant results of the recoded age group (q1), in relation to q.27-59. These are undertaken in pairs, the groups are as follows; 1(18-40), 2(41-50), 3(61+). The results outlined in table 5.65 are presented below.

1 and 2

Question	p-value
29.Changing to a new supplier is likely to be beneficial to the company	.030

1 and 3

Question	p-value
30. International supplier is likely to be beneficial to the company	.010
42. IT is essential to the running of my company	.004
46. Level of effort would not make it worthwhile	.029
47. How I use IT influences my customers	.002
48. How I use IT influences my suppliers	.010
49. How I use IT influences my competitors	.005

2 and 3

Question	p-value
47. How I use IT influences my customers	.028
48. How I use IT influences my suppliers	.004
49. How I use IT influences my competitors	.031
50. Has been dramatic change last 5 years due to IT	.008
51. Will be a dramatic change over next 5 years due to IT	.015
52. If competitors were adopting I would look into it	.004

Table 5.65 Gauging variation: age M-W

The results suggest that there are greater differences between the oldest age group (61+) and the other two age groups. The following table shows the significant results.

Age Groups	Significant results
1 and 2	29
1 and 3	30 42 46 47 48 49
2 and 3	47 48 49 50 51 52

Table 5.66 Gauging variation: age M-W significant results

Between the groupings three questions are significant for both 1 and 3, and 2 and 3 – q.47 to 49. These three look at the influencing factors of IT uptake and tie in with the *Social Influence* construct in

the Venkatesh et al. model (2003). This would tend to support the notion of the impact of age on IT usage.

5.7.2.1 Evaluation of computer skills (q.8)

The following outlined in table 5.67 related to the significant results of the *perceived experience* of computer usage in relation to q.27-59. The groups were once again recoded into three groups, 1(excellent and proficient), 2(OK), 3(poor and non-existent).

1 and 2

Question	p-value
37. Ability to procure stock online would be useful	.006
42.IT is essential to the running of my company	.000
43. I could adopt this with very little effort	.010
44. Would require training to use	.035
47.How I use IT influences my customers	.004
48.How I use IT influences my suppliers	.012
49.How I use IT influences my competitors	.001
51. Will be a dramatic change over next 5 years due to IT	.004

1 and 3

Question	p-value
40. Necessary to speak to person when procuring	.005
42.IT is essential to the running of my company	.000
43. I could adopt this with very little effort	.014
44. Would require training to use	.000
45. Staff would need to undertake training	.030
46. Level of effort would not make it worthwhile	.021
47.How I use IT influences my customers	.000
48.How I use IT influences my suppliers	.023
49.How I use IT influences my competitors	.000

55. Would require IT assistance via telephone from supplier	.010
58. Would require further h/ware assistance	.042

2 and 3

Question	p-value
31. Attendance at trade shows is likely to be beneficial	.035
40. Necessary to speak to person when procuring	.020
44. Would require training to use	.001
46. Level of effort would not make it worthwhile	.009
47. How I use IT influences my customers	.020

Table 5.67 Gauging variation: evaluation of computer skills M-W

The following table shows the significant results.

Perceived computer skills	Significant results
1 and 2	37 42 43 44 47 48 49 51
1 and 3	40 42 43 44 45 46 47 48 49 55 58
2 and 3	31 40 44 46 47

Table 5.68 Gauging variation: evaluation of computer skills M-W – significant results

The significant results show most variance (unsurprisingly) between groups 1 and 3. There are two common questions through the three tests, those of 44 and 47, the first of which looks at required training and the second, the influence of IT over consumers.

5.7.2.2 Behavioural Intention (q.26) recoded

The results outlined in table 5.69 look at future uptake and therefore link to behavioural intention. Again the groups are recoded to simplify the process required by the Mann-Whitney test. The new groups are 1(0), 2(1-7), and 3(7+).

1 and 2

Question	p-value
7. How long used internet for business	.001
9. Enjoy using IT for organisational purposes	.002
23. How many offer OP	.000
24. How many offer incentives if you use OP	.000
25. How many of these online do you use	.000
37. Ability to procure stock online would be useful	.013
39. Supplier would like us to use OP	.008
42. IT is essential to the running of the company	.009
44. Would require training to use	.020
45. Staff would need to undertake training	.028
46. Level of effort would not make it worthwhile	.000

1 and 3

Question	p-value
6. How long used internet for leisure	.003
7. How long used internet for business	.000
8. How would you evaluate your computer skills	.013
9. Enjoy using IT for organisational purposes	.000
19. How often do you need to order new products	.026
20. How often do you speak to suppliers	.019
22. How many supplier do you have	.000
23. How many offer OP	.000
24. How many offer incentives if you use OP	.000
25. How many of these online do you use	.000
31. Attendance at trade shows is likely to be beneficial	.018
37. Ability to procure stock online would be useful	.000

38.Type of product sold lends itself to OP	.004
39.Supplier would like us to use OP	.003
40.Necessary to speak to person when procuring	.019
42.IT is essential to the running of the company	.000
43.I could adopt this with very little effort	.050
44.Would require training to use	.019
45.Staff would need to undertake training	.019
46.Level of effort would not make it worthwhile	.000
47.How I use IT influences my customers	.003
48.How I use IT influences my suppliers	.001
49.How I use IT influences my competitors	.011
50.Has been dramatic change last 5 years due to IT	.019
51.Will be a dramatic change over next 5 years due to IT	.001

2 and 3

Question	p-value
6.How long used internet for leisure	.000
9.Enjoy using IT for organisational purposes	.003
19.How often do you need to order new products	.008
20.How often do you speak to suppliers	.032
22.How many supplier do you have	.000
23.How many offer OP	.000
25.How many of these online do you use	.000

37.Ability to procure stock online would be useful	.019
38.Type of product sold lends itself to OP	.016
47.How I use IT influences my customers	.009
48.How I use IT influences my suppliers	.002
49.How I use IT influences my competitors	.023
50.Has been dramatic change last 5 years due to IT	.034
51.Will be a dramatic change over next 5 years due to IT	.000
52.If competitors were adopting I would look into it	.024
59.Would require software assistance	.023

Table 5.69 Gauging variation: behavioural intention M-W

There are a number of significant results outlined in table 5.70 forthcoming from this question. Significant results for all three groups are found in the following questions; 9, 23, 25, 37.

Behavioural intention	Significant results
1 and 2	7 9 23 24 25 37 39 42 44 45 46
1 and 3	6 7 8 9 19 20 22 23 24 25 31 37 38 39 40 42 43 44 45 46 47 48 49 50 51
2 and 3	6 9 19 20 22 23 25 37 38 47 48 49 50 51 52 59

Table 5.70 Gauging variation: behavioural intention M-W – significant results

5.8 Open ended responses in the questionnaire

The two final questions (61 and 62) were open ended and looked firstly at the retailer product type and then invited any comments relating to the topic of the questionnaire. The first of these (q.61) was aimed at ensuring the retailers fell into the right category - and they did. The second question (q.62) was to illicit any general comments that practitioners might have on online procurement or wider IT adoption issues that were not covered in the questionnaire.

These are included in appendix 14 and analysed with the other results in the following chapter.

Chapter 6

Discussion

6.1 Introduction

This chapter will firstly discuss the results of the quantitative stage of the primary research (see 6.2 – 6.7) and then compare these results to relevant findings outlined in the literature review (see 6.8 – 6.9). The hypotheses which each relate to one or more of these constructs are discussed in relation to the construct they are testing. The initial qualitative research was used to: inform on the existing constructs and their relevance; outline any other issues relating to the specific situation of the SME and acceptance; and provide greater focus for the questions in the quantitative study. The aim of the quantitative research was to evaluate the legitimacy of the hypotheses and thus inform a newly developed model of technology acceptance relevant to the SME retail sector.

The chapter commences by discussing Behavioural Intention (BI) and the factors related to it. It then outlines the hypotheses by discussing the main factors of: performance expectancy; effort expectancy; social influence; and facilitating conditions; and their relevance in the establishment of a new model. New variables established from the primary research and literature will be discussed. Finally the development of a new model to reflect the specifics of the research question will be presented.

The sample frame for this research is outlined in section 4.4 (distribution and sample). Given the research aims and objectives, there were restrictions imposed on the type and size of business that could be involved in the research. The precise extent of potential respondents was an unknown but a general estimate put the figure at between two and three thousand across England, Scotland and Wales. The geographic locations of Scotland, South West England and Yorkshire representing approximately 20% of the overall population were chosen, and SME retailers falling into the chosen categories were targeted. 198 responses from 417 sent questionnaires were eventually collected from these locations; this represented a 47.5% rate of return.

6.2 Behavioural Intention

In attempting to measure technology acceptance, understanding the intention to behave in a particular way (adopt or not adopt) is crucial. BI is central to most of the hypotheses and as such the results relating to it merit clarification and explanation separately prior to it being discussed in the context of the main constructs (outlined in subsequent sections). It is the influence of the independent variables (such as age and experience) upon the main constructs that establishes the BI. Prior to looking at the hypotheses individually it is worth taking some time to think about Behavioural Intention (BI) and some of the general issues impacting upon it. This will be measured here. In the questionnaire BI is measured by the following question;

q. 26, How many of these (online) might you use in the future?

Despite the question being designed to measure BI independently, it is linked to the previous questions 22-25, which are as follows.

q.22 How many suppliers do you have?

q.23 How many offer online procurement?

q.24 How many offer incentives if you use online procurement?

q.25 How many of these (online) do you use?

6.2.1 Descriptive results

The differences to the results from questions 25 and 26 would suggest the increase from the present to the future and as such outline the perceived uptake of online procurement in the future. A comparison of the descriptive statistics for the two questions is shown in table 5.24 below.

No. of suppliers	q.25 - usage	q.26 – intention to use	Difference
0	56 (28.3%)	30 (15.2%)	-26 (-13.1%)
1	30 (15.2%)	14 (7.1%)	-16 (-8.1%)
2-7	87 (43.9%)	84 (42.4%)	-3 (-1.5%)
8-15	15 (7.6%)	37 (18.7%)	22 (11.1%)
15+	5 (2.5%)	21 (10.6%)	16 (8.1%)
Total (ex. '0')	69.2%	78.8%	

Taken from table 5.24

What is evident from this table it that there is a general expectation that more online procurement will be undertaken in the future. Nearly half of those who do not currently use it (0) believe they will be using it in the future (an extra 13.1%). Of those currently using '1' online procurement system the figure drops when related to

future usage, the inference being that they will use more online procurement systems in the future. Similarly the number using '2 - 7' also falls slightly when adjudging future usage, the inference here being that respondents will be using more and as such move out of the lower groups ('1' and '2 - 7'). The other two groups looking at the higher levels of current (8-15) and future (15+) use, both increase by 11.1% and 8.1% respectively.

To get a clearer view of the increase the following table takes the mean of each group (excluding '0') and gives an indication of the overall difference in real terms and percentages. This is merely a rough guide erring on the side of caution (means are rounded down and 15 adopted for 15+) but does provide a clearer indication of intent.

	Mean	q.25	q.26	Difference
1	1	30	14	-16 (-53%)
2-7	4	348	336	-12 (-3.4%)
8-15	12	180	444	264 (147%)
15+	15	75	315	240 (320%)
Total		633	1109	476 (75%)

Table 6.1 Differences in responses to questions 25 and 26

As can be seen even using the minus figures of 16 and 12 (and there is the possibility of some double counting) the increase is still dramatic. Using these conservative figures the percentage difference between the total number of online procurement systems currently used and the number of these sites practitioners perceive themselves to be using in the future is an increase of 75%.

6.2.2 Analysis of variance

Undertaking a K-W test the following results outline the significant variances when looking at BI and questions 1-9 and 17-21.

Test Statistics^{a,b}

	How long used Int - leisure	How long used Int - business	Evaluate computer skills	Enjoy using IT for org	How often speak to suppliers
Chi-Square	9.673	35.112	10.921	25.647	11.061
df	4	4	4	4	4
Asymp. Sig.	.046	.000	.027	.000	.026

a. Kruskal Wallis Test

b. Grouping Variable: How many online might you use in future

Table 5.58 Gauging variation: Behavioural intention

These results suggest that past internet usage (q.6, q.7,) and the perception of personal IT skills (q.8) and enjoyment from using IT in business (q.9) all have an impact on BI. It would be expected that those who have used the internet for longer and have good skills that they enjoy using are more likely to perceive an increasing usage of technology (in this instance online procurement) in the future. This ties in with the *experience* construct of the model, indicating a relationship between this and BI. The only other significant result relates to the frequency with which respondents speak to their suppliers (q.19) and could relate to the need of practitioners to be increasingly in touch with suppliers using IT to enhance their business in reacting to increasingly dynamic markets.

Further analysis of variance testing of BI was undertaken using the Mann-Whitney test. In this test the results from q.26 were recoded down from five to three groups. The following significant results were forthcoming relating to the same questions outlined above (questions 1-9 and 17-21).

1 and 2

	q.7	q.9
Asymp. Sig (2-	.001	.002

tailed)		
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1 and 3

	q.6	q.7	q.8	q.9	q.19	q.20
Asymp. Sig (2-tailed)	.003	.000	.013	.000	.026	.019

2 and 3

	q.6	q.9	q.19	q.20
Asymp. Sig (2-tailed)	.000	.003	.008	.032

Taken from table 5.67

What can be observed from this is that q.9 is the only one that appears in all three as a significant result. Not unexpectedly the highest number of variances exists between groups '1 and 3'. '1' represents those who do not perceive themselves using online procurement in the future, and '3' represents those who perceive they will be using online procurement for 8 or more suppliers in the future. This again suggests a relationship with *experience* which will be explored later in this chapter. It also suggests that reordering and the relationship with suppliers is different for those who see themselves involved in more online procurement in the future than those who do not.

BI is an essential element to this research and as such has been looked at in isolation in this section. It is the measurement of BI in the context of the other factors that is the main thrust of this research and as such it will be looked at in relation to the four main constructs (PE, EE, SI and FC) later in this chapter.

6.2.3 Interfacing with the supplier

Questions 10-12

A detailed overview of the descriptive results to these questions was outlined in section 5.3.4. The table below outlines the mean ranking of the various methods, with phone/fax coming out on top in each category.

Chosen method	Communications Question 10 mean rank (score)	Procurement Question 11 mean rank (score)	Non-stock Question 12 mean rank (score)
Phone/fax	1. (1.81)	1. (1.88)	1. (1.74)
Face to face	2. (2.61)	3. (2.89)	2. (2.91)
e-mail	3. (2.67)	2. (2.83)	3. (2.92)
Web	4. (3.83)	4. (3.03)	4. (3.12)
Letter	5. (4.09)	5. (4.36)	5. (4.30)

Taken from table 5.33

The figures presented firmly establish *phone/fax* as the most popular method for interacting with suppliers. They also suggest e-mail as an important method, with the web site seen as a slightly less important method amongst respondents.

The table below outlines the views of respondents in relation to the methods that they did not use providing further insight into the methods by which retailers choose to communicate - and how they don't.

Chosen method	Communications Question 10	Procurement Question 11	Non-stock Question 12	Total
phone/fa	18	14	17	49

x				
face to face	48	48	48	144
e-mail	55	62	63	180
web	77	89	74	240
letter	73	74	81	228

Table 6.2 Methods not used

This tends to reinforce what was outlined from the figures in 6.2 above. These cumulative scores merely provide a rough guide to the intentions of respondents and need to be looked at in the context of the results elsewhere.

6.2.4 Other general issues relating to BI

Questions 27-39

These questions related to the specific issues which impact on IT usage in the retail environment and how that environment is perceived by respondents. The first four of these questions relates specifically to suppliers and seeks an impression of whether the onset of the internet has impacted upon the drive for more and better suppliers from a wider catchment. As a general statement on suppliers this question is linked to behavioural intention as it suggests a motivation or otherwise on the part of retailers to pursue new suppliers. The likely route for this search is the internet. The following percentage results are indicated in the table below, the mean answer in each case was *neutral*.

Question	27	28	29	30
% of neutral	32.8	31.3	47	35.4

Table 6.3 BI and suppliers

As mentioned above the mean answer in each case is *neutral* and in each case the mean is also the median score. This does not provide a particularly clear picture of the need for new suppliers but does suggest, perhaps not surprisingly, that the respondents generally think they are right regarding their current suppliers and where they come from. Only q.30 had statistically significant results when looked at in relation to the other questions shown in tables 6.4, 6.5 and 6.6 below.

q.30 An international supplier is likely to be beneficial

Correlation

Question	1	8	17	19
Sig.	.178	.150	-.198	.149

Table 6.4 Correlation relating to q30

K-W

Question	1	7	19
Sig.	.026	.017	.048

Table 6.5 K-W relating to q30

M-W

Question	1
Sig.	.010 (1 & 3)

Table 6.6 M-W relating to q30

Age appeared as a significant factor in relation to q.30 (using an international supplier) whether using correlation or analysis of variance tests. In each case it is identified that the older the respondent the less the benefit they perceive accruing from an international supplier. This is similar to the general pattern of

attitudes relating to the use of technology. As a further link here it can also be suggested that the development of international suppliers would be greatly enhanced by the use of the internet, and conversely where a respondent had a generally negative attitude towards the use of technology (in this case an older respondent) then their ability to engage with geographically disparate suppliers would be limited.

Other significant results relate to q's 7 and 8 which look at the general IT experience of the respondent. As they suggest a link between IT skill and a positive attitude towards the benefits of an international supplier this would suggest that the more computer literate a respondent the more likely they are to see the pursuance of international suppliers as a positive.

Question 19 shows significant results for both the correlation and analysis of variance. This question looks at the level of required reordering and suggests that the higher the frequency of reordering the more attractive an international supplier might be. Again it could be argued that there is a link between a higher frequency of ordering and IT usage to accommodate this. If accepted this further supports the link with IT skill and business development that requires IT to support it, such as linking with international suppliers.

The final significant results (correlation) relates to q.17 and shows an inverse relationship between the desire for international suppliers and the average costs of the products purchased for stock. The suggestion here is that for retailers who require more expensive items they are more positive about the contribution a new overseas supplier could bring to their company. This would appear to be a logical relationship as more expensive goods would tend to have higher margins and as such there would be a desire to find the

cheapest price for a particular item a retailer wished to purchase for stock.

The next two questions of this section of the questionnaire relate to other methods of communicating with suppliers adopted by practitioners and can be linked to questions 10-12. Both of these questions show some significant results shown in tables 6.7, 6.8 and 6.9 below. The first (q.31) is as follows.

q.31. Attendance at trade shows is beneficial

Correlation

Q	18	26
Sig.	-.239	-.205

Table 6.7 Correlation relating to q30

K-W

Question	18	23
Sig.	.001	.005

Table 6.8 K-W relating to q30

M-W

Question	8	26
Sig.	.035 (2 & 3)	.018 (1 & 3)

Table 6.9 M-W relating to q30

Q.18 looks at the size of goods purchased for stock and has a negative correlation with attendance at trade shows. This generally suggests that for those who sell smaller items they do not see attendance at trade shows as useful. For those selling larger items the attendance at trade shows is deemed to be more important. This would appear to be logical as larger products would have to be

looked at and considered whereas smaller products would perhaps merely be sent.

Q.26 also had a significant negative correlation with attendance at trade shows. As a representation of BI, q.26 is central to this research. The relationship outlined suggests that those who perceive they will be using the higher levels of online procurement in the future feel attendance at trade shows is important and vice versa. The link here is not an obvious one but perhaps suggest respondents who are more dynamic and wish to advance their business' compared to those who are merely content with the status quo. Another significant result is forthcoming in the analysis of variance test (M-W) linking these questions. This result states that there is a significant difference between those giving an '0' response and a '7+' response to q.26. This further enforces the point made above.

A significant variance (M-W) is also forthcoming in relation to q.23 which considers the number of suppliers offering online procurement. The result here is not clear as the nature of the relationship is not available, and as there is no obvious explanation for this the result it can be viewed as spurious.

A final significant variance (M-W) is forthcoming in relation to q.8. The recoded groups of 2 & 3 looking at the evaluation of computer skills outline a significant difference in the way they perceive the benefits of trade shows. Once again this result may be viewed as spurious as there is no similar differences between the most and least perceived skill levels (1&3) as might have been expected if the result was truly significant.

32. The use of company reps is important

In relation to this question there is only one significant positive correlation that relates to q.19, as can be seen below.

Correlation

Q	19
Sig.	.145

Table 6.10 Correlation relating to q32

The link between the need for reordering and the use of reps suggests that those who reorder more frequently perceive a greater need for the role of the company representative in running their business. A company undertaking a higher level of ordering would suggest one with a higher turnover and as such the more frequent need for a reps visit would appear appropriate.

6.3 Performance Expectancy

In the questionnaire (see 4.4.1) the construct of performance expectancy (PE) was represented by questions 37-42 and is outlined in detail in section 2.7. PE deals with outcomes relating to the job (Compeau and Higgins, 1995) that a specific technology, in this case online procurement, is expected to deliver. A relationship between PE and other factors, and the impact on behavioural intention is identified in the UTAUT model (2003). PE is also seen as the most influential of the four main factors in earlier research (Venkatesh et al., 2003).

6.3.1 PE and factor analysis

A factor analysis undertaken on the responses identified questions 37-9 (Cronbach's Alpha .768) as constituting an individual factor. This was undertaken to establish the relationship between the questions that were aiming to measure PE. The results suggested a relationship between these questions and supported earlier work

(Venkatesh et al., 2003) suggesting that PE was a specific factor. The remaining three questions did not however link with questions 37-9.

As the factor analysis only identified the three questions as constituting a specific factor it is worth ensuring that these suitably represent the expression *performance expectancy*. The questions constituting the PE factor were as follows.

Ability to procure stock online would be useful (q.37)

Type of product sold lends itself to OP (q.38)

Supplier would like us to use OP (q.39)

These questions are more specific than the other questions aiming to represent PE. As such they would appear to be clearly represented by the expression *Performance Expectancy* when it is related specifically to the use of online procurement. The other three questions outlined below suggest a more general approach to the adoption of IT and are not represented in the factor analysis.

It is necessary to speak to a person when procuring stock (q.40)

The computer can replace human interaction in my business-to-business relationship (q.41)

Information technology (IT) is essential to the running of my company (q.42)

In using factor analysis it is common practise to name clusters appearing with a specific title (Bryman, 2004). It would be possible to rename this construct however the factor analysis aiming to confirm the existing factor comes sufficiently close that this factor will remain as in the work done by Venkatesh et al. (2003), which is *performance expectancy*.

6.3.2 Hypotheses relating to PE

The following four hypotheses relate to Performance Expectancy (PE).

H1: The influence of performance expectancy on behavioural intention will be moderated by age

H2: The influence of performance expectancy on behavioural intention will be moderated by the level of perceived IT experience (self efficacy) the user has

H3: The influence of performance expectancy on behavioural intention will be moderated by the frequency of re-ordering and the value of the product

H4: The influence of performance expectancy on behavioural intention will be moderated by the strength of the relationship between the retailer and supplier

6.3.3 Behavioural Intention relating to PE

The following significant results identify those relating to current usage (q.25) and perceived future usage (q.26). The move from current use, to future use determines BI, and in this instance an analysis of variance (K-W) identified the following shown in table 6.11 below.

No.	Significant results
q.25	37 38 39 42
q.26	37 38 39 40 42

Table 6.11 PE relating to q25 and q26 using K-W

Question 26 has significant results for all but one (q.41) of the PE questions, and all of those relating to the factor analysis PE (q's. 37-9). Question 25 has similar results but without the inclusion of q.40. These results suggest a clear relationship between BI and PE. This outlines that where there is a belief that performance will be

generally enhanced with technology (in this case online procurement) the behavioural intention will be to adopt.

When looking at the mean responses for PE as one factor and undertaking a K-W test the following results are forthcoming.

Question	Sig. PE
25.	.000
26.	.001

Table 6.12 PE significant results q25 and q26 using K-W

This reinforces the points made above about the significance of the relationship between BI and PE.

A further test of variance was undertaken using Mann-Whitney. In this test the results from the scale for q26 were recoded down from five to three groups to ensure high numbers in each category to allow for clearer comparisons. The following significant results were forthcoming for PE and BI when comparing the three groups individually.

1 and 2

	q.37	q.39	q.42
Asymp. Sig (2-tailed)	.013	.008	.009

1 and 3

	q.37	q.38	q.39	q.40	q.42
Asymp. Sig (2-tailed)	.000	.004	.003	.019	.000

2 and 3

	q.37	q.39
Asymp. Sig (2-tailed)	.019	.016

Table 6.13 PE significant results q26 using M-W

It would be expected that there would be more variances between the extreme groups (1 and 3) compared to the other two groups. Questions 37 and 39 are common throughout and as these constitute two thirds of the questions identifying the new PE factor from the factor analysis this suggests a relationship. The final question to constitute the new factor is included in the comparison between 1 and 3, and indeed all the questions relating to PE bar q.41 are represented here. The relationship is clearly established here between BI and PE.

6.3.4 PE influence on behavioural intention relating to age

H1: The influence of performance expectancy on behavioural intention will be moderated by age

The descriptive statistics (see 5.3) show that over the five age groups there is normal distribution. For the M-W tests the number of groups as per above were reduced from five to three (see 5.7).

		Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-30yrs	16	8.1	8.1	8.1
	31-40yrs	44	22.2	22.2	30.3
	41-50yrs	56	28.3	28.3	58.6
	51-60yrs	54	27.3	27.3	85.9
	61plus yrs	28	14.1	14.1	100.0
Total		198	100.0	100.0	

Table 5.7 Age

Age has been viewed as an important determinant (see 3.8.6.2) in relation to the use and application of IT (Venkatesh et al., 2003; Knutsen, 2005). The expected result here is that older respondents will be less interested in the use of technology and the internet both in general terms and relating to specific business usage (Louhu et

al., 2006). A further expected outcome would be that the level of experience of using IT and the internet would be generally lower for older respondents than those in the younger age groups. These factors would in turn be expected to impact on the general acceptance of new technologies, and in the case of this research, the adoption of online procurement.

Correlation

A Spearman's non-parametric correlation coefficient identified a link between age and the responses to q.42 looking at how essential IT was to the running of their company. The Spearman's correlation coefficient was .203 and this was to a higher significance level of .001.

Analysis of variance

The two non-parametric tests undertaken aimed to test for systematic differences in responses between the various levels of different grouping variables. The Kruskal Wallis (K-W) test did not show any significance when applied to the five age groups, however when these were reduced to three groups q.42 showed a significant relationship with age (sig .014). The Mann-Whitney (M-W) test looked at whether the medians of two samples are the same. When looking at the three age groups the first and third groups showed significant differences in the responses to q. 42 (sig .004).

When looking at PE a pattern emerged with all the tests used and that is that q.42 consistently gleaned significant results when looked at relating to age. As a perception this tends to look more at the importance and central nature of IT to the running of the business as opposed to the expectations of its performance (i.e. performance expectancy), also q.42 did not align itself with the

other PE questions (q's. 37-9) in the factor analysis (see 6.3.1). That said there is obviously a close link between the two and they could indeed be seen as two sides of the same coin. How well a user expects the technology to perform will be reflected in the importance they put on IT to achieve organisational goals.

When the six questions relating to PE are taken collectively there are no significant results forthcoming from any of the tests outlined above whether looked at in the context of either five or three age groups.

Open ended qualitative responses

The following qualitative statements were also forthcoming from the questionnaire relating to age.

1. 'I am coming up to retirement so my views may not be those of other SMEs however I do feel the internet and the 'big battalions' in my trade will see the disappearance of 'bricks and mortar' shops unless suppliers start to offer significant advantages.'
2. 'I am almost retirement age, my successors will no doubt get more involved with IT in the future.'
3. 'I have been trading since 1980 and have managed to run the business until recently without IT. However, more companies require us to order on-line now and so we have had to adapt. As I am due to retire within the next few years I have to say that I do not.'

These statements all make the fairly obvious link between age and retirement. Faced with a technology acceptance decision and impending retirement the decision to not use and develop the technology is perhaps a straight forward one. The first comment is

slightly more revealing than the others as it suggests some predictions for the future and also touches on the importance of the supplier relationship and how this has perhaps altered in the face of the internet – this is interesting but out with the scope of this study.

H1 is proven as there does appear to be a positive relationship with some elements of the questions (q.42) relating to PE. The relationship between PE and BI is not in doubt and therefore the link with age is established. This suggests that when considering the adoption (BI) of online procurement, the expectation that it will provide a more efficient method of procuring stock (PE) will be moderated by the age of the person making the decision. It can therefore be stated that the influence of PE on BI is moderated by age.

6.3.5 PE influence on Behavioural Intention relating to experience

H2: The influence of performance expectancy on behavioural intention will be moderated by the level of perceived IT experience (self efficacy) the user has

A range of questions from 6-9 aimed to establish levels of internet usage and perceived skill levels along with the level of enjoyment of achieving business objectives through the use of technology. The expectation would be that the extent of experience and perceived enjoyment of usage is likely to impact positively on general attitudes towards the use of internet based technologies such as online procurement.

Relating to internet usage, 13.1% did not use the internet for leisure and 11.1% did not use it in their business. The figures for each time period were higher for leisure than business except 'less

than 5 years' which was higher for business. It could be expected in most cases that leisure use would predate business usage; perhaps where business usage has increased is where, in the last five years, the profile of the internet has been raised and its use more the norm in a business context.

In the evaluation of computer skills the results were normally distributed with 81.8% rating their skill levels as 'OK' or above. In looking at the enjoyment gained from using IT to achieve organisational goals 62.6% said they did 'to a certain extent' or 'very much so'. These figures suggest a general picture of respondents who would not be too restricted by either their perceived computer skill level or a desire not to use IT if presented with a new software application such as e-procurement.

Correlation

A bivariate correlation undertaken looking at perceived levels of experience (q.8), identified three significant results relating to the questions linked to PE. The results are outlined below in table 5.36.

q.3 7	<i>Ability to procure stock online would be useful</i>	.142 *
q.4 0	<i>Necessary to speak to person when procuring</i>	-.171 *
q.4 2	<i>IT is essential to the running of the company</i>	.315 **

*0.05, **0.01

Taken from table 5.36

Only one of these (q.37) was in the factor identified by the factor analysis. The most significant result (0.01) related to q.42. These results would suggest that there is a link between how respondents view their IT skills and how useful they would expect a technology

to be, however the link is not definitive. The strong correlation with q.42 is perhaps not surprising given that if someone perceived their skills to be weak they would be admitting they cannot effectively run their own company!

Analysis of variance

The Kruskal Wallis (K-W) test identified the following variances when looking at the PE questions (37-42) and those relating to general IT experience (q6).

Question	q.37	q.42
Sig.	.007	.000

Taken from table 5.47

Question 7

Question	q.37	q.38	q.42
Sig.	.006	.006	.000

Taken from table 5.48

Question 8

Question	q.37	q.42
Sig.	.015	.000

Taken from table 5.49

When the number of groups within the categories is recoded from five to three, q. 40 also becomes significant (.014).

Question 9

Question	q.37	q.38	q.41	q.42
Sig.	.000	.028	.021	.000

Taken from table 5.50

Both questions 37 and 42 show significant results for all the questions relating to the use of IT (q's 6-9). One of these relates specifically to the technology being measured (online procurement) and is present in the factor analysis representing PE. The other is more general in nature and does not feature in the factor analysis. Questions 39 and 40 are the only two not represented in these tables. Again, one was in the factor analysis for PE (q. 39) and the other (q. 40) was not. Question 40 has reverse phasing (the Likert scale being counter to the results for the other questions), which may have lead to some confusion by respondents.

When the K-W test was used in conjunction with the mean from each of the main constructs the following results for the questions relating to IT usage were forthcoming for PE.

Question	Sig. PE
6.	.035
7.	.006
8.	.012
9.	.000

Table 6.14 PE relating to mean q6-9 using K-W

This would generally suggest significant variances between the questions relating to experience and those representing PE, when K-W tests are run.

Mann-Whitney (M-W) tests were also undertaken on these questions. For the purposes of the test the five point Likert scale was reduced to three with the following significant results forthcoming from q.8 (perceived IT experience) and the PE.

1 & 2	1 & 3	2 & 3
------------------	------------------	------------------

(Excellent and OK)	(Excellent and Poor)	(OK and Poor)
q.37 and q.42	q.40 and q.42	q.40

Table 6.15 PE and q8 using M-W

The difference between *Excellent and OK* and *Excellent and Poor* is interesting as it might have been expected that the latter would include the same as the former and perhaps some more. This is not the case as q.40 (reverse phasing) is not in *Excellent and OK*. Also q.37 which looks specifically at the issue of online procurement does not appear in *Excellent and Poor*. It is also worth noting that q.37 is the only one that appears in the new factor. Despite these apparent anomalies there are significant variances here and these are along the same lines as the previous K-W test.

Open ended qualitative responses

The qualitative statements relating to this are not as clear as those relating to age. That said the following have some bearing on the relationship between *experience* and IT usage.

1. 'All of our orders from our main suppliers (99% of our business) has to be ordered online on our retail ordering system and has been this way for at least 4 years. Very easy to use and is a benefit to our business.'
2. 'Until my suppliers have online purchase facilities with up to date pricing, I won't use it. Reps calling into the shop may be old fashioned and not cost effective, but it is reasonably efficient.'
3. 'I could not run my business without IT. I would find it nearly impossible to obtain stock quickly and effortlessly without the

internet and would cost more money on phone calls, stationary and stamps. A couple of clicks and its sent next day.'

As can be seen from the comments above there are a variety of issues relating to the PE, IT experience and the BI. Although there are no specific comments relating to the level of internet uptake and experience it can be adjudged from these comments that there are a variety of views relating to the more general question of online procurement and its uptake. The final comment suggests issues relating to the efficiency of the suppliers online offering and the fact that they are not always accurate.

H2 is supported as the range of tests undertaken and the significant results gleaned from these suggest that previous experience has a moderating influence over PE. This suggests that when considering the adoption (BI) of online procurement, the expectation that it will provide a more efficient method of procuring stock (PE) will be moderated by the perceived IT experience of the person making the decision. It can therefore be stated that the influence of PE on BI is moderated by perceived IT experience.

6.3.6 PE influence on Behavioural Intention relating to frequency of re-ordering

H3: The influence of performance expectancy on behavioural intention will be moderated by the frequency of re-ordering and the value of the product

The initial qualitative research identified the need for constant re-ordering for certain types of products and how, under these circumstances, online procurement was an efficient way of undertaking this process. Different types of retailers even within the

narrow band chosen (electrical) will have differing procurement needs: some may require frequent re-ordering and some may not; some may be purchasing expensive items for stock and some may not.

The descriptive results suggested the following relating to the cost of products.

Approx cost of products

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	11	5.6	5.6	5.6
£1-£5	2	1.0	1.0	6.6
£6-£50	11	5.6	5.6	12.1
£51-£100	24	12.1	12.1	24.2
£101-£250	51	25.8	25.8	50.0
£251-£500	56	28.3	28.3	78.3
£501+	43	21.7	21.7	100.0
Total	198	100.0	100.0	

Table 5.19 Approximate cost of products

The descriptive results suggested the following relating to the frequency of reordering.

How often reorder new products

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	2	1.0	1.0	1.0
Hourly	10	5.1	5.1	6.1
2x daily	11	5.6	5.6	11.6
Daily	64	32.3	32.3	43.9
2x weekly	51	25.8	25.8	69.7
Weekly	35	17.7	17.7	87.4
2x Monthly	9	4.5	4.5	91.9
Monthly	16	8.1	8.1	100.0
Total	198	100.0	100.0	

Table 5.21 How often reorder new products

Correlation

In undertaking a Bivariate correlation (Spearman two-tailed) the following questions were identified as having significant results.

37	<i>Ability to procure stock online would be useful</i>	.213	**
38	<i>Type of product sold lends itself to OP</i>	.198	**
39	<i>Supplier would like us to use OP</i>	.157	*
42	<i>IT is essential to the running of the company</i>	.263	**

*0.05, **0.01

Taken from table 5.42

The first three relate to the PE factor identified in the factor analysis, with the first two (q.37-8) showing highly significant results. These questions as discussed above (6.3.1) are directly related to online procurement whereas the other significant result relating to PE (q.42) is more general in nature. Given that four of the six questions relating to PE show significant results would suggest a correlation between this construct (PE) and the frequency of reordering products. This result could be spurious or it could be that those who use online procurement reorder more often as it is easier to do.

Analysis of variance

A Kruskal Wallis (K-W) analysis of variance test was used to test for systematic differences with the following questions relating to PE showing significant results when related to the frequency of reordering.

37	<i>Ability to procure stock online would be useful</i>	.019
38	<i>Type of product sold lends itself to OP</i>	.031
42	<i>IT is essential to the running of the company</i>	.001

Taken from table 5.54

The variances here suggest a relationship between the questions relating to PE and frequency of reordering, with three out of total of

six questions identified as having a significant relationship. When the test is run using a single mean for the PE construct the following significant results are forthcoming.

	Question	Sig. PE
19	<i>How often do you need to order new products?</i>	.013

Table 6.16 PE relating to mean q19 using K-W

A link between the PE construct and frequency of reordering is evident here the following statements support this.

Open ended qualitative responses

1. 'We order daily online for most products that are special orders or standard terms. Whilst offers are also available online we have no power to negotiate with these. We need to see reps to buy quantities of product that we can promote.'
2. 'We find internet purchasing to be unviable as suppliers aren't able to react to orders in a reasonable amount of time. If I fill in applications via the internet for say trade accounts, you will probably see a 50% return.'
3. 'IT ordering is excellent when you know exactly what you want, but personal contact better to know what direction suppliers are moving in, what new products are on offer etc. Also supplier reps talks about what others are doing, giving an industry view.'

The comments above provide some indication of the need for reordering and the frequency. As a general experience the limitations and at times inefficiencies of the technology are clearly stated. The continuing need for reps is a recurring theme here despite the obvious advances in technology.

H3 is supported given the number of statistically significant results. The idea came from the qualitative research and a significant relationship between the frequency of re-ordering and PE is evident. This suggests that when considering the adoption (BI) of online procurement, the expectation that it will provide a more efficient method of procuring stock (PE) and that this will be moderated by the frequency of re-ordering required by the retailer.

6.3.7 PE influence on Behavioural Intention relating to the strength of the supplier relationship

H4: The influence of performance expectancy on behavioural intention will be moderated by the strength of the relationship between the retailer and supplier

The relationship between the SME retailer and their supplier (see 3.4.7) is likely to be influential in the way the retailer responds to technology offered by the supplier. In the case of online procurement the new system is likely to be offered by the supplier to the retailer; the way they react may well be influenced by their perception of the relationship they have with them. In most cases the supplier will want the retailer to adopt the system; the reasons behind the reaction of the retailer to this are what is being considered in this research. It could be argued that if the relationship is seen as close that the retailer would be more likely to react positively to a suppliers' request for them to use an online procurement system, although this would not always necessarily be the case.

How would you consider the relationship

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very close	32	16.2	16.4	16.4
	Close	74	37.4	37.9	54.4
	Quite close	74	37.4	37.9	92.3
	Not close	14	7.1	7.2	99.5
	Not at all close	1	.5	.5	100.0
	Total	195	98.5	100.0	
Missing	0	3	1.5		
Total		198	100.0		

Table 5.23

The above results suggest that the relationship is generally perceived by the retailer as being close ('very close', 'close' and 'quite close' representing 92% of responses).

Correlation and analysis of variance

The Bivariate correlation (Spearman two-tailed) identified that there were no significant results relating to the questions that form the PE construct (qs. 37-42). The K-W analysis of variance identified the following significant results relating to PE.

37	<i>Ability to procure stock online would be useful</i>	.045
42	<i>IT is essential to the running of the company</i>	.017

Taken from table 5.56

There was not a significant result when looking at the mean of PE and relating it to this question. This suggests a reasonably weak link between the relationship with the supplier (q.21) and PE. Some of the statements relating to this are outlined below.

Open ended qualitative responses

1. 'Our main supplier is asking us to order 80% online. Other suppliers are setting up virtual showrooms online for us to show goods to customers without stocking them.'

2. 'I still prefer speaking to the suppliers personally as there are often problems with pricing errors, late delivery and faults under warranty terms.'
3. 'Because we use large international suppliers and small local suppliers, our use of the internet and IT ordering varies immensely. This may be reflected in some of the answers. The large companies expect us to use the internet and the small ones don't (yet).'

Once again these comments are fairly general in nature but do provide some insight into the relationship with suppliers and the complexities relating to that/those relationship/s. A clear picture does not necessarily emerge relating to the nature of the relationship, given that some have multiple suppliers of differing sizes and differing online procurement policies, further complicates the picture. The comments presented here suggest a move by suppliers to get retailers onto online procurement but also identifies the continuing need for a relationship that is more personal than a computer interface.

H4 is rejected. There are not sufficient statistically significant results to suggest a clear link between the relationship that the retailer perceives they have with their supplier/s and PE (and therefore BI). In rejecting this hypothesis it would appear that how the relationship is perceived does not influence the adoption or otherwise of online procurement. However this is not clear and would require further research in this specific area.

6.4 Effort Expectancy

In the questionnaire (see 4.4.1) the construct of effort expectancy (EE) was represented by questions 43-46 and is outlined in detail in

section 2.7. EE is 'the degree of ease associated with the use of the system' (Venkatesh et al., 2003 p.450). A relationship between EE, age and its impact on behavioural intention is identified in various models culminating in the UTAUT model (2003).

6.4.1 EE and factor analysis

A factor analysis undertaken on the responses identified questions 44-6 (Cronbach's Alpha .657) as constituting an individual factor. This suggested a relationship between these questions and supported earlier work (Venkatesh et al., 2003) suggesting that EE was a specific factor. The remaining question did not however link with these questions. Of the four main constructs this was the lowest score recorded.

6.4.2 Hypotheses relating to EE

The following hypotheses relate to Effort Expectancy (EE).

H5: The influence of effort expectancy on behaviour intention will be moderated by age

H6: The influence of effort expectancy on behaviour intention will be moderated by the level of perceived IT experience (self efficacy) the user has

H7: The influence of effort expectancy on behaviour intention will be moderated by the strength of the relationship between the retailer and supplier

6.4.3 Behavioural Intention relating to EE

The following significant results from analysing the variances (K-W) were identified for questions 25 and 26 relating to EE.

Question	Significant results
25	44 45 46
26	46

Table 6.17 EE relating to q25 and q26 using K-W

The results for q.25 suggested a significant relationship with EE. The three questions showing significance also constituted the factor outlined in the factor analysis (see 6.4.2). Question 26 however only had a significant result for q.46, a question that was represented in the new factor. These results do not suggest a strong relationship between BI and EE. Had the relationship been significant with question 26 the expectation would be that respondents generally believed that the amount of perceived effort expected would impact on their behaviour to adopt or otherwise, online procurement. The fact that there is not an obvious link would perhaps suggest that the level of perceived effort does not directly influence behavioural intention.

Another test of variance was undertaken using Mann-Whitney. In this test the results from the scale for q26 were recoded down from five to three groups. The following significant results were forthcoming for EE and BI when comparing the three groups individually.

1 and 2

	q.44	q.45	q.46
Asymp. Sig (2-tailed)	.020	0.28	.000

1 and 3

	q.43	q.44	q.45	q.46
Asymp. Sig (2-tailed)	.050	.019	.019	.000

Table 6.18 EE significant results q26 using M-W

There were no significant differences between groups 2 and 3, but for the other two groupings (1 and 2, 1 and 3) the significant

results covered all the questions excepting q.43 for 1 and 2. This would tend to suggest a difference between the responses of group 1 for q.26 (no online procurement to be used in future) and the other groups (some online procurement to be used in future). Given the nature of the difference between groups 1 and groups 2 and 3 it is perhaps not surprising that the attitude toward the level of perceived effort required to adopt online procurement shows significant differences between these groups.

6.4.4 EE influence on Behavioural Intention relating to age

H5: The influence of effort expectancy on behavioural intention will be moderated by age

The descriptive statistics (see 5.3) show that over the five age groups there is a normal distribution. For the M-W tests the number of groups as per above were reduced from five to three (see 5.7). In looking at EE and age it would be generally expected that the level of effort required to adopt a technology would be perceived as being greater for older rather than younger respondents.

Correlation

A Spearman's non-parametric correlation coefficient identified a link between age and q.46 which suggested that the *level of effort required would not make this adopting (online procurement) worth my while*. This was the only question of the four representing EE that had a significant result for this test. The Spearman's correlation coefficient was (-).165 this was to a higher significance level of .001. This result outlines a negative correlation between the perceived level of effort required and the age of the respondent suggesting that the older the respondent the more effort they perceive to be required to adopt online procurement. This is

perhaps not a surprising result but one that reinforces the general implications of age in relation to online procurement uptake.

Analysis of variance

The K-W test did not show any significances when applied to either the five age groups or the three age groups. Similarly when the four questions relating to EE are taken collectively there are no significant results forthcoming from any of the tests outlined above whether looked at in the context of the five age groupings or the three.

The M-W test with the reduced number of groups highlighted the following significant variance between groups 1 and 3.

	q.46
Asymp. Sig (2-tailed)	.029

Table 6.19 EE significant results q26 using M-W

This is the same question that had significant results when looking at the correlation.

Qualitative responses

The three comments outlined relating to age and PE (6.3.4) similarly applies to EE. In direct reference to the EE construct the views suggest a lack of desire to take on new technologies close to retirement.

H5 is not proven as there does not appear to be a sufficiently significant relationship between age and EE. The relationship between EE and BI is also not fully established bringing into question the next two hypotheses (6 & 7). This suggests that when considering the adoption (BI) of online procurement, the

expectation that a lot of effort will be required to undertake it is not apparent, and with no obvious link to age the hypothesis is discounted. It can therefore be stated that there is little influence of PE on BI and where there is, this is not moderated by age.

6.4.5 EE influence on Behavioural Intention relating to experience

H6: The influence of effort expectancy on behaviour intention will be moderated by the level of perceived IT experience (self efficacy) the user has

Questions from 6-9 aimed to establish levels of internet usage and perceived skill levels along with the level of enjoyment of achieving business objectives through the use of technology. In the case of EE it would be expected that higher levels of *experience* as denoted by questions 6-9 would lead to lower expectations of how difficult it would be to adopt a new technology.

Correlation

A bivariate correlation was undertaken to look at perceived levels of experience (q.8) related to the responses to all the questions. All the questions relating to EE showed significant results. These are shown in the following table 5.36.

q.4 3	<i>Could adopt with little effort</i>	.232 **
q.4 4	<i>Would require training to use</i>	-.322 **
q.4	<i>Staff would need to undertake training</i>	-.153 *

5		
q.4	<i>Level of effort would not make it worthwhile</i>	-.141 *
6		

*0.05, **0.01

Taken from table 5.36

Questions 44-46 came up as a new factor in the factor analysis and these are all represented here. The results suggest a link between how respondents view their IT skills and the level of effort they would expect to have to undertake in accepting a new technology. The strongest correlation relates to q.45 and q.46, q.43 has reverse phasing and provides the only positive result here. The results generally suggest a correlation between the EE construct and perceived experience respondents have.

Analysis of variance

The Kruskal Wallis (K-W) test identified the following variances when looking at the

EE questions and those relating to general IT experience (37-42).

Question 6

Question	q.43	q.44	q.46
Sig.	.013	.001	.004

Taken from table 5.47

Question 7

Question	q.44	q.45	q.46
Sig.	.001	.011	.000

Taken from table 5.48

Question 8

Question	q.43	q.44	q.46
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Sig.	.011	.000	.049
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Taken from table 5.49

Question 9

Question	q.43	q.44	q.46
Sig.	.003	.025	.000

Taken from table 5.50

Questions 44 and 46 both show as significant results in all four of the questions presented. Q.43 is in all of them bar q.7, and q.45 is only represented as a significant result in q.7. The link between EE and general IT experience (as represented by questions 6-9) is proven. The reverse phasing of q.43 may have caused some confusion for respondents although the question is not ambiguous. The first two questions represent self perception whereas q.45 is a perception on the ability of others. Q.46 provides a direct link with BI in that it suggests adoption or not. Its appearance on all four questions as a significant result suggests a strong, and perhaps obvious, link with EE.

When the K-W test was used in conjunction with the mean from each of the main constructs the following results for the questions relating to IT usage were forthcoming for EE

.Question	Sig. EE
6.	.000
7.	.004
8.	.000
9.	.001

Table 6.20 EE relating to mean q6-9 using K-W

This would generally suggest significant variances between the questions relating to experience and those representing EE, when K-W tests are run.

Mann-Whitney (MW) tests were also undertaken on these questions. For the purposes of the test the five point Likert scale was reduced to three with the following significant results forthcoming from q.8 (perceived IT experience) and the EE.

1 & 2 (Excellent and OK)	1 & 3 (Excellent and Poor)	2 & 3 (OK and Poor)
q.43 and q.44	q.43 and q.44	q.44 and q.46

Table 6.21 EE and q8 using M-W

Q.44 is consistent for all of the three groups and as this question looks at self perception this would perhaps link it more closely to EE than would those that look at the perception of others (q.45). As for q.43 its presence in the first two groups is not surprising but its omission for 2 & 3 is not entirely clear. The suggestion is that those who perceive themselves to have 'OK' and 'poor skills' (IT) don't uniformly see a problem with adoption based on their IT skills and the required level of effort. They do however see it as a direction they may not wish to pursue (q.46).

Open ended qualitative responses

It is difficult to pick out statements purely relating to *experience* and EE, the following provides one opinion outlined that is relevant here.

1. 'Can see a number of benefits to being more IT literate, unable

to find time to learn and implement.'

This comment suggests a desire to be able to use more IT but a lack of time to undertake the necessary learning process to achieve it. This is a perception on the part of this particular respondent that the effort required is not worth it for the perceived benefits and as such is appropriate in this context.

H6 is not proven given the weak relationship between EE and BI. That said there is a clearly significant relationship between perceived IT experience and EE. This suggests that when considering the adoption (BI) of online procurement, the expectation that it will require a lot of effort to undertake it is not evident however the level of effort required is moderated by the perceived IT experience the respondent has. Despite this it cannot be stated that the influence of EE on BI is moderated by perceived IT experience.

6.4.6 EE influence on Behavioural Intention relating to the strength of the supplier relationship

H7: The influence of effort expectancy on behaviour intention will be moderated by the strength of the relationship between the retailer and supplier

The level of effort required to achieve working knowledge of a new system is likely to be tempered by the role those who are in a position to assist you play. It is possible that the perception a retailer has of a new IT system will be influenced by the relationship they have with a particular supplier and their suppliers in general. If they have a close working relationship the retailer may feel that the

necessary support will be forthcoming. As a concept this is similar to *facilitating conditions* (FC) covered in section 6.6. However FC relates to the more concrete support available as opposed to a more general perception of support presented here. Where a retailer and supplier have a close relationship that works well for both parties there may be a perception from the retailer that the supplier will create an efficient, logical and straightforward interface for an online procurement system – if this is the perception of the retailer it is logical to suggest that they will believe the system to be good and as such be easy to master with little effort. This is however out with the scope of this research.

Correlation and analysis of variance

The Bivariate correlation (Spearman two-tailed) identified that there were no significant results relating to the questions that form the EE construct (qs. 37-42). The K-W analysis of variance similarly identified no significant results suggesting no clear link between EE and the relationship with the supplier. There was not a significant result when looking at the mean of EE and relating it to q.21 again suggesting a reasonably weak link.

Open ended qualitative responses

1. 'Our main supplier is asking us to order 80% online. Other suppliers are setting up virtual showrooms online for us to show goods to customers without stocking them.'

This statement was mentioned earlier on and is indeed pertinent to a number of the constructs. In this context it suggests a drive by some suppliers to get retailers onto their online procurement system with the proviso that not all orders need to be made online. The use of the word *asking* appears to suggest a voluntary system and as such it is likely that the quality of the relationship would play a part in the retailer's decision making process.

H7 is not proven as there does not appear to be a statistically significant relationship between EE and the retailer/supplier relationship. The relationship between EE and BI is also doubtful and therefore there is no significant link between the factors outlined in this hypothesis. This suggests that when considering the adoption (BI) of online procurement, the expectation that it will be difficult to undertake is not clear and the relationship between the retailer and the supplier would appear to have no bearing on the level of effort required anyway. It can therefore be stated that the influence of EE on BI is not moderated by the perceived relationship the retailer has with the supplier.

6.5 Social Influence

In the questionnaire (see 4.4.1) the construct of social influence (SI) was represented by questions 47-54 and is outlined in detail in section 2.7. SI is 'the degree to which an individual perceives that important others believe he or she should use the new system' (Venkatesh et al., 2003, p. 451). A relationship between SI, age and its impact on behavioural intention is identified in various models as far back as the Theory of Reasoned Action (1975) and is represented in the UTAUT model (2003).

6.5.1 SI and factor analysis

A factor analysis undertaken on the responses identified two separate factors from the questions on SI. Questions 47-9 (Cronbach's Alpha .841) constituted an individual factor, and questions 50-54 (Cronbach's Alpha .787) constituted another. This suggested a relationship between these questions and supported earlier work (Venkatesh et al., 2003) suggesting that SI was linked,

although due to the fact that there were two factors makes this less clear. There were however no questions relating to SI that did not come in one or other of the factors. There is nothing obvious in the questions that would suggest why they came out as two factors. Despite the fact that there are two factors represented here for *social influence* they do come out as the second and third most influential. This would tend to suggest that as either two factors or taken together as one they are influential.

The stronger factor (.841) was represented by questions 47-9.

Question	Sig.
47. How I use IT influences customers	.777
48. How I use IT influences suppliers	.708
49. How I use IT influences competitors	.777

There is an obvious link between these questions from the point of view of their wording. Also they relate to directly to IT usage and the perceived influence this has upon various stakeholders of the business (*competitors* seen as stakeholders given their influence over the business).

The second factor (.787) was represented by questions 50-4.

Question	Sig.
50. Has been dramatic change last 5 yrs due to IT	.502
51. Will be dramatic change next 5 yrs due to IT	.744
52. If competitors were adopting I would look into it	.811
53. If staff thought it a good idea I would look	.596

into it

54. If family/friends thought it a good idea I would look into it .595

There is an obvious link to the first two questions here but the other three (52-4) appear more closely related to the first factor represented by questions 47-9 in that they look at the importance of the opinions of referent others. The results from this will be looked at in the context of the original factor (SI) and the two new factors outlined in the factor analysis.

6.5.2 Hypotheses relating to SI

The following hypotheses relate to Social Influence (SI).

H8: The influence of social influence on behavioural intention will be moderated by age

H9: The impact (influence) of social influence on behavioural intention will be moderated by experience

6.5.3 Behavioural Intention relating to SI

The following significant results from analysing the variances (K-W) were identified for questions 25 and 26 relating to SI.

Question	Significant results
25	48 50 51 52
26	47 48 49 50 51

Table 6.22 SI relating to q25 and q26 using K-W

The results for q25 suggested a significant relationship with SI. The four questions showing significances fall into the two factors outlined above in the factor analysis (see 6.5.2). Question 26 shows significant results for questions 47-9, these questions constitute a

specific new factor in the factor analysis. Of the five questions relating to the second factor only the first two are significant here. These results would tend to suggest a strong relationship between BI and SI. The high number of significant results suggests that respondents generally believed that the people around them are influential in their behavioural intention and as such are an important causal factor in the uptake or otherwise of online procurement.

When looking at the mean responses for SI as one factor and undertaking a K-W test the following results are forthcoming.

Question	Sig. SI
25.	.003
26.	.000

Table 6.23 SI significant results q25 and q26 using K-W

This reinforces the points made above about the significance of the relationship between BI and SI and suggests a strong link between the two.

Another test of variance was undertaken using Mann-Whitney. In this test the results from the scale for q. 26 were recoded down from five to three groups. The following significant results were forthcoming for SI and BI when comparing the three groups individually.

1 and 3

	q.47	q.48	q.49	q.50	q.51
Asymp. Sig (2-tailed)	.003	.001	.011	.019	.002

2 and 3

	q.47	q.48	q.49	q.50	q.51	q.52

Asymp. Sig (2-tailed)	.009	.002	.023	.034	.000	0.24
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Table 6.24 SI significant results q26 using M-W

There were no significant differences between groups 1 and 2, but for the other two groupings (1 and 3, 2 and 3) the significant results covered all the questions relating to the first new factor, and two and three respectively out of four, for the second factor. The fact that there are no significant differences between 1 and 2 is interesting and suggests that in the context of SI the behavioural intention of the respondents representing group 3 are more reflective when compared with the other two groups. The reason behind this is not apparent.

6.5.4 SI influence on Behavioural Intention relating to age

H8: The influence of social influence on behavioural intention will be moderated by age

The influence of age has been mentioned throughout this research as an important determinant when looking at technology acceptance. For this particular hypothesis the impact of age is identified in the context of the influence played by others on the decision making, and therefore technology adoption plans, of respondents. Or put another way, do we listen more or less to the opinions of referent others and are we more or less concerned with what they think (or what we think they think) as we get older?

Correlation

A Spearman's non-parametric correlation coefficient identified a link between age and the responses to the following questions.

47	<i>How I use technology influences my customers</i>	.223 **
48	<i>How I use technology influences my suppliers</i>	.195 **
49	<i>How I use technology influences my competitors</i>	.196 **

Taken from table 5.34

The significance results are all at the higher level (.001) suggesting a strong relationship between the three questions outlined and age. These three questions also constituted a specific factor as outlined in the factor analysis. This would suggest that there is a clear link between how respondents view the importance of what referent groups think and age.

Analysis of variance

The Kruskal Wallis (K-W) test shows the following significances when applied to the five age groups.

q.47	<i>How I use IT influences customers</i>	.004
q.48	<i>How I use IT influences suppliers</i>	.005
q.49	<i>How I use IT influences competitors</i>	.011
q.52	<i>If competitors were adopting I would look into it</i>	.010

Taken from table 5.45

When this was recoded into three age groups the following further results relating to SI were forthcoming.

q.50	<i>Has been dramatic change last 5yrs due to IT</i>	.021
q.51	<i>Will be dramatic change next 5yrs due to IT</i>	.045

Taken from table 5.45

This test shows the most significant results for all four constructs and indeed only two other questions had significant results out with SI. The suggestion here is that there is a strong link between age and the perceived importance of how the views of others are used in decision making. There is also a strong link with the perception of the past and future implications of IT and age.

The Mann-Whitney (M-W) test looked at whether the medians of two samples are the same. When looking at the three ages the following results were forthcoming.

Age Groups	Significant results
1 and 3	47 48 49
2 and 3	47 48 49 50 51 52

Taken from table 5.66

When looking at SI the factor identified in the factor analysis represented by questions 47-49 featured in the comparisons between groups 1 and 3, and 2 and 3. This suggests that group 3 are the standout group and that their attitudes are markedly different to the other groups. The significance of this would appear to be that the influence of technology is perceived as lower in the older age group, not surprisingly its impact is also deemed as lower by this group.

When the eight questions relating to SI were taken collectively the K-W results were as follows.

Question	Sig. SI
1.	.000

Table 6.25 SI relating to mean q1 using K-W

This was indeed the only significant result for any of the constructs relating to *age*. This suggests that in the context of age it is the most influential of the constructs in determining what will lead to technology acceptance, in this case online procurement. It can be therefore taken that the older a respondent the less likely they are to act on the what they believe others are thinking, and also the less likely they are to perceive that IT has, or is likely to, fundamentally change their business.

Open ended qualitative responses

The qualitative statements outlined in 6.3.4 are again pertinent here and support the statistical evidence outlined above. These statements make the link between age and retirement suggesting that this period in the working life of an owner/manager is not suitable for changing accepted business practices.

H8 is proven as there does appear to be a significant relationship between SI and BI and this moderates with age. This suggests that when considering the adoption (BI) of online procurement, the opinions and influence of referents (SI) is important and the level of importance changes in relation to the age of the decision maker. It can therefore be stated that the influence of SI on BI is moderated by age.

6.5.5 SI influence on Behavioural Intention relating to the level of IT experience

H9: The impact (influence) of social influence on behavioural intention will be moderated by experience

There were several significant results when looking at the correlations between perceived IT experience (q.8) and SI (q. 47-54) that relate to this hypothesis. Of the eight questions relating to SI, five had significant results and four of these were to the higher significance level of 0.01. Two factors were established in the factor analysis; one representing questions 47-9 (Cronbach's Alpha .841) and the other representing questions 50-4 (Cronbach's Alpha .787). All three of the questions that represent the first factor are present in the significant results. The results were outlined in table 5.36 as follows.

47	<i>How I use IT influences my customers</i>	.336 **
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48	<i>How I use IT influences my suppliers</i>	.219 **
49	<i>How I use IT influences my competitors</i>	.312 **
50	<i>Has been dramatic change last 5 years due to IT</i>	.177 *
51	<i>Will be a dramatic change over next 5 years due to IT</i>	.208 **

Taken from table 5.36

The three questions represented in the factor analysis also show significant results when looking at variation. A comparison of responses to the questions outlined above by gauging variation suggests the following results.

Q.47	Q.48	Q.49	Q.51
27.611	13.110	20.863	14.907
4	4	4	4
.000	.011	.000	.005

Taken from table 5.49

This concurs with previous research by Venkatesh et al. (2003). This is suggesting that a practitioner with greater perceived IT experience will react differently, to someone who has lower perceived skills, to the perception of others of their use of IT - and that this will moderate their BI. Being more computer literate and aware of issues relating to general IT usage is likely to make a practitioner more respondent to the views of others in this area and to view change in the area as being significant. This leads to this hypothesis being supported and the relationship included in the final adapted model.

6.6 Facilitating Conditions

In the questionnaire (see 4.4.1) the construct of facilitating conditions (FC) was represented by questions 55-59 and is outlined in detail in section 2.7. FC is 'the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system' (Venkatesh et al., 2003, p. 453). A relationship between FC, age and its impact on usage is represented in the UTAUT model (2003). This is different to the other hypotheses as Venkatesh et al. stated that FC would impact upon usage but not behavioural intention.

The general results (see 5.3) suggested that in most instances respondents would require some kind of assistance from what ever source that might come from indeed for all five questions relating to FC the mean score was represented by 'agree' on the Likert scale. The following provides the percentages for the mean scores for the five questions.

	55	56	57	58	59
Mean%	34.8	37.9	33.8	40.9	47

Taken from table 5.29

A general acceptance of the need for support is apparent here and would generally be expected. The analysis that follows aims to identify whether these groups could be broken down further to see which if any perceived that they required higher levels of support.

6.6.1 FC and factor Analysis

A factor analysis undertaken on the responses identified questions 55-9 (Cronbach's Alpha .892) as constituting an individual factor. This was the strongest factor loading of the four (five including the two for SI) constructs. This suggested a relationship between these questions and supported earlier work (Venkatesh et al., 2003) suggesting that FC was a specific factor. All the questions went to making up this factor. This contradicts previous research that suggested that PE was generally the strongest individual factor.

6.6.2 Hypotheses relating to FC

The following hypotheses relate to Facilitating Conditions (FC).

H10: The facilitating conditions will not have a significant influence on behavioural intention

H11: The influence of facilitating conditions on usage will be moderated by age, such that the effect will be stronger for older participants

H12: The influence of the facilitating conditions on usage will be moderated by the nature of the relationship with the supplier

6.6.3 Behavioural Intention relating to FC

H10: The facilitating conditions will not have a significant influence on behavioural intention

Previous research (Venkatesh et al., 2003) suggested a relationship between BI and the constructs PE, EE and SI. The link with FC was with usage. This research concurs that FC does not have an influence on BI. The results from the quantitative research presented here suggest that this was the case with no significant results forthcoming from either question 25 (usage) or 26 (BI). This infers that the need for assistance relating to the questions outlined in those measuring FC (55-9) does not, or would not deter respondents from accepting online procurement in their business.

H10. This hypothesis is proven as it states that there will not be a relationship between FC and usage. A statistical relationship between FC and usage is not established. This suggests that when considering actual usage of online procurement, the perceived need for support (FC) does not impact on how respondents intend to behave. It can therefore be stated that FC will not have a significant influence on intention.

6.6.4 FC influence on Behavioural Intention relating to age

H11: The influence of facilitating conditions on usage will be moderated by age, such that the effect will be stronger for older participants

The association is clearly laid out here between age and the need for FC. This would be an expected result and would be in line with the other points made in relation to the other constructs.

Correlation

The Spearman correlation showed no significant results between

age and the individual questions relating to FC. This is counter to the expected result.

Analysis of variance

The K-W undertaken on age and FC again shows no significant results. The final M-W test once again does not produce any significant results that would suggest a link between age and FC.

The lack of significant results here suggest that despite FC coming out as the strongest specific factor in the factor analysis and including all the questions relating to it, there is no significant differences between the way the age groups perceive the need for support. This is contrary to earlier research where a clear link between FC and age was forthcoming.

H11. This hypothesis is not proven as it predicts a relationship between age and FC. This suggests that older participants will not differ from younger ones in their perceived need for external support (FC) in undertaking online procurement. It can therefore be stated that FC will not be moderated by age.

6.6.5 FC influence on Behavioural Intention relating to by the nature of the relationship with the supplier

H12: The influence of the facilitating conditions on usage will be moderated by the nature of the relationship with the supplier

The expectation relating to this hypothesis would be that the strength of the relationship would have an impact on the perceived quality of the IT assistance required and as such the general feeling towards it. Whether this would impact positively or negatively is unclear. A Bivariate correlation relating to the perceived closeness of the relationship provided the following results.

56	<i>I would require IT assistance via internet from supplier</i>	-.147
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Taken from table 5.44

This suggests a negative relationship between the results to this question and the relationship the respondents have with their supplier, meaning that those who perceive themselves as having a close relationship with their supplier felt they required less assistance via the internet than those who did not feel they had a close relationship. The significance level is not high (0.05) and this is the only one of the questions relating to FC which has a significant result, despite some of the other questions being similar in nature.

There are no significant results in any of the tests relating to analysis of variance. Tests undertaken used M-W for individual questions and for the construct as a whole but no significant results were forthcoming. The statistical evidence appears weak here and does not provide a conclusive case that there is a relationship between these factors.

Open ended qualitative responses

The qualitative answers provided shed some light on this area.

1. 'Until my suppliers have online purchase facilities with up to date pricing, I won't use it. Reps calling into the shop may be old fashioned and not cost effective, but it is reasonably efficient.'
(used for second time)
2. 'Use and efficiency of procuring stock parts etc. is only as good as the supplier is listing. If item not listed then telephone calls are required to source parts - this can be time consuming.'

These comments suggest that some of the systems in use are not as accurate as they might be – if systems are not accurate and up

to date practitioners are unlikely to use them and more likely to stick to tried and tested methods of procurement such as telephoning and using the rep.

H12. This hypothesis is not proven as it states that there will be a relationship between FC and usage and that this will be moderated by the nature of the relationship with the supplier. A statistical relationship between FC and usage is not established. This suggests that when considering the use of online procurement (usage), the perceived need for support (FC) is not impacted upon by the nature of the relationship between the retailer and the supplier. It can therefore be stated that the relationship between FC and usage will not be impacted upon by the perceived nature of the retailer/supplier relationship.

6.6.6 Experience relating to FC

Despite the fact that there are no links established between FC and either BI or UB, there are statistically significant relationships in this research. The original study by Venkatesh et al. (2003) did not establish a link between FC and BI but did anticipate a link with *use behaviour*. The findings of this research did not find a link between FC and BI these factors (hypothesis 10). It did however find a link between perceived IT experience and FC as did the previous research. The relationship was significant to 0.01 (see below) for question 55. Both results were negative suggesting not surprisingly that the more experienced the user the less assistance they would be likely to need from their supplier.

55	<i>I would require IT assistance via telephone from supplier</i>	-.193 **
56	<i>I would require IT assistance via internet from supplier</i>	-.155 *

Taken from table 5.36

The K-W results for experience indicated no relationship between experience (q.8) and FC (q.55-9). However the M-W results suggested that when experience was reduced to three groups the following significant results relating to q.8 were as follows.

q.8	Significant results
1 and 3	55, 58

Taken from table 5.70

There are a number of significant results relating to experience and FC. As FC came out strongly (.892) in the factor analysis with all five question collectively making a specific factor, this would suggest that the number of significant results presented here are not enough to allow this research to consider that there is a generally significant relationship between FC and experience.

6.7 Behavioural Intention and Use Behaviour

This section looks at the last two hypotheses which relate to behavioural intention and use. The issues relating to these factors were looked at in detail in section 6.2. Both these factors are linked to different hypotheses and as such appear in the specific sections looking at the four main constructs; PE (6.3), EE (6.4), SI (6.5) and FC (6.6). The remaining three hypotheses that relate to other factors are outlined here. They are as follows.

H13. The availability of use will have a significant influence on use behaviour

H14. Behavioural intention will have a significant positive influence on usage

H15. The frequency of reordering will have a significant influence on behavioural intention

6.7.1 Availability and Use Behaviour

H13. The availability of use will have a significant influence on use behaviour

The first of these two hypotheses appears to be a fairly obvious statement suggesting that use behaviour will be different where a system is not available. Obviously in the case of online procurement if the suppliers of a company do not use online procurement it is safe to say that a retailer will not be adopting a system that they are not aware of, or does not exist.

Question 23 queries how many suppliers a retailer actually has that offer online procurement, the descriptive results are as shown below in table 5.24.

How many offer OP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	15	7.6	7.7	7.7
	1	17	8.6	8.8	16.5
	2-7	110	55.6	56.7	73.2
	8-15	37	18.7	19.1	92.3
	15+	15	7.6	7.7	100.0
	Total	194	98.0	100.0	
Missing	no response	4	2.0		
Total		198	100.0		

Taken from table 5.24

As is evident from the figures above, 7.6% of respondents used suppliers that did not offer online procurement. Although in some cases respondents might not have been aware of whether or not a supplier had an online procurement system (and they may indeed have had one), it was their perception that it was not an option to use online procurement. As per the hypothesis above, in this situation the retailer would assume that they were not in a position

to adopt online procurement and their behaviour would be potentially altered because of this.

Use behaviour can be looked at in the context of q.25 which asks respondents in relation to procurement, how many of these (online) do you use? The descriptive results from this question suggest that 28.3% did not use any online procurement systems. As this figure is considerably higher than the figure that represents that outlined in q.23 it could be suggested that a number of respondents are aware that they have access but choose not to use it for reasons already outlined. The picture is however not quite that clear cut as amongst those using online procurement with some of their suppliers they may have others who do not have a system in place, and others still that have online procurement but for whatever reason the retailer does not use them. The complexity of this point is out with the realms of this research although some of the issues relating to it are discussed.

H13 is supported although the statistical evidence is not strong. Ultimately this hypothesis appears to be sound on the basis of common sense. That is that if a system exists it is logical that people will have the ability to adopt or not adopt. Where an online procurement system is not in place practitioners will have no choice but to use other methods.

6.7.2 Behavioural Intention and Use Behaviour

H14. Behavioural intention will have a significant positive influence on use behaviour

This final hypothesis states that where the intention to behave in a certain way is established it will lead to actual behaviour in this area. This idea goes back to the Theory of Reasoned Action (1975)

devised by Ajzen and Fishbein which separated *intention* from actual *behaviour*. The suggestion here is that just because someone intends to do something does not specifically mean they will do it. That said there is likely to be a close link between the two. Behavioural intention is (see 6.2) represented by questions 25 and 26 looking at current and perceived future levels of usage.

In analysing the variances of questions 25 & 26 using a K-W test the following results are forthcoming.

Test Statistics^{a,b}

	How many online do you use
Chi-Square	70.313
df	4
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: How many online might you use in future

Table 6.26 BI q25 using K-W

As can be seen from this table the results is, perhaps not surprisingly, highly significant suggesting a strong relationship between usage and the behavioural intention. This result would tend to support the hypothesis suggesting a direct relationship between the two.

H14 is supported as the statistical evidence indicates a close relationship between BI and usage and this relationship would appear to be positive. This means that for those who believe that in future they will use online procurement the suggestion is that this will indeed happen.

6.7.3 Frequency of reordering and Behavioural Intention

H15. The frequency of reordering will have a significant influence on behavioural intention

The need to reorder relates to a variety of issues faced by the SME retailer. The highly significant results presented here are negative suggesting that the higher the frequency of reordering the higher the current use of online ordering (UB) and the higher the perceived future usage (BI).

25	<i>How many of these online do you use</i>	-.207 **
26	<i>How many online might you use in future</i>	-.186 **

From table 5.42

6.8 Linking the findings with previous research

Extensive research has been undertaken in this area and this is documented in the literature review chapters (see 2-4). The basis of the approach adopted in this research is reasonably well established with the aim of using existing tried and tested methods to take the study of this area in a different direction. The ultimate goal is to establish a new model (see 6.9) that allows researchers to identify and measure the influencing factors relating to SME retailers and their uptake of technology.

6.8.1 Behavioural Intention

Section 6.2 looked at the Behavioural Intention (BI) and the various issues relating to it. Current behaviour should be easy to measure; despite being more complex, how a person intends to behave in the future should also be measurable. The ultimate behaviour (*use behaviour*), or future behaviour bears a close relationship to the intention but may differ. The inclusion of BI in models looking at technology acceptance such as UTAUT (2003), originated in the TRA (1975) devised by Ajzen and Fishbein. Ha (1998) stated the model suggests a causal link between the antecedents of *attitude*,

subjective norm, and intention. The authors predicted that from this model an understanding of a person's intention to act could be calculated. The theory further states that where a positive outcome from a particular behaviour is predicted that a favourable attitude will be held towards it (Ajzen and Fishbein, 1980).

6.8.2 Performance Expectancy (PE)

The results for PE are outlined in section 6.3. This construct is included in hypotheses 1 – 4 and is identified by Venkatesh et al. (2003) as the strongest predictor of intention of all the constructs. The results from previous research relating to PE were outlined in section 2.8 and similarly identified PE as being a strong determinant of attitudes (Knutsen, 2005; Wang and Yang, 2005; Carlsson et al., 2006; Louhu et al., 2006). Other research suggested that PE was significantly linked to certain personality traits (Wang and Yang, 2005). Work by Li and Kishore (2006) identified significant results with PE in conjunction with factors relating to experience but rejected a link with gender. This reflects the findings of this research that showed a strong link between PE and BI (see 6.3.3) and a clear link between PE and age (see 6.3.4). Gender was discounted given the low number of female respondents and although age showed some significant results these were not definitive.

6.8.2.1 Hypothesis 1

This hypothesis looking at the moderating impact of age and the influence PE has over BI was supported. Knutsen (2005) found in his research into acceptance of mobile phone services that contrary to his initial thoughts (see 2.8), age appeared to have a positive effect on PE with older respondents having higher expectations than younger ones. Research by Louho et al. (2006) also found that age had an impact on adoption but did not state in which direction. This

research concurs with earlier work suggesting that there will be a moderating impact on different age groups and that this will influence PE on BI.

6.8.2.2 Hypothesis 2

This hypothesis looking at the moderating impact of perceived IT experience and the influence PE has over BI was supported. Similarly Wang and Yang (2005) found there to be a link between PE and IT experience. Pu Li and Kishore (2006) however found scores for PE were 'comparable among different groups' (p.189) and as such did not see previous experience as impacting on PE. This research supports some earlier research suggesting that the level of previous IT experience will act as a moderator over the influence of PE over BI.

6.8.2.3 Hypothesis 3

This hypothesis looked at the moderating impact of the frequency of re-ordering and the value of the product and their influence over PE and BI. As this was particular to this research there is no previous research to which it could be compared. The results suggested that there was a significant relationship between these factors.

6.8.2.4 Hypothesis 4

This hypothesis looked at the moderating impact of the strength of the relationship between the retailer and supplier and looked at the impact this might have over PE and BI. As this was particular to this research there is no previous research to which it could be compared. The results suggested that there was not a significant relationship established between these factors.

6.8.3 Effort Expectancy (EE)

The results for EE are outlined in section 6.4 and cover hypotheses 5 – 7. Venkatesh et al. (2003) suggest that the impact of EE on intention is 'moderated by gender and age such that it is more significant for women and older workers, and those effects decrease with experience' (p.467). EE was seen as a strong determinant in work undertaken by Louhu et al. (2006); Li and Kishore (2006); Carlsson et al. (2006); and Knutsen (2005). Research by Wang and Yang (2005) found EE to be a weaker determinant than PE but supported both of the hypotheses relating to EE in their research.

6.8.3.1 Hypothesis 5

Despite previous research suggesting a link between EE and age (Venkatesh et al., 2003; Louhu et al., 2006), and therefore its impact on BI, this research does not make that link.

6.8.3.2 Hypothesis 6

Due to the rather specific nature of this hypothesis, there is little research specifically on this. The core underpinning paper by Venkatesh et al. (2003) finds that the effect of EE 'on intention is also moderated by gender and age such that it is more significant for women and older workers, and these effects decrease with experience' (p. 467). Such a relationship is not established in this research.

6.8.3.3 Hypothesis 7

Due to the highly specific nature of this hypothesis there is no other research specifically on this that it can be compared to. The results do not suggest a significant relationship in the case of these factors.

6.8.4 Social Influence (SI)

The results for SI were outlined in section 6.5 and cover hypotheses 8 – 9. The work by Venkatesh et al. (2003) suggests that all four moderators impacted on SI. In work undertaken using UTAUT Carlsson et al. (2006) and Li and Kishore (2006), stated that the the link with intention was not as strong as for PE and EE. Research by Louhu et al. (2006) rejected the hypotheses linking SI and use intention.

6.8.4.1 Hypothesis 8

This hypothesis looking at the moderating impact of age and the influence SI has over BI was supported. Louho et al. (2006) rejected their hypothesis linking SI with age. The findings of this research disagree with this earlier work by finding a link between the moderating impact for different ages and the influence SI has on BI.

6.8.4.2 Hypothesis 9

This hypothesis was taken from earlier work by Venkatesh et al. (2003) who found that experience had a moderating effect on the relationship between SC and BI. This research finds the same.

6.8.5 Facilitating Conditions (FC)

The results for FC were outlined in section 6.6 and cover hypotheses 10 – 12. Venkatesh et al. (2003) suggested a link between FC and age and experience. Studies by Carlsson et al. (2006) and Louhu et al. (2006) did not find a link with FC. Wang and Yang (2005) found significant relationships with FC and the work by Li and Kishore (2006) identified some significant results but also rejected some of the hypotheses linked to FC. Amidst this rather uncertain evidence this research suggested the following hypotheses.

6.8.5.1 Hypothesis 10

This hypothesis looks to disprove a link between FC and BI. These findings were supported by Carlsson et al. (2006) however research by Louho et al. (2006) rejected their hypothesis stating that FC did not have an effect on use intention (BI). The findings of this research disagree with some earlier work and agree with other research. Even in the latter case a strong link between FC and BI is not clearly established.

6.8.5.2 Hypothesis 11

This hypothesis looked at the impact of age on the relationship between FC and usage stating that it would act as a moderator. This was not found to be the case in this research and this is supported by work by Louho et al. (2006) and Carlsson et al. (2006) and therefore refutes the original work on UTAUT by Venkatesh et al. (2003).

6.8.5.3 Hypothesis 12

This final hypothesis looking at FC states that the nature of the relationship between the retailer and the supplier will moderate the influence FC has over usage. There are not sufficient significant results that suggest a link here and therefore the hypothesis is rejected. Due to the specific nature of this hypothesis there is no direct comparison available from previous research.

6.8.6 Use Behaviour

The final two hypotheses look at the link between at the factors impacting upon actual adoption. The work of Ajzen and Fishbein led to the Theory of Reasoned Action (1975) which established the processes of intention and usage as different. The suggestion being here that even if we intend to do something, in this case adopt

online procurement, does not mean we *will* ultimately behave in this way. Venkatesh et al. (2003) suggested a direct link between both FC and BI, and use behaviour.

6.8.6.1 Hypothesis 13

Once again there is not a great deal of research undertaken where there is voluntary or mandatory uptake to be compared. In most cases the work looks at areas where adoption is voluntary (Knutsen, 2005; Carlsson et al., 2006; Louho et al., 2006; Pu Li and Kishore, 2006). Venkatesh et al. (2003) establish a link between BI and voluntariness of use, in the case of this research this is upheld.

6.8.6.2 Hypothesis 14

This research supported the positive link between BI and usage and this is supported by previous research by Venkatesh et al. (2003). Other work has not fully established the link, Louho et al. (2006) rejected a link between BI and usage as did Carlsson et al. (2006).

6.8.6.3 Hypothesis 15.

This research supported the link between the need to reorder and behavioural intention. This was a new departure for work in this area.

6.8.7 Other issues relating to this research

The hypotheses above were developed mainly from the secondary research and based along the lines of existing studies and work relating directly to the SME and/or retail sector. The following represent where significant relationships have emerged and although not incorporated as hypotheses are worthy of mention. There is no previous research in these areas to which to compare these results.

6.8.7.1 Value of product and size of product

These significant results make the fairly obvious link (in this part of the retail trade) between the value of a product and its size, suggesting that the larger the product the more expensive it is likely to be, see table 5.40 below. This would necessarily hold for other SME retailers such as Jewellery and Apparel.

18	<i>Approximate size of item procured</i>	.495 **
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Taken from table 5.40

6.8.7.2 Value of product – international supplier (inverse)

The negative relationship outlined below in table 5.40 suggests that where a retailer is purchasing expensive items they will be keen to look into the possibilities of using international suppliers. Indeed the ability to procure products from a wider source is likely to be enhanced by use of the internet. Interestingly the results for continually sourcing new suppliers (q.27) had a positive significant relationship and although this relationship is weaker than for question 30 it suggests the opposite, i.e. that those predominantly purchasing cheaper items find it more important to constantly seek out new suppliers. That said this could be in the context of national suppliers and may relate to cheaper more homogeneous goods that are more price based and commoditised.

27	<i>It is important to continually source new suppliers</i>	.145 *
30	<i>An international supplier is likely to be beneficial</i>	-.198 **

Taken from table 5.40

6.8.7.3 Relationship with supplier

It was expected that the relationship between the retailer and the supplier would have a significant impact on the likelihood that they would adopt online procurement. The rationale was that given a bond of trust between the parties, if a new system was proposed then the retailers would be more enthusiastic to engage in activities

aimed at streamlining and improving the ordering system to the benefit of both. The literature would generally suggest (see 2.9) closer relationships leading to closer ties e.g. online procurement, this link is not however found here.

6.8.8 Towards a new model

The final section of this chapter that follows (see 6.9) presents the new model that reflects the results of the hypotheses and aims to convey the issues of technology acceptance relating to SME retail.

6.9 The New Model

The aim of this research was to establish through qualitative and quantitative research a method of measurement of the SME retailer's experience of technology adoption using the UTAUT (Venkatesh et al., 2003) model as the underpinning. It was expected that given the specific situation facing this type of business that there would be peculiarities that would only be explained by a new developed model. This expectation has come to fruition and as such a new model is required that fully represents the findings of this research. As can be seen in figure 6.1 the new model is similar in nature to the UTAUT model but has some significant differences which better represent the situation facing the SME retailer for electrical goods.

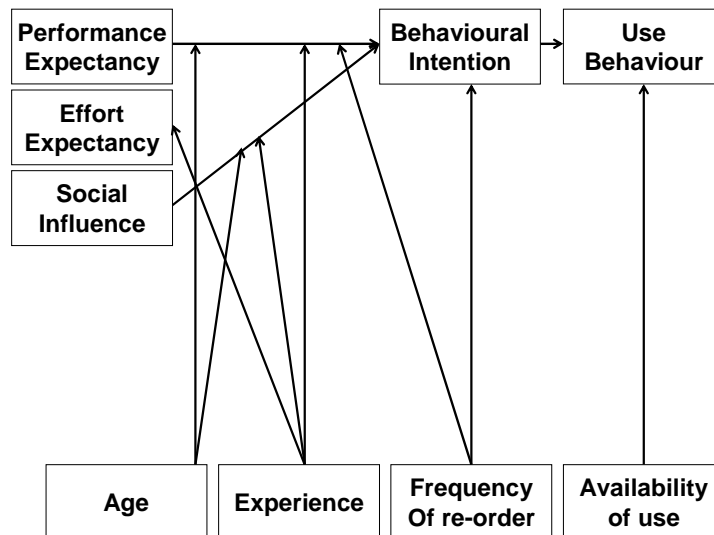


Figure 6.1 Adapted model for technology acceptance in the SME

6.9.1 The links represented in the model

The following links included in this model concur with the research undertaken that established the UTAUT model (2003).

- BI links to UB
- PE links to BI and is moderated by *age, experience*
- SI links to BI and is moderated by *age* and *experience*.
- Availability of use links to BI
- Experience links to EE

The following links represents the findings of this research.

- PE links to BI and is moderated by the *frequency of reordering*.
- Frequency of reordering links to BI

Other issues that were expected through the secondary and qualitative research to have an impact on the measurement of technology acceptance in the area of SME retail were as follows.

- The perceived relationship between the retailer and the supplier

- The cost of the product being procured
- The size of the product being procured

The fact that significant relationships were not forthcoming does not mean they do not exist but they were not apparent in this research.

6.9.2 The main differences from previous research

The aim of this research was to identify not only the areas where UTAUT (2003) was appropriate but also those areas below where it failed to measure the research findings.

- EE is not seen to link with BI
- FC is not seen as an influential factor in relation to UB
- The frequency of re-ordering moderates the influence of PE on BI
- The frequency of re-ordering is seen as an important determinant of BI

6.9.3 The main constructs

The main constructs of the UTAUT (Venkatesh et al., 2003) model were represented in this model and are outlined below.

Performance Expectancy – this was proven to have a direct relationship with BI, being moderated by age and experience as suggested in the UAUT model. A new moderating factor of frequency of re-ordering also emerged as significant. The expectation that a technology will achieve what it sets out to, is seen as a strong determining factor. Whether or not the technology was seen as achieving its goals was influenced by the age and/or experience of those making the adoption decision. In the context of online procurement and the SME retailer another factor that needed to be taken into consideration was how often the practitioner needed to re-order products. Those who required frequent re-ordering in their business linked positively to PE and as such to a

significantly higher BI (and consequently UB). It could be suggested on the basis of this that technology is generally more necessary in businesses with high turnover, and therefore a higher frequency of re-ordering. See future research 7.4.

Effort Expectancy – the links between EE and BI were not sufficiently significant to concur with the findings of the UTAUT model which suggested such a link. The only moderator that showed a significant relationship with EE was experience. The expectation that if greater effort in adopting a technology is required then the BI will be lower is not met here. As experience is linked to EE in the results for this research it suggests that the older the respondent the more effort they believe is required. That said, the fact that a significant relationship between EE and BI is not established suggests no matter which moderator links to EE it does not influence BI. Ultimately the amount of effort that the respondents perceived would be required in the adoption process is according to this research not likely to ultimately impact on whether or not adoption is either considered or actually undertaken. See future research in section 7.4.

Social Influence – as with the UTAUT model SI showed a significant relationship with BI and this was moderated by *age* and *experience*. The idea of the importance of referents can be seen in the work of Ajzen and Fishbein (TRA and TPB). The thoughts and opinions of those around us are likely to influence our actions in a variety of ways. Given the nature of the respondents in this research (owner/managers) there was the possibility that these people would be less influenced by others than in, for instance, the context of a large organisation. The results presented here suggest otherwise and show that the influence of others is as pertinent here as it is in other situations. See future research in section 7.4.

Facilitating Conditions – despite the fact that this factor was strongly represented through factor analysis by the questions relating to it, it failed to link to UB as was the case in the original model. A link with BI also failed to materialise agreeing with the original research into the UTAUT model. Indeed there were very few significant results relating to it and as such it is been removed from the final model representing this research. The fact that IT support was not seen as an important determinant of BI suggests that either respondents feel capable of resolving IT problems they may come across themselves, or that they feel that this type of support is not very useful anyway. Either way the IT support afforded by external parties is not seen as being linked to BI, and also does not appear to be significantly influenced by any of the proposed moderating factors.

The implications of the points made above are discussed in the final chapter (7).

Chapter 7

Conclusions and Implications

7.1 Findings

The aim of this research has been to explore the issues relating to the uptake of technology in the context of the SME retailer. This is based on the fact that despite well documented evidence on the benefits accruing to those adopting online technology in their working practices, the level of uptake in this sector has, according to the UK government (The Times, 2003), been disappointing. Chapter 2 looked at the background of IT and internet uptake in the recent past and identified that the message coming from adopting emerging technologies is at best ambiguous. A variety of different interests exist to push sometimes unnecessary technologies whereas other parties have been quick to spell out the dangers of technology adoption. The timeline has also led to confusion in that stock prices raced ahead in the late nineties only to fall substantially at the turn of the century – again this created uncertainty on the ability of internet technologies to fully achieve their earlier promise. Chapter 3 provided an overview of the literature in the general area of technology acceptance. Measurement of human behaviour is complex and studying likely future behaviour even more so. Theoretical models to measure technology acceptance have evolved over the last thirty years and the accumulated model of Venkatesh et al. (2003) goes a long way to predicting acceptance levels in the large organisation.

The research questions to be addressed were outlined in chapter 1. These are revisited here with additional background information to provide an account of what was found in relation to the points made.

7.1.1 Background on the SME sector in the UK

This research states that the SME is indeed central to the economic well being of the UK. A large proportion of GDP comes from this sector (over 40%) as does a high

percentage of employment (up to 90%). It is therefore important that the SME sector remains competitive and that government provides it with appropriate support to achieve efficient levels of operation, allowing it to maintain its invaluable contribution to UK PLC.

The general aim of technology is to improve efficiency in the organisation and as such is key to the ongoing success of the SME. Technology led improvements in large organisations often come by replacing people with technology, this is less likely in the SME as they are not so prone to overstaffing. Despite this, to be successful in today's retail environment the SME cannot turn its back on adopting technological change and in most cases does not. The forces of competition work upon the SME as much as any company and this research suggests that national and international competition are seen as a threat alongside the more traditional SME competition at local level. Therefore to remain competitive in an increasingly global market place the SME has to continue to look at ways of improving their business practices, such as adopting new technologies.

7.1.2 Background on the adoption of internet based technologies and specifically online procurement in the retail sector

The internet has afforded the SME retailer with a level of reach that it never previously had both in terms of potential customers (b2c) and suppliers (b2b). Being able to compete at a higher level has allowed some retailers to flourish but this appears to have been highly dependent on the product they sell and the market structure they operate in. The experience of those identified for this research, especially in the preliminary qualitative work, does not suggest a homogeneous view to the adoption of internet based technologies, with some very enthusiastic and others ambivalent.

The adoption of online procurement can be seen in the UK from the mid 1980s onwards. The UK retail sector has led in this field (e.g. Tesco). The SME retail sector has lagged behind in the adoption of online procurement due in part to the variable nature of the small business market place. The results from those interviewed and surveyed do not provide a clear picture of the perceived benefits. Some practitioners are very enthusiastic with online procurement and others remain unconvinced. Some see the simplicity and speed of online procurement as a bonus reflecting a business environment that is continually getting faster. Other practitioners feel that the lack of

personal involvement does not reflect the SME retail environment and that the de-humanising of the procurement process is unhelpful and in part, against the ethos of the SME. Some practitioners will therefore perceive a higher level of risk in the taking on new suppliers. Technology adoption and specifically the use of online procurement is evident amongst SMEs in the retail sector however the general perceived value of this remains unclear, reflecting the diverse nature of the SME sector.

7.1.3 Research question 1: Are the four constructs outlined in the UTAUT model (2003) appropriate in the context of SME technology acceptance?

The direct determinants (constructs) and the moderators laid out in the Venkatesh et al. model (2003) underpin this research. The model is used in support of this research as it is currently deemed to be the most statistically successful measurement of technology acceptance currently available. Its usefulness here is however somewhat tempered by the fact that research carried out on it has generally been in a large business context as opposed to the SME, which this research focuses on. This research has found that the constructs in the original UTAUT model (ibid.) do mainly reflect the research proposition outlined here although with some changes necessary in order to reflect the SME retailer.

PE was generally seen as a strong factor with practitioners suggesting that if they thought the technology (online procurement) could do the job better than the previous method, then they would intend to adopt (BI). In practical terms the person/organisation being asked to adopt online procurement needed to feel that the system would achieve the job better than previous methods, or at least compliment it to create a better overall working practice in the area of procurement. This research suggests that this construct is central in the context of the retail SME, and that it plays an important part in how the behavioural intention to use online procurement is reached. This suggests a role on the part of those wishing to have online procurement adopted (suppliers or owner/managers) of conveying the benefits of the system clearly and in terms that show how it enhances or improves the current methods that are used.

The level of effort required (EE) to adopt online procurement did not link clearly to the intention to adopt (BI) as it did in the original UTAUT model. The lack of a significant relationship here suggests that the perceived level of effort required to allow for

adoption of online procurement did not influence the BI. This is perhaps because the online procurement interfaces are getting better and therefore are not perceived as so much of a concern for practitioners, or perhaps the general levels of perceived skill of using internet based technologies is today so high and the internet so common place that people are less anxious about using it. Ultimately the level of effort required (EE) does not appear to have major bearing on the intention to use in the context of the SME retailer and as such would be an issue of less concern when trying to persuade people to adopt an online procurement system or other technology.

The importance of the perceived impact of the thoughts of others was addressed by SI. Referent others are normally deemed important in the decision making process and this is related to the adoption of technology and specifically online procurement in this research. Significant results suggested that SI had a bearing on BI meaning that practitioners took note of the views of those around them and were prepared to act upon them. Given the nature of the SME the role of owner/manager is likely to be crucial to the success of the business. Their reaction to technology is likely to be the main driver when it comes to adopting processes such as online procurement, unless a supplier enforces the use of it (see B&O case study, 5.2.2.7). This research aimed to ask only this group of decision makers to elicit their opinions. The results suggest that they are generally responsive to the thoughts of others and act upon these. SI having a bearing on the intention to adopt would suggest that even those owner/managers who are not enthusiastic about technology adoption may find themselves being persuaded into it by staff members, family and even competitors who *do* perceive the benefits of adoption.

The original UTAUT model (Venkatesh et al., 2003) identified the relationship between support networks (FC) and actual behaviour but not the intention to behave (BI). In the case of this research no such link was forthcoming with actual behaviour suggesting that the support networks (FC) do not have a significant relationship in the SME context with either BI or UB. The lack of significant relationships between FC and these points suggests that practitioners are sufficiently well versed with technology to resolve problems themselves, or that they feel these support networks do not really achieve in the way they should. Ultimately the impact of support networks in place to assist with any technological problems that practitioners might have, does not appear to be an important issue when attempting to persuade people to use a technology.

This research has contributed to the existing literature in this area by identifying the impact of the direct determinants in the context of SME retail. Given the specific nature of the SME it is not surprising that influence of the four constructs is different than previous research which mainly looked at the experience of employees in larger organisations. In understanding the impact of these constructs it allows for a clearer analysis of the moderators and their impact on acceptance.

7.1.4 Research question 2: Do experience, gender and age impact upon the likelihood of technology acceptance in the SME?

The moderating factors outlined in the original research (UTAUT) identified experience, gender and age as impacting upon the likelihood of acceptance. In the quantitative research it was not possible to gauge the impact of gender. Both age and experience were deemed to be significant in their impact on BI.

Age moderated both PE and SI, meaning that the expected performance of online procurement was perceived to be lower for older respondents, and the influence of others (SI) less important when online procurement was being considered. Age was also significant when looking at the adoption of international suppliers suggesting that older respondents were not motivated to seek these out in a way that their younger counterparts might. The issue of age is a topic of much debate in both governmental and academic circles. This is not only in terms of employment but also related to technology uptake. The idea that you *can't teach an old dog new tricks* appears to hold some weight in this research and the implications of this are far reaching in terms of technology uptake, leading to concerns over a technology underclass. Although out with the scope of this research it is worth noting that government is keen to address these points and that initiatives to enthuse older age groups to use online technologies are prevalent.

Levels of perceived IT experience linked to PE, SI and EE. Those who considered themselves to have higher IT skills were more likely to look upon online procurement favourably and were more open to the influence of others. Generally these factors taken from the original model also held true for the SME retailer. The issue of actual experience is one that is likely to change over time as people become more comfortable

with using IT. Their perception of their skills however might not change (zero sum game) as they see others as far more versed with what is by its nature becoming an increasingly complex area. That said the level of complexity that technology can now offer can be mitigated to an extent with superior user interfaces which are designed to be more intuitive and therefore easy to use.

The contribution to the literature here is to identify the importance and significant linkages relating to age and experience in the context of technology acceptance in the SME. The impact of these moderators and the way they link to the direct determinants differs from previous research and suggests a different scenario for technology acceptance for the SME. A final point relating to experience that is worth mentioning is that if staff within a SME retailer perceive their skills to be higher this is likely to have an increasing influence over owner/managers and their decision making in terms of accepting technology.

7.1.5 Research question 3: Does; the relationship with the supplier, the size of the product and the frequency of reordering, impact upon the likelihood of technology acceptance in the SME?

The secondary and qualitative research led the author to consider the issues of; the supplier relationship, the size of the product and the frequency of re-ordering as potential moderators in the specific case of the SME retailer. Of these, only the frequency of reordering was reckoned to be a significant factor when looking at the adoption and use of online procurement.

The need to frequently re-order product would be expected to impact upon the use of technology in general as it would suggest higher turnover and therefore the quest for more efficient methods of procuring stock and marketing stock (b2c). Although the latter part of this expectation (b2c) was out with the scope of this research the frequency of the procurement of stock did show a significant relationship. By including the frequency of re-ordering in the final model there is a clear suggestion that those retailers who have a higher level of turnover have a greater need for online procurement. In those instances where the type of retailer has a naturally lower level of turnover, for instance furniture, this would suggest a lower need for technology to perform that specific business process. Where, however organisations are in the same

area (in the case of this research) it could be suggested that those who have a higher turnover, and consequently adopt more technology, are likely to be more successful than their competitors who do not.

The size of the product was expected to impact upon online procurement adoption as it was expected that larger items would be purchased less frequently and therefore link to the frequency of reordering, however no significant relationships were found here.

The issue of supply chain relationships has featured extensively in recent academic literature (see 2.6.3) and as such it was considered that this relationship may have a significant moderating impact on the determinants of technology acceptance. This did not however come out as a significant factor in the adoption of online procurement.

This new moderator contributes to the literature in both IS (Information Systems) and SME research. Relating the level of business activity to the need for technology acceptance for the SME retailer suggests a new and important development for research in this area. The next section clarifies the uses that this research could be put to.

7.2 Uses of this research

This research set out to establish a model that would allow for the study of the SME in relation to their likelihood to accept technology in light of the change scenario that internet usage has created. Given the background this research aims to assist in the area of technology acceptance for the SME retailer by providing guidance not only for them but also for those that have relations with them such as suppliers.

7.2.1 Uses of this research for the retailer

This research can provide support for practitioners faced with adoption decisions. The SME retailer should be able to judge the influencing factors relating to adoption and this should ultimately assist in the quality of their decision making. An understanding of the model would allow a retailer insight into the likelihood that they would adopt a

new technology if it were presented to them, or if they felt it might be of use to their business. It would also provide assistance relating to the likelihood that their staff would adopt a specific technology and the forces acting upon this. The main issues arrived at in the research would allow practitioners to focus on these in the event of adopting a new technology.

7.2.1.1 The retail SME and PE

In the case of motivating staff to adopt a certain technology there may be certain things the retailer owner/manager can do to mitigate the negative issues of acceptance such as clearly clarifying the benefits of a system and thus increasing the Performance Expectancy held by members of staff. This would have the effect of increasing the Behavioural Intention, thus improving the possibilities that staff will actually use the system. An understanding of the elements that moderate the PE and therefore BI could also be of use. In the case of *age* and *experience* the influence these issues have over the likelihood of adoption may steer the owner/manager toward the use of certain staff to take on a specific IT role.

7.2.1.2 The retail SME and the frequency of re-ordering

As a new moderator in relation to PE the frequency of re-ordering came out as a significant issue in this research and suggests that where a higher level of re-ordering is required, the PE has a more positive outcome on the BI. This might suggest that the perceived need for technology tends to be greater as a business becomes busier. In this case, a SME planning to increase their level of business (and therefore turnover and the need to re-order) should be utilising technology more to assist in this process.

7.2.1.3 The retail SME and SI

The research identified Social Influence as an important determinant of BI. The moderating factors here were again identified as *age* and *experience*, and their importance is therefore the same as above (see 7.1.2.1). Although the influence of referent others (SI) could have potentially been diminished in the SME context, this does not appear to be the case.

7.2.1.4 The retail SME and EE

Contrary to earlier research Effort Expectancy does not appear to influence BI. The issue of EE in the SME context suggests that practitioners are not overly concerned with the level of required effort to allow them to actually use a certain technology. However *experience* does have a significant impact upon EE and as such the SME owner/manager may wish to focus on those with the necessary IT experience to have a higher chance of acceptance of a proposed new system.

7.2.1.5 The retail SME and FC

No significant relationships were found with regards to Facilitating Conditions, this suggests that the practitioner need not be too concerned with the levels of support on offer as it is not likely to have a great influence on whether or not staff plan or do accept a specific technology. The supply of appropriate FC can be costly and time consuming and as such this may assist the practitioner in the choice of support that they require.

7.2.1.6 The retail SME and the availability of use

The research suggests that not all suppliers are providing online procurement and as such not all retail procurement can be undertaken in this way. The results also suggest that the expectation is that more and more suppliers will get to a point of using online procurement and that retailers will be in the position of accepting or not, the system on offer. Obviously in a position where there is no system in place it does not matter how high the BI is, UB can not be achieved. The other issue is how long suppliers will be happy to offer other methods of procurement to the retailers they supply, or if they will aim to ultimately force adoption on retailers to allow for greater streamlining and efficiencies of their supply chain processes.

7.2.2 Uses of this research for the supplier

This research can provide insight for suppliers wanting to convert their clients (the SME retailers) to using internet based technology to simplify and streamline supply chains for greater efficiency. The revised model indicates the issues that will be influential in the decision by retailers to adopt technology or not. Similarly, suppliers need to know if a given technology is likely to be accepted by practitioners as if it is not they will have potentially gone to great expense for no reason.

A clear business rationale exists for the use of technology in streamlining the supply chain given its proven ability to reduce costs, usually through the disintermediation of middlemen or employees used to run it. If technology *can* be used successfully in supply chain processes, and it *does* reduce costs, then its deployment would appear to be a natural way suppliers would progress to potentially gain short term competitive advantage and/or keeping up with their competitors. Their ability to make a reliable judgement on this would appear to be crucial to a successful deployment of a system aimed at improving the supply chain process. The revised model should allow for better judgement in this area relating to the points outlined above.

Another issue that arises for the supplier is that of the company representative. Several comments were forthcoming from both the initial qualitative study and the open ended questions in the quantitative research. The use of the rep appears to be continuing to thrive. Although some suppliers might prefer not to have to pay reps to undertake this role they still appear to have an important role to play in the supply chain to inform and educate the retailers. This appears to be a situation where the technology can not replace the human touch and face to face interaction. Trade shows are another aspect of the SME/supplier relationship which still depends on the non-virtual environment. How long these practices will continue is out with the realms of this research, but they do not currently appear to be abating.

7.2.3 Uses of this research for the academic

As mentioned, this research aimed to extend the boundaries of technology acceptance literature by looking at the SME retailer. The position held by the electronic SME retailer is indeed peculiar to the specific situation they find themselves in. That said there are also clear implications for other types of SME retailers and indeed other small businesses. (See also further research 7.4.)

7.3 Limitations of this research

Every attempt has been made to mitigate any issues that might have resulted in inaccuracies or false representations in this research. There are also some points worth mentioning that present limitations on the findings.

7.3.1 Measuring the SME

The majority of research carried out in this area has been on the acceptance of technologies in the larger organisation. The adaptation of the work on technology acceptance to the SME environment given their heterogeneous nature presents some challenges for the researcher. In any research the ability to have some factors that are constant can lead to more consistent results. For the researcher in the large organisation looking at technology acceptance there is likely to be a time when the new technology that is going to be adopted will be pending and people are aware of it. This is likely to be followed by a period where the technology is actually introduced, allowing the researcher to plan how to measure the adoption. In attempting to identify technology acceptance in the SME retail sector all factors are prone to change as each SME retailer is potentially at a different point of acceptance of any given technology. As these SMEs are unlikely to be dictated to by a researcher s/he needs to structure questions as best as possible in an attempt to find out what s/he wishes to.

7.3.2 The sample

Careful consideration of the sample for the survey led to the choice of three geographically disparate areas being chosen from the UK in an attempt to get a representative picture of the situation relating to the average SME electronic retailer. It was not possible to ask all potential companies that would fall in to the chosen category due to the complexity of the market place. Despite all these efforts it is possible that the sample is not representative of the chosen group.

7.3.3 Gender

Despite gender being seen as an important variable in previous work relating to this topic, in the case of this research given the sample groups it was problematic. Not many females are employed in the SME electronic retail sector and thus the number of respondents who were female was very low. As it is statistically unreliable to use such a low percentage of respondents extrapolating significant results became problematic.

7.3.4 Dynamic nature of IT

The level of development in IT has been dramatic since the onset of the PC and latterly the internet. The geometric progression of acceptance of the internet in both work and entertainment has been well documented but does provide a difficult change scenario for the researcher. Although the general level of internet online procurement adoption that this research is trying to measure is likely to have changed dramatically since the project began, the general reasons behind the adoption of technology have not.

7.3.5 The revised model

In aiming to measure the factors involved in the acceptance of a technology there is the need to study a specific software and/or hardware application. The choice of technology in this case was highly specific and as such the model outlined below, (figure 6.1) tends to refer specifically to the issues relating to online procurement. General issues relating to technology adoption in the SME can be taken from this however this is limited due to the specifics of the test technology.

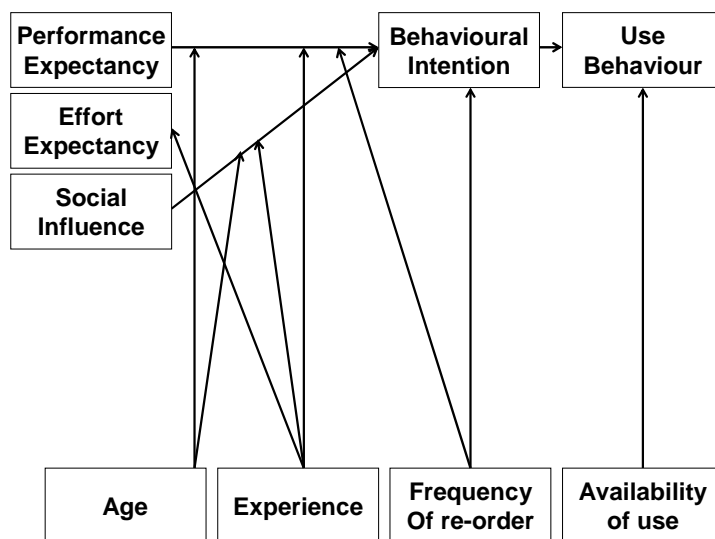


Figure 6.1 Adapted model for technology acceptance in the SME

7.4 Recommendations

The recommendations outlined below relate to SME retail practitioner (see 7.3.1 and 7.3.2) and the supplier of these retailers (see 7.3.3). They aim to provide general guidance in using this research to achieve a number of IT business objectives.

7.4.1 Online procurement adoption and the SME retailer

The following recommendations are related to the SME retail practitioner and look at the general nature of IT adoption and the specific case of online procurement.

- Be aware of current online procurement developments in the area (SI) and be able to take an objective view on how they can assist the business.
- In trying to persuade staff to adopt ensure they can see the link between the effort they need to make (EE) and wider organisational benefits that will accrue intrinsic and/or extrinsic benefits to them.
- In choosing staff to undertake the use of new technology consider their age and the level of IT experience they have if adoption is likely to be an issue.
- The higher the frequency of reordering has a direct impact on the expectations of how well the technology will perform. Those practitioners with a higher frequency of re-ordering should be looking to take advantage of the technology more than those who have a lower frequency.
- If the SME retailer is looking to expand then the same point as above applies. Given the increased perceived need for technology where there is higher turnover and higher frequencies of re-ordering the impact of this on PE will be positive and should have the resultant effect of increasing the likelihood of adoption
- As FC is unlikely to have a major impact on adoption the need for extensive IT back up is diminished. This may encourage the retailer to go ahead without concerning themselves too much with IT support and its impact on adoption. Also in the context of IT support, where FC represented a cost to the retailer they may wish to limit their expense in this area given the small impact it is likely to have upon adoption.

7.4.2 IT adoption and the SME retailer

The following recommendations are related to the SME retail practitioner and look at the specific situation of online procurement and how this can be effectively adopted in the organisation.

7.4.3 Online procurement and the supplier of SME retailers

The following recommendations are related to the supplier of retail outlets and looks at the specific area of online procurement and how SME retailers can be encouraged to adopt this technology. It also considers some more general issues regarding other technologies that the supplier may wish the retailer to adopt.

- Ensure the interface is intuitive as this will assist PE.
- If the strategy of the supplier is to expand the use of online procurement then a staged development would logically commence with the larger companies who have a higher frequency of re-ordering as this research suggests that the perceived benefits are higher for these retailers and as such adoption more likely.
- Be aware of current IT developments in the area (SI).

7.5 Future Research

Venkatesh et al. (2003) suggested that 'given that UTAUT explains as much as 70 percent of the variance of intention, it is possible that we may be approaching the practical limits of our ability to explain individual acceptance and usage decisions in organisations' (p.471). That said it is evident that different situations lead to more or less emphasis being put on the established factors. This research has amended the UTAUT model towards the specifics of the SME retailer and as such takes it in a new direction which is more focused to a specific scenario.

7.5.1 The constructs

The existing constructs have been developed over time and have been proven in a number of research projects. Both EE and FC are seen as less influential in the SME retail scenario and as such would be an area for further academic research. EE is not likely to remain static over time and is indeed likely to be dynamic as more people become proficient and confident in their use of IT. Another factor that could influence EE would be the interface and how intuitive it is to the end user. Although this was

not looked at specifically in this research this could impact upon EE and its influence over BI. Looking specifically at the EE in the context of acceptance would be an area for further study relating it to the changing levels of general IT experience, more user friendly interfaces and the growing complexity of what the IT is aiming to do.

The perceived need for FC and its influence over UB is not significant in this research and relating to the points above it is possible that the perceived need for this in relation to PE and BI is diminishing. Looking in more detail at the types and requirements of FC would be potentially useful research for organisations providing it as well as suppliers who wish to move retailer over to full online procurement.

7.5.2 The moderators

The moderating impact of age and experience is well documented in previous academic studies and upheld in this research. Gender was mainly overlooked in this work given the type of organisation being studied. Further studies measuring the significance of gender would be useful in this area. The new moderator looking at the impact the frequency of re-ordering has upon the practitioners desire to adopt online procurement could lead to further studies in this area to identify its impact on the adoption of other IT applications.

7.5.3 Other factors

An obvious route for further research in the context of this project would be to look at a wider range of SME retailer fields. This could be achieved by looking at the range of retail activities outlined by Doherty et al. (1999) and replicating this study with two or more different areas for comparison. An example of where this might be informative is in regard to gender. Given the issues relating to this study with the gender variable a possible comparison would be to look at an area of retail expected to be dominated by female practitioners such as children's clothes and/or children's footwear. This would provide an interesting perspective on the differences relating to gender as well as the differing IT needs of this type of retail outlet.

A less obvious approach might be to examine the role of the supplier and to identify their desire to migrate retailers on to online procurement and how they aim to motivate their customers into doing this. This could probably be achieved by an

amended version of the model that takes the perspective of the supplier as opposed to the retailer.

7.6 Concluding Comments

This research has aimed to gain an understanding of the reactions of the SME to technology and its adoption, to serve its business objectives. The specific technology looked at was online procurement, that is the ability of the supplier and retailer to connect in real time for the purposes of ordering stock. The idea of taking out the human element in how organisations communicate is not a new one, however the adoption of online procurement is reasonably new to the SME retail sector.

The reasons behind acceptance of online procurement lay at the heart of this research. The importance and costs involved of ensuring that technology is accepted has generated a great deal of academic interest. In this process the SME has been widely ignored for reasons mentioned throughout this research. The aim of this work has been to bridge that gap and identify how technology acceptance impacts upon the SME.

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Appendices

Appendix 1. Rappa, 2006. Types of internet based business models

Type of Model:	Description:
Brokerage Model	Brokers are market-makers: they bring buyers and sellers together and facilitate transactions. Brokers play a frequent role in business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. Usually a broker charges a fee or commission for each transaction it enables. The formula for fees can vary. Brokerage models include:
	Marketplace Exchange -- offers a full range of services covering the transaction process, from market assessment to negotiation and fulfilment. Exchanges operate independently or are backed by an industry consortium. [Orbitz, ChemConnect]
	Buy/Sell Fulfilment -- takes customer orders to buy or sell a product or service, including terms like price and delivery. [CarsDirect, Respond.com]
	Demand Collection System -- the patented "name-your-price" model pioneered by Priceline.com. Prospective buyer makes a final (binding) bid for a specified good or service, and the broker arranges fulfilment. [Priceline.com]
	Auction Broker -- conducts auctions for sellers (individuals or merchants). Broker charges the seller a listing fee and commission scaled with the value of the transaction. Auctions vary widely in terms of the offering and bidding rules. [eBay]
	Transaction Broker -- provides a third-party payment mechanism for buyers and sellers to settle a transaction. [PayPal, Escrow.com]
	Distributor -- is a catalogue operation that connects a large number of product manufacturers with volume and retail buyers. Broker facilitates business transactions between franchised distributors and their trading partners.
	Search Agent -- a software agent or "robot" used to search-out the price and availability for a good or service specified by the buyer, or

	to locate hard to find information.
	Virtual Marketplace -- or virtual mall, a hosting service for online merchants that charges setup, monthly listing, and/or transaction fees. May also provide automated transaction and relationship marketing services. [zShops and Merchant Services at Amazon.com]
Advertising model	The web advertising model is an extension of the traditional media broadcast model. The broadcaster, in this case, a web site, provides content (usually, but not necessarily, for free) and services (like email, IM, blogs) mixed with advertising messages in the form of banner ads. The banner ads may be the major or sole source of revenue for the broadcaster. The broadcaster may be a content creator or a distributor of content created elsewhere. The advertising model works best when the volume of viewer traffic is large or highly specialized.
	Portal -- usually a search engine that may include varied content or services. A high volume of user traffic makes advertising profitable and permits further diversification of site services. A personalized portal allows customization of the interface and content to the user. A niche portal cultivates a well-defined user demographic. [Yahoo!]
	Classifieds -- list items for sale or wanted for purchase. Listing fees are common, but there also may be a membership fee. [Monster.com, Craigslist, Match.com]
	User Registration -- content-based sites that are free to access but require users to register and provide demographic data. Registration allows inter-session tracking of user surfing habits and thereby generates data of potential value in targeted advertising campaigns. [NYTimes Digital]
	Query-based Paid Placement -- sells favourable link positioning (i.e., sponsored links) or advertising keyed to particular search terms in a user query, such as Overture's trademark "pay-for-performance" model. [Google, Overture]

	<p>Contextual Advertising / Behavioural Marketing -- freeware developers who bundle adware with their product. For example, a browser extension that automates authentication and form fill-ins, also delivers advertising links or pop-ups as the user surfs the web. Contextual advertisers can sell targeted advertising based on an individual user's surfing activity. [Claria]</p>
	<p>Content-Targeted Advertising -- pioneered by Google, it extends the precision of search advertising to the rest of the web. Google identifies the meaning of a web page and then automatically delivers relevant ads when a user visits that page. [Google]</p>
	<p>Intromercials -- animated full-screen ads placed at the entry of a site before a user reaches the intended content. [CBS MarketWatch]</p>
	<p>Ultramercials -- interactive online ads that require the user to respond intermittently in order to wade through the message before reaching the intended content. [Salon in cooperation with Mercedes-Benz]</p>
Infomediary	<p>Data about consumers and their consumption habits are valuable, especially when that information is carefully analyzed and used to target marketing campaigns. Independently collected data about producers and their products are useful to consumers when considering a purchase. Some firms function as infomediaries (information intermediaries) assisting buyers and/or sellers understand a given market.</p>
	<p>Advertising Networks -- feed banner ads to a network of member sites, thereby enabling advertisers to deploy large marketing campaigns. Ad networks collect data about web users that can be used to analyze marketing effectiveness. [DoubleClick]</p>

	Audience Measurement Services -- online audience market research agencies. [Nielsen//Netratings]
	Incentive Marketing -- customer loyalty program that provides incentives to customers such as redeemable points or coupons for making purchases from associated retailers. Data collected about users is sold for targeted advertising. [Coolsavings]
	Metamediary -- facilitates transactions between buyer and sellers by providing comprehensive information and ancillary services, without being involved in the actual exchange of goods or services between the parties. [Edmunds]
Merchant model	Wholesalers and retailers of goods and services. Sales may be made based on list prices or through auction.
	Virtual Merchant --or e-tailer, is a retail merchant that operates solely over the web. [Amazon.com]
	Catalogue Merchant -- mail-order business with a web-based catalogue. Combines mail, telephone and online ordering. [Lands' End]
	Click and Mortar -- traditional brick-and-mortar retail establishment with web storefront. [Barnes & Noble]
	Bit Vendor -- a merchant that deals strictly in digital products and services and, in its purest form, conducts both sales and distribution over the web. [Apple iTunes Music Store]
Manufacturer (direct) model	The manufacturer or "direct model", it is predicated on the power of the web to allow a manufacturer (i.e., a company that creates a product or service) to reach buyers directly and thereby compress the distribution channel. The manufacturer model can be based on efficiency, improved customer service, and a better understanding of customer preferences. [Dell Computer]
	Purchase -- the sale of a product in which the right of ownership is transferred to the buyer.
	Lease -- in exchange for a rental fee, the buyer receives the right to use the product under a "terms of use" agreement. The product is

	returned to the seller upon expiration or default of the lease agreement. One type of agreement may include a right of purchase upon expiration of the lease.
	License -- the sale of a product that involves only the transfer of usage rights to the buyer, in accordance with a “terms of use” agreement. Ownership rights remain with the manufacturer (e.g., with software licensing).
	Brand Integrated Content -- in contrast to the sponsored-content approach (i.e., the advertising model), brand-integrated content is created by the manufacturer itself for the sole basis of product placement. [bmwfilms].
Affiliate model	In contrast to the generalized portal, which seeks to drive a high volume of traffic to one site, the affiliate model, provides purchase opportunities wherever people may be surfing. It does this by offering financial incentives (in the form of a percentage of revenue) to affiliated partner sites. The affiliates provide purchase-point click-through to the merchant. It is a pay-for-performance model -- if an affiliate does not generate sales, it represents no cost to the merchant. The affiliate model is inherently well-suited to the web, which explains its popularity. Variations include, banner exchange, pay-per-click, and revenue sharing programs. [Barnes & Noble, Amazon.com]
	Banner Exchange -- trades banner placement among a network of affiliated sites.
	Pay-per-click -- site that pays affiliates for a user click-through.
	Revenue Sharing -- offers a percent-of-sale commission based on a user click-through in which the user subsequently purchases a product.
Community model	The viability of the community model is based on user loyalty. Users have a high investment in both time and emotion. Revenue can be based on the sale of ancillary products and services or voluntary contributions; or revenue may be tied to contextual

	advertising and subscriptions for premium services. The Internet is inherently suited to community business models and today this is one of the more fertile areas of development, as seen in rise of social networking.
	Open Source -- software developed collaboratively by a global community of programmers who share code openly. Instead of licensing code for a fee, open source relies on revenue generated from related services like systems integration, product support, tutorials and user documentation. [Red Hat]
	Open Content -- openly accessible content developed collaboratively by a global community of contributors who work voluntarily. [Wikipedia]
	Public Broadcasting -- user-supported model used by not-for-profit radio and television broadcasting extended to the web. A community of users support the site through voluntary donations. [The Classical Station (WCPE.org)]
	Social Networking Services -- sites that provide individuals with the ability to connect to other individuals along a defined common interest (professional, hobby, romance). Social networking services can provide opportunities for contextual advertising and subscriptions for premium services. [Flickr , Friendster, Orkut]
Subscription model	Users are charged a periodic -- daily, monthly or annual -- fee to subscribe to a service. It is not uncommon for sites to combine free content with "premium" (i.e., subscriber- or member-only) content. Subscription fees are incurred irrespective of actual usage rates. Subscription and advertising models are frequently combined.
	Content Services -- provide text, audio, or video content to users who subscribe for a fee to gain access to the service. [Listen.com , Netflix]
	Person-to-Person Networking Services -- are conduits for the distribution of user-submitted information, such as individuals searching for former schoolmates. [Classmates]

	Trust Services -- come in the form of membership associations that abide by an explicit code of conduct, and in which members pay a subscription fee. [Truste]
	Internet Services Providers -- offer network connectivity and related services on a monthly subscription. [America Online]
Utility model	The utility or "on-demand" model is based on metering usage, or a "pay as you go" approach. Unlike subscriber services, metered services are based on actual usage rates. Traditionally, metering has been used for essential services (e.g., electricity water, long-distance telephone services). Internet service providers (ISPs) in some parts of the world operate as utilities, charging customers for connection minutes, as opposed to the subscriber model common in the U.S. [IBM]
	Metered Usage -- measures and bills users based on actual usage of a service.
	Metered Subscriptions -- allows subscribers to purchase access to content in metered portions (e.g., numbers of pages viewed). [Slashdot]

Rappa, M., Accessed online 26 July 2006

<http://digitalenterprise.org/models/models.html>

Appendix 2. Interviewees for preliminary study

Name	Type
1. Dargie Design	Furniture
2. Holburn Hi-fi	Hi-end hi-fi
3. Bruce Millers	Hi-fi and general music
4. Panasonic Shop	Hi-fi (franchise)
5. Sony Shop	Hi-fi (franchise)
6. R&B Music	Musical instruments and amplification
7. Sainsbury	Furniture
8. Top note	General music
9. Bang & Olufsen	Hi-fi (franchise)
10. David's Flowers	Florist

Appendix 3. Structured interview questions relating to the UTAUT model

Performance expectancy	6. Is the internet essential to the running of your company?
	14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock?
	15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock?
	18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock?
	19. Could using the internet potentially provide a wider range of goods to your customers?
Effort expectancy	7. What level of computer literacy would you consider yourself to have?
	8. Do you enjoy using the internet?
	9. What year did you start using it for the purposes of leisure?
	21. Do you find the internet easy to navigate when looking for potential suppliers?
Social influence	13. How many people are involved in the decision making process of what stock should be procured?
	23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods?
	24. Do <i>they</i> utilise it for anything else in their business?
	25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it?
	26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock?
Facilitating	3. Do you have full access to the internet?

conditions	
	4. Is this via a modem or larger connection?
	5. Does your internet connection run quickly and effectively?
Experience	10. What year did you start using it for the purposes of the business?
	11. Are you a gadget person?
	12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation?
	27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs?
	28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency?
	29. Has the internet fundamentally changed the way you do business?
Voluntariness of use	
Behavioural intention	
No construct	1. How many employees do you have?
	2. What is the annual turnover?
	16. When you are buying stock is it usually the same items or do these constantly change?
	17. Do you buy anything else online for the purposes of the business?

Appendix 3

	20. Do you actively seek new suppliers on line?
	22. Do you feel there is an impressive array of suppliers on the internet providing highly competitive prices in your sector?
	30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers?

Appendix 4. Questions for exploratory interviews into the use of the internet by small retailers in their method of procurement

The aim of these questions is to use the academic constructs developed from the literature as the basis for exploratory, structured interviews. Once these have been undertaken it should provide a clearer view of the appropriateness, or otherwise, of the constructs for the proposed research.

Questions to retailers

1. How many employees do you have?
2. What is the annual turnover?
3. Do you have full access to the internet? *Facilitating conditions*
4. Is this via a modem or larger connection? *Facilitating conditions*
5. Does your internet connection run quickly and effectively? *Facilitating conditions*
6. Is the internet essential to the running of your company? *Performance expectancy*
7. What level of computer literacy would you consider yourself to have? *Effort expectancy*
8. Do you enjoy using the internet? *Effort expectancy*
9. What year did you start using it for the purposes of leisure? *Experience*
10. What year did you start using it for the purposes of the business? *Experience*
11. Are you a gadget person? *Experience*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *Experience*
13. How many people are involved in the decision making process of what stock should be procured? *Social influence*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *Performance expectancy*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *Performance expectancy*
16. When you are buying stock is it usually the same items or do these constantly change?

17. Do you buy anything else online for the purposes of the business?
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *Performance expectancy*
19. Could using the internet potentially provide a wider range of goods to your customers? *Performance expectancy*
20. Do you actively seek new suppliers on line?
21. Do you find the internet easy to navigate when looking for potential suppliers? *Effort expectancy*
22. Do you feel there is an impressive array of suppliers on the internet providing highly competitive prices in your sector?
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *Social influence*
24. Do *they* utilise it for anything else in their business? *Social influence*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *Social influence*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *Social influence*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *Experience*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *Experience*
29. Has the internet fundamentally changed the way you do business? *Experience*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers?

Appendix 5. The Questionnaire

Questionnaire: Small to Medium Retailers and internet usage – to be filled in by owner/manager

	18-30	31-40	41-50	51-60	61+
1. Age:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Male	Female			
2. Gender:	<input type="checkbox"/>	<input type="checkbox"/>			
3. Education highest attained:	School	College	Degree	Post-graduate	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. What is your position in the company?	Owner	Owner/manager	Manager	Employee	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Are you the main decision maker?		Yes	One of them	No	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. How long have you used the internet for leisure?	do not use	less than a year	less than 5 years	between 5 and 10 years	more than 10 years
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. How long have you used the internet for business?	do not use	less than a year	less than 5 years	between 5 and 10 years	more than 10 years
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. How would you evaluate your computer skills?	Excellent	Proficient	OK	Poor	Non-existent
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Do you <u>enjoy</u> using information technology to achieve organisational goals?	Very much so	To a certain extent	Not sure	Not really	No
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. What is your chosen method of communication with suppliers? <i>Please rank in order of preference with '1' as the highest chosen, or not applicable (N/A)</i>	Phone/fax	Letter	Face to face	E-mail	Web page
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. What is your chosen method of procuring stock? <i>Please rank in order of preference with '1' as the highest chosen, or not applicable (N/A)</i>	Phone/fax	Letter	Face to face	E-mail	Web page
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. What is your chosen method of purchasing other items for the business? <i>Please rank in order of preference with '1' as the highest chosen, or not applicable (N/A)</i>	Phone/fax	Letter	Face to face	E-mail	Web page
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. How many staff does your company employ? Part time _____ Full time _____

14. What is the approximate sales turnover per year? *Optional* £. _____ K

15. Is your company's computerised internal system on the same system as the internet link (or can they be linked to it)? Yes No

16. Can your company gain access to information held by your supplier/s via the internet or some other technology? Yes No

17. What is the approximate average cost of the products you purchase for stock?

<£1	£1-£5	£6-£50	£51-£100	£101-£250	£251-£500	£501+
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. What is the approximate average size of the products you purchase for stock? Choose 1

Very small (fit in pocket)	Small (carry in bag)	Medium	Large (1 person to carry)	Large (2 people to carry)	Large (2+ carry)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. How often do you need to order new products?

Hourly	2x Daily	Daily	2x Weekly	Weekly	2x Monthly	Monthly
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. How often do you speak directly to your supplier/s?

Hourly	2x Daily	Daily	2x Weekly	Weekly	2x Monthly	Monthly
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. Would you consider your relationship with your supplier/s to be?

Very close	Close	Quite close	Not close	Not at all close
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. How many suppliers do you have?

	1	2-7	8-15	15+
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. How many offer online procurement?

	0	1	2-7	8-15	15+
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. How many offer incentives if you use online procurement?

	0	1	2-7	8-15	15+
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. How many of these (online) do you use?

	0	1	2-7	8-15	15+
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26. How many of these (online) might you use in the future?

	0	1	2-7	8-15	15+
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following questions aim to measure the advantages perceived by yourself, for using the internet in your relationship with your supplier/s

Appendix 5

Please rate the following factors, on the scale provided by circling **one** response for each statement:

- 1=Strongly agree
- 2=Agree
- 3=Neutral
- 4=Disagree
- 5=Strongly disagree

- 27. It is important to continually source new suppliers 1 2 3 4 5
- 28. It is simple to find new suppliers 1 2 3 4 5
- 29. Changing to a new supplier is likely to be beneficial to the company..... 1 2 3 4 5
- 30. An international supplier is likely to be beneficial to the company 1 2 3 4 5
- 31. Attendance at trade shows is likely to be beneficial to the company 1 2 3 4 5
- 32. The use of company reps is important to the running of the company 1 2 3 4 5
- 33. The company experiences high levels of competition locally 1 2 3 4 5
- 34. The company experiences high levels of competition nationally 1 2 3 4 5
- 35. The company experiences high levels of competition internationally 1 2 3 4 5
- 36. The company experiences high levels of competition online..... 1 2 3 4 5

Performance Expectancy - *The following question aims to measure the advantages perceived by yourself, for using the internet for online procurement in your relationship with your supplier/s*

Please rate the following factors, on the scale provided by circling **one** response for each statement:

- 1=Strongly agree
- 2=Agree
- 3=Neutral
- 4=Disagree
- 5=Strongly disagree

- 37. Being able to procure stock online would be/is useful 1 2 3 4 5
- 38. The type of product we sell lends itself to online procurement 1 2 3 4 5
- 39. My supplier/s would/do like to use online procurement 1 2 3 4 5
- 40. It is necessary to speak to a person when procuring stock 1 2 3 4 5
- 41. The computer can replace human interaction in my business-to-business relationship 1 2 3 4 5
- 42. Information technology (IT) is essential to the running of my company..... 1 2 3 4 5

Effort Expectancy - *The following question aims to measure the level of effort you think would be required to adopt an online procurement system in your organisation*

Please rate the following factors, on the scale provided by circling **one** response for each statement:

- 1=Strongly agree
- 2=Agree
- 3=Neutral
- 4=Disagree
- 5=Strongly disagree

- 43. I could adopt this with very little effort 1 2 3 4 5
- 44. I would require training to be able to use such a system 1 2 3 4 5
- 45. Staff would need to undertake training 1 2 3 4 5
- 46. The level of effort required would not make this worth my while 1 2 3 4 5

Social Influence *The following question aims to measure the influence others might have on your decision regarding the adoption of an online procurement system*

Please rate the following factors, on the scale provided by circling **one** response for each statement:

- 1=Strongly agree

2=Agree
3=Neutral
4=Disagree
5=Strongly disagree

- 47. How I use technology influences my customers 1 2 3 4 5
- 48. How I use technology influences my suppliers 1 2 3 4 5
- 49. How I use technology influences my competitors 1 2 3 4 5
- 50. There has been a dramatic change in the last 5 years in my business due to IT 1 2 3 4 5
- 51. There will be a dramatic change over the next 5 years in my business due to IT 1 2 3 4 5
- 52. If I knew competitors were adopting this system, I would be more likely to explore it 1 2 3 4 5
- 53. If members of staff thought it was a good idea, I would be more likely to explore it 1 2 3 4 5
- 54. If family and friends thought it was a good idea, I would be more likely to explore it 1 2 3 4 5

Facilitating Conditions - *The following question aims to measure what conditions may need to be met to make you wish to adopt a new system for online procurement*

Please rate the following factors, on the scale provided by circling one response for each statement:

1=Strongly agree
2=Agree
3=Neutral
4=Disagree
5=Strongly disagree

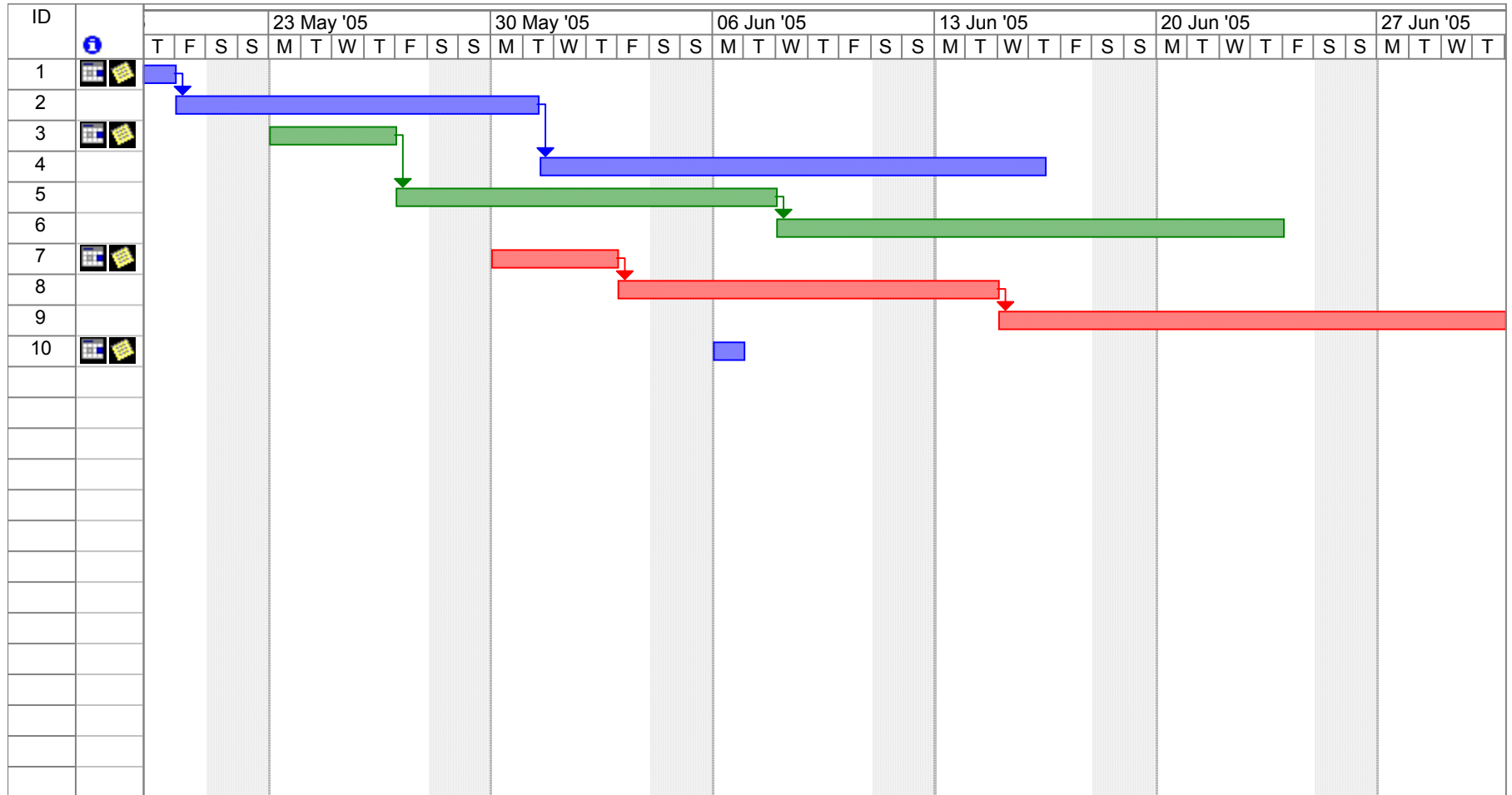
- 55. I would require IT assistance over the telephone from the supplier 1 2 3 4 5
- 56. I would require IT assistance over the internet from the supplier 1 2 3 4 5
- 57. I would require IT assistance from my service provider 1 2 3 4 5
- 58. I would require further hardware assistance in case anything went wrong 1 2 3 4 5
- 59. I would require software assistance in case anything went wrong 1 2 3 4 5

60. Retailer Product Type: _____

61. Please add any comments here about your use of IT now, or in the future, or any other comments you may have that are not covered by the questions above?

Thank you for filling in this questionnaire
Neil G Connon

Appendix 6. Gantt chart on Dillman approach



Appendix 7. The online databases

Database Name	Categories chosen	Additional information available	Notes
Yell	<ul style="list-style-type: none"> • Hi-Fi dealers • TV, DVD, Video & Radio Shops • <i>Electrical Appliance Retailers</i> • TV, Video & Radio Servicing • DVD & Video Services 	<ul style="list-style-type: none"> • map/directions • others in category 	<ul style="list-style-type: none"> • The main database in the UK with 3.5m users • Some brief notes provided by company • Appears to run out after search goes past 100 • A business can be under multiple categories
D&B UK	Keywords used: <ul style="list-style-type: none"> • Retail • Hi-fi • TV • DVD • electronic 	<ul style="list-style-type: none"> • map/directions • business report • full details 	<ul style="list-style-type: none"> • An international search engine (may be useful for international comparisons in future) • Uses key words as opposed to categories, scores being provided for 'best fit' • Links to web site (not many) • Not much in the way of additional information in 'full details'
Kellys	<ul style="list-style-type: none"> • Audio systems (1008) • Audio Visual Equipment and Accessories (806) • DVD players (x3) • Televisions (x3) • Video recorders 	<ul style="list-style-type: none"> • company 	<ul style="list-style-type: none"> • Devised around categories, providing a complete listing for a specific category • Some addresses are web sites, e.g. Amazon

Appendix 8. UK Population area and statistics 2003

Main area	Regions	Cities	Population
1. North East	<ul style="list-style-type: none"> • Durham • Northumberland • Gateshead • Newcastle-upon-Tyne • North Tyneside • South Tyneside • Sunderland, 	<ul style="list-style-type: none"> • Darlington, • Hartlepool • Middlesbrough • Redcar & Cleveland • Stockton-on-Tees 	2,539
2. North West	<ul style="list-style-type: none"> • Cheshire • Cumbria • Lancashire 	<ul style="list-style-type: none"> • Darwen • Blackpool • Halton • Warrington • Bolton • Bury • Knowsley • Liverpool (469 017) • Manchester (394 269) • Oldham • Rochdale • St Helens • Salford • Segton • Stockport • Tameside • Trafford • Wigan & Wirral 	6,805
3. Yorkshire and the Humber	<ul style="list-style-type: none"> • North Yorkshire • 	<ul style="list-style-type: none"> • East Riding of Yorkshire • Kingston upon Hull (301 416) • North East Lincolnshire • North Lincolnshire • York • Barnsley • Bradford (293 717) • Calderdale • Doncaster • Kirklees • Leeds (443 247) 	5,009

Appendix 8

		<ul style="list-style-type: none"> • Rotherham • Sheffield (439 866) • Wakefield 	
4. East Midlands	<ul style="list-style-type: none"> • Derbyshire • Leicestershire • Lincolnshire, Northamptonshire • Nottinghamshire 	<ul style="list-style-type: none"> • Derby • Leicester (330 574) • Nottingham • Rutland 	4,252
5. West Midlands	<ul style="list-style-type: none"> • Shropshire • Staffordshire • Warwickshire • Worcestershire 	<ul style="list-style-type: none"> • Birmingham (970 892) • Coventry (303 475) • Dudley • Sandwell • Solihull • Walsall • Wolverhampton (251 462) • Herefordshire • Stoke-on-Trent (259 252) • Telford • Wrekin 	5,320
6. East	<ul style="list-style-type: none"> • Bedfordshire • Cambridgeshire • Essex • Hertfordshire • Norfolk • Suffolk 	<ul style="list-style-type: none"> • Luton • Peterborough • Southend-on-Sea • Thurrock 	5,463
7. London			7,388
8. South East	<ul style="list-style-type: none"> • Buckinghamshire • East Sussex • Hampshire • Isle of Wight • Kent • Oxfordshire • Surrey • West Sussex 	<ul style="list-style-type: none"> • Bracknell Forest • Brighton & Hove • Milton Keynes • Portsmouth • Reading • Slough • Southampton • West Berkshire • Windsor • Maidenhead • Wokingham 	8,080

Appendix 8

9. South West	<ul style="list-style-type: none"> • Cornwall • Devon • Dorset • Gloucestershire • Somerset • Wiltshire • NE Somerset • North Somerset • South Gloucestershire • Isles of Scilly 	<ul style="list-style-type: none"> • Bath • Bristol (420 556) • Bournemouth • Bristol • Plymouth • Poole • Swindon • Torbay 	4, 999
10. Wales	<ul style="list-style-type: none"> • Dyfed • Glamorgan • Gwent • Gwynedd • Mid-Glamorgan • Powys • South Glamorgan • West Glamorgan 	<ul style="list-style-type: none"> • Aberystwyth • Cardiff (292 150) • Swansea 	2, 903
11. Scotland	<ul style="list-style-type: none"> • Borders • Grampian • Highland • Lothian • Shetland • Strathclyde • Tayside • Western Isles 	<ul style="list-style-type: none"> • Aberdeen • Dundee • Edinburgh (430 082) • Glasgow (629 501) • Inverness 	5, 057

Scotland - <http://www.gro-scotland.gov.uk/statistics/library/popproj/03population-projections.html>

Wales - <http://www.statistics.gov.uk/StatBase/Expodata/Spreadsheets/D6677.xls>

Appendix 9. Population of chosen area and statistics 2003

Similarly all regions include large cities (Bristol, Leeds, Glasgow) and rural areas, again providing a good mix.

Main area	Regions	Cities	Population
3. Yorkshire and the Humber	<ul style="list-style-type: none"> • North Yorkshire 	<ul style="list-style-type: none"> • East Riding of Yorkshire • Kingston upon Hull (301 416) • North East Lincolnshire • North Lincolnshire • York • Barnsley • Bradford (293 717) • Calderdale • Doncaster • Kirklees • Leeds (443 247) • Rotherham • Sheffield (439 866) • Wakefield 	5,009
9. South West	<ul style="list-style-type: none"> • Cornwall • Devon • Dorset • Gloucestershire • Somerset • Wiltshire • NE Somerset • North Somerset • South Gloucestershire • Isles of Scilly 	<ul style="list-style-type: none"> • Bath • Bristol (420 556) • Bournemouth • Bristol • Plymouth • Poole • Swindon • Torbay 	4, 999
11. Scotland	<ul style="list-style-type: none"> • Borders • Grampian • Highland • Lothian • Shetland • Strathclyde • Tayside • Western Isles 	<ul style="list-style-type: none"> • Aberdeen • Dundee • Edinburgh (430 082) • Glasgow (629 501) • Inverness 	5, 057

Scotland - <http://www.gro-scotland.gov.uk/statistics/library/popproj/03population-projections.html>

Wales - <http://www.statistics.gov.uk/StatBase/Expodata/Spreadsheets/D6677.xls>

Appendix 10. A study in the similarities of three UK areas

These three areas have been chosen primarily because they are in disparate parts of Great Britain; North, Middle (East Coast) and South (west Coast). It was felt that by looking at areas widely geographically spread, this would provide a clearer and more representative overview of the situation in the UK. Other factors indicating similarities between these areas are outlined in the table below.

	Scotland	Yorkshire and Humber	South West
1 Geographic location (Latitude)	55 (Glasgow)	53 (Leeds)	51 (Bristol)
Population	5057	5009	4999
2 Average house price	116 467	136 537	199 426
3 Disposable income per head	95.5	93.6	90.2
4 Average earnings	10.7	10.3	10.8
5 Employment	2318	2248	2318

All statistics are from Government sites (some of the information is from the 2001 Census)

1. John O’Groats Latitude – 58; Lands end - 50

The latitude for the UK stretches from approximately 50 to 60 and the north of Scotland is the least habited part of the country so geographically the three regions provide a good geographical spread.

2. Average house price all dwellings January 2005

(http://www.odpm.gov.uk/stellent/groups/odpm_housing/documents/page/odpm_house_027482.xls)

Appendix 10

3. Gross value added and household disposable income per head 2001(UK = 100)

4. Average earnings per hour, full time – all industries 2003

5. All people of working age in employment – autumn 2003

As can be seen from the above a variety of the key indicators suggest that the three chosen areas are similar. Retailer outlets chosen from the different areas should not display any characteristics that would suggest any obvious bias.

Appendix 11. The total target population (calculated at 422)

Organization Name	Address	City	Country/Region
A.N Dodds	31, High St	Dunbar	East Lothian
Sony Centre	48-50, Morningside Rd	Edinburgh	Midlothian
Edinburgh Camcorder Centre	78, Haymarket Terrace	Edinburgh	Midlothian
Edinburgh Sony Centre	44a, Rayburn Place	Edinburgh	Midlothian
Nationwide Electronics	100g, Saughton Rd North	Edinburgh	Midlothian
A1 TV Services	125, Comiston Rd	Edinburgh	Midlothian
Hi-Fi Corner (Edinburgh) Ltd	121, Rose St,	Edinburgh	Midlothian
Hi-Fi Corner (Edinburgh) Ltd	1, Haddington Place	Edinburgh	Midlothian
Moving Pictures	12, Roseburn Terrace	Edinburgh	Midlothian
Moving Pictures	162, Dalkeith Rd	Edinburgh	Midlothian
Robertsons Electrical Ltd	1, Forrester Park Drive	Edinburgh	Midlothian
Bang & Olufsen of Edinburgh	Hamilton Place, Stockbridge	Edinburgh	Midlothian
Telecare	114, Nicolson St,	Edinburgh	Midlothian
Hi-Tech TV	85, Morrison St	Edinburgh	Midlothian
Ovation Audio Visual Systems Ltd	45, Frederick St,	Edinburgh	Midlothian
Sony Centre	44a, Raeburn Place, Stockbridge	Edinburgh,	Midlothian
Carl Dyson Rentals	6, Hamilton Place	Edinburgh	Midlothian
The Wireless Emporium	90a, Walter Scott Avenue	Edinburgh	Midlothian
James-Morrow Home Entertainment Systems Ltd	1, Home St,	Edinburgh	Midlothian
A & M Video Services	43, Dalry Rd,	Edinburgh,	Midlothian
247 Productions	37, Relugas Rd	Edinburgh	Midlothian
Robertsons Electrical Ltd	21, South Clerk St	Edinburgh	Midlothian
Loud & Clear (Edinburgh)	26, Hamilton Place	Edinburgh	Midlothian
Abbeyhill TV & Video Services	4, Cadzow Place	Edinburgh	Midlothian
The Hi-Fi Repair Shop	19, Bruntsfield Place	Edinburgh	Midlothian
Heriot Electronics Ltd	10, Shandon Place	Edinburgh	Midlothian
Robertsons Electrical Ltd	274, Gorgie Rd	Edinburgh	Midlothian
Peter J Robertson	23, South St	Bo'Ness	West Lothian
Robert Clark Repairs	South Mid St	Bathgate	West Lothian
Sony Centre	31 Almondvale Centre	Livingston	West Lothian
Livingstone City Repairs	52, Polbeth Crescent, Unit B, Polbeth	West Calder	West Lothian
Aurora Media	42, East Bankton Place	Livingston	West Lothian
Greig Electronics	17-19 Market Place, Armadale Rd, Whitburn	Bathgate	West Lothian
1A East Calder Electronics	162, Main St, East Calder,	Livingston	West Lothian
Wisharts Electronics	60, East Glen Avenue, Deans,	Livingston	West Lothian
Stewart Electrical	98, High St,	Linlithgow	West Lothian

Appendix 11

Organization Name	Address	City	Country/Region
Bang & Olufsen	165, Milngavie Rd, Bearsden	Glasgow	Lanarkshire
Glasgow Camcorder Centre	717a, Great Western Rd	Glasgow	Lanarkshire
Joe Reilly Television Services Ltd	3, Glasgow Rd, Ballieston	Glasgow	Lanarkshire
James Cuthbertson & Co	255, Albert Drive	Glasgow	Lanarkshire
Bang & Olufsen Centre	98, Bath St,	Glasgow	Lanarkshire
Robertsons Electrical Ltd	Paisley Rd West, Cardonald	Glasgow	Lanarkshire
TV, Video & Repairs	Leckethill Court, Cumbernauld	Glasgow	Lanarkshire
Argyle Electronics	948, Argyle St	Glasgow,	Lanarkshire
Robert Whyte (Photographics) Ltd	559, Sauchiehall St	Glasgow	Lanarkshire
Stereo Stereo	260, St. Vincent St,	Glasgow	Lanarkshire
Hi-Fi Corner (Edinburgh) Ltd	145, Bath Street	Glasgow	Lanarkshire
HOLBURN HI FI LTD	135, Great Western Road	Glasgow	Lanarkshire
Alan James Hi-Fi	43, Hope St	Glasgow	Lanarkshire
Glasgow Audio Ltd	135, Great Western Rd	Glasgow	Lanarkshire
Kermack Electronics	103, Randolph Rd,	Glasgow	Lanarkshire
Linn Products Ltd	Floors Rd, Eaglesham	Glasgow	Lanarkshire
W.M & D Forrest	217, Gallowgate	Glasgow	Lanarkshire
The Audio Salon Ltd	4, Park Circus	Glasgow	Lanarkshire
Linn	Princes Square Shopping Centre, 48, Buchanan Rd,	Glasgow	Lanarkshire
AV REPAIRS	34 MEADOWHILL, NEWTON MEARNS	Glasgow	Lanarkshire
Sevenoaks Sound & Vision	88, Great Western Rd	Glasgow	Lanarkshire
Crookston Television	2371, Paisley Rd West	Glasgow	Lanarkshire
Mitchell T.V. Services	290, Gallowgate	Glasgow	Lanarkshire
Eric M Hamilton	116, Queen Margaret Drive	Glasgow	Lanarkshire
Bruce's TV Workshop	27, Well St,	Paisley	Renfrewshire
Robertsons Electrical Ltd	18, Darluith Rd, Linwood	Paisley	Renfrewshire
Robertsons Electrical Ltd	7, Broomlands St,	Paisley	Renfrewshire
Shop at Panasonic	32, High St	Paisley	Renfrewshire
Hi-Fi Corner (Edinburgh) Ltd	44-46, Cow Wynd	Falkirk	Stirlingshire
Loud & Clear (Scotland) Ltd	520, St. Vincent St, Finnieston	Glasgow	Lanarkshire
Robertsons Electrical Ltd	141, High St,	Dumbarton	Dunbartonshire
Radio Music Store Ltd	1-5, Quakerfield, Bannockburn	Stirling	Stirlingshire
Sounds Perfect	26, St. Andrews St	Dundee	Angus
Hosies Electrical	39, Gray St, Broughty Ferry	Dundee	Angus
Ancrum Electronics	28, Tannadice St	Dundee	Angus
Shop at Panasonic	8, Whitehall St,	Dundee	Angus
Visions the Video Shop	15, Glengate	Kirriemuir	Angus
Sammy Lee	38-40, Grant St,	Inverness	Inverness-Shire
Highland Audio	Seannlios, Kirkhill	Inverness	Inverness-Shire
The Music Station	49, Church St,	Inverness	Inverness-Shire

Appendix 11

Organization Name	Address	City	Country/Region
Telly On The Blink Ltd	65-67, Tomnahurich	Inverness	Inverness-Shire
Shop at Panasonic	112, Academy St,	Inverness	Inverness-Shire
Highland TV Service	14-16, Greig	Inverness	Inverness-Shire
Alex Wilson	21, Buccleuch St,	Dumfries	Dumfriesshire
Semple & Fergusson	13, Church Crescent	Dumfries	Dumfriesshire
T.N McKay	76, English St	Dumfries	Dumfriesshire
The Media Factory	Netherby, Romanno Bridge	West Linton	Peeblesshire
Installations Direct	The Mount, Blyth Bridge	West Linton	Peeblesshire
Kevin Galloway Audio	11, Milton Rd,	Kilmarnock	Ayrshire
J.H Donald (Darvel) Ltd	17-21, Alloway St	Ayr	Ayrshire
Wilson & Wallace	68, Sandgate,	Ayr	Ayrshire
INTELLIGENT HOME SYSTEMS LTD	East Bruntbrae, Maud	Peterhead	Aberdeenshire
Bang & Olufsen of Perth	207, High St	Perth,	Perthshire
Convergent-Av Ltd	8, Fraser Drive, Blackwood	Lanark,	Lanarkshire
Laser Audio	1, St. Marnock Place	Kilmarnock	Ayrshire
Shadow Audio Consultants	21-22, Cadham Centre	Glenrothes	Fife
Geddes & Mellis	28, Commerce St,	Elgin	Morayshire
Colin M Smith	137-139, Castle Street	Forfar	Angus
Morgans of Lossiemouth	61, Clifton Rd	Lossiemouth	Morayshire
Alex Wilson	57 High Street	Dalbeattie	
Colin M Smith	20, Glengate	Kirriemuir,	Angus
G Sinclair	34, Main St,	Kelty	Fife
Shop At Panasonic	9 Almondvale Centre, Almondvale South	Livingston	West Lothian
F Wilkinson Radio & T.V	17, Raploch St	Larkhall,	Lanarkshire
William Adam	55, High St	Carluke	Lanarkshire
Stewart Barnett	20, Gordon St	Huntly	Aberdeenshire
Walter D Allan Ltd	39, Marischal St,	Peterhead	Aberdeenshire
Robert Ritchie Hi-Fi	102-106, Murray St	Montrose	Angus
Graham Begg Ltd	2, Rotterdam St	Thurso	Caithness
Robertsons Electrical Ltd	165, Main St	Alexandria	Dunbartonshire
McKenzies	46, Charlotte St	Stranraer	Wigtownshire
Semple & Fergusson	97, High St	Annan,	Dumfriesshire
BrightHouse	35, High St,	Falkirk	Stirlingshire
Graham Begg Ltd	Whitechapel Rd	Wick,	Caithness
Matrix	9, Queens Building, Queensferry Rd	Rosyth	Fife
Robert T Baird	26, Main St, Sorn,	Mauchline	Ayrshire
T.V Services	176, Mid St	Keith	Banffshire
Creeseide Electrical Ltd	80, Victoria St,	Newton Stewart	Wigtownshire
J.H Donald (Darvel) Ltd	7-11, Titchfield St,	Kilmarnock,	Ayrshire
Radio & Gramophone Co	9, Canongate	Jedburgh	Roxburghshire

Appendix 11

Organization Name	Address	City	Country/Region
Border Video & TV Services	12, Channel St,	Galashiels,	Selkirkshire
W.M Coupar	8, Wellmeadow	Blairgowrie	Perthshire
Crawford & Barbour	Main St,	Lamlash	Isle Of Arran
Jed TV & Video Services	5, Abbey Place	Jedburgh	Roxburghshire
Allans TV Services	4, Market St	Brechin	Angus
Booth for Better Service	12, West High	Inverurie	Aberdeenshire
Kemnay TV Sales & Service	20, Aquithie Rd	Kemnay	Aberdeenshire
Peebles TV Services	34, High St	Peebles	Peeblesshire
Steven Gibson Ltd	96, Argyll St,	Dunoon	Argyll
Transat	21, Shottskirk Rd	Shotts	Lanarkshire
Bolts Electrical	Toll Clock Shopping Centre, 26, North Rd	Lerwick	Shetland
Colin Chessor Repairs	Bridge St,	Halkirk	Caithness
Alex Carswell	62, Keptie St,	Arbroath	Angus
Semple & Fergusson	143, King St,	Castle Douglas	Kirkcudbrightshire
Carnethy Electrical Ltd	8, Carnethy Avenue	Penicuik	Midlothian
Sound & Vision	101, Dundee St	Carnoustie	Angus
Burgess & Gibson Ltd	54, High St,	Crieff,	Perthshire
Braedale Electronics	27, St.Leonard St,	Lanark,	Lanarkshire
Graham Begg Ltd	Fountain Square	Brora	Sutherland
Alan Fenske	177, High St	Burntisland	Fife
D Stevenson TV Sales & Service	8, Knockcushan St	Girvan	Ayrshire
Bisset & Steedman Ltd	58, High St	Tranent	East Lothian
Robert Ewing & Co	7, High St,	Rothesay	Isle Of Bute
Braedale Electronics	133, High St,	Biggar,	Lanarkshire
D.D Morrison & Co	59, Cromwell St	Stornoway,	Isle of Lewis
Graham Begg Ltd	Unit 4, Airport Ind Est, Wick Airport	Wick	Caithness
D Manderson	62-64, East Clyde St	Helensburgh	Dunbartonshire
John M Keay	Linmor, Carsie,	Blairgowrie	Perthshire
Ian Hutchison (Leven) Ltd	Commercial Rd,	Leven,	Fife
G.T Bett	3, Main St, Thornton	Kirkcaldy	Fife
Ashburn Electronics	Main St, Bridge of Earn	Perth	Perthshire
Organization Name	Address	City	Country/Region
Home Cinema Heaven	170, Kirkgate	Wakefield	West Yorkshire
Huddersfield Hi-Fi Centre	4, Cross Church St	Huddersfield	West Yorkshire
Zen Audio & Vision	25, Story St	Hull	North Humberside
Sevenoaks Sound & Vision	635, Queens Rd	Sheffield,	South Yorkshire
Vickers Hi-Fi	24, Gillygate	York	North Yorkshire
Sound Organisation	2, Gillygate	York	North Yorkshire
A1 Sound	192, Crookes	Sheffield	South Yorkshire

Appendix 11

Organization Name	Address	City	Country/Region
Acm Installations Ltd	71, Western Galles W	Hull	North Humberside
Huddersfield Hi-Fi Centre	3-5, King Cross St	Halifax	West Yorkshire
Hi-Fi Studios	The Long Barn, Wakefield Rd, Hampole	Doncaster	South Yorkshire
Harrison Custom Install	18, Green St,	Rotherham	South Yorkshire
Audio Projects Ltd	45, Headingley Lane	Leeds	West Yorkshire
Superfi	1, Rockingham Gate	Sheffield	South Yorkshire
Moorgate Acoustics Ltd	184, Fitzwilliam St,	Sheffield	South Yorkshire
Image Audio	8-10, St. Annes Rd, Headingley	Leeds	West Yorkshire
Bang & Olufsen of York	69, East Parade	York	North Yorkshire
Sevenoaks Sound & Vision	Unit 1, Savile Row, Savile St,	Hull,	North Humberside
Barnsley Hi-Fi Centre	42, Sheffield Rd	Barnsley	South Yorkshire
The Audio Room	2, George St, Hedon	Hull	North Humberside
Superfi	7, King Edward St	Leeds	West Yorkshire
Audio Images Ltd	284, Glossop Rd	Sheffield	South Yorkshire
Audio Republic	78, Otley Rd, Heddingley	Leeds	West Yorkshire
Sevenoaks Sound & Vision	62, North St	Leeds	West Yorkshire
Class A Repairs	184, Fitzwilliam St	Sheffield	South Yorkshire
Tandy	Unit 28, Asmin Centre, Long Causeway	Dewsbury	West Yorkshire
Eric Wiley	85, Beancroft Rd	Castleford	West Yorkshire
E.T Satellite Systems Ltd	44, Main St,	Mexborough	South Yorkshire
Vision 2000 (Leeds) Ltd	7, Ridgeway	Leeds	West Yorkshire
ADV Audio Visual Installations	12 York Place	Leeds	West Yorkshire
UNICAM Group Ltd	7, Wortley Moor Lane Trading Estate	Leeds	West Yorkshire
Lightsimple Ltd	3, Westwood Rd, Fulwood	Sheffield	South Yorkshire
ADV Audio Visual Installations Ltd	12, Beverley Close	Normanton	West Yorkshire
Digital Connexions Ltd	Unit 6, Ripon Rd,	Harrogate	North Yorkshire
Finitesolutions.co.uk	Unit 1 Atelier Building, Barnsley Rd	Wakefield	West Yorkshire
A. Fanthorpe Ltd	6-8 Hepworth Arcade, Silver St	Hull	North Humberside
Video Tech	2, Cross Church St	Huddersfield	West Yorkshire
Visecom Ltd	11, Birklands Drive	Hull	North Humberside
Robertshaw'S	49-51, Southgate	Elland	West Yorkshire
Johnson & Son	1, Robin Lane, Hemsworth	Pontefract	West Yorkshire
Maxwells of Northallerton	130-131, High St,	Northallerton	North Yorkshire
Y T.V Rentals	1, Hyde Park Rd,	Leeds	West Yorkshire
Shop at Panasonic	50, Darley St	Bradford	West Yorkshire

Appendix 11

Organization Name	Address	City	Country/Region
Fred Moore Ltd	Caxton House, New Rd	Halifax	West Yorkshire
Videotel	21, Water St	Todmorden	Lancashire
Conisborough Sound & Vision Ltd	28-32, Old Rd, Conisborough	Doncaster	South Yorkshire
Andrews Electrical	52, Westgate	Shipley	West Yorkshire
In Store Electrics Ltd	1043, Leeds Rd	Bradford	West Yorkshire
J Porter & Son	Doncaster Rd, Denaby Main	Doncaster	South Yorkshire
John Rawlings Television	36, Otley Rd, Guiseley	Leeds	West Yorkshire
Television House	19, Market Place	Pickering	North Yorkshire
T.V.C Electrical	4, Railway St,	Malton	North Yorkshire
Inger Radio & TV	19-21, Laughton Rd, Dinnington	Sheffield	South Yorkshire
Tooby's Ltd	21, Main St, Bentham	Lancaster	Lancashire
H.B Reeder Ltd	103, Lidget St,	Huddersfield	West Yorkshire
K.T.S	50-52, Cavendish St	Keighley	West Yorkshire
C TV Discount Electrical	248, Oakworth Rd	Keighley	West Yorkshire
Wall of Sound	Unit 6, Haxby Shopping Centre, Haxby	York	North Yorkshire
Webster's (Mexborough) Ltd	83, Main St,	Mexborough	South Yorkshire
Sound & Vision (TV)	The Wharf	Elland	West Yorkshire
Megadeal 24 Ltd	Commerce Court, Challenge Way	Bradford	West Yorkshire
Walkers TV & Hi-Fi	41, St. Thomas St	Scarborough	North Yorkshire
In Store Electrics (Leeds) Ltd	171, Harehills Lane	Leeds	West Yorkshire
Webb & Barker Ltd	Kingsway Arcade, Foundry St,	Dewsbury	West Yorkshire
Quay Television Ltd	31, Prospect St	Bridlington	North Humberside
TNT Aerials & Satellites	96a, Grange Lane, Cundy Cross	Barnsley	South Yorkshire
Shakespeare TV	177, Spring Bank	Hull	North Humberside
Astroview	103, Station Rd, Chapeltown	Sheffield	South Yorkshire
Arthur Day	21, Market Place	Driffield	North Humberside
P.E Adams Radio & TV Ltd	7-11, High St, Bentley	Doncaster	South Yorkshire
J.W Bennett	51, Harrogate Rd	Leeds	West Yorkshire
Moldgreen Electrical Service	344, Wakefield Rd, Moldgreen	Huddersfield	West Yorkshire
Blackburn & Swallow Ltd	2, The Horsefair Centre	Wetherby	West Yorkshire
Peter R Twibell	39, Green Arbour Rd, Thurcroft	Rotherham	South Yorkshire
Arcadia Home Entertainments	51a, New Briggate	Leeds	West Yorkshire
C.J Wright Ltd	7, Church St, Armthorpe	Doncaster	South Yorkshire
John Phillip of Skipton Ltd	28, Newmarket St	Skipton	North Yorkshire
Crampton & Moore TV Ltd	109, High St, Ecclesfield	Sheffield	South Yorkshire
Hornsea Television	45, Market Place	Hornsea	North Humberside

Appendix 11

Organization Name	Address	City	Country/Region
K.W Smith	1a, Victoria Place	Whitby	North Yorkshire
D & G Garton	142, Halifax Rd	Sheffield	South Yorkshire
Nuway Electrical	Unit 1, Stonetec Business Park, Stoneferry Rd	Hull	North Humberside
G Craggs	Fishergate, Boroughbridge	York	North Yorkshire
Prossers	211-213, Chanterlands Avenue	Hull	North Humberside
Frank Platt Electrical Ltd	19, Westgate, Honley	Holmfirth	West Yorkshire
Blackburn & Swallow Ltd	19-21, Commercial St	Harrogate	North Yorkshire
Harold Swift	57, Main St, Garforth	Leeds	West Yorkshire
Woollett Audiovision Ltd	56, Duckworth Lane	Bradford	West Yorkshire
Clayton West Wireless Stores	1, Scott Hill, Clayton West	Huddersfield	West Yorkshire
Thorne Television	3, King St, Thorne	Doncaster	South Yorkshire
J.R Iveson	Main St	Hawes	North Yorkshire
F.H Loft	18, George St, Pocklington	York	North Yorkshire
Cudworth Electronic Services	2a, Sidcop Rd, Cudworth	Barnsley	South Yorkshire
Ron Hardy	95, Bingley Rd, Saltaire	Shipley	West Yorkshire
Readyvision Ltd	92-94, Lockwood Rd	Huddersfield	West Yorkshire
Organization Name	Address	City	Country/Region
Pascoe's Electronics	1-2, Newport	Callington	Cornwall
Cornwall Electronics	2 Nansilgans, Killiow	Truro	Cornwall
Saltash Radio & Television Co.Ltd	123, Fore St,	Saltash	Cornwall
Dimensions	3, St. Georges Rd	Newquay	Cornwall
S.J Matthews & Sons	11-14, Baytree Hill	Liskeard	Cornwall
Bang & Olufsen Centre	4, Frances St,	Truro	Cornwall
Bartletts	The Coombes, Polperro	Looe	Cornwall
Shop at Panasonic	17, King St,	Truro,	Cornwall
Rock Television & Electrical Services Ltd	Rock Rd, Rock	Wadebridge	Cornwall
Westcotts	9, St. Pirans Rd	Perranporth	Cornwall
Gilbert & Vanstone	Hill Park Centre, The Square, Kilkhampton	Bude	Cornwall
Bartletts	Trafalgar Square	Fowey	Cornwall
Murts Television	32, Penpol Terrace	Hayle	Cornwall
Pridhams Electrical Centre	14, Fore St,	Callington	Cornwall
Falmouth Hi-Fi & Colour Centre	14, Market Strand	Falmouth	Cornwall
Neon Electronics	12, Fore St, Porthleven	Helston	Cornwall
Richards Television	King St, Combe Martin	Ilfracombe	Devon
Classic Vision	Unit 1, Rydons Ind Est, Canal Way, Kingsteignton	Newton Abbot	Devon
J Searle & Son	43, Fore St,	Buckfastleigh	Devon
Sony Centre	235, High St	Exeter	Devon
Sony Centre	Holland Walk	Barnstaple	Devon

Appendix 11

Organization Name	Address	City	Country/Region
Sony Centre	100, Union St	Torquay	Devon
Bernard Smith	101, High St	Barnstaple	Devon
Clearview Tv & Video Service	8, Rowan Way	Plymouth	Devon
B.G Electricals	Shorts Cottage, Fore St, Dolton	Winkleigh	Devon
Howards (Exeter) Ltd	90, Sidwell St	Exeter	Devon
Radio Electric	5, King St	Dawlish	Devon
Stoneman Television	9, Church St, Witheridge	Tiverton	Devon
Digitalworld	15, St. Thomas Centre	Exeter	Devon
Shop at Panasonic	21, The Harlequin Shopping Centre, Paul St	Exeter	Devon
Teleservice	117, Cowick St	Exeter	Devon
Terry R Dart	55, Fore St,	Brixham	Devon
Leztronics	43, Exeter Rd	Exmouth	Devon
Conway Television	13b, New St,	Honiton	Devon
Classic Vision	1st floor of Austin Stores, Courtenay St,	Newton Abbot	Devon
Shop at Panasonic Torbay	3, Braddons Hill Rd West	Torquay	Devon
Westward Rentals	5, Church St, Heavitree	Exeter	Devon
Telecare Electrics Ltd	11, St. James St	Okehampton	Devon
Wenmouth Radio	32, High St	Crediton	Devon
H.B.H Woolacotts	7, The Square	Holsworthy	Devon
Harleys	320, Torquay Rd,	Paignton	Devon
H.G Curgenvan	41, Bampton St,	Tiverton	Devon
Shop At Panasonic	56, Cornwall St	Plymouth	Devon
Heavitree Radio	58-62, Fore St, Heavitree	Exeter	Devon
Radio Service	45, Springfield Rd, Elburton	Plymouth	Devon
Bang & Olufsen of Exeter	30-31, Gandy St,	Exeter	Devon
Havills	69b, Church Rd, Alphington	Exeter	Devon
J.G TV	28, Marlborough St,	Plymouth	Devon
Braunton TV Services	Mercaston House, South St	Braunton	Devon
Beechwood Electronics	85, Fore St, Bovey Tracey	Newton Abbot	Devon
Shop @ Panasonic	62, Queen St,	Newton Abbot	Devon
James Television Ltd	43, Boutport St,	Barnstaple	Devon
Clearview Tv Services	1, Mill St,	South Molton	Devon
Ford & Sons (Sidmouth) Ltd	132, High St	Sidmouth	Devon
Castle Electronics	1b, Castle St	Totnes	Devon
Havills	95, Fore Street, Topsham	Exeter	Devon
Seaton Electronics	12b, Queen St	Seaton	Devon
Lawes	26, Rolle St	Exmouth	Devon
H Carter & Sons	28, Rolle St	Exmouth	Devon
Shop At Panasonic	8, Torquay Rd,	Paignton	Devon
Totnes Television & Electrical	103c, High St	Totnes	Devon
Wood Audio & Television	33, St. Peter St,	Tiverton	Devon
John Williams	8, Mill St, Ottery	St. Mary	Devon

Appendix 11

Organization Name	Address	City	Country/Region
STONE AUDIO U K	Holmead Walk, Poundbury,	Dorchester	Dorset
George Fry (Audio & Video) Ltd	799, Christchurch Rd, Boscombe	Bournemouth	Dorset
E.S.T T.V Video Hifi	187, Bournemouth Rd	Poole	Dorset
Combens Television	14, Easton St,	Portland	Dorset
E.B Marsh & Son Ltd	59, Cheap St	Sherborne	Dorset
Prototech Electronics	Clarence House, 13, West Bay	Bridport	Dorset
Bailey's of Verwood	Television House, 11, Ringwood Rd	Verwood	Dorset
Chantry TV Ltd	High St	Gillingham	Dorset
Town and Country Vision	11, Brickfields Business Park	Gillingham	Dorset
Godden & Curtis	Greenhill,	Sherborne	Dorset
Bang & Olufsen of Wimborne Minster	8, East St,	Wimborne	Dorset
Rawlings Radio	17, Withermoor Rd	Bournemouth	Dorset
Bang & Olufsen Of Bournemouth	74, Poole Rd	Bournemouth	Dorset
Waterman T.V Ltd	86a, High St,	Swanage	Dorset
Bovington TV & Home Electronics	Memorial Hall, Bovington Camp	Wareham	Dorset
Purewell Electrical Co.Ltd	81, Summerford Rd	Christchurch	Dorset
Televuew	636, Ashley Rd, Parkstone	Poole	Dorset
Holman Radio & Television	2-4, King St	Wimborne,	Dorset
Robert J Prowse Ltd	31a, Great Western Rd	Dorchester	Dorset
E.B Marsh & Son Ltd	34, Market Place	Sturminster Newton	Dorset
Sony Centre	149, High St	Poole	Dorset
Roberts Media Services	36, Salisbury St, Blandford	Blandford Forum	Dorset
Combens Television	Easton Lane,	Portland	Dorset
Movement Audio	588, Ashley Rd, Parkstone	Poole	Dorset
W Tout & Co.Ltd	40, Park St	Weymouth	Dorset
Movement Audio	926, Wimborne Rd,	Bournemouth	Dorset
AGB Televison	101, Southbourne Grove	Bournemouth	Dorset
Jarvis Radio & TV	177, Tuckton Rd	Bournemouth	Dorset
Jarvis Radio & TV	55, High St	Christchurch	Dorset
Parkstone Television & Video Centre	45b, Churchill Rd, Parkstone	Poole	Dorset
Town & Country Vision	11, Brickfields Business Park	Gillingham,	Dorset
K.W Hurford	2, Church St,	Beaminster	Dorset
Dacombe & Renaut Ltd	18, Corn Market	Wimborne	Dorset
Mike Doyle TV & Video Repairs	32, Buxton Rd, Rodwell	Weymouth	Dorset
Weymouth Hi-Fi	33-35, Maiden St	Weymouth	Dorset
Hutchinsons	297-299, High St	Cheltenham	Gloucestershire
Chris' Shed	33, King St	Stroud	Gloucestershire

Appendix 11

Organization Name	Address	City	Country/Region
R.P Jones	17, Long St	Dursley	Gloucestershire
Tony Box Televisions & Electrical	26-28, Newerne	St, Lydney	Gloucestershire
Telmec Services	9, Stroud Rd	Gloucester	Gloucestershire
Shop At Panasonic	22 Regent Arcade, Regent St,	Cheltenham	Gloucestershire
B.V Harrod	10, Princes St,	Cheltenham	Gloucestershire
Television Services (Lydney) Ltd	59, High St, Aylburton	Lydney	Gloucestershire
Cirencester Sony Centre Connect	21, West Market Place	Cirencester	Gloucestershire
Tony Dyer Television	High St	Moreton-In-Marsh	Gloucestershire
F.A Wall	Tetbury St, Minchinhampton	Stroud	Gloucestershire
TV & Hi-Fi 2000	23, West Market Place	Cirencester	Gloucestershire
Apollo 2000 Ltd	Kingsditch Retail Park, Kingsditch Lane	Cheltenham	Gloucestershire
Dean Television	7, Market Place	Coleford	Gloucestershire
Tony Box Television	26, Newerne St	Lydney	Gloucestershire
Treens	75, Barton St	Tewkesbury	Gloucestershire
R.P Jones	9, High St	Wotton-Under-Edge	Gloucestershire
Good Viewing	100, High St, Staple Hill	Bristol	Avon
L Wyatt	4, High St	Chard	Somerset
Sight & Sound	8a, Church St	Wincanton	Somerset
Telefringe	2-3, King St	Frome	Somerset
Shop @ Panasonic	The Barns, Hankridge Retail Park	Taunton	Somerset
Chantry Television Ltd	18, Market Place	Frome	Somerset
R Parmiter & Son	186, St. Michaels Avenue	Yeovil	Somerset
Central Radio Service	58, High St	Burnham-On-Sea	Somerset
South Western Electronics	146, High St,	Street	Somerset
Bang & Olufsen of Salisbury	3 Endless Street	Salisbury	Wiltshire
Chantry Television	4, High St	Westbury	Wiltshire
M.E Tye Rentals Ltd	107, High St, Cricklade	Swindon	Wiltshire
Bang & Olufsen of Swindon	5, Wood St	Swindon	Wiltshire
Jeans	Salisbury St, Mere	Warminster	Wiltshire
Murchison Television & Radio	49, North St, Wilton	Salisbury	Wiltshire
N.V Spreadbury	104, High St, Burbage	Marlborough	Wiltshire
Pewsey Radio Vision	54, High St	Pewsey	Wiltshire
Salisbury Sony Centre	10, High St	Salisbury	Wiltshire
D.M Small Communications	44, Winchester St	Salisbury	Wiltshire
Hickmans (Swindon) Ltd	121, Victoria Rd	Swindon	Wiltshire
F.H Way Ltd	15, Market St	Bradford-On-Avon	Wiltshire

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Organization Name	Address	City	Country/Region
Service Centre T.V & Video	92, Marshfield Rd	Chippenham	Wiltshire
Audio Destination Ltd	32, Bampton St	Tiverton	Devon
Bespoke Installations	1, Rogers Close	Tiverton	Devon
AUDIO EXCELLENCE	156, Sidwell St	Exeter	Devon
Clockwork Audio	50, Portland Rd	Plymouth	Devon
A & J Audio	61, Warbro Rd	Torquay	Devon
Audio & Cinema Experience Ltd	Trenoweth, Barbican Hill, East Looe	Looe	Cornwall
L.S.H Systems	177, Creak-a-Vose Park, St. Stephen	St. Austell	Cornwall
STONE AUDIO U K	Holmead Walk, Poundbury	Dorchester	Dorset
Suttons Hi-Fi	18, Westover Rd	Bournemouth	Dorset
Forge Audio	The Forge, The Cross, Berwick St. John	Shaftesbury	Dorset
Sound & Vision 4u	22, Haywards Avenue	Weymouth,	Dorset
Sound Experience Ltd	5, Sovereign Business Park, Willis Way	Poole	Dorset
Dawsons Radio Ltd	74, Poole Rd	Bournemouth	Dorset
Audio Excellence Ltd	58, Bristol Rd	Gloucester	Gloucestershire
Crystal Sound & Vision	28b, Park Lane	Chippenham	Wiltshire
Trinifold Home Cinema	38, Merton Avenue	Swindon	Wiltshire
unknown			
Organization Name	Address	City	Country/Region
Swales Radio & Electrical Services	Market St, Milnsbridge	Huddersfield	West Yorkshire
Boylans (TV) Ltd	6a, Central Terrace, Edlington	Doncaster	South Yorkshire
S.S Audio Video Ltd	56, James St,	Bradford	West Yorkshire
Headingley TV & Video	17, St. Michaels Lane	Leeds	West Yorkshire
R Rutherford & Sons	11, Main St, Stamford Bridge	York	North Yorkshire
Williams Electrical Shops	Unit 37, West Mall, Upper Mall Level, Crystal Peaks	Sheffield	South Yorkshire
Pennine Plus	56-58, Cavendish St	Keighley	West Yorkshire
Bang & Olufsen of Harrogate	Prince Albert Row, 77, Station Parade	Harrogate	North Yorkshire
Ernest Roy Electrical	5, Patrick Pool	York	North Yorkshire
Thompsons	3, Railway St	Leyburn	North Yorkshire
J.W Hodkinson	8, The Square, Grassington	Skipton	North Yorkshire
Peter Dyer Ltd	4, Cow Pasture Rd	Ilkley	West Yorkshire
Bang & Olufsen of Roundhay	54, Street Lane	Leeds	West Yorkshire
Westgate Audio Visual Ltd	79, Westgate	Bradford	West Yorkshire
Hewitt's	549, Ecclesall Rd	Sheffield	South Yorkshire
Cleggs	31, Railway Rd	Ilkley	West Yorkshire
Lord-Dales	19, West End,	Hebden Bridge	West Yorkshire
Bamford Fonacall	38, St. Augustines Gate, Hedon	Hull,	North

Appendix 11

Organization Name	Address	City	Country/Region
			Humberside
Pearsons T.V & Electrical	33, High St, Stokesley	Middlesbrough	Cleveland
Grays TV & Video	76-78, High St, Bentley	Doncaster	South Yorkshire
Audiovision	91, Laughton Rd, Dinnington	Sheffield	South Yorkshire
Davick TV & Hi-Fi Services	29, Brinsworth Lane, Brinsworth	Rotherham	South Yorkshire
Jones of Oakwood Electrical Shops	Oakwood Parade, 472, Roundhay Rd	Leeds	West Yorkshire
G Craggs	105, Long St, Easingwold	York	North Yorkshire
Sanders Televisions	69, Balby Rd, Balby	Doncaster	South Yorkshire
John F Mawson	280, Abbeydale Rd	Sheffield	South Yorkshire
Vision	125, Huddersfield Rd	Barnsley	South Yorkshire

Appendix 12. Questions for exploratory interviews into the use of the internet by small retailers in their method of procurement

Questions to retailers

1. How many employees do you have?
2. What is the annual turnover?
3. Do you have full access to the internet?
4. Is this via a modem or larger connection?
5. Does your internet connection run quickly and effectively?
6. Is the internet essential to the running of your company?
7. What level of computer literacy would you consider yourself to have?
8. Do you enjoy using the internet?
9. What year did you start using it for the purposes of leisure?
10. What year did you start using it for the purposes of the business?
11. Are you a gadget person?
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation?
13. How many people are involved in the decision making process of what stock should be procured?
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock?
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock?
16. When you are buying stock is it usually the same items or do these constantly change?
17. Do you buy anything else online for the purposes of the business?
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock?
19. Could using the internet potentially provide a wider range of goods to your customers?
20. Do you actively seek new suppliers on line?
21. Do you find the internet easy to navigate when looking for potential suppliers?

22. Do you feel there is an impressive array of suppliers on the internet providing highly competitive prices in your sector?
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods?
24. Do *they* utilise it for anything else in their business?
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it?
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock?
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs?
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency?
29. Has the internet fundamentally changed the way you do business?
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers?

Appendix 13. Outline and analysis of the responses of the 10 interviewees

Outline of exploratory interviews (abridged) – March 2004

1. Dargie Design – Keith Dargie

One outlet in Aberdeen

1. How many employees do you have? - 5
2. What is the annual turnover? *not disclosed*
3. Do you have full access to the internet? - *full*
4. Is this via a modem or larger connection? - *modem, may go for broadband in the future*
5. Does your internet connection run quickly and effectively? – *yes, given limited nature of use*
6. Is the internet essential to the running of your company? – *helps to run company, can check out prospective suppliers before contacting them. Not something that needs to be running on a daily basis*
7. What level of computer literacy would you consider yourself to have? *fairly low, can use for manipulation of basic graphics on a web page and for general marketing purposes*
8. Do you enjoy using the internet? *its ok, views it as a tool*
9. What year did you start using it for the purposes of the leisure? *needed computer for business which happened to have internet access, 3 years*
10. What year did you start using it for the purposes of the business?
11. Are you a gadget person? *not really*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *not really*
13. How many people are involved in the decision making process of what stock should be procured? *all employees but mainly 2*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *not totally appropriate for this type of venture, given the nature of the business which is very much focused on quality and not price. Retailers in this area tend to be one or the other, for those focusing on price it is a volume business and they would therefore be more likely to use the internet. Also the business is tactile in nature, and therefore pictures are not necessarily enough. Old fashioned business*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *Might become more prominent but there are few obvious advantages to using the internet in this context for this type of business, some concerns over human error*
16. When you are buying stock is it usually the same items or do these constantly change? *mainly changes from one order to the next, is fashion led and therefore naturally changes over time - this is usually done by phone or fax*
17. Do you buy anything else online for the purposes of the business? *no*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *not at the moment, relationship with the rep is important*
19. Could using the internet potentially provide a wider range of goods to your customers? *could do but system tends to work via the use of reps, trade shows – basically, human contact*
20. Do you actively seek new suppliers on line? *will check on a potential new supplier via their online presence and get a feel for the company prior to contacting them, normally by phone*

21. Do you find the internet easy to navigate when looking for potential suppliers? *if you have the specific name of the company, yes – don't tend to look for suppliers on an ad hoc basis*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *not really, tend to know the companies they want to do business with*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *don't have much contact with other retailers, other than a shop in Glasgow who are less hi-tech than themselves*
24. Do they utilise it for anything else in their business? *No*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *not really mentioned, web site being created but still early days, one page only up so far. Attempting to convey a lifestyle*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *n/a*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *becoming a bigger part, can help if customers are looking for something new*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *tend to try to lead rather than follow, therefore avoid looking too closely at the competition, might check out colour schemes on competitors web sites from time to time*
29. Has the internet fundamentally changed the way you do business? *probably yes – not totally*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *it may do, unlikely to decrease, but current levels of competition are low given the nature of the business, the type of product and the target market Lot of potential competition coming from China, but tends to be on the lower end of the market.*

Notes: discussed the role of the agent/ reps and the relationship, tends to be that the agents represent a few companies and know what the retailer is interested in i.e. modern/old, quality/price – they also provide demos of cloth/leather that are essential to the making choices on stock. Some competitors are online such as Ocean, initially catalogue retailer, mainly fashion led.

2. Holburn Hi-fi – Ian

One outlet in Aberdeen and about to open another, and one outlet in Glasgow

1. How many employees do you have? *15 -20 (including part time)*
2. What is the annual turnover?
3. Do you have full access to the internet? *Yes*
4. Is this via a modem or larger connection? *broadband*
5. Does your internet connection run quickly and effectively? *yes*
6. Is the internet essential to the running of your company? *not essential, but is important*
7. What level of computer literacy would you consider yourself to have? *a user*
8. Do you enjoy using the internet? *yes*
9. What year did you start using it for the purposes of the leisure? *4 years*
10. What year did you start using it for the purposes of the business? *3 years*
11. Are you a gadget person? *yes*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *not really, the new accessory shop will require daily usage as it more internet based*
13. How many people are involved in the decision making process of what stock should be procured? *group of 4 but ultimately 1. Have thought about this in a strategic context, but often it is about reacting*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *stock is not ordered online, not entirely appropriate for the type of business - mainly based on quality and not quantity (price), therefore smaller numbers of items ordered, usually by phone or fax. Reps system used also, some of which are independent*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *possibly will go this way but no obvious advantages at the moment*
16. When you are buying stock is it usually the same items or do these constantly change? *can be repeats or new items, but mainly in small numbers given the nature of the business –still appropriate for the type of the business*
17. Do you buy anything else online for the purposes of the business? *will check for information but would generally order by phone/fax – could be items such as tools i.e. one offs. Radio spares could be used via computer but currently don't purchase in sufficient amounts to merit this. Some suppliers are trying to get them to use online ordering, but have not done this so far, no obvious incentives have been provided as yet.. Will check for information online*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *possibly in some niche areas but not in the main business, wouldn't necessarily rely upon it either could be a power cut! Broadband has improved this and encouraged greater use*
19. Could using the internet potentially provide a wider range of goods to your customers? *possibly, but part of service is to know manufactures and offer the best products*
20. Do you actively seek new suppliers on line? *not really may check via the web site but more usually via reps and trade shows*
21. Do you find the internet easy to navigate when looking for potential suppliers? *mainly easy to find*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *yes*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *don't know*
24. Do they utilise it for anything else in their business? *don't know*

25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *not really, discussed the online presence and the fact that it was more appropriate for the new business, selling cable (homogeneous), than it is for the current main business of selling expensive hi-fi equipment*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *don't*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *need to have it, it is a necessary tool, there is an expectation that a company has access*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *not essential, does help, more important for the new shop*
29. Has the internet fundamentally changed the way you do business? *not really, some aspects have changed, customers coming in and getting demos and then buying online*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *possibly, difficult to know, does cause concern, and have reacted via the new shop*

Notes: they are in the process of opening a new shop that will sell directly over the internet. The shop is selling mainly hi-fi and home cinema accessories such as cable and given the homogeneous nature of the product, is better suited to be sold over the internet. An online purchasing service will be available but this will be via e-mail as opposed to pure transactional (real time).

Not aware of companies coercing retailers into using the internet, facilities tend to be available but not pushed. No financial incentives provided.

3. Dave Sykes (manager of TV dept.) – Bruce Millers

One big retail outlet in Aberdeen, with several different departments

1. How many employees do you have? *c. 100*
2. What is the annual turnover?
3. Do you have full access to the internet? *yes*
4. Is this via a modem or larger connection? *broadband*
5. Does your internet connection run quickly and effectively? *has slowed as more people have come on the system, the company is looking at expanding their current level of band width*
6. Is the internet essential to the running of your company? *not essential but important*
7. What level of computer literacy would you consider yourself to have? *reasonable and training is given*
8. Do you enjoy using the internet? *yes*
9. What year did you start using it for the purposes of the leisure? *4 – 5 years*
10. What year did you start using it for the purposes of the business? *3 – 4 years*
11. Are you a gadget person? *probably, yes*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *probably not but it is used regularly*
13. How many people are involved in the decision making process of what stock should be procured? *departmental managers (x8) decide on needs of their area, overall view taken by board of directors (x7)*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *currently use phone and fax, do on occasion use the internet to track developments and get information on products, this might be general info or regarding a specific order (extranet!)*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *may well go this way in the future, suppliers are making more use of the internet*
16. When you are buying stock is it usually the same items or do these constantly change? *both*
17. Do you buy anything else online for the purposes of the business? *no*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *possibly*
19. Could using the internet potentially provide a wider range of goods to your customers? *yes*
20. Do you actively seek new suppliers on line? *sometimes*
21. Do you find the internet easy to navigate when looking for potential suppliers? *yes*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *some*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *no*
24. Do *they* utilise it for anything else in their business? *Don't know*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *no*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *Don't know*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *becoming increasingly important*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *need to keep a close eye on the competition and prices they are charging to remain competitive*

29. Has the internet fundamentally changed the way you do business? *change has been gradual, but continues a pace*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *very much so, it is likely to shape the future of the company*

Notes: The use of reps is still widely used but some companies are cutting down on the number of reps they have, doing the rounds of independent shops. Also mentioned concerns over disintermediation with the manufactures going straight to the end user – mentioned some evidence of this already They are concerned about the online competition and price wars relating to this, they cannot compete on price. Their online activities are currently limited to books, focussing on local authors and subject matter – an area where they have some competitive advantage.

4. Questions to Sony – Andy (manager) 20 May 2004

Franchise, one of four outlets

1. How many employees do you have? *3 + 1(manager)*
2. What is the annual turnover? *Turnover 1m (also Perth, Dundee, Inverness)*
3. Do you have full access to the internet? *Limited access, charged per minute therefore a window in the morning and another in the afternoon, can go in if needed for a client*
4. Is this via a modem or larger connection? *modem*
5. Does your internet connection run quickly and effectively? *yes*
6. Is the internet essential to the running of your company? *Suppose it would be, mostly for comparing prices that customers come and say they have seen as opposed to the b2b link*
7. What level of computer literacy would you consider yourself to have? *No expert, gets by, the interface is simple – log on through sterling internet and then via password*
8. Do you enjoy using the internet? *yes*
9. What year did you start using it for the purposes of the leisure? *3/4 years ago*
10. What year did you start using it for the purposes of the business? *A couple of years ago*
11. Are you a gadget person? *To a certain extent*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *Most of the ordering done through the internet and done mainly by the owner, there is no restriction as to what he can buy, may be a credit limit, shop needs to be set out in a certain way, but aren't restricted to a great extent, will send out special offers, some of the prices on the internet are cheaper than they can buy in, (Sony have been asked but are not concerned about this) people will look round the shop and get the expertise of the staff and then buy online, those who have purchased elsewhere will often bring stock they have bought on line that is faulty to the shop expecting them to fix/exchange the goods, which obviously they can not do*
13. How many people are involved in the decision making process of what stock should be procured? *Mainly the owner, on a weekly basis is down to the manager*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *Yes, well, the wrong goods can still be sent even though this is done online*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *There are current developments from the point of procurement allowing tracking of orders and more exact information on the transaction itself, so it is becoming more useful and functions are being added all the time – it is going more and more down this line*
16. When you are buying stock is it usually the same items or do these constantly change? *change*
17. Do you buy anything else online for the purposes of the business? *no*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *Doesn't make any difference via phone or email, sony have not differentiated on this as yet*
19. Could using the internet potentially provide a wider range of goods to your customers? *Could get more info. online as regards to products*
20. Do you actively seek new suppliers on line? *N/A*
21. Do you find the internet easy to navigate when looking for potential suppliers? *N/A*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *N/A*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *no*
24. Do they utilise it for anything else in their business? *N/A*

25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *Between the brochure and the internet they can find any Sony products people might be after*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock?
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *Yes, you have to, need to be aware of what products are available*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *Tend to do it from home and will check out what others are doing – there is no specific site for the shop*
29. Has the internet fundamentally changed the way you do business? *Yes, without a doubt the customer is far more in control than ever before, the retailer supplier relationship is weak, little support is provided by Sony to assist the retailer. 10 years previously shop would have been making a fortune*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *Believes that the internet will spell the death of high street retail for electronic goods*

5. Questions to Panasonic – Steven (manager) 20 May 2004

Franchise, one of several outlets

1. How many employees do you have? *3ft shop, and 2 drivers (shared)*
2. What is the annual turnover? *Less than £2m*
3. Do you have full access to the internet? *yes*
4. Is this via a modem or larger connection? *broadband*
5. Does your internet connection run quickly and effectively? *yes*
6. Is the internet essential to the running of your company? *Yes, it is now*
7. What level of computer literacy would you consider yourself to have? *Has a system just for dealers, all can access it, b2b homepage. Shows campaigns, images for marketing, and ordering – shows what is available, what has been ordered and what is on its way. Volume mainly left to owner, some ordering done from the shop. Stock can be delivered directly or to their web site. Panasonic emails vouchers with deals encouraging people to use the system. Online magazine allows the user to look at new products, explaining what they are about, also sales skills and reviews – basically a tool for the salesperson. It does provide a useful tool for the staff. The relationship with the supplier tends to be good, get a fantastic amount of support from Panasonic, including courses for training. The rep visits regularly. Can find prices online cheaper than what they can get but not often – could be grey market if cheaper. Not perceived as a real problem as there are differences in the goods e.g. from the point of view of different systems. No training is given but not required*
8. Do you enjoy using the internet? *yes*
9. What year did you start using it for the purposes of the leisure? *4 yrs*
10. What year did you start using it for the purposes of the business? *Since open*
11. Are you a gadget person? *yes*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *yes*
13. How many people are involved in the decision making process of what stock should be procured? *Mainly the owner but all have input, all market places are different and therefore have different needs – between Aberdeen and say Dundee*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *Yes, if stock is not available then you know immediately, all real time, and check in transit – only as correct as numbers you put in*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *Already do*
16. When you are buying stock is it usually the same items or do these constantly change? *Change, range changes twice a year*
17. Do you buy anything else online for the purposes of the business? *No not really*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *No, might do from the point of view of the suppliers, they do not mind the retailer using the phone at the moment*
19. Could using the internet potentially provide a wider range of goods to your customers?
20. Do you actively seek new suppliers on line? *Full range offered anyway*
21. Do you find the internet easy to navigate when looking for potential suppliers? *n/a*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *n/a*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *no*
24. Do they utilise it for anything else in their business? *Don't know*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *Don't mention it, but @ is mentioned in the name of the shop which might convey a link with the internet*

26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *Imagine everyone uses it*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *No, not really*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *Yes, look up other prices, especially the nationals, also have links to AV manufactures to provide the service to their clients, provides product knowledge which improvise the kevel of service*
29. Has the internet fundamentally changed the way you do business? *Yes, it is another front you have to fight on (b2c, 'price is king') the box can be bought anywhere, are people prepared to pay for other services, service will need to be paid for*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *yes*

Notes

Steven stated that he would expect to see more branded retailers on the high street in the near future e.g. Bosch, LG. Has an independent b2c site.

6. Questions to R&B Music – Ross Donald (co-owner) 27 May 2004

One outlet only

1. How many employees do you have? *3 ft, 4pt 2 owners*
2. What is the annual turnover? *Circa 1 million*
3. Do you have full access to the internet? *yes*
4. Is this via a modem or larger connection? *Modem ADSL connection*
5. Does your internet connection run quickly and effectively? *yes*
6. Is the internet essential to the running of your company? *Perhaps not essential, the more it is used the more we rely on it – seen as a positive thing*
7. What level of computer literacy would you consider yourself to have? *Fairly high level of ability, teaches in aspects of technology (OS 10) use Macs*
8. Do you enjoy using the internet? *yes*
9. What year did you start using it for the purposes of the leisure? *1994*
10. What year did you start using it for the purposes of the business? *1998*
11. Are you a gadget person? *yes*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *Yes, just Ross*
13. How many people are involved in the decision making process of what stock should be procured? *Ross and business partner, all staff have input to a certain degree*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *In some respects it is, is quick. Personal interaction is still important, need to know how quickly they can get stock, there are a lot more variables in purchasing stock. Strings are consumables, only variable is the quantity, tend to stick with particular brand. Guitars do change from year to year – new models will be brought into the shop. Sometimes buy strings over the internet, they get calls and visits from reps and they tend to buy from them and get the most business. Still about building relationships with the companies, i.e. human interaction. Collectors items are normally procured from people coming into the shop, sometimes from trade shows in the States. There is quite some trade online relating to this. Aberdeen tends to be unadventurous and this is reflected in the stock held by the shop.*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *Think it depends how the suppliers of equipment react to the technology. Some companies have developed internet buying (Fender and Yamaha), the fender system included a computer and this allowed them to find out what could be supplied and attempted to offer improved deals – Ross did not like this system. It was eventually discontinued as Arbiter had financial difficulties and it was stopped when Fender went independent. Ross felt that it didn't work as well for them as it might have for others. Most of the goods on the system were consumables, not those items that would normally require a high level of explanation or discussion. The occasional deals that came along meant that buying practices were usually fairly timid – waiting for the next good deal to come along. Yamaha have a new system for online ordering, Ross feels that it will be years before this system is used widely. If reps were stopped there would be more of a need for it, Ross' choice would be for a continuation of the use of reps.*
16. When you are buying stock is it usually the same items or do these constantly change? *See above, cutting edge are constantly changing (6 months to 2 years life), consumables do not tend to change as much, if a new product comes along will usually come from the reps*
17. Do you buy anything else online for the purposes of the business? *No, phone and reps- occasionally computer software and peripherals, tend to be one offs*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *Potentially yes, b2c – new web site is being developed and will be template based will remain informational. Selling online is purely based on price and therefore not of use for R&B*

19. Could using the internet potentially provide a wider range of goods to your customers?
no
20. Do you actively seek new suppliers on line? *no*
21. Do you find the internet easy to navigate when looking for potential suppliers? *Most suppliers are actually third parties for manufacturers, would look at these sites purely for information on the merchandise*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *Competitors are now country wide, some of these sell online but no major market unless collectors guitars or very cheap consumables*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *Everyone is aware of it, customers tend to do their homework, and the outlet cannot match the prices online, but customers are happier buying from a local store and realise that the prices will be higher because of the services offered, turnover suggests that people are still happy to use a local outlet*
24. Do *they* utilise it for anything else in their business?
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *Not an issue*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *n/a*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *The internet is becoming more important as a tool 1. for communication and 2.backup for manuals, upgrades for software, circuit diagrams for an amplifier*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *Early days, not all competitors are up and running for their web sites*
29. Has the internet fundamentally changed the way you do business? *Think it probably has and daily it has more of an impact.. 5-10 years will see a dramatic change in demand for specialist stores, thinks many will perish.*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *Yes, absolutely. As the use of the internet tool sharpens, more and more threats will exist. The public will become more comfortable and confident on line and more and more business will be undertaken online.*

7. Questions to Sainsbury Furniture: 1.7.04

One outlet only

1. How many employees do you have? *19 all full time*
2. What is the annual turnover? *Excess £1m*
3. Do you have full access to the internet? *6 networked computers,*
4. Is this via a modem or larger connection? *3 have broadband*
5. Does your internet connection run quickly and effectively? *Setting up somewhat complex but generally works well*
6. Is the internet essential to the running of your company? *More information needs to be downloaded – delivery times and payment schedules, is used on a daily basis by one member of staff*
7. What level of computer literacy would you consider yourself to have? *Frequent user, non technical*
8. Do you enjoy using the internet? *yes*
9. *What year did you start using it for the purposes of the leisure? 8 years*
10. What year did you start using it for the purposes of the business? *Last 2 years being used extensively*
11. Are you a gadget person? *no*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *Not for purchasing*
13. How many people are involved in the decision making process of what stock should be procured? *3*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *Not doing this yet, more on a traditional basis using a rep and purchasing from them or direct to manufacture. Manufacturers are still mainly done on a verbal basis and from trade show (3 a year) where discounts are on offer. The relationship with the rep is still very important especially relating to after sales*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *Perhaps, there is some competition from online traders and get the articles are cheaper, manufacturers tend to be against this and put all on the same level of discounts. These discounts can be improved upon (2.5%) where retailers attend training seminars provided by the manufacturers, the internet retailers will not do this as they are not involved in face to face selling – this appears to be specifically aimed at benefiting the traditional retailer and hurting the internet retailer*
16. When you are buying stock is it usually the same items or do these constantly change? *Generally goods are different over time and not repeat purchase*
17. Do you buy anything else online for the purposes of the business? *no*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *No, will continue to work on a face to face basis*
19. Could using the internet potentially provide a wider range of goods to your customers? *They can look and see what the fashion is*
20. Do you actively seek new suppliers on line? *Definitely no*
21. Do you find the internet easy to navigate when looking for potential suppliers? *no*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *Haven't looked locally, aware of some cases e.g. Tempur beds have been offered at large discounts online (50%) but surfing is more to look at marketing practices. There is usually not a middleman in the supply chain and buying is therefore mainly done directly from the manufacturer, there are however some agents involved*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *Not aware*

24. Do *they* utilise it for anything else in their business? *Not really*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *no*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *no*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *Yes, furniture industry is changing more rapidly than ever in the past, retailer therefore needs to react more quickly – the internet does serve to provide better information than was previously available, related level of change to a change in culture in the UK and more awareness of what is going on out with Europe*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *Yes, definitely, helps to look up what other companies are doing – interesting to see what suppliers the competition are using and if they are hiring more staff (suggesting they are doing well)*
29. Has the internet fundamentally changed the way you do business? *No, not at the moment*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *Not really*

8. Questions to Top note: 1.7.04

One outlet only

1. How many employees do you have? *4 part time and 1*
2. What is the annual turnover?
3. Do you have full access to the internet? *yes*
4. Is this via a modem or larger connection? *ISDN line(gives 3 lines and has ability to run 2 at one), considering broadband*
5. Does your internet connection run quickly and effectively? *Usually, does have some idiosyncrasies*
6. Is the internet essential to the running of your company? *It is now and is depended upon, has online shopping facility which works quite well for the organisation, was done on a tight budget and might gain form greater exposure – a lot of ordering done on line*
7. What level of computer literacy would you consider yourself to have? *Fairly high (ex-trainer), behind in some of the new developments*
8. Do you enjoy using the internet? *yes*
9. What year did you start using it for the purposes of the leisure? *1997*
10. What year did you start using it for the purposes of the business? *1997*
11. Are you a gadget person? *yes*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *No*
13. How many people are involved in the decision making process of what stock should be procured? *Just one mainly –not daily, a few times a week*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *It is except that you can't ask questions, some suppliers call and you can ask any questions at the time – never know if you are going to get what you have ordered until it comes. One or two suppliers have tried to get retailers to use the internet more extensively for ordering by offering free delivery etc, but most do not. These deals have been discontinued, and were not used by this retailer because, in the case of one of the suppliers, the site was too difficult to browse and was not loading properly. Uses email for ordering but this is not done on a real time basis. Most dealers do not have a real time facility. Many of the publishers are small operations and therefore it is not worth them using it*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *Would find it great if the people came up with a real time site that worked – the system in the shop is not fully integrated and therefore the benefits would not be fully realised. Did try integrating the systems and it did not fully work – should work, and might be done if the cash and time was available.*
16. When you are buying stock is it usually the same items or do these constantly change? *There is a nucleus of the ordering is the same stuff e.g. for examinations and thing in with syllabus, some music that has been ordered would not again e.g. pop music with a short shelf life.*
17. Do you buy anything else online for the purposes of the business? *no*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *Would need to be reflected in special deals – this is unlikely to happen in the near future*
19. Could using the internet potentially provide a wider range of goods to your customers? *Potentially it could*
20. Do you actively seek new suppliers on line? *Not suppliers, particular versions of music, yes. If dissatisfied then might look for other as –in many cases there is no alternative*
21. Do you find the internet easy to navigate when looking for potential suppliers? *yes*

22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *Don't know*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *Not really aware*
24. Do *they* utilise it for anything else in their business? *Don't know*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *Not really an issue – did use one particular site for checking what CD's were available, but it is not loading at the moment*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *Might think that they were at the forefront as they are the only company selling online. CD manufacturers are more likely to be using the internet for ordering online as opposed to music publishers*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *yes*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *No not really*
29. Has the internet fundamentally changed the way you do business? *Not fundamentally*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *Some music publishers are starting to sell directly to the end user and this as a trend may continue and will effect the business.*

9. Questions to Bang and Olufsen: 2.7.04

Franchise, one only

1. How many employees do you have? *3*
2. What is the annual turnover? *Short of a £1m*
3. Do you have full access to the internet? *yes*
4. Is this via a modem or larger connection? *ADSL*
5. Does your internet connection run quickly and effectively? *yes*
6. Is the internet essential to the running of your company? *absolutely*
7. What level of computer literacy would you consider yourself to have? *Day to day used, younger staff have good technical knowledge*
8. Do you enjoy using the internet? *Yes, find it frustrating at times*
9. What year did you start using it for the purposes of the leisure? *1994*
10. What year did you start using it for the purposes of the business? *1994*
11. Are you a gadget person? *yes*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *all*
13. How many people are involved in the decision making process of what stock should be procured? *POS has an upload that requests a repeat purchase when a product is purchased, major decisions will tend to be taken by Bill*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *yes*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *Yes, does it all online anyway*
16. When you are buying stock is it usually the same items or do these constantly change? *Same range, but the range changes, 3 new products this year (more than in the past)*
17. Do you buy anything else online for the purposes of the business? *yes*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *Already doing it*
19. Could using the internet potentially provide a wider range of goods to your customers? *No more than the retailers already does, limited as they are to the B&O range*
20. Do you actively seek new suppliers on line? *N/A*
21. Do you find the internet easy to navigate when looking for potential suppliers? *N/A*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *Yes, would tend to purchase goods online e.g. camcorder – reflects on changing times*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *Not particularly, would not really see other retail electronic shops such as Panasonic and Sony as competitors, these are perceived as high value brands e.g. Rolex, Kuoni*
24. Do they utilise it for anything else in their business? *No*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *Yes, as the retailer orders directly from the factory (carry no stock), standard from Denmark is 8-10 days. This real time upload to the B&O factory impresses customers – the relationship is very close compared to Panasonic and (even more so) Sony*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *missed*
27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *yes*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *Can look at what others are doing,*

29. Has the internet fundamentally changed the way you do business? *Yes, when the system went down, due to a fire in Manchester, the company was running blind. This occurs especially with complicated orders. Non response via email could create a loss to the company*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *As product cannot be bought from anywhere other than the registered retailer this provides a level of control not enjoyed by other franchisers. There is a European wide policy to keep prices stable throughout the trading area, therefore it is not possible to buy abroad and bring it here for cheaper.*

Notes

Interesting interview where the philosophy of the company was discussed at length. This indicated the differing relationship between the manufacturers (Sony, Panasonic and Bang & Olufsen) and the franchisee. The extreme differences discussed suggested the different approaches taken by the manufacturers and their use of the internet in their operations. The brand is essential and this is closely guarded by B&O to the extent that the lettering on the van has to be just right and if not, has to be redone. The overall result of this is a well policed and respected brand.

B&O can only be bought from specified retailers and is not available online – this changes the B&O business model from the perspective of the retailer as they cannot be beaten on price –

10. Questions to David Florist Tel: 01224 649944 – 16.7.04

One outlet only

1. How many employees do you have? *9*
2. What is the annual turnover? *circa 350k*
3. Do you have full access to the internet? *yes*
4. Is this via a modem or larger connection? *modem*
5. Does your internet connection run quickly and effectively? *yes*
6. Is the internet essential to the running of your company? *no*
7. What level of computer literacy would you consider yourself to have? *Medium, happy browser*
8. Do you enjoy using the internet? *yes*
9. What year did you start using it for the purposes of the leisure? *2002*
10. What year did you start using it for the purposes of the business? *2002*
11. Are you a gadget person? *no*
12. Are there members of staff in the organisation who use the internet on a daily basis for purchasing for the organisation? *no*
13. How many people are involved in the decision making process of what stock should be procured? *2*
14. Do you perceive that currently the procuring of stock over the internet is a more efficient way of purchasing stock? *No, does not currently purchase the main products (flowers) online - the company has a close relationship with its buyer in Holland who is able to choose what he thinks the company will want and is usually right. Given the nature of the business and the volume of flowers bought from the growers it is difficult to see how this system could be improved upon by cutting out intermediaries – the wholesaler also distributes the flowers so they are not merely providing an intangible service.*
15. Do you perceive that in the future the procuring of stock over the internet will be a more efficient way of purchasing stock? *It is possible but difficult to see how*
16. When you are buying stock is it usually the same items or do these constantly change? *Constant change*
17. Do you buy anything else online for the purposes of the business? *Yes, articles such as vases, shop fittings are purchased online and this works well and without the need of an intermediary to converse with*
18. Do you think that using the internet more extensively could reduce your cost base relating to the procuring of stock? *Not in the main area of flowers given the nature of the product*
19. Could using the internet potentially provide a wider range of goods to your customers? *Theoretically, yes*
20. Do you actively seek new suppliers on line? *I suppose I do*
21. Do you find the internet easy to navigate when looking for potential suppliers? *yes*
22. Do you feel there are an impressive array of suppliers on the internet providing highly competitive prices in your sector? *Yes, but tend to stick to one main supplier due to the long relationship (20 years) and mutual understanding*
23. Are you aware of other retailers in your area utilising the internet to find new suppliers and increase their range of goods? *No, not really*
24. Do they utilise it for anything else in their business? *Don't know*
25. What image of your retail outlet does using the internet to procure stock portray to your clients? Do you mention it? *Like the idea of using cutting edge technology in the way the company operates as the sector is sometime seen as being run by middle aged women cutting ribbons*
26. What image do you think you convey to other retailers if you mention you use the internet for the sourcing of stock? *Does not tend to be an issue but would be similar to the above*

27. Do you feel that in your industry that it is essential to be using the internet to be able to react to customer needs? *Suggested yes to this, although appreciated that this tended to contradict the answer to question 6. Has become an every day tool that assists the company in achieving its objectives*
28. Do you feel that in your industry that it is essential to be using the internet to be aware of what your competitors are doing and to maximise efficiency? *Not entirely, but does help*
29. Has the internet fundamentally changed the way you do business? *Again, not entirely but has created change – changed processes and market place (see Notes below)*
30. Do you think that the level of competition you experience is likely to expand over the foreseeable future due to competition from internet suppliers? *Difficult to see how this would happen (see Notes below)*

Notes:

From the b2c side of things they find that the bottom end of the market has been eroded via competition from companies such as Tesco and M&S, providing standardised product to the market via the internet. This has made it necessary for them to become more niche orientated and value added. They intend to develop a b2c presence at some point in the future and currently have a ‘good’ web site, which is information only.

Analysis of qualitative interview responses - July 2004

Issue	Theme
1. Nature of product they sell	1. The product
2. Size of product they sell	
3. Specific issues relating to product	
4. Likelihood product could be bought online	
1. Type of client	2. The company
2. Location	
3. Number of staff	
4. Number of staff involved in decision making	
5. Number of staff involved in procurement decisions	
1. Thoughts on the use of technology	3. The decision maker
2. Enjoyment gained from using technology	
3. Reaction and perceived adoption of new technology	
4. Preferred method of communication for information	
5. Preferred method of ordering stock	
6. Preferred method of ordering other items necessary for the company	
7. Level of computer literacy	
8. Number of years using the internet	
9. Perception of future ordering	
10. Level of change experienced through the use of the internet	
11. Perceived future level of change experienced through the use of the internet	
1. Number of suppliers	4. The supplier/s
2. Desire/need to find new suppliers	
3. Ease of finding new suppliers	
4. Level of change in what a new supplier can offer	
5. Possibility of international suppliers	
6. Frequency of ordering	
7. Type of ordering i.e. same items or different	
1. Relationship with supplier	5. Supplier relations
2. Normal method of contact with supplier	
3. Relationship with reps	
4. Use/attendance of trade shows	
5. How they buy	

6. When they buy	
7. Discounts on offer	
8. Desired use of internet by supplier for ordering online	
9. Methods of ordering online on offer	
10. Drive of supplier to make customer use this method of ordering	
1. Available internet connection	6. IT
2. Ability to surf the WWW	
3. Link to internal systems	
4. Link to suppliers systems	
5. Link to suppliers back office systems	
1. Perceived competition locally	7. Competition
2. Perceived competition nationally	
3. Perceived competition internationally	
4. Perceived competition online	
5. Perception of the use of the internet by competition	
6. Perception of the use of the internet by competition in relationship with supplier	
1. Perceived effect of internet usage on company image relating to customers	8. Image
2. Perceived effect of internet usage on company image relating to the competition	

1. The Product tech – technical tang – tangible
non hg –non homogeneous

Issue	Darg Des	H Hifi	Bruce Miller	Pan shop	Sony Shop	R&B music	Sains bury	Top Note	Bang &O	Dave's Flower
Nature of product they sell	Tang	Tech	Tech	Tech	Tech	Tang/tech	Tang	Non tech	Tech	Living
Size of product they sell	Big	Mix	Mix	Mix	Mix	Mix	Big	Small	Mix	Mix
Specific issues relating to product	Sight and touch	Need tech spprt	May need tech spprt	May need tech spprt	May need tech spprt	Non Hg	Sight and touch	Non hg	Need tech spprt	Time Ltd.
Likelihood product could be bought online	Unlikely	Likely	Likely	Likely	Likely	Unlikely	Unlikely	Likely	Unlikely	Likely

2. The company

Issue	Darg Des	H Hifi	Bruce Miller	Pan shop	Sony Shop	R&B music	Sains bury	Top Note	Bang &O	Dave's Flower
Type of client	TR	IS, SR	IS, PC, SR	IS, PC, SR	IS, PC, SR	IS, PC, TR	TR	PC	IS, SR, TR	PC, SR
Location	Near centre	Near centre	Central	Central	Central	Central	Near Centre	Near centre	Centre	Near centre
Number of staff (incl. p-t)	5	15-20	c. 100	3	4	9	19	5	3	9
Number of staff involved in decision making	All	4	8	3	2	All	3	1	3	2
Number of staff involved in procurement decisions	2	4	8	1	1	2	3	1	1	2

Type of client – internet savvy (IS), price conscious (PC), service requirer (SR), touch required (TR)

3. The Decision Maker

Issue	Darg Des	H Hifi	Bruce Miller	Pan Shop	Sony Shop	R&B music	Sains bury	Top Note	Bang &O	Dave's Flower
Thoughts on the use of technology	+	+	+	+	+	+	+	+	+	+
Enjoyment gained from using technology	Med	High	Med	Med	Hi	Med	Med	Med	High	High
Reaction to and perceived adoption of new technology	Neutral	In creasing	In creasing	In creasing	In creasing	In creasing	Neutral	Neutral	High	High
Preferred method of communication for information	Rep/ Show/ Phone	Rep/ Show/ phone	Inet/ Rep/ Show	Inet/ Rep/ Phone	Inet/ Rep/ Show/ Phone	Inet/ Rep/ Show/ Phone	Rep/ Show/ Phone	Inet/ Phone	Inet	Rep/ Inet/ Phone
Preferred method of ordering stock	Phone/ Rep	Phone	Phone	Inet/ phone	Int/ Phone	Phone	Phone	Phone	Inet	Phone
Preferred method of ordering other items necessary for the company	Phone	Phone	Phone	Phone	Phone	Phone	Phone	Phone	Inet	Inet
Level of computer	Low	Med	Med	High	Med	High	Med	Med	High	High

Appendix 13

literacy										
Number of years using the internet	3	4	3	4	3	9	8	7	10	2
Perception of future ordering	No	Yes	Yes	Yes	Yes	Poss.	Poss.	Yes	Al Ready Doing	Poss.
Level of change experienced through the use of the internet	Small	Some	Large	Always used	Large	Some	Small	Some	Always used	Some
Perceived future level of change experienced through the use of the internet	Small	High	High	Al Ready Used	High	High	Small	Some	Al Ready used	Some

4. The suppliers

Issue	Darg Des	H Hifi	Bruce Miller	Pan shop	Sony Shop	R&B Music	Sains bury	Top Note	Bang &O	Dave's Flower
Number of suppliers	Many	Many	Many	1	1	Many	Many	Many	1	1
Desire/need to find new suppliers	Low	Med	Med	n/a	n/a	Med	Med	Low	n/a	Low
Ease of finding new suppliers	Don't use	Yes	Yes	n/a	n/a	Yes	Don't use	Yes	n/a	Yes
Level of change in what a new supplier can offer	None	Some	Some	n/a	n/a	Some	None	Good	n/a	Some
Possibility of international suppliers	Yes	Few	Yes	n/a	n/a	Yes	Yes	Few	n/a	Yes
Frequency of ordering	Low	Med	High	Med	Med	Med	Low	Low	Low	High
Type of ordering i.e. same items or different	Diff	Diff	Repeat/diff	Diff	Diff	Repeat/diff	Diff	Repeat/diff	Repeat/diff	Repeat/diff

5. Supplier Relations

Issue	Darg Des	H Hifi	Bruce Miller	Pan shop	Sony Shop	R&B music	Sains Bury	Top Note	Bang &O	Dave's Flower
Relationship with supplier/s	Strong	Mixed	Mixed	Strong	Weak	Mixed	Strong	Mixed	Strong	Strong
Normal method of	Rep/ phone	Rep/ phone	Phone	Phone/ inet	Phone/ inet	Phone/ inet	Rep/ phone	Phone	Inet	Phone

Appendix 13

contact with supplier										
Relationship with reps	Strong	Strong	Strong	Strong	Some	Strong	Strong	No	Strong	Strong
Use/attendance of trade shows	Yes	Yes	Yes	Some	Some	Yes	Yes	No	No	Yes
How they buy	Shows/ reps	Reps/ phone	Reps/ shows/ phone	Phone/ inet	Phone/ inet	Reps/ phone	Rep/ phone	Phone	Inet	Phone/ rep
When they buy	Occ	Freq	Freq	Freq	Freq	Freq	Occ	Occ	Occ	Freq
Discounts on offer via inet	No	No	No	Yes	No	Some	No	Some	No	Some
Desired use of internet by supplier for ordering online	No	No	No	Yes	No	No	No	No	Yes	No
Methods of ordering online on offer	None	Some	Some	Yes	Yes	Yes	None	Some	Direct	None
Drive of supplier to make customer use this method of ordering	Low	Some	Some	Some	Some	Some	Low	Some	High	Low

6. IT

Issue	Darg Des	H Hifi	Bruce Miller	Pan shop	Sony Shop	R&B music	Sains bury	Top Note	Bang &O	Dave's Flower
Available internet connection	Modem	bb	bb	bb	Modem	bb	Modem	ISDN	Modem	Modem
Ability to surf the WWW	Med	High	Med	High	Low	High	Med	Med	High	High
Link to internal systems	No	No	No	Yes	Yes	Yes	No	No	Yes	Yes
Link to suppliers systems	No	No	No	Yes	Yes	Some	No	Yes	Yes	Some
Link to suppliers back office systems	No	No	No	Yes	Yes	Some	No	No	Yes	No

7. Competition

Issue	Darg Des	H Hifi	Bruce Miller	Pan shop	Sony Shop	R&B music	Sains bury	Top Note	Bang &O	Dave's Flower
Perceived	Low	Med	High	High	High	Low	Med	Low	Low	High

Appendix 13

competition locally										
Perceived competition nationally	Low	High	High	High	High	Med	Med	Med	Low	high
Perceived competition internationally	Low	Low	Low	Low	Low	Med	Med	Low	Med	Low
Perceived competition online	Low	Med	High	High	High	Med	Low	Med	Low	High
Perception of the use of the internet by competition	Don't know	Don't know	Don't know	Don't know	Don't know	Some	Don't know	Don't know	Some	Don't know
Perception of the use of the internet by competition in relationship with supplier	Don't know	Don't know	some	Don't know	Don't know	Some	Don't know	Don't know	Don't know	Don't know

8. Image

Issue	Darg Des	H Hifi	Bruce Miller	Pan Shop	Sony Shop	R&B Music	Sainsbury	Top Note	Bang & O	Dave's Flower
Perceived effect of internet usage on company image relating to customers	None	Some	Some	Some	Some	None	None	Some	NB	NB
Perceived effect of internet usage on company image relating to the competition	None	Don't know	Some	Don't know	Some	None	None	Don't know	N/A	NB

Appendix 14. Qualitative responses from the questionnaire

Issue	Response
1. Age	I am coming up to retirement so my views may not be those of other SMEs however I do feel the internet and the 'big battalions' in my trade will see the disappearance of 'bricks and mortar' shops unless suppliers start to offer significant advantages to
	I am almost retirement age, my successors will no doubt get more involved with IT in the future
	I have been trading since 1980 and have managed to run the business until recently without IT. However, more companies require us to order on-line now and so we have had to adapt. As I am due to retire within the next few years I have to say that I do not
2a. Online purchasing (good)	All of our orders from our main suppliers (99% of our business) has to be ordered online on our retail ordering system and has been this way for at least 4 years. Very easy to use and is a benefit to our business
	Until my suppliers have online purchase facilities with up to date pricing, I won't use it. Reps calling into the shop may be old fashioned and not cost effective, but it is reasonably efficient
	Use and efficiency of procuring stock parts etc. is only as good as the supplier is listing. If item not listed then telephone calls are required to source parts - this can be time consuming
	we order daily online for most products that are special orders or standard terms. Whilst offers are also available online we have no power to negotiate with these. We need to see reps to buy quantities of product that we can promote that perhaps our
	WE would not function well as a business without IT ordering, customers details, purchasing etc all uploaded

	We are in the process of introducing a SPM system into OK business at the moment which is all done online, not bore you with details anymore any info needed get in touch
	Our main supplier are asking us to order 80% online. Other suppliers are setting up virtual showrooms online for us to show goods to customers without stocking them
	IT ordering is excellent when you know exactly what you want, but personal contact better to know what direction suppliers are moving in, what new products are on offer etc. Also supplier reps talk about what others are doing, giving an industry view.
	I could not run my business without IT. I would find it nearly impossible to obtain stock quickly and effortlessly without the internet and would cost more money on phone calls, stationary and stamps. A couple of clicks and its sent next day
2b.Online purchasing (bad)	We find internet purchasing to be unviable as suppliers aren't able to react to orders in a reasonable amount of time. If I fill in applications via the internet for say trade accounts, you will probably see a 50% return.
	All stock for sale is currently ordered online - however if these items are not in stock computers are not programmed to give accurate incoming dates hence back to phoning and asking! Reps give you offers/deals/sort out problems
	It is forced on companies that do not always need 'the full Monty'
	I think you will find that most retailers are gradually introducing computers into their business. There is a feeling with this trade that online selling is unprofitable and online buying might be efficient for the manufacturers but the human touch would
	I do not find the internet as useful in my business as I thought. Items delivered wrong, nobody to blame. Internet useful for information
	It was a lot quicker in most cases in the past to obtain information

	and spares etc. by speaking directly to a person e.g. by phone - a computer does not understand anomalies
	I still prefer speaking to the suppliers personally as there are often problems with pricing errors, late delivery and faults under warranty terms
	IT has become valuable for product research, e-mail communication and selling of certain items online. We do not consider the business as online and most custom requires face to face dealing
	I think that it has run its course regarding buying/selling retail. Consumers need face to face. Buyers request face to face. Our accounts show that no rep = not a good moving account
	Major issue of new IT software for ordering and stock control would be cost
	We do use it now more than ever but still prefer the personal contact
	A major issue with me is reliability of online supplier sites. Most are under resourced and tend to hang
	we will adapt as necessary
	We in South Yorkshire are still in the dark ages
	Online catalogues are not designed user friendly enough and systems are too slow in operation
3. b2c	The days of small electrical shops is over; Tesco, Walmart etc, will kill everyone. After 50 years in the business I am glad to retire
	People are using internet as a way of selling cheaply and in volume to customers. Most people doing so have no understanding of customer needs or back-up service. Lots of companies like ours (providing proper support) are now going out of business as we

	Internet and supermarkets selling all types of appliance will kill retailing. Now companies e.g. Panasonic, Sony, will sell direct to the public
	The internet is beginning to have an effect on business because of the discounting by online retailers
	Having just seen 2 independents with a big online presence go under, the industry is beginning to consider if it can survive on single digit margins which give bricks and mortar no ability to compete on price. The manufacturers are looking at ways to
	From a small business point of view the advantage of online ordering for stock and spare parts is far outweighed by the loss of retail business due to internet, e-bay etc. Probably the final nail in the coffin of many small businesses already severely hit
	I feel that the internet is driving down product prices, causing small retailers to go under. The internet is great for under 40's looking at price, but who will over 40's go to for customer service when the small businesses go under?
	Internet selling has damaged the industry to an extent that customers with ever complicated equipment are suffering
	Likely to increase. Competition increasing from internet cheap sales but people still trying to get advice from us (FOC)
	The internet has had a profound effect on driving down prices in my industry, however sales have improved 5x annual due to 'relationship selling' to our customer base - also very important to hear the products as very expensive
4. Supplier relations	Because we use large international suppliers and small local suppliers, our use of the internet and IT ordering varies immensely. This may be reflected in some of the answers. The large companies expect us to use the internet and the small ones don't (yet)
5. Franchises	Some questions do not apply as all stock is ordered via our retail

	ordering system. Direct to factory in Denmark
	B&O demand the use of IT for all transactions. All sales are logged and all orders. Even perspective customers have to be recorded and we are monitored on our performance of conversion to sales. The business could not run without I.T.!
	We are a franchise, therefore we adopt our main supplier's procurement procedure. We have no choice in this
6. Technical	Electrical contracting, plumbing wholesalers are well behind companies such as Panasonic so answering the questions over a diverse range is difficult. We would interact via SOAP XML, if plumbing supplies could do the same
	It is increasing exponentially, is important and identifies skill shortages in staff which need addressing. we will totally renovate our 25 year (in development) bespoke software soon with a new system (DOS to windows) and to incorporate a web page site
	recently purchased an up to date computer and connected to broadband, only starting to appreciate the benefits of fast efficient access to the internet. With probably much more use being made of the services in the coming months
	The most important aspects of IT is simple to use, very quick, easy to rectify and find mistakes. Also able to bypass the system so orders can be made if need be by self
	We have just recently (Oct 04) installed for the first time a new networked EPOS system which links all our stores and warehouse together - Stock control now much more efficient. Also monitoring of actual sales much easier to follow/predict
	On watching electrical goods trading on the internet very closely I have decided developing a quality website supporting what we do locally would be a safer more beneficial tool for our business. I have seen a high level of stock it high sell it cheap
	Can see a number of benefits to being more IT literate unable to

Appendix 14

	find time to learn and implement
	Our EPOS system is Electrosoft which we are changing to M!-store (touch screen designed with our business in mind) - hopefully will be more useful
	For a small independent, I believe our IT network and software are very good. What causes us problems is the apparent lack of 'policing' of internet service provision - hosting etc.
	Several computer terminals in store, used to track stock, order and manage retail customer database
	We use a trade package, in house, and also windows for various purposes i.e. letters, price labels, prices price lists, wages, internet, service info. (manuals and tech information etc.)
	Company has not yet got to the computer stage yet as are only a small electrical shop with fax