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Marketing of innovation: The case of a Welsh SME in the ICT sector

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Marketing of Innovation: The Case of a Welsh SME in the ICT sector

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by

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Abstract of Thesis

This study investigates the marketing of software products and services in small and medium enterprises (SMEs). Due to the nature of software products' intangibility and the high failure rate of small high tech organisations, the study incorporates the concept of Relationship Marketing (RM) and Integrated Marketing Communications (IMC). These concepts are especially pertinent to organisations within highly competitive and innovative markets as they attempt to build market share by delivering fast, high quality and innovative solutions.

The methodology combines qualitative and quantitative methods. The qualitative methods include two case studies of SMEs in the Welsh software industry and in-depth interviews with their customers and employees. The researcher was also able to employ participant observation of the marketing activities and development of relationships within the SMEs. Content analysis and text mining analysis was conducted on the in-depth interviews to establish customer perceptions of the dyadic relationships and customers' general expectations of software organisations. Adaptive Conjoint Analysis (ACA) was subsequently employed as a quantitative method to investigate the trade-offs organisations make when making software purchase decisions.

The findings indicate that development of long-term relationships with customers is valuable within the software industry, and such long lasting relationship has to have roots in important attributes especially 'Software Quality', 'Understanding of customer requirements' and 'Professionalism' of the software supplier. The importance of service quality as well as product quality is evident in the ACA findings and the constructs are presented in a model, which can be used by high tech SMEs as a guide to managing customer expectations and improving their Relationship Marketing activities. Important facets of high tech marketing are also included in the model as critical success factors for SMEs in the software industry. These factors include forming alliances, and developing Integrated Marketing Communications as a tool supporting RM.

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1.0 INTRODUCTION

The title of the thesis is "Marketing of Innovation: The Case of a Welsh SME in the ICT sector". The research project began in January 2005 and was part of the ESF[1] Objective One program. The ESF funded program gave 50 local Bangor University students from a variety of disciplines the opportunity to work towards a PhD whilst working alongside a local SME. The aims of ESF Objective One were to provide support and expertise to small organisations in a deprived area, to increase the research capacity of SMEs and to encourage SMEs to undertake research whilst simultaneously providing the student with an academic qualification.

This chapter introduces the research project and serves as a guide to the thesis. It provides information that is relevant to the aim of the thesis (section 1.1); the rationale and background to the research (sections 1.3 and 1.4); the manner in which it was approached by the author; the implications and consequences of that approach for the style and methodology (section 1.5); and finally, an explanation of the thesis chapters and the logic of the sequence in which they are positioned (section 1.6).

1.1 Aim of the Research

The aim of the research is **to contribute to the understanding of relationship formation and customer satisfaction in high technology, information based industrial markets.** This involves supporting the research and development of expertise in the area of marketing communications and Relationship Marketing in the Information and Communication Technology (ICT) sector. Within the remits of the ESF Objective One program, this research focuses on Wales and the Welsh business environment using a major case study of a Welsh software SME based in Bangor, North Wales. The term "Innovation" used in the project title refers to innovative, high tech products and services, and although the focus of this study is specifically in the software industry, the term innovation

[1] European Social Fund

seemed appropriate to capture and emphasise the skills, knowledge and capabilities of people within SMEs who develop such innovative solutions. The level of innovation within any economy has huge implications on its competitiveness, employment levels and regional development of the country and as innovation often is predominant within small, flexible SMEs, the continuance, understanding and support of such SMEs is imperative for support of long term economic growth.

The key research question posed by this investigation is: how can innovative, high tech SMEs market their solutions using relationships in the business to business sector? The software industry was chosen to be a focus of the research. This case study of a Welsh software SME explores the concept of Relationship Marketing (RM) and Customer Relationship Management (CRM) within the organisation from a dyadic point of view (both suppliers and customers). Conjoint analysis was applied as a quantitative method in order to investigate the importance of various product and service attributes and the trade-offs companies make when purchasing software products/services.

Very often a lack of resources forces SMEs to handle their own marketing, distribution and support of the finished product. This research investigation aims to deliver a specialised marketing model that is appropriate for use in SMEs that operate in the ICT sector. The question arises whether there is a genuine need for another applied marketing model taking into account a plethora of marketing solutions presented in literature (Albers, 2000; Raghu *et al.*, 2001). None of the models however, address the rapidly changing and volatile environments facing small market players. Also the speed of change and innovativeness in the software development sector creates a tendency for ad hoc communication and marketing of new/improved products (Barry and Lang, 2001), which calls for more structured, robust and holistic approach to ensure market success of innovative, technological solutions.

1.2 Research Objectives

The main aim of the research is expressed in a list of specific objectives, which were addressed throughout the course of the study;

- To review the current situation in the UK software market, with an emphasis on SMEs and the software market in Wales.
- To identify why small software companies find it difficult to market their products effectively.
- To establish how small organisations can effectively market software products and services.
- To establish critical success factors for high tech SMEs in Wales.
- To identify customers' expectations pertaining to customer-supplier relationships.
- To establish the main attributes which customers deem important when purchasing software and to find out what trade-offs customers make when deciding on software purchases.
- To evaluate the relevance of Relationship Marketing concepts and practices in the management of SMEs in the software/high tech sector.
- To identify whether high tech SMEs use of Integrated Marketing Communications, can enhance their Relationship Marketing activities.
- To develop a model approach that can be used by companies to profile and enhance their customer relationships in the proprietary ICT sector.

1.3 Rationale for the Research

The rationale for the research is twofold: firstly, there is a gap in the existing literature and research on marketing of software products and technology services, specifically when applied to SMEs. Secondly there is a need to establish critical success factors for small ICT companies. Two cases of small software companies based in North Wales, one of which went into liquidation after five years of operation, the other of which remains successful and healthy in terms of financial performance and its market position, are used to identify

these criteria. The analysis and comparisons of both cases focus on their marketing activities/lack of marketing activities, external and internal business relationships, and seek to accomplish, combined with other applied methodology, the above research objectives.

1.4 Background to the Research

There is considerable evidence to suggest that the increased complexity, globalisation, and knowledge intensity of the marketplaces require SME's to make better use of their technological, organisational and marketing competencies in order to survive. Contemporary organisations in highly competitive and highly innovative markets should be able to build market share quickly, by delivering fast, high quality and innovative solutions. These prerequisites particularly influence smaller high technology companies which have to provide fast response, mass customized, yet innovative products and services with limited resources. Their efforts to maintain and extend market share should be supported by the development of new customers and support of existing relationships with current customers.

In the software development industry the relationship with customers should not only consist of need-oriented interviews and focus groups, but should be supported by knowledge of external customer expectations. These are formed by the consideration of known competitor products and services plus a vast range of external factors and trends such as global issues of socio-cultural norms, product market positioning, and associated budgets. The relationship between software development companies and their customers is also characterised by the fact that customers are increasingly willing to assist with the development effort (Prahalad and Ramaswamy, 2000).

Innovative technologies bring new opportunities for developers to be creative and to surprise their customers via direct enhancement of information-based products and services, real-time maintenance and support, and rapport building. These can be commercially realised only if the benefits are communicated and

demonstrated to customers who very often have a limited knowledge about the product and advantages the product would offer to their businesses.

On the other hand, the needs and requirements that SMEs face in the market place are varied and products are expected to be customised according to the end-customer, whilst being innovative, reflecting good value and being of high perceived quality. Very often a lack of resources in smaller companies forces them to handle their own marketing, distribution and support of the finished product. This type of environment and the nature of software calls for a specialised marketing model that can be applied by SMEs in ICT sector (Alajoutsijarvi *et al.*, 2000).

Despite the widespread acceptance of the importance of SMEs, including innovativeness, flexibility and the provision of employment, much has been written about the lack of marketing competencies of SMEs and the constraints of SMEs to effectively leverage their products and innovations in the marketplace (Hausman, 2005). Constraints include lack of resources and lack of specialist expertise (Gilmore *et al.*, 2001).

The application of two theoretical concepts, Integrated Marketing Communications (IMC) and Relationship Marketing will constitute a backbone of the proposed applied model (Bose and Sugumaran, 2003). IMC is required if a small yet distinctive ICT company is to broaden recognition and appreciation of brand and products, whereas Relationship Marketing will aid in attracting and retaining the existing and prospective customer base.

Relationship Marketing (RM) is a concept which has been developed in the last twenty years. RM has evolved as a result of globalisation, proliferation of service markets, increased customer sophistication and the saturation of product markets. The idea proposed by many leading scholars is that the organisational focus should be on retaining existing customers as well as attracting new customers through developing long term relationships and customising products and services to meet customer needs (Gronroos, 1997).

Consequently the study of RM within SMEs is crucial, especially taking into account that the effective development of RM and CRM can help SMEs to win and retain customers. It is hypothesised that the development of CRM activities should be strongly supported by Integrated Marketing Communications (IMC), underpinning the theoretical framework of this research. The focus of IMC is to integrate the various tactical aspects of marketing communications with the aim of delivering a consistent and cohesive message to customers, prospects and other stakeholders. It should also be noted that customer orientation is a significant enabler of consistency of message content and delivery within an organisation (De Pelsemacker *et al.*, 2007).

1.5 Methodology: A Summary

A combination of qualitative and quantitative research has been employed throughout this study using a mixed methodology research design. The case study method was chosen as part of the exploratory stage of the research and two contrasting cases of software SMEs were analysed. Participant observation of the cases was carried out, as well as archival research of corporate documents and marketing material. In order to gain a detailed view of both SME's and their relationships with their customers and expectations of the supplier and software companies in general, in-depth interviews were conducted with 16 customers. Content analysis was conducted on the interview transcripts, applying the theoretical framework of SERVQUAL and the 7Ps Services Marketing Mix. The SERVQUAL model is a scale designed to measure customer perceptions of service quality across five key dimensions (Fisk *et al.*, 2004). The 7Ps framework was applied to assess the customer expectations of small software suppliers. Following the recommendations of Hill and Wright (2001), the analysis of the interview transcripts included data coding, moving from coding to interpretation, interpreting the data and generating meaning from the analysis. The qualitative findings were supported by text mining analysis of the text files of interviews' transcripts. A second objective of the in-depth interviews was to ascertain what attributes the customers deemed important when deciding on software purchase. Additionally a short survey was administered to a convenience sample of 65

respondents to establish a broad initial set of key product and service attributes. Following a comparison with the extant literature, the content analysis of the depth interviews and analysis of the questionnaires, 12 key attributes were identified: 'Price', 'Relationship', 'Location', 'Bilingual Capability', 'Software Functionality', 'Software Quality', 'Professionalism', 'Expertise of Employees', 'Understanding of customer requirement', 'Trustworthiness', 'Communication' and 'Service'. These attributes were used to design an Adaptive Conjoint Analysis survey. Conjoint Analysis is a multivariate technique which determines consumer preferences for alternative products and service offerings by examining the trade-offs consumers make during the decision making process. Adaptive Conjoint Analysis (ACA) is a hybrid approach which 'adapts' each respondent's interview based on the answers provided, and hence concentrates on the areas of greatest interest to the respondent. The ACA survey was distributed to decision makers responsible for software purchase in various organisations located in Wales. 256 on line surveys were collated and analysed, employing ACA SMRT[2], ACA simulations and cluster analysis.

1.6 Structure of the Thesis

Chapter Two delves into the literature surrounding the research question in order to review research development in the area. The nature of the research question requires a review of the literature in the following areas: Services Marketing, Relationship Marketing and Customer Relationship Management (CRM), Integrated Marketing Communications (IMC), Marketing of SMEs, and the Marketing of High Tech Products, specifically the marketing of software products and services.

As the focus is on marketing of innovative software, chapter three reviews the software industry, starting with the global software industry sector, followed by the UK software industry and finally the software industry in Wales. The aim of this chapter is to examine the business environment and characteristics of

[2] ACA Software Market Research Tools software

the software industry, including issues and challenges that affect structure, conduct and performance of the industry.

Chapter Four then describes the research methodology and the rationale for selecting the prescribed methods and discusses the limitations of the study. The chapter begins with an insight into the researcher's approach and the remainder of the chapter follows the sequence of research, introducing case research and ethnography, in-depth interviews, followed by an examination into Conjoint Analysis and Adaptive Conjoint Analysis. Procedures used in survey design and sampling are described and methodological limitations are presented.

Chapter Five is devoted to the case study research. Both case studies are described and special attention is given to the marketing activities and customer relationships of both SMEs. The findings from the exploratory survey of Company A are presented, whilst Company B (the failed SME) is analysed using the McKinsey 7S model (Peters and Waterman, 1982 cited in Kaplan, 2005). This analysis along with exploratory interviews with company B's employees and customer are summarised into a model illustrating the primary reasons why the SME went into liquidation. Cross-case comparisons are made between both companies under a list of common themes highlighted throughout the research. The chapter concludes with a model of critical success factors contributing to the success of Company A, and a literature-related discussion of the case research findings, with particular attention paid to aspects of Relationship Marketing and Integrated Marketing Communications.

Chapter Six reports the qualitative findings of the in-depth interviews conducted with Company A's customers. The results of content analysis using the SERVQUAL framework are illustrated using relevant quotations from customers. Analysis of customer expectations is then carried out within an adapted 7Ps model. A literature-related discussion of the findings explores the significance of the findings from both customer and supplier perspectives of Relationship Marketing. Text mining analysis of the in-depth interviews is also reported at the end of the chapter.

Chapter Seven is an account of the Adaptive Conjoint Analysis results. The chapter begins by presenting the importance of selected attributes established with OLS regression, then compared with results obtained with ACA Hierarchical Bayes algorithm. The second part of the chapter presents scenarios for software organisations using market simulations of the attributes and their associated levels in an attempt to establish optimal service. The third part of the chapter describes the results of cluster analysis. The chapter concludes by discussing the findings and supplier choice criteria using the 12 identified key software product and service attributes.

Chapter Eight combines all research findings in order to present the conclusions of the research along with managerial implications. Two of the key research objectives are re-visited and the models presented in chapter five and six are presented to remind the reader of the key findings. The predominant outcome of this chapter is the presentation of a new model which has been developed from this research and can be adopted for use by high technology SMEs who produce software so that they may improve their approaches to Relationship Marketing and also improve their response to customer expectations. The model is clearly defined and its application described, then overall conclusions are drawn with recognition of the original contributions that this model has made to new knowledge in this area. Finally, managerial implications are discussed and future research directions are offered from both academic and an applied perspective.

1.7 Thesis Contributions

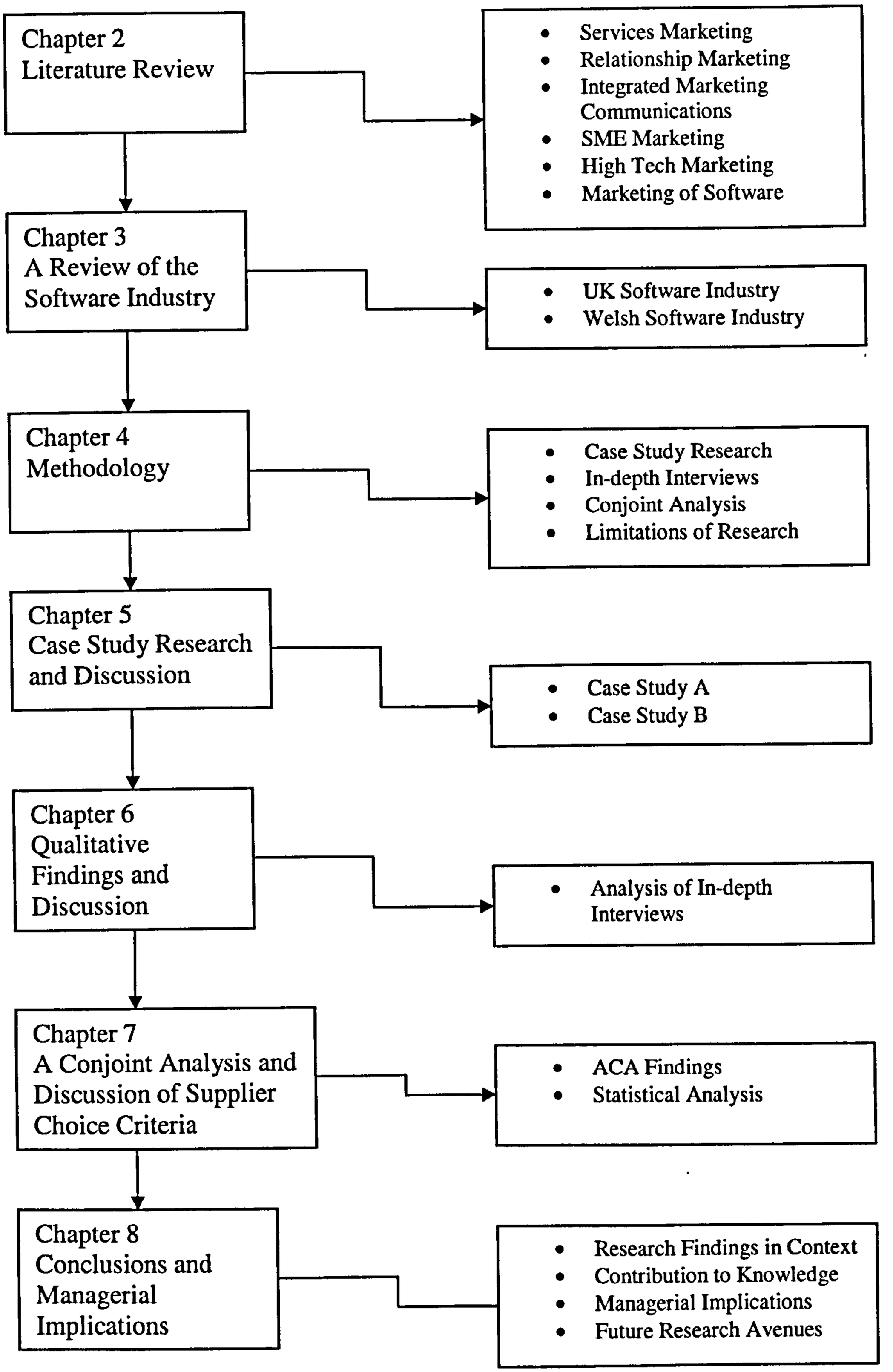
This research hopes to contribute new knowledge to both academic and practitioner domains. The study therefore intends to contribute to the limited knowledge on marketing of software SMEs and customer expectations of software suppliers in a B2B business environment. The resulting model intends to act as a guide for high technology SMEs that produce software and offer a service, to improve customer relationships and to help them develop an innovative and cutting edge software solution which also meets customer expectations. The IMC element of the model intends to aid SMEs in achieving

communication objectives and developing a lasting dialogue with prospective customers and other stakeholders in the B2B environment.

1.8 Summary

The purpose of an Introduction is to provide the reader with all the important components they need to know about before embarking on the main body of the thesis. This chapter has detailed the thesis title, its aim, objectives, rationale and background, and a summary of the methodology employed to achieve the aim and objectives. There has been an explanation of the content of the chapters and the sequence of the chapters is illustrated in figure 1.1.

Figure 1.1 Structure of the Thesis



2.0 LITERATURE REVIEW

2.1 Introduction

The key research aim of this project is to examine how small software organisations can improve their marketing activities through the development of relationships with customers and prospective customers. Software is an intangible product, thus can be marketed as a service and a 'solution' to business problems, often in a customised manner. The nature of the research problem thus requires a review of a number of marketing disciplines including the Marketing of Services, Relationship Marketing (RM) and Customer Relationship Management (CRM), Integrated Marketing Communications (IMC), SMEs and Marketing of SMEs, Marketing of High Tech/Innovative Products and the Marketing of Software.

The chapter begins with the discussion of broad topical areas of Services Marketing and Relationship Marketing, which constitute major theoretical underpinnings of the research. These concepts are reviewed with a focus on business-to-business settings. The competitive and progressive nature of the software industry requires organisations to offer services such as consulting, after-sales support, software maintenance and project management as well as delivery of the software product itself. Arguably the quality of service delivery is even more essential for software SMEs who do not always have a well known brand or reputation, marketing experience or the general business capacity of larger businesses to develop and market their products as standard off the shelf products which are often generic and inflexible. The product and service thus combine into a 'solution', which is often customised and thus requires the development of a relationship, allowing customer expectations and requirements to be fully understood.

The concept of IMC is complementary to, and supports the development of the RM literature, and is therefore included in the literature review. It is hypothesised that an IMC program combined with an RM approach within a

software organisation can provide clarification and consistency in the minds of customers. As the research objectives focus on SMEs in particular, and as case study research methodology is employed, the literature on how SMEs approach marketing cannot be ignored and is also reviewed. This is particularly important as SME researchers observe that SMEs tend to market themselves differently from larger firms. Finally, the literature moves from a broad theoretical base and focuses on the specific research question and therefore includes the literature on marketing of software which is thoroughly examined. As was clear early on in the research process, there is a gap in the literature on marketing of software products and services (Alajoutsijarvi *et al.*, 2000; Helander and Ulkinemi, 2006; Ojasalo *et al.*, 2008). Therefore the logical area of literature in proximity to marketing of software is the marketing of high tech products, which is also presented and reviewed in this chapter.

2.2 Marketing of Services

This section firstly describes the nature and characteristics of services and then examines the differences between the marketing of a product and the marketing of a service. Service quality, internal marketing and the service experience are also examined, with a focus on technology and information industries. Software is an intangible, digital product that can be seen and managed as a service offering as well as a product. Particularly relevant and unique to SMEs is their ability to develop a close relationship with customers and the opportunity to create a customised service or solution, in an attempt to establish a competitive advantage and retain valuable customers. A definition of services proposed by Gronroos (2007, p. 52) embraces the importance of direct contact with customers:

> "A service is a process consisting of a service of more or less intangible activities that normally, but not necessarily always, take place in interactions between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems".

Some of these key words identified by Gronroos (2007) such as "process", "intangible", "interactions" and "solutions", are highly relevant in the context of software development as the software provider frequently offers tailored computer systems that require regular and close interactions with the customer. To a certain extent, the customer participates as a co-producer in the production process for instance by providing system requirements and user-feedback on a software prototype.

2.2.1 Characteristics of Services

It is proposed that the marketing of services is inherently different to the marketing of goods, because services are intangible, perishable, inseparable and heterogeneous (Fisk *et al.*, 2004). The fact that service industries have grown phenomenally during the last thirty years highlights the importance of understanding how to market services and how to create customer-perceived value. Parallel to the growth of services is the emergence of RM, which will be reviewed below (see section 2.3).

Is software a service or a product? We have already established its intangibility, and as heterogeneity applies to tailored software solutions, it is difficult to standardise solutions. Although software can become obsolete very quickly, it is not of a perishable or inseparable nature as improvements to the solution can be made prior to its delivery. Moreover, buying and choosing a software supplier is a complex process, as many buyers have limited knowledge regarding the service offering (unless they are an IT expert) and therefore face uncertainty regarding technical outcomes. These are the types of characteristics common within service contexts. Despite the accepted wisdom that intangibility, heterogeneity, inseparability and perishability (IHIP) uniquely characterise services, these concepts have recently faced criticism based on the premise that services offer benefits via rentals or temporary access fees, presenting a different view of services (Lovelock and Gummesson, 2004). This is relevant to software as it is forecasted that renting software could take over from full licensing ownership in the near future (see chapter 3).

2.2.2 Development of Services

The Marketing of Services as a discipline has become an established field within the marketing literature. The discipline has materialised as a result of a general growth in the service sector, the deregulation of service industries, intense price competition and the increasing sophistication and rising expectations of consumers. Important contributions to the early literature on services marketing include Berry's (1983) work on RM, and Booms and Bitner's (1981) expansion of the traditional marketing mix (cited in Gummesson, 2006). Sheth and Parvatiyar's (2002), research into the development of domains to disciplines, showed that Services Marketing has stood the test of time and is now a distinguished discipline. Moreover, the service quality model, SERVQUAL is well-known and has been applied to various research contexts. Vargo and Lusch's work (2004) on the 'new service dominant logic' has been equally well received and supports the contention that customers engage in buying "service solutions" to solve problems rather than buying products, which promotes the sharing of ideas and resources within relationships (Ballantyne and Aitken, 2007).

2.2.3 Role of People in Services

Inevitable to the discussion of services is the reference to people, relationships and interaction. Due to the characteristics of services, the human aspect is vital as co-operation can facilitate a mutual creation of value, resulting in a positive service experience. Therefore the relationship facet of services is important, particularly in business-to-business settings and "high-credence services" (Eisingerich and Bell, 2007) where service quality, trust and loyalty is key. Although RM is not suitable for application in every service setting, arguably, it is essential in the software industry where customised solutions are developed, the pricing of software is specific to individual customer requirements and there is a degree of resource sharing amongst two partners. Related to the concept of internal marketing (see section 2.2.4 for a description) is service recovery, which is the supplier's response to a customer when a service failure has occurred. It was found to be one of the factors which

deter customers from switching to an alternative service supplier, even when they are generally dissatisfied with the service. Other factors identified were high switching costs, inertia, interpersonal relationships and the attractiveness of alternatives (White and Yanamandram, 2007). Service recovery is particularly vital in the software industry where implementation of new programmes into organisations does not always run smoothly and can impact negatively on organisational performance if not effectively implemented by service employees.

2.2.4 Internal Marketing

Internal Marketing and its contribution towards business performance has been emphasised in the services marketing literature. Service quality is inherently linked to a performance and the performers or "actors" are the employees. Also the quality of external relationships depends on successful internal marketing that transfers into positive relationships with customers (Herington *et al.*, 2006) and it is contended that customer-oriented employees can have a positive influence on customer loyalty and positive word-of-mouth (Macintosh, 2007). Thus service organisations must not only attract and retain the right customers, they must also attract and retain good quality employees who can enhance customer service experiences and act as advocates of the service organisation. Similarly, top-down support and organisational commitment to the training of employees, providing incentives and IT systems can aid and improve internal marketing (Gronroos, 2007), and the practice of internal marketing can result in greater job satisfaction (Gounaris, 2008). In software organisations, IT systems are normally already in place, thus it is the supplier's responsibility to ensure that these systems are used by employees' to support their RM efforts.

2.2.5 Service Quality

Much of the literature on services describes the quality of services and how to enhance or improve service quality. Services are subjectively experienced processes, most of which are evaluated post-purchase. Service quality includes technical and functional dimensions (Gronroos, 2007). As software purchase

involves complex decision making, functional dimensions such as professionalism and reputation are equally important as technical quality when assessing the supplier's quality. However, the level of total perceived quality is ultimately determined by the gap between the expected and experienced service quality (Gronroos, 2007).

The SERVQUAL instrument is a well-known attribute-based approach and is often used to measure perceived service quality. It was developed by Parasuraman *et al.*, 1985. The first stage of their study resulted in 10 service quality dimensions;

- Reliability –involves consistency of performance and dependability.
- Responsiveness –concerns the willingness or readiness of employees to provide service.
- Competence –the possession of the required skills and knowledge.
- Access –involves ease of approachability, delivery and contact.
- Courtesy –involves politeness, respect and friendliness of employees.
- Communication –means listening to and informing customers.
- Credibility –involves trustworthiness, honesty and integrity of the organisation.
- Security –involves the freedom from risk or doubt.
- Understanding the Customer –involves making the effort to understand the customer's needs and requirements.
- Tangibles –includes the physical evidence and representations of the service.

These dimensions were later refined and decreased to five: Tangibles, Reliability, Responsiveness, Assurance and Empathy (Parasuraman *et al.*, 1988).

The SERVQUAL instrument has faced some criticism (Ladhari, 2008). It has been claimed that the instrument focuses on human interaction as opposed to the service product or core service. It has also been criticised due to the fact that standardisation of service delivery and social responsibility of the service organisation is not taken into account (Sureshchandar *et al.*, 2001). It has also

been argued that the instrument should be industry-specific (Carman, 1990). Further instruments were subsequently developed, including SERVPERF (Cronin and Taylor, 1992), and specific to a relationships approach, the relationship-quality model (Liljander and Strandvik, 1995 cited in Ojasalo, 2001). However, recent studies showed that SERVQUAL is a valid predictor of overall service quality (Carrillat *et al.*, 2007; Lai *et al.*, 2007).

2.3 Relationship Marketing

This section of the literature review examines the changing role of Marketing and the evolution of Relationship Marketing during the last twenty years. The concept of RM is further explored by examining some definitions in the literature and RM theory development, along with the benefits of adopting this approach, the debate on whether the concept constitutes a new paradigm within marketing and its applicability to varying industries. The literature on CRM is subsequently reviewed as the practical enabler of RM. The relevance of CRM to small organisations, particularly within the high tech industry is also discussed. A table summarising the seminal RM and CRM literature is presented in table 2.3.

RM is a concept that is closely related to Services Marketing. It is contended that the complex nature of high tech products such as software require relationship-type marketing approaches as opposed to a traditional mass marketing approach. Moreover it is an approach which SMEs adopt instinctively as they have closer, more interactive communications with customers, they are more flexible to changing customer demands and they tend to make use of their personal contact networks to identify opportunities and customer requirements (Gilmore *et al.*, 2001).

RM is a form of marketing which focuses on developing long-term relationships with customers by listening to customer requirements and satisfying customer needs with the aim of retaining high value customers (Reichheld and Sasser, 1990). The concept emerged in the 1980s as a response

to globalisation, the evolution of markets from product based to service based, technological changes and changes in competition dynamics. RM has since been advocated by a number of academics as a new 'paradigm' in marketing (Donaldson and O'Toole, 2000; Gronroos, 1994; Gummesson, 1997; Sheth and Parvatiyar, 2002). Whether it is a new paradigm or not, we are certainly in a "relationship age" (Olasz, 2006) which embraces co-creation and share of customer rather than share of a market.

During the first half of the twentieth century, marketing was predominantly production orientated and a major focus was on the transaction between buyer and seller, describing the commodities to a mass audience via non-personal advertising and promotion, and increasing firm value by selling mass-produced commodities (Vargo and Lusch, 2004). Between 1950 and 1980 there was a shift towards the customer, and as a result of contributions from distinguished scholars such as Kotler and McCarthy, became developments such as the marketing mix (4Ps) and the heightened recognition of customer satisfaction. Developments from 1980 onwards include the introduction of Total Quality Management, Services Marketing, Value and Supply Chain Management, and Relationship Marketing.

Despite the fact that relationships have been ubiquitous among markets and organisations for centuries, the term 'Relationship Marketing' was first used by Berry in 1983 through his work on Services Marketing (cited in Lovelock and Gummesson, 2004). Various definitions of RM have since been presented in the extant literature. Morgan and Hunt (1994, p.22) state that:

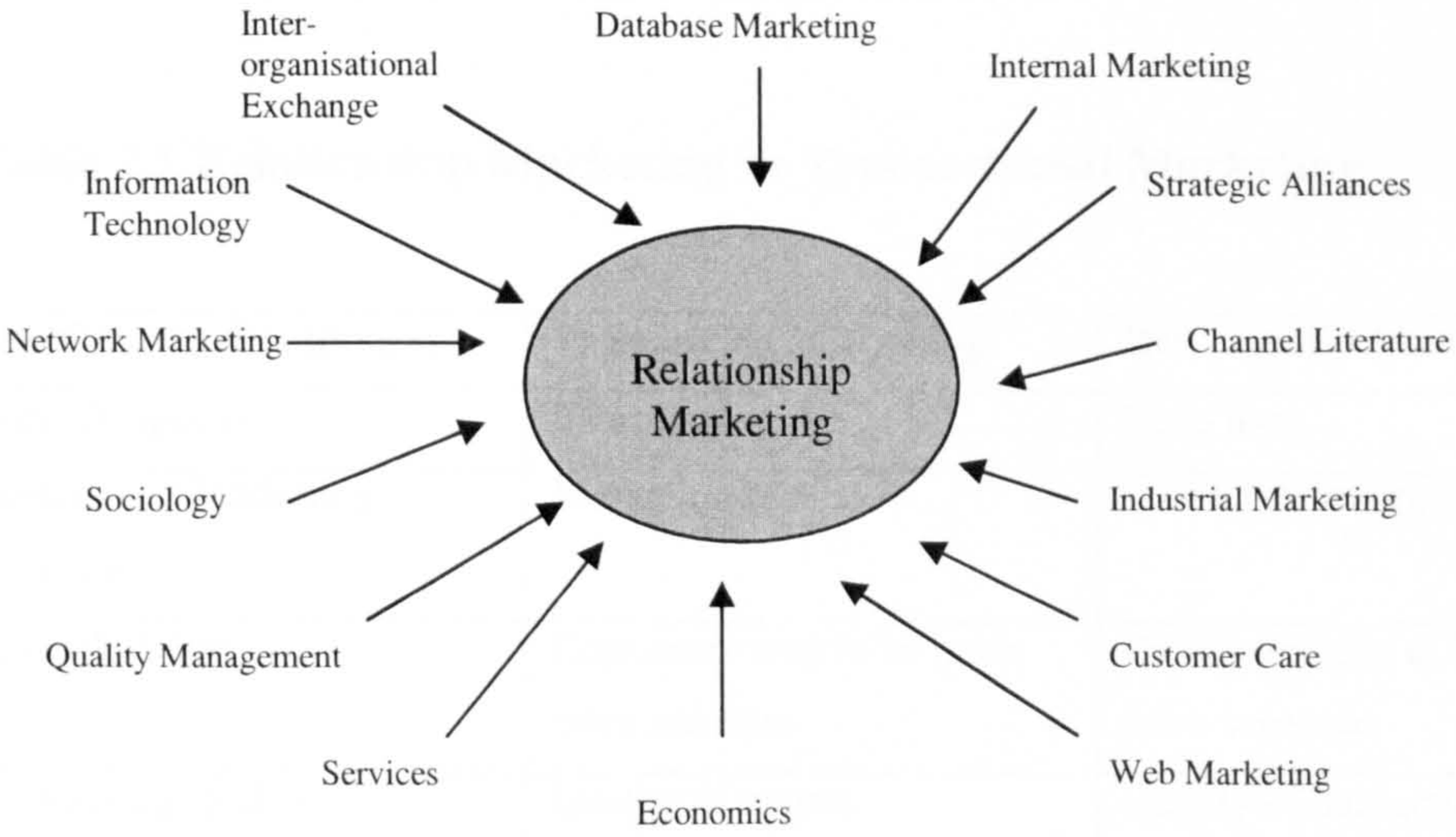
> "Relationship Marketing refers to all marketing activities directed toward establishing, developing, and maintaining successful relational exchanges".

Gronroos (1994, p.9) argues that RM "is to establish, maintain, and enhance relationships with customers and other partners, at a profit, so that the objectives of the parties involved are met. This is achieved by a mutual exchange and fulfilment of promises". Despite widespread debate regarding the definition and theory development of RM, this definition proposed by

Gronroos is arguably the most comprehensive to date (Harker 1999; Harwood *et al.*, 2008).

Moller and Halinen (2000, p.49) contend that four marketing traditions have contributed mostly to the development of RM: Services Marketing, Business Marketing, Marketing Channels and Database Marketing. However, the authors argue that there is no developed theory of RM. Their view is that RM can consist of a variety of approaches, namely market based relationships and network based Relationship Marketing, but ultimately organisations have to "master several modes of marketing". Harwood *et al.*, 2008 have recently added other perspectives of marketing including IT and Sociology as perspectives of RM, and an adapted model including web marketing and database marketing is presented here:

Figure 2.1 Adapted Model of Relationship Marketing



Source: Adapted from Harwood *et al.*, (2008, p.14)

In light of the recent proliferation of service industries, it has been suggested that Transactional Marketing (as defined by the basic 4Ps of marketing) is somewhat obsolete and more suited to mass, consumer-marketed products in previous eras of marketing (Kotler et al., 2007). In the early 1980s, markets were becoming saturated and the needs of customers were clearly varied and

challenging as a result of fragmented markets. Consequently the views of practitioners and academics alike shifted from product-oriented philosophy to relationship-oriented philosophy as it dawned on them that the key to sustainable competitive advantage was the retention of profitable customers (Harker and Egan, 2006). However it is a common view within the literature that Transactional Marketing still could be seen as a major approach as not all customers wish to enter into a long term relationship with an organisation, especially when customers are buying commodity products (Gronroos, 1997; Ward and Dagger, 2007). Evident in the literature is a description of a relationship continuum, where Transaction Marketing is on one end and Relationship Marketing on the other end: what type of relationship the customer wishes to enter into depends on the needs of the customer and the product or service offered (Gronroos, 1997).

When comparing RM and Transactional Marketing, the major differentiation dimension is the interactiveness with customers (see table 2.1 below).

Table 2.1 Relationship Marketing vs Transactional Marketing

The Strategy Continuum	Transaction Marketing	Relationship Marketing
Time Perspective	Short term	Long term
Dominating Marketing Function	Marketing mix	Interactive marketing
Price elasticity	Customers tend to be more price sensitive	Customers tend to be less price sensitive
Dominating quality dimension	Quality of output	Quality of interactions
Measurement of customer satisfaction	Monitoring market share	Managing the customer base
Customer information system	Ad hoc customer satisfaction surveys	Real-time customer feedback system
Interdependency between marketing, operations and personnel	Interface of no/limited strategic importance	Interface of substantial strategic importance

Source: Gronroos (1997, p.329)

Although RM has been an expanding approach for the last twenty years, its definition, conceptual content and practical implications are still being debated. The three key schools of thought are derived from the Nordic School, the IMP (Industrial Marketing and Purchasing) and the Anglo-Australian approach. The Nordic School appeared in the late 1970s in response to perceived shortcomings in the transactional approach to marketing and the work on Services Marketing. The IMP Group also originated in the 1970s and is centred around business-to-business relationships. The Anglo-Australian approach is a third school of thought which is built on quality and increasing levels of value to customers through enduring relationships. (Palmer *et al.*, 2005) as illustrated in table 2.2 below.

Table 2.2 Relationship Marketing: Schools of Thought

Key component	Transaction Marketing	IMP Group	Nordic school	Anglo-Australian approach
Basis	Exchange 4P 's	Relationship between firms	Service	Service/quality
Time-frame	Short-term	Short and long-term	Long-term	Long-term
Market	Single, customer	Multiple, network	30 markets with 4 categories	6 markets
Organisation	Hierarchical, functional		Functional, cross-functional	Cross-functional. Process-based
Basis of exchange	Price	Product/service, information	Less sensitive to price	Perceived value
Product/quality dimension	Product/ output quality	Technological	Interaction quality	Function of value and cost of ownership
Measurement	Revenue, market share	Profitability	Quality, customer satisfaction	Customer satisfaction
Customer information	Ad hoc	Varies by relationship stage	Individual	Customer value and retention
Internal Marketing			Substantial strategic importance	Integral to the concept
Service	Augmentation to core product	Close seller/buyer relations	Integral to product	Basis for differentiation

Source: Palmer *et al.*, (2005, p.322)

In summary, the major part of the literature considers RM to have increased in importance due to various factors including the rise in service based industries, the decline of traditional mass marketing techniques as customers become more demanding and powerful, the saturation of markets and the changing nature of markets; the increase in competition and the development of fragmented as well as global markets (Palmer *et al.*, 2005). Major approaches to RM are discussed in the section 2.3.1 below.

2.3.1 Approaches to Relationship Marketing

Gummesson's major contribution to a theory of RM is the 30R approach, which identifies thirty types of relationships that exist in organisations. The author stresses that RM is more than management; it is rather marketing-orientated management – an aspect of the total management of the firm that includes networks and interactions. The thirty relationships are grouped into four classes: Classic Market relationships, Special Market Relationships, Mega Relationships and Nano Relationships. The classification of relationships into 30Rs is to make RM more operative and useful for planning marketing activities. Not all Rs are applicable to every situation; it is a matter of selecting a specific relationship portfolio for the marketing plan (Gummesson, 2002). The author agrees with other scholars that there is thus far no definition of RM, but goes further and points out that no definition of RM will ever be precise and all-inclusive.

RM focuses on the customer; satisfying the customer and retaining the customer as it is acknowledged that the cost of retaining a customer is less than that of acquiring a new one. Reicheld and Sasser (1990) estimated that a 5% increase in retention rate resulted in an increase in the net present value of customers of between 35% and 95%. This was found to occur in a wide range of industries, from credit card to insurance brokerage and from motor services to office building management. Interestingly the estimate obtained for software industry was 35%. In this study, larger organisations were investigated as opposed to SMEs, providing further rationale for the research into RM approaches within this industry, specifically within SMEs.

RM research has led to research developments in database marketing and data mining, which include an analysis of customer base according to its value and the extracting of the most profitable customers, with a view to directing most RM activities toward them. Similarly the customers deemed less financially valuable do not have to be retained. Data mining is considered in section 2.4 on CRM.

The following core values and beliefs according to Gummesson (2002) provide an effective summary of the assumptions of RM:

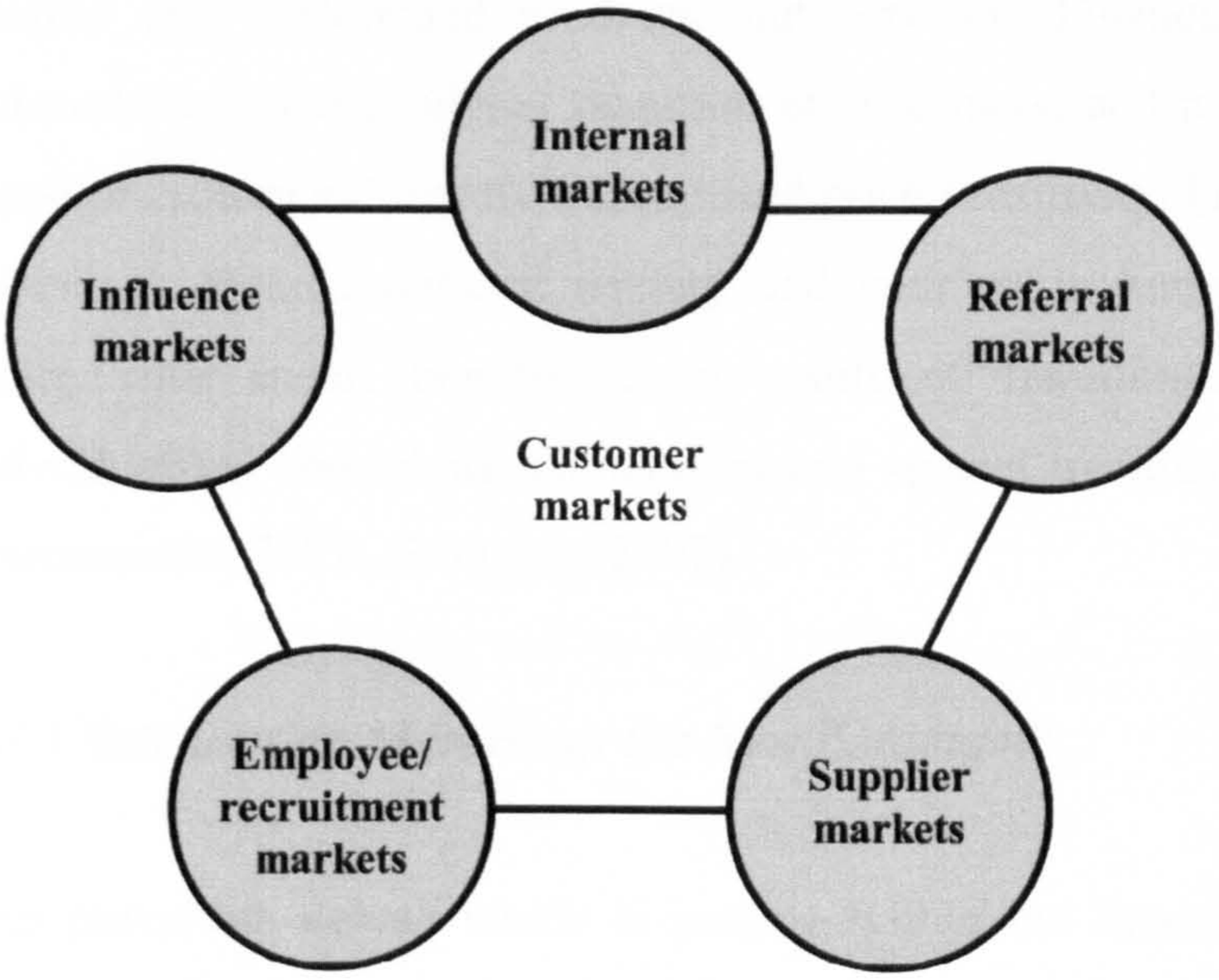
- Each customer is an individual. Heterogeneity is the key concept.
- Partners in collaboration create joint value.
- Long term relationships pay.
- Win-win relationships should be the objective.

Contrary to numerous RM studies, which focus on the organisational benefits, these assumptions embrace the benefits for the customer as well as benefits for the organisation.

In the 'Six Markets' model, Christopher *et al.*, (1991) take an extended view of RM, which incorporates all stakeholders into organisational relationships (see figure 2.2). The model emphasises that, although the customer is central in the RM process, companies have a number of markets to whom they need to direct marketing activity and build positive relationships (Christopher *et al.*, 1991). In this research context perhaps the second most important group is the Internal Markets group, which is developed on the notion that every person working within the organisation is a supplier and a customer. If effective relationships can be built with these organisational employees, it can positively affect service quality, motivation and customer relationships. Gummesson (1991) takes a similar view in his proposition that all employees in an organisation are "part-time marketers".

A recent practical development to the 'Six Markets' model has been the addition of a stakeholder map, which is used to identify and present an organisation's emphasis on each market, its desired emphasis and the gap between these propositions (Payne *et al.*, 2005).

Figure 2.2 Extended view of Relationship Marketing.



Source: Christopher *et al.* (1991, p. 21)

Christy *et al.*, (1996) suggest that RM is appropriate for certain consumer markets depending on the characteristics of the market segment and the product field. Therefore RM is not appropriate in every situation. Within Christy *et al's* matrix, it is theorized that basic goods and commodities have low relationship potential but more complex goods such as cars and other tailored products have high relationship potential. This implies that high tech products and services have high relationship potential. The contention that not all customers want to develop relationships is supported by Ward and Dagger (2007), as relationship strength depends on the importance of the relationship, relationship characteristics as well as the type of service or product.

2.3.2 Benefits of Relationship Marketing

The literature on RM generally seems to focus more on the potential benefits for suppliers who adopt RM, and often ignores the question whether the customer wishes to enter into a relationship (Blois, 2007). Benefits for the supplier include increased cooperation, a better understanding of customer

requirements and a dialogue with customers leading to the development of co-created and customised products and services. Financial benefits include reduced costs due to higher retention of customers, and increased profits as a result of customers' loyalty and reduced price-sensitivity. Proposed benefits for customers include reduced anxiety and comfort in knowing their supplier, along with social benefits as a result of familiarity with employees, individualised and additional services and special treatment (Gronroos, 1994; Gummesson, 2002; Gronroos, 2007).

2.3.3 Relationship Marketing: the New Paradigm?

The prevailing debate which is notable within the literature is whether RM constitutes a new paradigm in Marketing. Researchers supporting this view include Gummesson (1994), Gronroos (1997) and Donaldson and O'Toole (2000). Sheth and Parvatayar (2002) offer suggestions on how RM can be developed from "domain to discipline" following the success of Consumer Behaviour, Services Marketing and Marketing Strategy as disciplines. The authors contend that RM should focus on delimiting the domain; there should be agreement on a definition, a development of performance metrics, employment of longitudinal research methods, and development of explanatory theory. Whilst it is widely acknowledged in the literature that there is no general theory or definition of RM, there is extensive research being undertaken in the subject area and an academic journal dedicated to the subject area has been established. Conversely, there are a few authors who argue that the degree of change in marketing does not constitute a new paradigm. Moller and Halinen (2000, p.30) argue that RM "...does not have the potential to constitute a general theory of marketing", Mattson (1997) concurs that it is merely a strategy aimed at increasing loyalty and customer retention, and that RM is just one approach to marketing, which is taken based on factors such as the product/service offered, customer and culture (Rao and Perry, 2002).

2.3.4 Can Relationship Marketing work in Practice?

It is apparent from the literature that although the concept is hailed as the future of customer satisfaction and organisational profitability via tailoring to individual needs and retaining high value customers, the implementation of RM in practice is troubled (Fournier *et al.*, 1998). There may be undue pressure on Transactional Marketing to be replaced by RM when in fact it can co-exist with RM. RM is likely to remain more selective and targeted (Sheth, 2002) and employ industry and product specific tools, for example, a study by small software firms were found to focus on Interaction and Network Marketing (Roderick *et al.*, 1997).

In a study by Li and Nicholls (2000), the authors do not consider RM to be a new paradigm but propose that the approach is appropriate when:

- the exchange is long-term oriented;
- uncertainty regarding the performance of the other party is high;
- the joint planning requirement is significant;
- there is mutuality of interest;
- interdependence, co-operation and needs for internal obligation increase;
- more primary personal relations are involved;
- the uncertainty of the power balance is high.

Furthermore, the small number of customers in some industrial markets may explain why RM is more appropriate as relationships with key exchange partners are important and more practically feasible (Li and Nicholls, 2000).

Although the concept of RM is based on a long-term and customer-oriented view, the concept of 'self-interest' needs to be addressed. In this respect, organisations faced with sudden environmental problems may take short-term radical action to safeguard its future, and these actions may have disruptive effects on customer relationships (Blois, 2007).

It is also important to consider whether customers wish to enter into relationships with suppliers at all. Sometimes a company's preoccupation with its most valuable customers leaves other revenue-generating customers feeling underappreciated e.g. credit card companies are constantly offering new customers special introductory rates and the recent wave of TV adverts by Nationwide illustrates the emphasis on "brand new customers only". It is also important to note that RM activities carry the risk of making customers more distrustful of organisations, through use of intrusive marketing communications (O'Malley and Prothero, 2004).

2.3.5 Commitment and Trust

Following the research conducted by Morgan and Hunt (1994), the terms commitment and trust have been prevalent in the RM literature, as they are vital factors in developing healthy relationships with customers. This seminal study by Morgan and Hunt identified the outcomes of relationship commitment and trust to be;

- Acquiescence and a lower propensity to leave.
- Co-operation.
- Lower functional conflict.
- Lower uncertainty in decision making.

Commitment assumes that both parties view the relationship as beneficial and will work at maintaining it. Two types of commitment have been identified by Geyskens and Steenkamp (1995): affective commitment and calculative commitment. Affective commitment is based on the extent to which partners desire to maintain their relationships, whilst calculative commitment is based on the extent to which partners need to maintain their relationships.

Trust is defined as "...a willingness to rely on an exchange partner in whom one has confidence" (Moorman *et al.*, p.82, 1993 cited in Morgan and Hunt, 1994). Trust plays a key role in the maintenance and integrity of relationships. It is required to prevent neither party from practicing opportunistic and

exploitative behaviour. Numerous studies within the literature have concurrently found that the presence of trust and commitment has a positive impact on relationships (Barry *et al.*, 2008; Ivens, 2005; Melewar *et al.*, 2001; Takala and Usitalo, 1996). The literature is encouraging as it recognises the two way process between the organisation and the customer.

The investigation by Mohr and Spekman (1994) supports the view that commitment and trust are vital in the development of relationships by considering the characteristics of partnership success. The factors identified as predictors of partnership success include commitment, coordination, trust, partnership success quality, information sharing, participation and joint problem solving. A recent study of RM and customer loyalty found that customer loyalty can be created and reinforced by strategies aimed at building trust and demonstrating commitment in a proactive fashion (Ndubisi, 2007).

Whether RM is described as a new paradigm or not, it is evident that a shift has occurred in academic and managerial thinking. There is definitely a move towards being more customer orientated, to improve customer understanding and to develop a two way dialogue with the customer through synergistic relationship and partnerships. This is largely attributed to the implementation of CRM.

2.4 Customer Relationship Management (CRM)

Although the terms RM and CRM are often used interchangeably (Parvatiyar and Sheth, 2001), the majority of the literature reviewed suggests that CRM is the practical and tactical implementation of RM within an organisation. Wilson *et al.*, (2002, p.194) refers to CRM as "a modern synonym for Relationship Marketing" whilst Gummesson, (2006, p.3) defines CRM as "the values and strategies of Relationship Marketing-with particular emphasis on customer relationships-turned into practical application." It is a relatively new management discipline which gained popularity in the 1990s and as with RM, there is no universally accepted definition of CRM. Most definitions use terms such as 'customer-centric' and 'technology solution' to describe CRM, and

most definitions refer to CRM as a process of building and maintaining relationships. Buttle (2006, p.34) however contends that CRM is more than a marketing process and emphasises its strategic importance:

> "CRM is the core business strategy that integrates internal processes and functions, and external networks, to create and deliver value to targeted customers at a profit. It is grounded on high-quality customer data and enabled by information technology."

Although this is a comprehensive definition, it neglects the importance of long term relationships and customer centricity. Despite the lack of a widespread definition, a large part of the literature describes its associated potential benefits and characteristics.

Ryals and Knox (2001, p.535) summarise the key characteristics of CRM:

- A customer relationship perspective aimed at the long term retention of selected customers;
- gathering and integrating customer information;
- use of dedicated software to analyse this information;
- segmentation by expected customer lifetime value;
- customer value delivery through service tailored to micro segments; facilitated by detailed, integrated customer profiles;
- customer value creation through process management;
- CRM provides the opportunity to implement Relationship Marketing on a company wide basis;
- a shift from managing product portfolios to managing portfolios of customers, necessitating changes to working practices and sometimes to organisational structure.

2.4.1 Benefits of CRM

Advocates of CRM have argued that it can create a competitive edge for organisations by helping to track customers' interactions with the organisation, and as a result improve customer loyalty and customer retention (Payne and Frow, 2005; Ryals, 2005). The CRM system itself manages all customer data and the information is shared throughout an organisation. The CRM database provides all employees with current knowledge on customer demographics, a history of the relationship, details of products and services purchased, enabling employees to cross-sell additional complementary goods and services as well as customising offerings to micro segments. Its attraction is that it claims to provide a "single view of the customer" (Reid and O'Brien, 2005, p.357). Furthermore, data mining techniques can uncover hidden patterns and new marketing opportunities, and it enables organisations to place a numerical value on a customer's lifetime (Dorrington and Goodwin, 2002). A well-known measure in the CRM literature is Customer Lifetime Value, which can be calculated by taking into account customer acquisition cost, revenue stream, cost stream and length of the relationship (McDougall *et al.*,1997). CRM can capture and analyse information in real time which can also improve organisational efficiency and customer profiles, which are regularly updated. It can improve interactivity and communication, leading to closer and more successful business relationships. The effects of CRM on customers are proposed to be improved customer service and improved customer satisfaction (Richard, 2007).

The concept of CRM has proven attractive for organisations and many have launched into swift delivery of CRM databases. However successful cases appear to be few and far between. In Europe alone it is estimated that $1.7 billion will be spent on call centre technology by 2009 (Datamonitor 2006 cited in Egan, 2007). However there are reports of high failure rates among CRM implementation: Computerworld.com estimates that 66% of IT projects supporting CRM were failing (Nelson 2006 in Egan, 2007). Woodcock and Starkey (2001) estimate that any large CRM project greater than £10m will fail. Despite the widespread reports of failure, the number of CRM systems

being adopted still appears to be growing. CRM systems and consultancy were predicted to grow to $US 47 billion by 2006 (Gartner 2003 in Payne and Frow, 2006). The question is why do organisations continue to invest in CRM software and IT despite the reported failures? Perhaps it is due to its fashion as a concept as well as the emergence of RM. What is missing from the literature is a valid, proven methodology for CRM success.

Much has been commented on the reasons for CRM failure, subsequently leading to proposed factors and criteria for success. However there is a lack of empirical validations of criteria within the literature. In a study conducted by Wilson *et al.,* (2002) that employed case study methodology, the following success factors were supported:

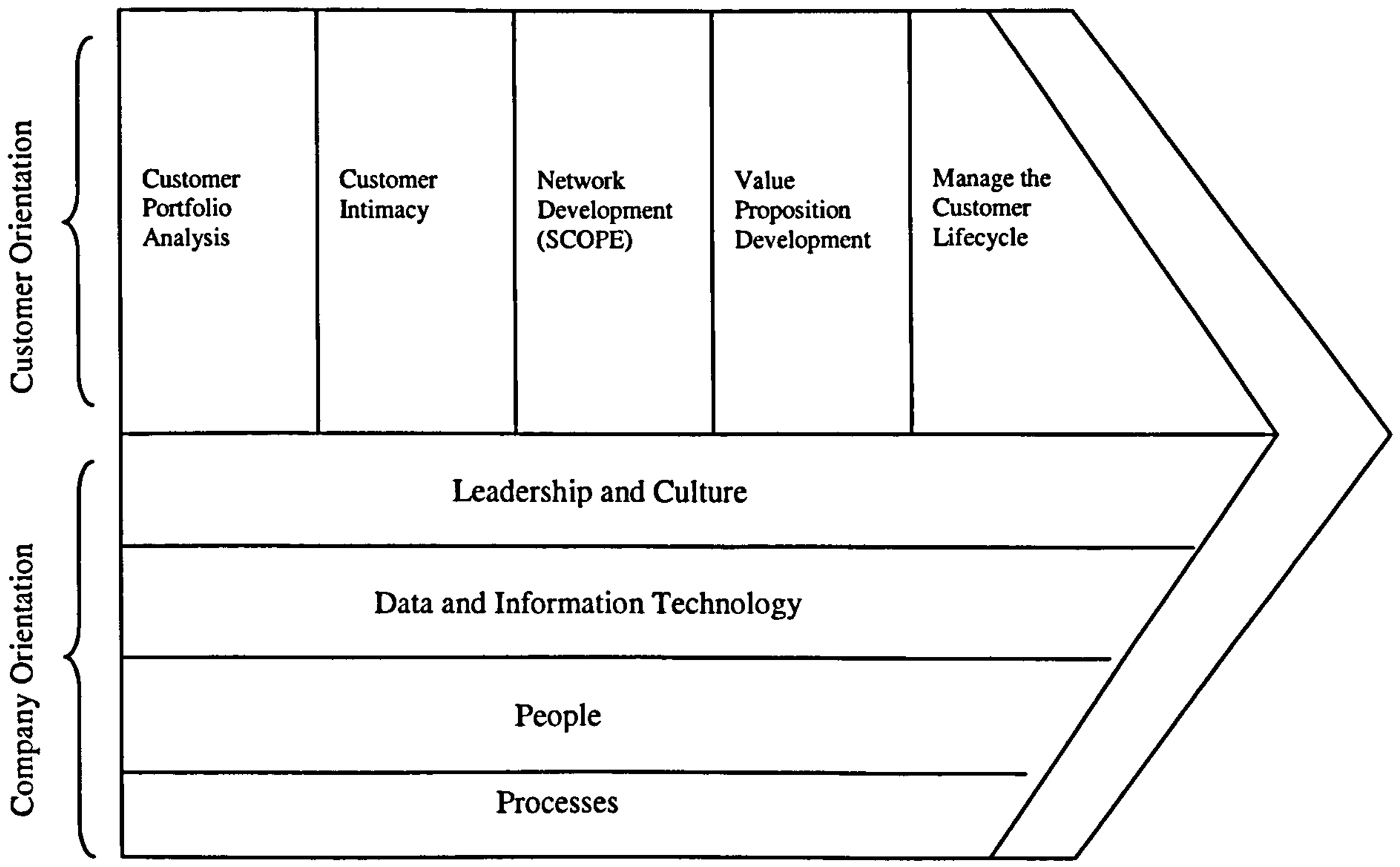
- board level backing;
- definition of approval procedures which allow for uncertainty;
- gain board awareness of the strategic potential of IT (IT cannot be looked upon as merely a support function);
- organise around the customer;
- involve users interactively in system design e.g. using workshops;
- design for flexibility;
- employ a rapid strategy but with a phased approach as relaxed timescales can make a project vulnerable.

It seems that companies often see a CRM project as an IT project only and perceive that a convergence of databases into one CRM system will automatically improve customer relationships. However, technological integration does not necessarily lead to performance and organisational integration (Nguyen *et al.*, 2007; Ryals and Knox, 2001). The need for a company-wide understanding of CRM and its objectives is evident, preferably before the implementation of technology in order to achieve employee support. Arguably, an important prerequisite to employee support is the vision and attitude of management, hence the call for a Chief Customer Officer (CCO) to manage CRM implementation (Seth and Sisodia, 2001 cited in Gronhholdt and Martensen, 2005).

2.4.2 Strategic and Implementation Models of CRM

CRM is a holistic approach to managing relationships and needs to be defined strategically (Payne and Frow, 2005). The CRM Value Chain describes a five step process for developing and implementing a CRM strategy, and the model also identifies a number of supporting conditions that facilitate successful implementation (see figure 2.3). The supporting conditions are Leadership and Culture, Data and Information Technology, People and Processes. The framework demonstrates that following the five stage process and leveraging the supporting conditions can lead to customer retention and associated profitability.

Figure 2.3 The CRM Value Chain



Source: Buttle (2006, p.40)

Other CRM implementation models have been presented in the literature, all of which are of varying degrees of complexity but most of which have certain facets in common: commitment of senior management, the importance of

people within the organisations, the technology as an enabler of CRM and strategic development of CRM (Chen and Popovich, 2003; Lindgreen, 2004). A recent model developed by Payne and Frow (2006) emphasises the cross-functional importance of CRM processes. The model has two main components: key CRM implementation activities consisting of CRM Readiness Assessment; CRM Change Management; CRM Project Management and Employee Engagement. The second component is the model's five core CRM processes:

1. Strategy Development.
2. Value Creation.
3. Multi-Channel Integration.
4. Information Management.
5. Performance Assessment.

The model highlights the integration of CRM processes and illustrates the importance of managing each process and implementation activity often concurrently, and the need for re-visiting certain processes at later stages of CRM implementation. For example, value creation focuses on the value to the customer, and is an interactive process (Payne and Frow, 2006).

The question arises about application of these models in business practice. Most of these models are developed following methodologies such as interviews with managers, case research and action research. However there is a lack of empirical testing of such models in both B2C and B2B sectors. A recent study by Ryals (2005) shows that a relatively straightforward analysis of the value of the customer can make a real difference. As a result of the research, a real life insurance company decided to make fundamental changes in their customer management strategy such as introducing relationship pricing, turning some customers down, cross-selling and new product targeting. The company subsequently noted that customer retention had improved (Ryals, 2005). A large part of CRM research has been conducted in the banking and finance industry as it is generally believed that it is the most advanced industry in terms of CRM development and implementation (Lindgreen and Antioco, 2004).

Other companies examined who have experienced successes as a result of implementing CRM include Siemens, who since have developed a reputation for strong CRM (Strategic Direction, 2006). Matalan is an example of a retailer whose customer management strategy has proven successful. As all customers are club members, and each transaction recorded, Matalan has developed a comprehensive database of all customers, and therefore direct marketing activities can be targeted towards the right customers, consequently strengthening communications and relationships with customers (Rowley and Haynes, 2005). Although these are examples of large organisations which have experienced CRM success, CRM implementation problems are often cited by organisations of such sizes (Woodcock and Starkey, 2001). Indeed it is argued that smaller organisations are more successful at implementing CRM as they are more responsive to change and are more likely to have updated and usable customer information (Abbot *et al.*, 2001). Abbot *et al*'s study is interesting as it examined a high proportion of technology-based businesses. However there still remains a significant gap in the research of CRM and RM activities and their management in high tech organisations, particularly in software SMEs.

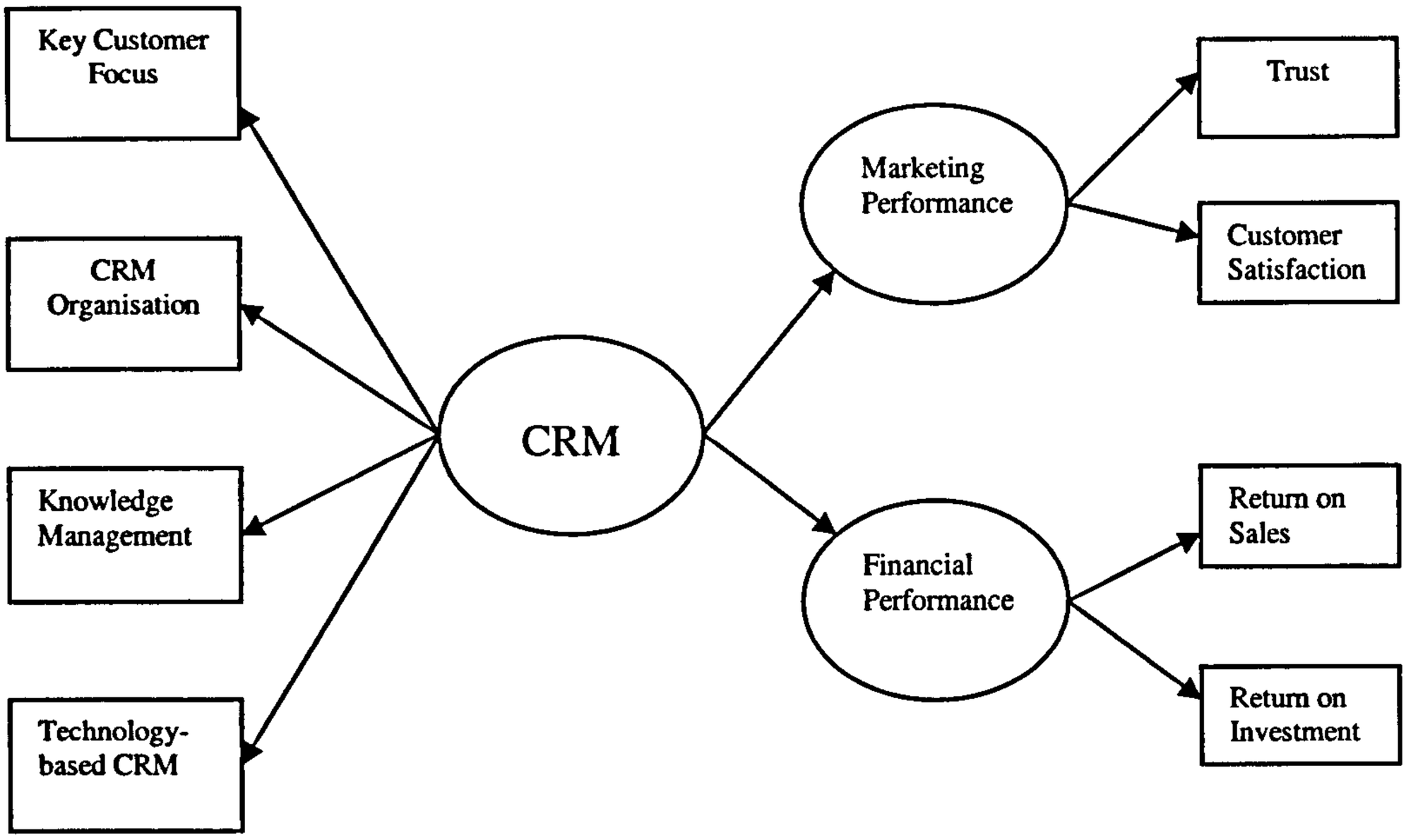
2.4.3 CRM: Measuring Performance

A widely cited difficulty with CRM is the problem of measurement, specifically the problem of quantifying organisational CRM success. One of the main objectives of an organisation using CRM, and one of the promises of CRM is its ability to identify the high value customers with which an organisation should leverage relationships, and create customised products and services with the aim of retention. Typically, the Pareto rule states that the top 20 per cent of an organisation's customers provide 80 per cent of its revenue and profits (McKim and Hughes, 2001), implying that a large amount of time and money are currently spent on building relationships with unprofitable customers.

The main CRM performance measurement tools found in the literature are the Balanced Scorecard, Return On Investment (ROI) and the Customer Management Assessment Tool (CMAT). According to META Group (2003),

88% of UK companies use ROI to measure performance of their CRM systems (Aslett, 2003 in Wangstitstaporn and Jones, 2006) but often, companies who claim a positive return on investment are unable to quantify their claims. The Balanced Scorecard, which was developed by Norton and Kaplan in the 1990's is generally agreed to be a better indicator of performance as it contains four aspects: Financial; Customer; Internal Business Processes; Learning and Growth. A combination of these aspects provides a more detailed measure of corporate performance. The Customer Management Assessment Tool (CMAT) can assess how well a company manages its customers. It includes assessing current CRM activities, developing a vision for the future and developing programmes of change. The CMAT tool was developed by Woodcock (2000) but there has been a lack of independent research to validate its claims (Alvarez *et al.*, 2006). Therefore there is a lack of concurrence in the literature as to how to measure CRM performance. The most promising piece of research offering a valid measure of a firm's CRM is a conceptual model proposed by Sin *et al.*, (2005). It was created in the context of four behavioural components and was focused on marketing and financial performance measures (see figure 2.4). Although the model was tested empirically, it was only conducted in the Hong Kong financial industry thus it is questionable in terms of generalisation into other countries and industries (Wangstitstaporn and Jones, 2006).

Figure 2.4 Measuring CRM Performance



Source: Sin *et al.*, (2005, p.1279)

A qualitative approach to measuring CRM effectiveness was proposed by Jain *et al.*, (2003), which included behavioural determinants of customers including attitude, perceived quality, retention and satisfaction. However, this type of assessment may be useful if used in conjunction with a valid quantitative measure which can effectively be compared with competitors.

2.4.4 Criticism of CRM

Criticism of CRM is visible throughout the literature. Egan (2007, p.1) argues that "CRM uses the language and rhetoric of RM without adopting the underlying values of the Relationship Marketing concept". He goes further stating that both concepts are fundamentally different in that CRM focuses on the customer-supplier dyad, whereas RM takes into account the holistic nature of multi-relationships. This criticism further relates to one of CRM's "perils" or risks that it is perceived as a technological initiative and that customers are largely becoming annoyed with such initiatives as centralised, impersonal call centres.

Other academics have argued that CRM is in danger of becoming the latest fashionable buzzword or "business fad" as opposed to a valid management discipline (Kellen and Stefanczyk, 2002, p.41). This and the fact that a large number of organisations are experiencing difficulties in implementation and measurement could lead to a reduction in the confidence in CRM. However one must remember that it is a relatively new concept, and much more research should be devoted to its practical application. It seems that many are willing to adopt the concept, and the level of investment in CRM signifies the confidence it invokes. What practitioners and academics need to establish is how to do it successfully in particular industries and business conditions, for example, using the results of this particular research study.

In terms of use of CRM within SMEs, it is found that most SMEs do not use CRM applications, although the concepts are being applied through informal relationship building and forming alliances (Maguire *et al.*, 2007). However, software or other high-tech SMEs perhaps do use CRM because they tend to already have the facilities in place.

Table 2.3 Overview of publications in RM/CRM

Seminal RM/CRM Literature		
Author(s)	Title	Themes
Christy, Oliver and Penn, 1996	Relationship Marketing in Consumer Markets	Relationship Marketing easier to form in 'relationship friendly' environments (long term and complex purchases)
Donaldson and O'Toole, 2000	Classifying relationship structures : relationship strength in industrial markets	Alternative relationship structures in B2B environment: bilateral, recurrent, dominant partner and discrete.
Gronroos, 1994	From Marketing Mix to Relationship Marketing: Towards a Paradigm Shift In Marketing.	Evolution of Marketing and Paradigm shift towards Relationship Marketing based on customer perceived quality, trust and collaboration.
Gummesson, 2002	Relationship Marketing in the New Economy	Evolution from Traditional marketing to 'Total Relationship Marketing'.
Hunt *et al.*, 2006	The Explanatory foundations of relationship marketing theory	Factors Accounting for RM success include Trust, Commitment , Shared Values and Communication
Mohr and Spekman, 1994	Characteristics of Partnership Success: Partnership Attributes, Communication Behavior and Conflict Resolution Techniques	Attributes of successful partnership include commitment, communication, quality, information sharing and trust.
Payne *et al.*, 2005	A Stakeholder approach to relationship marketing strategy	Six Markets model used to develop a stakeholder relationship planning model
Payne and Frow, 2005	A Strategic Framework for Customer Relationship Management	Five key cross-functional CRM processes: strategy development, value creation, multichannel integration, information management and performance assessment.
Ryals, 2005	Making Customer Relationship Management Work: The Measurement and Profitable Management of Customer Relationships.	CRM works, and requires a straightforward analysis of the monetary value of the customer.
Ryals and Knox, 2001	Cross-Functional Issues in the Implementation of Relationship Marketing through Customer Relationship Management.	CRM requires senior commitment and support, a focus on long-term customer relationships and development of cross-functional teams.
Vargo and Lusch, 2004	Evolving to a New Dominant Logic for Marketing	Focus on services provision, based on delivering intangible resources, the co creation of value and developing relationships.

2.5 Marketing in Small and Medium sized Enterprises (SMEs)

The aim of the research is to investigate marketing within small to medium sized enterprises (SMEs) within the software industry. This section of the literature review will therefore explore how SMEs tend to operate and how they differ to their larger counterparts, including their advantages and disadvantages that they experience, specific to SMEs that operate in the high tech sector. Relevant models and resultant research of SMEs and SME marketing are also presented and reviewed.

According to the European Commission (2005), "Micro, small and medium-sized enterprises (SMEs) are the engine of the European economy. They are an essential source of jobs, create entrepreneurial spirit and innovation in the European Union (EU) and are thus crucial for fostering competitiveness and employment". SMEs are defined according to number of employees and annual turnover, and are categorised into three types:

1. Micro enterprises, which employ under 10 people and have an annual turnover of no more than approx £1.3m (converted at the exchange rate on 11th December, 2006).
2. Small enterprises, which employ over 10 people but fewer than 50, and have an annual turnover of no more than approx £6.7m.
3. Medium-sized enterprises, which employ over 50 people but fewer than 250, and have an annual turnover of no more than approx £34m.

In the UK, SMEs account for 99% of all businesses in the private sector (DTI, 2004). Despite these figures, the marketing models and theories identified in the literature have historically been applicable to larger organisations. Although the literature distinguishes SMEs from larger organisations in terms of size and revenue, it has been recognised that SMEs are not smaller versions of these larger businesses. Instead it is acknowledged that they have unique and particular characteristics which affect the way in which they operate and affect their preoccupations and decision making processes (Hill, 2001).

There is no widely accepted definition of SMEs in the academic literature although Hill, 2001 cites the work of the Bolton Committee (1971) as the most appropriate definition of SMEs. They identified three important characteristics of SMEs:

- They have a relatively small share of their marketplace.
- They are managed by owners/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.

These characteristics do capture the generic characteristics of SMEs but may not be appropriate considering the broad range of organisations which now exist, especially in the volatile and the dynamic high technology industry. Overall, SMEs are predominantly described in the literature by their characteristics or defined by objective measures such as size, number of employees and turnover thresholds.

SMEs are recognised as significant sources of innovation, and innovation can be the most important aspect of an SME's success. Examples of successful innovations in SMEs that have transformed into global successes are organisations such as Apple Computers and Starbucks (Hausman, 2005). Another example is that of Google, which started as a garage company to become the most powerful brand in IT, overtaking Microsoft globally. Innovativeness is arguably due to the smaller and flatter structures of SMEs, and the absence of bureaucracy, which improves communication, knowledge sharing and collaboration (Laforet and Tann, 2006). Other advantages of SMEs include their flexibility and rapid ability to respond to environmental needs, their ability to satisfy rapidly changing customer needs, and their potential for close relationships with customers hereby making customers feel valued. SMEs often find it difficult to make an impact in large, competitive markets with established players, and therefore create their own market by developing an innovative product/service, or commit to supplying a neglected, untapped niche market. Both paths can provide them with the opportunity to create competitive advantages (Carson *et al.*, 1995; Hill, 2001). Furthermore, SMEs cannot compete in the traditional sense, as they have limited resources and cannot

achieve economies of scale, therefore they leverage unique networks and core competencies in order to achieve a competitive advantage (O'Donnell *et al.*, 2002).

Networking in SMEs has been identified as an important marketing strategy, as it can increase their market knowledge, provide access to marketing resources, new opportunities and enable them to learn from others' experiences (O'Donnell, 2004). Furthermore, networking can increase the sophistication of SMEs' planning and decision making processes. Three different categories of marketing were described by Gilmore *et al.*, (2006): 'sophisticated', 'selective' and 'limited', whilst proactive marketing networking was found to be a key determinant of sophisticated marketing in SMEs.

Many authors within the SME literature have cited problems inherent in SMEs (Carson *et al.*, 1995; Hill, 2001; Simpson and Taylor, 2002). These problems include the lack of resources, limited finances, a lack of strategic expertise and the fact that the power and decision-making is concentrated solely in the owner-manager (Hausman, 2005). Further disadvantages include a limited customer base, limited access to competitive markets, a lack of formal and strategic planning, and decisions made without a logical analysis of opportunities and the environment, but instead determined by the personal preference of the owner-manager (Chaston, 1997). With regards to the ICT industry, which is the focus of this research, there are additional problems for SMEs competing in this industry. These include the difficulties of gaining credibility in a highly competitive, rapidly evolving and uncertain market. These issues will be examined further in the next section of the literature review, Marketing of Software and High Tech Products.

2.5.1 SME Theoretical Models

While much has been written about the characteristics of SMEs, the traits of SME owner-managers and marketing in SMEs over the last 30 years, there is general agreement that SME theory development is still lacking (Hill, 2001; Siu and Kirby, 1998). Research in SMEs began with early SME growth models

developed from the economics literature (Churchill and Lewis, 1983; Carson and Cromie, 1990). More recently the focus has shifted towards entrepreneurship and entrepreneurial marketing, and their significance within SMEs (Stokes, 2000). More importantly, during the last 10 years, the use of networking in SMEs has been highlighted as one of the principal methods of marketing (Gilmore *et al.*, 2001; Tersvioski, 2003).

The behaviour of SMEs has been notably examined by Carson (1990), who argues that there is no one formula that any company can adhere to and that marketing needs to be flexible to suit SMEs at all stages of development. He proposed six marketing models which can be used to assess SME marketing performance. The models concentrate on 'Marketing Limitations', 'Levels of Generalisation', 'Planning vs Operations', 'Marketing Planning Adapted for Small Firms', 'Stages of Marketing Development', and 'Levels of Marketing Activity'. The fifth model is categorised into Reactive, Tinkering, Entrepreneurial and Proactive, each level involving a higher degree of commitment to marketing and a number of marketing activities conducted by the SME. The sixth model distinguishes between the degrees of marketing, which are defined as little or no marketing, implicit and simple marketing and explicit and sophisticated marketing. Carson (1990) concludes that SMEs have a "distinctive marketing style" which is characterised by:

- Informal structure, evolution and implementation.
- Restricted in scope and activity.
- Simplistic and haphazard.
- Product and price oriented.
- Owner/manager 'involved.'

Other academics have used similar adjectives to describe the marketing of SMEs (Gilmore *et al.*, 2001; Fuller, 1994).

Another approach presented and referred to in the literature is the Role and Relevance of Marketing model (Simpson and Taylor, 2002). The model takes into account the internal role of marketing with the external relevance of marketing and has four categories:

1. Marketing-Led Organisation: Here, marketing is important to the organisation and the external competition is tough.
2. Marketing Dominated Organisation: Here, there is a misbalance between marketing activities and the external environment in that marketing dominates the strategy making process.
3. Marketing Weak Organisation: marketing is essential for long term survival but little time and effort is spent on marketing activities.
4. Marketing Independent Organisation: there is a balance here but it can be seen as quite risky as these organisations are often relying on one large customer.

This model was recently tested by Simpson *et al.*, (2006) and found that most of the SMEs investigated fell into the 'Marketing-Led' category, and that most companies prefer 'Strategy B' (evolving from a marketing independent organisation, to marketing weak organisation, and finally to a marketing led organisation). Furthermore, these 'Marketing Led' companies seemed to have more employees and had significantly greater turnover than other companies in other categories, which lays support for the hypothesised positive relationship between marketing and financial performance in SMEs. The model was deemed "fairly robust" by the authors but was criticised on the grounds that it doesn't take the entrepreneurial elements and networking activities into account.

2.6 Integrated Marketing Communications (IMC)

Associated with RM and CRM is the concept of IMC, which is a relatively new concept, concerned with the realignment and integration of the various marketing communication tools with the aim of conveying a consistent and unified message to target audiences. It is a strategic tool, focussing on seeing the whole communicative strategy as one unified voice as opposed to seeing parts of the strategy such as advertising, public relations, personal selling, which are sometimes inconsistent and can often send varying, even confusing messages from the same organisation.

The application of IMC as a theoretical underpinning in this research is deemed suitable as it supports RM and CRM in any company. A relationship cannot develop without some form of communication, and the dialogue involves both the customer and supplier. IMC can thus aid the development of long-term relationships (De Pelsemacker *et al.*, 2007; Hutton, 1996). Moreover, it can be developed more easily within SMEs as they tend to use fewer communication tools to contact their prospective customers. Therefore SMEs can be more customer-focussed, thus the opportunity for direct communication and direct marketing are more pronounced.

IMC has grown in recognition during the last twenty years because of the similar trends which have prompted the growth of RM and CRM. Trends include the allocation of budgets away from mass media advertising, increased media fragmentation, a narrower segmentation of consumer tastes and preferences and mass customisation (De Pelsemacker *et al.*, 2007; Kitchen, 2005). Broader factors for the emergence of IMC include the deregulation of markets, the globalisation of the economy, the growth of IT, the increased sophistication and customer empowerment and the general move towards customer orientation (Holm, 2006).

During the last twenty years, much has been written on IMC, which suggests that the concept is gaining wide acceptance, but criticism over its lack of theoretical foundation, lack of empirical research and the difficulty of measurement features strongly in the literature. In contrast, advocates of IMC contend that although it was an emerging concept in its early stages, IMC proposes a revolutionary way of organising marketing communications and building brand equity (Duncan, 2002 cited in McGrath, 2005; Schultz *et al.*, 1994). Both sides of the argument tend to agree on two things: that there is no established definition of IMC and further empirical research needs to be conducted, to either validate or invalidate the concept (Kliatchko, 2005).

A comprehensive definition was proposed by Schultz and Schultz (1998, p.18), who define IMC as a business process which incorporates the notion of internal marketing as well as external marketing:

> " IMC is a strategic business process used to plan, develop, execute and evaluate coordinated measurable, persuasive brand communication programs over time with consumers, prospects, and other targeted, relevant external and internal audiences". (cited in Kliatchko, 2005).

2.6.1 IMC: The Benefits

The benefits of IMC are highlighted in the literature by supporting academics and practitioners. Researcher advocates argue that the implementation of IMC can potentially create competitive advantage, increase efficiency and thereby increase revenue and profits. At its most basic level, a unified, consistent and clear message has more impact than a disjointed array of messages, especially when considering the huge amount of commercial messages which customers are bombarded with everyday. Furthermore, IMC can boost sales by stretching messages across several communication tools to create more opportunities for customers to become aware of the product, service or brand, to encourage the beginning of a dialogue and ultimately, to develop a long term relationship with the customer (Kitchen, 2005; McGrath, 2005). The consistency in messages creates credibility in the minds of consumers and thereby reduces their perceived risk associated with the purchase. It shortens the search process and helps to distinguish varying brands in their minds (Smith and Taylor, 2004). It is also claimed that IMC saves money as it avoids duplication in areas such as brand design; logos and brand images can be shared and used in more than one communication tool (Smith and Taylor, 2004). There is consensus in the literature that IMC can help customers move through the various stages of their buying process, which is a process presented by models such as AIDA (awareness, interest, desire and action), developed back in 1898 (Strong, 1925 cited in Smith and Taylor, 2004), or by the New Product Adoption Model (awareness, interest, evaluation, trial and adoption) (Rogers, 1961 cited in Smith and Taylor, 2004). Both these models were investigated by Garber and Dotson (2002) in the context of IMC, and the new product adoption model was found to be an appropriate template for the formulation of a marketing communications mix in the B2B sector. Despite the planning involved, it is also argued that one of IMC's strengths is its flexibility and versatility. Depending on the product and target audience, a unique combination of

promotional elements can be specifically selected to communicate a consistent message (Pitta *et al.*, 2006). The literature does not list a set of promotional tools which must be used and integrated as it is likely to be unique to each product and service.

2.6.2 History of IMC

An early writer in this area was Schultz (1993 p.73) who claimed that IMC had become "one of the hottest topics in the whole marketing arena" (cited in Kitchen, 2005). Another early researcher in the field was Kitchen, who quickly partnered with Schultz to undertake a series of exploratory studies to investigate IMCs theoretical foundations. This was followed by a multi-national, cross-cultural study in 1999 (Kitchen, 2005). A seminal study was also conducted by Duncan and Everett (1993) when they surveyed attitudes towards IMC by marketing communication client organisations. A number of similar studies have been conducted investigating the practice of IMC by advertising agencies (Eagle *et al.*, 2007; Kitchen and Li, 2005; Kitchen *et al.*, 2004).

2.6.3 Criticism of IMC

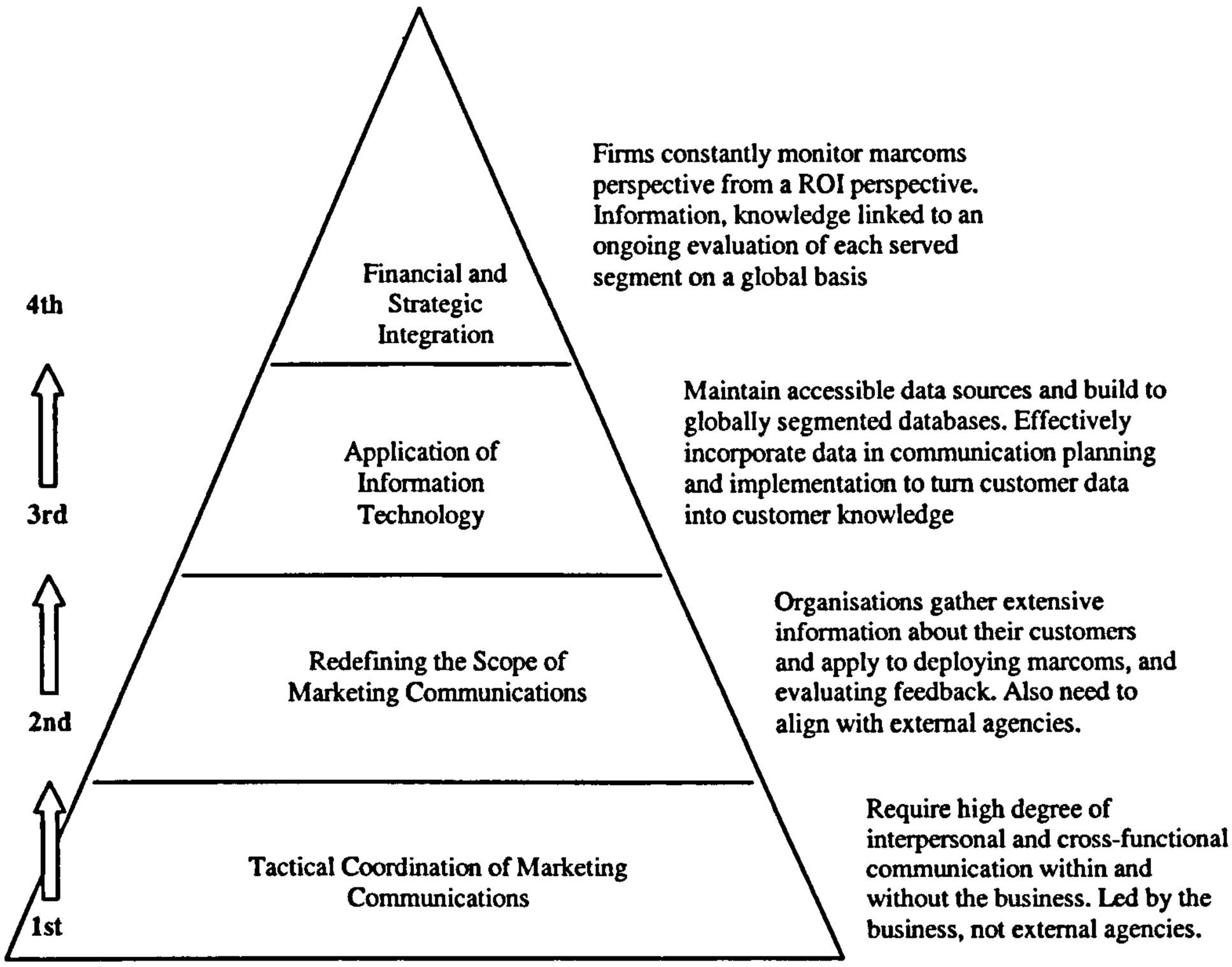
Since the IMC concept has appeared in the literature, there has been a heated debate over its merits and validity. Whilst some academics consider IMC to be essential in executing their marketing communications strategy for the aforementioned benefits, others have dismissed the concept as simply a "management fashion" or a popular management theory which is lacking a solid theoretical foundation (Cornelissen and Lock, 2000, p.7). Others contend that it merely reinvents existing marketing theory (Spotts *et al.*, 1998). Proponents of IMC challenged this view by arguing that IMC itself was an evolutionary field, still undergoing a process of definition and redefinition (Gould, 2000; Kitchen and Schultz, 2000). Another criticism presented to IMC is its lack of measurement of the effectiveness of IMC, however it is argued that measurability is not only the problem of IMC, but a concern of all marketing communications as a whole (Kitchen, 2005).

2.6.4 Theoretical propositions

A recent study by McGrath suggests that the IMC concept is based upon three theoretical underpinnings centred around the ongoing dialogue between consumers and marketers, message consistency and the inclusion of all aspects of brand communications (McGrath, 2005), however an important element which is missed here is its strategic, organisational-wide aspect.

One theoretical model which is widely cited in the literature is the four stages of IMC development (see figure 2.5). This model encapsulates the tactical as well as the strategic elements of IMC. Stage one is termed 'inside-out marketing' which is simply the bundling of promotional and communication tools, and requires little or no focus on customers. Stage two represents 'outside-in marketing' which is a major step towards IMC being driven by consumers and their needs. Stages three and four move beyond promotional mixes and market research to building segmented databases and strategically monitoring IMC from a ROI perspective. It is proposed that true integration is achieved at stage four. Due to the lack of widespread diffusion of IMC, the majority of firms studied are placed in either stage one or stage two scenarios, with some moving into stage three but only a handful at stage four (Kitchen *et al.*, 2004).

Figure 2.5 Four stages of IMC.



Source: Schultz and Kitchen (2000) cited in Kitchen *et al.*,(2004, p.22)

Fill (2001) proposes a similar framework, which specifically recognises that IMC has a variety of forms and configurations, and evolves at different speeds. The establishment of IMC should be undertaken in four incremental steps including a co-ordinated promotional mix, functional co-ordination, cultural shift and full IMC. This framework encompasses the importance of integration throughout the organisation and the sharing of information among the various functions. The cultural shift signifies a move toward customer orientation, and when full IMC is achieved, it is argued that an organisation should display a high propensity to maintain a dialogue with its customers and share information with all of its audiences for mutual benefit (Fill, 2001).

McGrath (2005) has recently proposed a relatively simple conceptual framework based on two aspects of IMC's foundations, namely integration of multiple communication vehicles, and consistency of message. The IMC condition is achieved when both vehicle integration and message consistency is

high. This model can be used by practitioners to assess their level of IMC, however the model does not address the consumer-supplier dialogue.

To further support RM, advances in IT systems have created further opportunities for customers and organisations to interact for mutual benefit and the use of databases can be used to practice "Interactive IMC" as proposed by Peltier *et al.*, (2003) which is based on a CRM foundation. They contend that Interactive IMC differs from traditional IMC as it prioritises segments in terms of IMC efforts and investment levels, using database marketing to establish segment-specific communication objectives, messages and incentives (see table 2.4).

Table 2.4 Interactive IMC and Customer Response

Change Components	Interactive IMC	Customer Response
Role of Databases		
1. Importance of Databases 2. Data collection 3. Type of Data 4. Use of Data	1. High 2. Traditional plus interactive methods (email, web) 3. Demographic, psychographical, behavioural 4. Traditional plus detailed understanding of individual customers and relationships	- Permission-based Marketing - Customer feedback and opportunity for dialogue - Customised communication
Communication Issues		
5. Media/placement 6. Scope of communications 7. Communication flow 8. Nature of message consistency	5. Based where customers already are 6. Targeted/personalised 7. Dialogue and ongoing 8. Overall best message, augmented by target-specific and individual specific messages	-Convenience for customers - Targeted offering for customers
Relationship dynamics		
9. Specification of relationship 10. Degree of interaction	9. Customer and Marketer identified value/form 10. Two-way relationships, mutual information exchange	- Mutual Relationships with which the customer is comfortable - Interactive Exchange of Information
IMC Metrics		
11. Return on investment 12. Acquisition vs retention 13. Contact measures	11. Value and returns 12. Customer retention 13. Effectiveness measures (lifetime value)	- Sales - Long-term relationships - Commitment from the customer

Adapted from Peltier *et al.*,(2003, p.100)

2.6.5 IMC in Practice

Studies on the practice of IMC have been carried out across the globe including New Zealand and China (Eagle and Kitchen, 2000; Fam, 2001; Kitchen and Eagle, 2002; Kitchen and Li, 2005). All studies concur that a strong commitment to IMC is evident as it is perceived to be valuable in the face of media fragmentation and the changing communications environment, but further barriers described include lack of planning, lack of sophisticated marketing thinking and short-term focuses (Eagle and Kitchen, 2000). A recent study by Eagle *et al.*, (2007) found that advertising agencies in the UK and New Zealand support IMC as a concept, and that New Zealand is catching up with the UK in terms of IMC uptake. Commitment to IMC is stronger, and although perceptions of IMC are beyond the mere coordinating of promotional tools, a move towards the application of information technology is slow. The findings show an increase in application of IMC, but that it remains "situation-specific".

A number of studies have been conducted in order to test the consistency concept and whether a consistent message can actually result in better recall of brand or product by the consumer. The results of an experiment conducted by McGrath (2005) showed that visually consistent messages executed across various media tools may prompt a stronger attitude towards the brand. Another set of recent experiments concluded that the use of relevant spoke characters in IMC campaigns can result in more favourable brand attitudes as well as improving memory of the brand. (Garretson and Burton, 2005). These studies suggest that the image of the company can be used to support Relationship Marketing as it is a communication in itself, and can potentially increase trust in the brand when clear and consistent.

2.6.6 IMC in SMEs

The majority of SMEs lack the resources to deploy a large number of promotional tools to market their products and services. The combination of elements in SMEs is thus smaller, and arguably easier to integrate. It is

contended that for most SMEs, personal selling is their biggest promotional tool due to their closeness to customers and the increased face to face contact with customers and other stakeholders (Hill, 2001).

There is minimal research on the application of IMC in SMEs, and to the best of the researcher's knowledge, no research has been conducted on IMC in high tech or software SMEs.

A study by Fam (2001) examined how New Zealand small businesses view IMC as well as their perceptions of barriers to adopting the concept. It was found that small businesses are equally aware of IMC and its associated advantages, but the key barriers cited include lack of resources or promotional ineffectiveness. IMC is thus not carried out strategically or tactically. This study investigated small clothing and shoe retailers and found that the three most important promotional tools are the sales force, in-store promotion and print media (Fam, 2001). However, a study into IMC in the business-to-business context showed that small businesses faced with global pressures tend to employ a consistent communications approach, but in order for it to be successful, 'IMC Champions' must exist in the industry in order to facilitate relationship development and communication (Wickham and Hall, 2006). Low (2000) showed that firms whose marketing communications tend to be integrated are likely to be small, service organisations which are customer-focused.

A related study in brand building in software SMEs explored the communication aspects of branding, and found that the content of the communication includes product-feature focussed communication and benefit-based communication (Ojasalo *et al.*, 2008). This type of communication should be as a result of a relationship and a customer-supplier dialogue in order to establish what constitutes the benefits for the customer. There is a call for organisations employing IMC to be less centralised and to reduce the tight control over communication vehicles, thus a flexible integration approach with a continual customer orientation would result in efficient organisation responsiveness (Christensen *et al.*, 2008). This type of integration may be

easier for SMEs to achieve due to their flexible and customer-focused management practices.

2.7 Marketing of High Tech Products

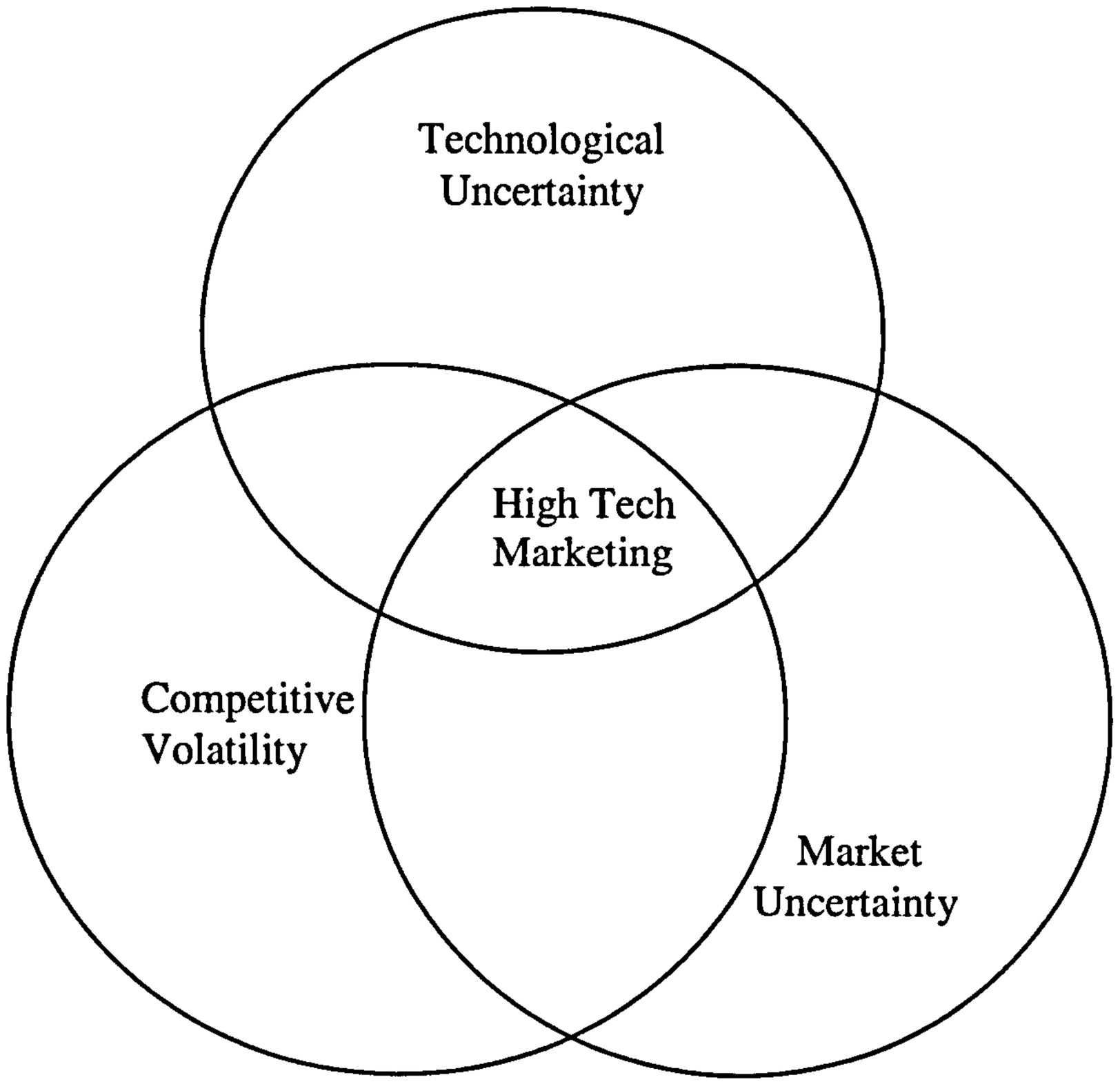
There is an apparent gap in research conducted on the marketing of software products and services, but much has been written on the marketing of high tech, innovative products. It was therefore deemed necessary to review the aforementioned literature as software can be categorised under the term 'high tech'.

High technology products have been defined in the literature based on their differing characteristics from low technology products. High tech products are characterised by high levels of uncertainty, the availability of standards in the marketplace, and the availability of complimentary products. Furthermore, the high tech industry is characterised by a higher level of innovation, a higher amount of R&D expenditure, product complexity, rapid obsolescence and high levels of competitiveness (Mohr *et al.*, 2005).

A popular view of high technology industries is its high degree of market, technological and competitive uncertainties (Mohr *et al.*, 2005; Moriarty and Kosnik, 1989). Market uncertainty arises from consumer fear and doubt about what needs or problems the new technology will address. The prospective customer may therefore delay the adoption of a new innovation or seek more information for reassurance before purchasing the innovation. Customer anxiety is perpetuated by a lack of an established standard for new innovations in the market. Another factor relating to market uncertainty is the risk that customer needs may change rapidly and unpredictably. Technological uncertainty relates to anxiety regarding whether the new technology will function as promised, concerns about the supplier of the new technology and concern over unanticipated consequences of purchasing the product. Technological uncertainty exists because one never knows how long the new technology will be viable before an even newer technology renders it obsolete. Competitive volatility refers to the competitive environment, specifically

uncertainty over who will be new competitors in the future. New competition can arise from product competition or new ways of satisfying the customer, an example being MP3 players as a new way of satisfying the customer, instead of an improved CD player (see figure 2.6) (Mohr *et al.*, 2005).

Figure 2.6 Characteristics of High Tech Marketing



Source: Mohr *et al* (2005, p6.)

The importance of network externalities and industry standards is also highlighted in the literature on marketing high tech products. They are advocated as means of reducing the uncertainty associated with the purchase of innovative products. Network externalities exist when the value of the product increases as more users adopt it. Due to the idea of network externalities, the first company to have its technology widely adopted may well set the technology standard for all, and the more successful a firm is at getting its technology accepted as a standard, the more successful it will become in the future (Mohr *et al.*, 2005). Other means of reducing uncertainty is to make the

product compatible with an underlying technological standard, and assessing the availability of complementary products can increase the value of the product to the consumer (Mohr *et al.*, 2005).

2.7.1 Innovation

High tech products are characterised by innovation, but the level of innovation can vary. Innovativeness can occur along a continuum, with radical, breakthrough innovations on one end and incremental developments on the other (Mohr *et al.*, 2005; Salavou, 2004). Radical innovations are sometimes referred to as revolutionary breakthroughs as they employ new technologies and create new markets. Incremental innovations are continuations of existing methods and normally involve extensions of products which are already on the market. The contingency theory contends that in order to be effective, marketing strategies must be tailored to the type of innovation (Mohr *et al.*, 2005).

The rise of trends such as customer empowerment and heightened competition in a global landscape has highlighted the need for innovativeness in the marketplace. The concept of innovation has since been widely explored in recent literature (Cottam *et al.*, 2005; Hult *et al.*, 2004; Salavou, 2004; Hurley *et al.*, 2004). Aspects covered include factors affecting the adoption of innovative products, antecedents of innovation as well as the benefits and perils of innovation. However in terms of identifying true customer needs and in response to the failure of high tech organisations in developing successful innovative products, the concept of "customers as innovators" has been advocated in the literature (Thomke and Von Hippel, 2002), which is a new way of listening to consumer needs by encouraging them to co-produce their own products according to their needs and wants, thereby enhancing the value they get when buying and using the goods or service (Maklan *et al.*, 2008). However it is also recognised that customers do not always know what they need until they try out prototypes (Thomke and Von Hippel, 2002), which presents opportunities for organisations to test prototypes of innovative products and ideas in the marketplace, and amending, adding or removing

features according to customer feedback. This view is supported by Athaide *et al.*, 2003 who investigated the antecedent conditions for fostering co-development relationships with prospective customers. New Product Development (NPD) is related to accelerating innovation, and the strive to be "first to market" with a new product or service. Acceleration of the NPD process is due to increased global competitive pressures, market demand, short product life-cycles and rapid technological changes. However, senior management commitment, early involvement of functional groups and market testing is key to retaining customer orientation (Owens, 2007).

2.7.2 Marketing Challenges in the High Tech Industries

The biggest challenge in marketing innovative, high tech products is the diffusion and adoption of innovations by mainstream customers. Categories of adopters have thus been defined as innovators, early adopters, early majority, late majority and laggards. Innovators, early adopters and early majority tend to purchase the innovation prior to the average time of adoption, while the late majority and laggards adopt after the average time of adoption (Mohr *et al.*, 2005; Yadav *et al.*, 2006). These categories fall into a normal, bell-shaped curve. The specific challenge posed here is crossing the 'chasm' between the early adopters and the early majority. The chasm arises because the early market is saturated but the mainstream market is not ready to adopt, thus there is no-one to sell to (Mohr *et al.*, 2005). Many high tech firms fail because they are unable to make the transition from early adopters to mainstream customers. The goal of the high tech marketer should be to minimise their time in the chasm by developing a complete, end-to-end solution satisfying customer requirements, which can be achieved via partnering. A recent find is that high quality technology alone does not guarantee success in high tech markets, as firms with a strong reputation and those that have achieved critical mass in a market have created a 'lock in effect' and closing out the competition, thus social and psychological effects to the purchase of high tech products needs to be considered (Choi *et al.*, 2007).

It is argued that market segmentation is an under utilized tool in the high tech industry (Dunn and Probstein, 2003). Furthermore, customers should be segmented based on their level of technology readiness, which is their level of propensity to adopt and embrace technological products. Optimism and the tendency to experiment with new technologies contribute positively to technology readiness whilst discomfort and insecurity can affect it negatively. There is a technology readiness index which classified potential customers into five segments: explorers, pioneers, sceptics, paranoids and laggards, which are similar to the aforementioned classification (Yadav *et al.*, 2006). The classification is a tool which can be used by high tech firms as some firms attempt to pursue too many market segments at once. Pursuing several segments is done to minimise the risk of selecting the wrong segments, but most firms do not have the resources to be successful in several segments (Mohr *et al.*, 2005).

Another challenge in the high tech industry is the issue of appropriability, which arises because innovation is imitated cheaply. This is particularly relevant in the software sector, which is generally characterised by a low degree of appropriability. It is contended that strong marketing assets along with tight intellectual property rights can result in strong appropriability (Rao, 2005).

The funnelling approach is a tool advocated for use in high tech services, as it provides a focus on a company's most productive prospects. It is a stage by stage with broad to narrow approach according to the target customer's level of response to a marketing communication. Therefore the use of marketing communication tools will vary according to the funnel level, may it be segmentation, attention, interest, desire or action (Dunn and Probstein, 2003).

It is reported in a number of research articles that the relationship between Marketing and R&D is essential for effective new product development, especially in high tech industries. However it is apparent that disagreements still exist, hindering integration between both departments. One study identified barriers to integration which included a lack of communication,

insensitivity to other's point of view, lack of support from the top and personality differences. Moreover this study found that R&D people are the more reluctant co-operators (Gupta *et al.*, 1985). However it is argued that relative R&D spending is more important than relative marketing spending as it is better to have a better product and spend less on marketing, than an inferior product and spend more on marketing (Ko, 2005). Mohr *et al.*, (2005, p.119) propose a four step framework for effective R&D-Marketing Interaction;

1. Match the nature of interaction to the type of innovation.
2. Examine and overcome core rigidity of elevation of engineering over marketing.
3. Use formal and interactions to build bridges.
4. Enhance opportunities for communication.

Communication and the development of interpersonal trust between marketing and R&D is further supported by Massey and Kyriazis (2007). Mohr *et al* stress that one important barrier is a company's culture which may tend to value technical knowledge more than marketing knowledge (Mohr *et al.*, 2005). This is more pronounced when the technical entrepreneur's background is in engineering/technology. Moreover, a technical orientation is more likely when there is one owner-manager as opposed to a group of owner managers/partners who offer varying skills. A study conducted by Berry (1996) found that technology driven companies were the least successful group in terms of corporate performance, highlighting the need for companies to evolve from a technological posture to a marketing led company with a strategic management approach and a long term plan. However the study doesn't take into account companies which set up after identifying a market opportunity, and is therefore market-led from inception. Other critical success factors in new product development projects in high-tech SMEs include project visioning, communication and management support (Akgun *et al.*, 2004). However, from the marketing perspective the issue of improvement in new product development is important in order to differentiate the product, and to attract and retain customers.

2.8 Marketing of Software

The specific focus of this study is the software industry and the marketing of software products and services by SMEs. The software industry itself is explored in the next chapter whilst the literature on the marketing of software is reviewed here. In contrast to the literature on marketing of high tech products and services, there is an evident gap in the literature addressing the marketing of software by SMEs (Alajoutsijarvi *et al.*, 2000; Helander and Ulkinemi, 2006; Ojasalo *et al.*, 2008).

2.8.1 Characteristics of the Software Industry

The software industry is characterised by intangible products, making the offering's support and service elements of paramount importance in order to add value for the customer. Small software firms tend to be managed by technical specialists, who often do not have sufficient marketing experience. Software SMEs thus tend to seek inter-firm cooperation and partnership opportunities in order to share resources and capabilities. Furthermore, the industry is characterised by rapid technological evolution, uncertainty from both companies and customers, as customers are often uncertain about the potential value of the innovation, shorter product life cycles and fast obsolescence of products, making it an extremely competitive market (Kulmala and Uusi-Rauva, 2005; Ruokolainen and Makela, 2007).

2.8.2 The Supplier's Perspective

There is not much published on how software SMEs should approach marketing, but as software products can be easily distributed via electronic means, there have been propositions regarding the internationalisation of small, software SMEs (Bell, 1995; Coviello and Munro, 1997; Moen *et al.*, 2004). Even though internationalisation of software SMEs is not the focus of this research, the literature emphasises the importance of networking and developing partnerships, which is essential in marketing of software across the board.

Alliances and network relationships are vital in the software industry. Marketing in SMEs is largely based on the owner-managers personal contact networks and how he/she can leverage them for the SMEs benefits. Taylor (2005) is one of the few researchers who have explored the determinants of alliance success in the software sector. He found that determinants include adaptability and openness, the need for personal chemistry among the contacts, readiness to learn from each other and willingness to share knowledge and competencies.

As with the literature on high tech marketing and innovative products, the literature on the marketing of software highlights the importance of collaboration between marketing and R&D, and the role of the customer in new product development, in order to collate real time customer feedback and "capture the voice of the customer" (Strategic Direction, 2003). Helander and Ulkuniemi (2006) argue that the successful marketing of software requires a relational competency which involves a comprehensive understanding of the technology as well as the customers' business. Furthermore, they advocate that businesses based on tailored software projects is a more relationship and service-oriented business, and that deep understanding of the customer's business as well as the technology is key to overcoming marketing challenges in the software industry. A recent study by Ojasalo *et al.*, 2008 focussing on brand building in software SMEs, found that cooperation with a bigger and trustworthy actor in the market is also the key to strengthen the SMEs marketing communications and customer relationships.

Marketing tactics used in the software industry, particularly during the software launch stage include:

- Versioning –modifying the product to suit different segments and emphasising regular technical innovations.
- Pre-announcement of products/vapourware strategies.

Easingwood *et al.*, (2006) identified five launch strategies used in a software environment, namely: early strategic alliances, targeted low risk by producing versions which are customised to certain segments, low-price combined with channel building, broadly-based market preparation and niche-based

technological superiority. The research does not suggest that one strategy is superior to another, as it depends on the marketing objectives of each company. However the authors support the view that working with partners is vital. They also contend that software companies should start-broadly, and work their way into a niche depending on the market response.

Software companies have historically endeavoured to protect their innovations by means of patents and copyrights. However, the problem of rapid technology evolution negates the need to patent innovation, as it is time consuming and expensive. There is also the risk that competitors will 'invent around' patented software (Rao and Klein, 1994). Other challenges include the piracy of software, and the development and use of open-source software, which are discussed in detail in chapter three. To combat such issues, Rao and Klein, (1994) suggest that software companies should invest in "complementary marketing", which includes a superior sales and service infrastructure, alliances and partnerships in the form of R&D contracts, licensing and marketing agreements, and diversification into related and complementary services.

2.8.3 The Customer's Perspective

Gillies, (1997, cited in Antony and Fergusson, 2004) stated that the software development process is fundamentally different from other processes for the following reasons:

- software has no physical existence;
- the lack of knowledge about clients' needs at the beginning;
- the change of clients' needs over time;
- the growing expectations of customers, particularly in relation to adaptability and flexibility.

Generally, small software companies customise software products and manage a 'project' type business due to a limited customer base. However, Alajoutsijarvi *et al.*, (2000) contend that 'productization' is a key prerequisite for continued growth in the software industry. Productization includes a shift

from unique service-intensive customer projects towards standardised products aimed at international mass markets. This strategy has evidently worked for the likes of Microsoft, but the question is whether this approach will satisfy customers who require a tailored software system that solves their business problems. The need for relationship-building in the software industry was briefly explored in the context of this research, and it has been proposed that many small software companies see the marketing mix method as the 'true' way of doing marketing as they do not consider the development of long term relationships with clients as 'marketing' (Alajoutsijarvi *et al.*, 2000). There is a paradox here in that relationships are arguably important, but if the 'productization' strategy is the way forward, it neglects the need for relationships and delivering superior customer value via a tailored solution.

Another difficulty facing small start-up software organisations is getting the first customer reference, which provides the organisation with credibility in the eyes of potential new customers. Getting the first customer is usually found via the owner-managers' personal contact network. The importance of relationships with existing customers is hence supported as a means of future revenue and further business opportunities (Ruokolainen and Makela, 2007). The significant role of relationships with customers is further supported as it allows software developers to improve their performance by better understanding of customer requirements and learning how end-users use the software (Ahmed and Capretz, 2007).

When moving from high tech marketing to the marketing of software, there is an apparent gap in research, especially in the marketing of software by SMEs. Although some research has been conducted on internationalisation of SMEs, there is no substantial research that has been conducted in terms of retaining customers, developing and leveraging relationships in software SMEs.

2.9 Conclusion

The aim of this chapter was to introduce the background literature which supports the aims and objectives of the research. Thus, the literature has been presented on all relevant concepts to this study. Theories, disciplines and concepts reviewed included Services Marketing, Relationship Marketing. Integrated Marketing Communications, SME Marketing and more specifically High Tech Marketing in SMEs. These literature areas were considered relevant due to the complex, high value and inherently relational nature of software purchase. The concept of RM and the management of these relationships, along with the management of customer expectations identified in the Services Marketing literature are central themes of the research investigation. This is because bespoke software production for SMEs is unusual in that it demands effective development of customer relationships from the outset, prior to purchase. The IMC concept is identified as a supporting tool to RM as creating awareness is vital to software SMEs in a volatile and fast-paced market. It also encourages an interactive dialogue which further supports the development of software solutions based on real-time customer requirements.

Chapter Three will review the UK and Welsh Software industry context in an extension to the academic review. This is important as SME research tends to be context specific, that is, results of research findings will vary depending on the nature of the business and the pervasive external environment.

3.0 A REVIEW OF THE SOFTWARE INDUSTRY

3.1 Summary

The software industry makes up a large part of the ICT sector and is a rapidly growing sector which by its very nature, is driven by innovation. This chapter describes the structure, performance and conduct of the software sector, particularly the UK software market and the software market in Wales. The next chapter will introduce the research methodology, which includes two case studies of software SMEs in Wales.

3.2 The Global Software Market

The software market has played a vital role in the economy for the last 20 years. The global software sector was estimated to be valued at $203.4bn in 2006 and is forecast to reach about $272bn in 2011, representing a five-year CAGR[1] of 7.5% (Business Insights, 2008). Despite the industry's rapid growth, it is widely recognised that the industry has reached a stage of maturity. This also follows a grey area around the turn of the millennium in which global events like the Y2K problem and 9/11 posed serious threats to the industry.

According to Keynote (2008), the software industry can be classified into two categories, namely the business software industry, including business systems software and business applications software, and entertainment software, consisting of PC games, leisure software and console games. This chapter focuses on the business software industry.

3.2.1 The Global Business Software Market

The leaders in the global business software industry have remained relatively unchanged for the last 20 years. The industry is dominated by U.S companies as recent figures show Microsoft, IBM and Oracle leading the global software

[1] Compound Annual Growth Rate

and computer services sector (FT Global 500, 2008). Although the sector has become consolidated, with the leading 20 players representing an estimated 45-50% of the market in 2004 (Keynote, 2005), it is estimated that the gap between mega-companies (Microsoft, Oracle, SAP) and the industry average has narrowed since 2000 (Software2006, 2006). Although margins are steadily improving across the industry, there is always a question with regards to the competitiveness of a start-up SME entering such a consolidated industry which is dominated by powerful brand names.

Business software can be categorised into three areas; systems infrastructure, software application development areas and software applications. In global terms, the systems infrastructure and application development areas are more concentrated than for applications, with the leading three players accounting for 40-45% of the market in systems infrastructure, 45-50% in application development and deployment, and 20-25% in applications. Microsoft is the only player to dominate in all three categories (Keynote, 2005).

While discussing the global software industry, it is necessary to reflect on India: the Indian software industry is growing rapidly. It has the largest number of quality-certified software companies in the World, which demonstrates the level of quality in the Indian software industry (Isaac *et al.*, 2006). The high level of outsourcing received by India has aided its growth with large players accessing cheaper, but high level software development skills.

3.3 Issues/Challenges in the Software Industry

3.3.1 Globalisation/Offshoring

Offshoring and outsourcing are both becoming standard practices in global software development. This trend has emerged as a result of globalisation and the pressure to reduce costs. Although it is inevitable that some UK employment will be lost as a result of offshoring, there are opportunities in terms of long term industrial growth as the UK seeks to keep up with other developed nations (BCS, 2006).

BCS estimates that by the year 2010, 102,000 IT and software jobs will have been off-shored from the UK (12% of the current IT workforce). However the jobs which are being offshored are those of the lower end programming and coding skills, providing the UK with the opportunity to focus on developing skills close to end user requirements and the creative jobs associated with solving business problems. Competitive advantage could be gained by organisations that generate value from intellectual property, process innovation and strategic insight (BCS, 2006). This trend is in line with the transformation from a manufacturing based economy to a service based economy, where lower costs are achieved through automating, offshoring and outsourcing.

A significant challenge in the industry is how to make the most of the opportunities which offshoring presents. The main benefit of lower cost bases for software organisations has already been recognised. The opportunities for employees include a move up the value chain towards innovation and knowledge. Microsoft has termed this paradigm shift as 'The New World of Work' which includes collaboration across cultural, geographical and time boundaries to supply a global customer base, offering huge scope for new products and services (BCS, 2006).

3.3.2 Open Source Software

Open source software development allows individuals and organisations to co-operate in order to develop software that is not owned by a single entity and which can be distributed and modified by anyone. Open source evolved in the 1970s due to Richard Stallman, an American software developer who developed a 'free' version of the widely used 'Unix' operating system (Postnote, 2005).

It is clear that enterprises that were initially sceptical about open source alternatives have opened up to the concept. Key players such as IBM and Hewlett Packard have therefore started to back high-profile open-source projects in order to win or retain enterprise customers, and also as a way to challenge the dominance of suppliers such as Microsoft (Keynote, 2005). Moreover, the government has started taking more interest in open source as

pilot schemes have showed that it could create savings in IT costs. Examples of government use of open source software include Powys County Council Wales who have replaced all their existing machines with Linux servers, leading to cost savings on hardware, licensing and support. However despite some uptake of open source software, the governmental attitude seems to be cautious, and contracts will reportedly be based on a case-by case basis based on overall value for money (Postnote, 2005).

Commercial software companies must now address the issue of open source and no commercial vendor is free from its threat. Primarily it has the potential to cut vendor sales but it also differs from the historical commercial process whereby a customer needed to get support from the supplier who sold the software. With open source, multiple companies can provide support (Keynote, 2005).

However, it is unlikely that open source software will take over from commercial vendor products. Despite its increasing awareness and uptake of open source software within both the public and private sector, Microsoft continues to dominate, and it is estimated that around three quarters of organisations use Windows as their main operating system, followed by the IBM mainframe and Linux (Keynote, 2005).

The primary benefit of open source software for most customers is that, as there are no costs for the basic product, it is cheaper than a commercial alternative. However there have been criticisms of the overall costs of open source as large organisations charge high prices for technical services and support, eroding the price advantage. Moreover the costs associated with indemnification must be taken into account (when open source software suppliers do not indemnify its customers against legal action should a software product be found in breach of patents). Without indemnification, every user of open source software is vulnerable to legal action and customers have to assume the liability risk. As a comparison, Microsoft provides uncapped IP indemnification of its products after a change in its licensing in 2003 (Keynote, 2005). Ultimately, customers especially large enterprises want to buy stability

and stability is associated with brand names such as Microsoft, Oracle or SAP. It is contended that customers want contracts, which have minimised risks with a product purchase and a viable route to follow if something goes wrong.

The security issue is pertinent to open source software. Microsoft argues that the number of security vulnerabilities is lower on Windows than Linux, and Windows' responsiveness on security is better than Linux (Keynote, 2005). However, advocates of open source software argue that, because it involves a large team of developers, bugs and errors can be rapidly spotted and fixed, therefore increasing reliability and security, which are key desirable software attributes (Postnote, 2005). Many commentators argue that open source software can be difficult to use and can suffer from weak project management processes (Postnote, 2005). Moreover, open source software is constantly upgraded, which is a positive thing in terms of innovation but perhaps too quick to follow by users in an organisation. Integration of the software with existing systems can also be an issue. However new types of organisations have recently been developed, which have founded their business on the notion of selling subscription support services for open source software customers (CNET News, 2004).

As for the future of open source software, it is projected that by 2010, its adoption will be more pronounced in the education sector, followed by the healthcare and distribution sectors. Barriers are estimated to include a lack of experience and skills in using open source software, a personal resistance to change to open source software, and a fear of lack of information and quality (Gallego *et al.*, 2007). It thus seems that although open source software is a threat to software companies, there will always be room for proprietary software, as it provides security to customers.

3.3.3 Software Piracy

Another major issue for the software industry is software piracy. Keynote (2005) estimates that, in 2003, software piracy in the UK amounted to $1.6bn. Piracy rates are reportedly decreasing in countries such as China, due to

stronger intellectual property laws and enforcement. However it continues to be a global problem. Business Software Alliance estimated that the software industry lost $34 billion globally due to software piracy in 2005 (Kin-wai Lau, 2006). Companies have several options in attempting to protect the proprietary information that forms the basis of their competitive advantage, including patents, copyrights, trademarks and trade secrets. All these options however have their specific limitations and aren't able to halt piracy, especially when software can be easily stored on disks or shared over the internet (Mohr *et al.*, 2005). A study into factors motivating people towards software piracy found that the cost of original software is important in software piracy, and is a key factor pushing them to commit piracy. Furthermore, it is the views and attitudes towards intellectual property, especially by young computer users, that need to be changed in order for software piracy to be combated in the long term (Kin-wai Lau, 2006).

Large players such as Microsoft are unsurprisingly keen to diminish software piracy, as it naturally affects their revenues. Microsoft have introduced programs such as The Genuine Software Initiative, which focuses on raising awareness of piracy among customers and re-sellers, investing in anti-counterfeiting technologies that protect its intellectual property, and supporting the government and the law in taking action against software counterfeiters. The specific benefit for individual consumers of Windows is the Windows Genuine Advantage program, launched in July 2005, which is a program allowing customers to validate their software and ensure that they are receiving the capabilities expected from Windows (Software Business Online, 2006).

Interestingly, the losses which software companies have made have been described as "theoretical", and software piracy has even been said to have upsides (Chapman, 2006). One argument put forward is that when the number of people using a company's software increases, so does the company's perception as the market leader:

> "...pirated software (functions) as a sort of marketing kudzu, tending to choke out the competition as use if your product spreads throughout the computing populace" (Chapman, 2006, p.253).

3.3.4 Software as a Service

The software industry is becoming widely recognised as a services as well as a products industry. It is argued that providing both products and services is vital for software companies in order to survive poor economic times where large software purchases are often placed on hold. On the other hand, new-product releases are the source of many service and maintenance revenues (Cusumano, 2004).

An emerging trend in the industry is that of Software as a Service (SaaS), which is a new model of software delivery based on delivering a whole software solution including maintenance, deployment and after sales support (Keynote (b), 2008).

Software as a Service includes the online delivery of software, whereby a business buys subscriptions of the software application, as opposed to licenses, giving the buyer more flexibility to switch vendors. It has been found that customers are eager for the shift, as they're frustrated by the traditional way of buying software and the costs of upgrades and maintenance (Dubey and Wagle, 2007). Furthermore, using remotely hosted applications means that customers are not faced with high start up costs and ongoing maintenance (Keynote (b), 2008). Newer vendors such as Amazon and Google have already been promoting new SaaS offerings and mass-customised software platforms, implying that it is viewed as a potentially competitive alternative to traditional suppliers of software services (Keynote (b), 2008).

Implications of the software industry becoming more of a services based industry includes the importance of developing long-term relationships with customers and prospective customers, as the purchasing of a software product is unlikely to be a one-off transaction. However, many customers will be in control of the relationship as they can easily switch to another vendor if there

are failures in performance. Suppliers are expected to understand individual customer needs and issues, and even tailor software solutions and services agreements accordingly. Moreover, the proliferation of alliances and partnerships in the industry complements the trend as the sharing of resources and expertise reduces costs and increases innovation. In terms of software SMES, partnering potentially breaks down barriers for entering certain markets hence increasing the opportunities available to them. It is estimated that SaaS providers such as BT, Capgemini and Oracle will pay particular attention to developing and increasing partnerships in order to expand revenue streams and customer adoption (IDC, 2006).

3.3.5 Skills Gap

A significant skills gap in IT and software development is reported in the UK. Research estimates that 150,000 extra employees are needed in IT each year, but only approximately 20,000 graduates in computer science and related subjects graduate from UK universities each year (BCS, 2006). It could be argued that due to the increase in offshoring of IT jobs, there is less of a need for jobs in the UK, but as was previously mentioned, there is a growing need for core skills, namely software architecture, project management, strategy and design which is vital for future development and continued innovation.

There has been a decline in university applications to study Computer Science, with a 50% decrease in applications in the four years to 2005. There has been a further drop of 60% in specialised Software Engineering courses. These figures along with increasing retirement rates of the experienced software architects and designers that drove the boom in software from the 1970s to 1990s, indicates a significant labour shortfall. Moreover, it indicates a decrease in experienced software personnel in the UK, which will require massive re-skilling of the existing workforce and an influx of software professionals from abroad (BCS, 2006).

It is generally accepted that software developers require business skills and while these skills can be taught in some part at universities, businesses need to

realise that graduates often have little or no experience of business. Thus strong relationships between industry and academia are required to improve transferable and general business skills, and to closely match what universities are producing with the challenges faced by businesses. Furthermore, commercial investment in universities may help to close the gap between industry and academia while also supporting entrepreneurialism, innovation and research capabilities, as is largely seen in the USA (BCS, 2006).

3.3.6 Image

The current image of software development and IT is one of a male-dominated, technical profession. Although in one respect, the software industry is seen as an exciting, fast moving and innovative industry, this image inevitably has an impact on recruitment and potential business investment. The image is pervasive in the media and is a contributory factor in putting young people off a career in IT, especially women, who currently make up only 20% of the industry. The negative image can be due to the media's portrayal of IT employees, the bad press in the UK following the collapse of the dotcom economy and the high profile IT disasters in business, project overruns and poor budgetary control, a recent example being the NHS's troubled supplier, iSoft (BCS, 2006).

It is suggested that students should be encouraged to see software as a significant and all-pervasive technology which has application in a wide variety of areas including medicine, ecology and engineering. Academia, government and businesses need to therefore work together to raise the profile of the industry, so that investing in a software development career is attractive, appealing and rewarding (BCS, 2006). The shifts in perception and the increased collaboration among industry and academia should result in increasing survival among start-up software companies as managers become aware that both technical and business management skills are imperative for business success. The BCS reported that more than 25% of early stage companies spend over 90% of their funding on product development, with fewer than one in five companies spending more than half of funding on

market awareness activities (BCS, 2006). An illustration of this issue and other marketing related issues are described in chapter five.

3.3.7 Government Initiatives

An important incentive in software development which the government introduced in 2000 is the Research and Development tax credits, which allows SMEs to receive cash elements worth up to 24% of their R&D expenditure. HM Treasury published an update on progress made with tax credits in 2005, showing that in April 2005 around 17,000 claims for R&D tax credits were made with around £1.3bn of the support claimed. Overall, the tax credit scheme seems to work better for smaller companies than large enterprises (BCS, 2006).

Other government bodies set up to help software companies include:

- Department for Business Enterprise & Regulatory Reform (formerly DTI);
- UK Trade & Investment;
- Business Link;
- Business Eye Wales;
- Small Business Service.

External organisations include:

- The British Computer Society;
- EUREKA;
- Information Age Partnership;
- Intellect.

3.4 The UK Software Industry

3.4.1 Market Value

The leading 19 software companies in the UK were recently valued at £12m (FT UK 500, 2008). The industry has experienced rapid growth over the last

ten years, and although growth in the industry is still anticipated, the rate of growth has been forecasted to fall, mainly as a result of the slowdown in the UK economy (Datamonitor, 2005; Keynote, 2008). According to Keynote estimates, the total UK computer software market was worth £9.75bn at final selling prices in 2007, a 7.7% rise in value over the previous year (Keynote, 2008). The leading revenue source for the UK software market is the applications software sector (consisting of enterprise, technical and entertainment software). In terms of value, the UK accounts for 16.8% of the European software market, second behind Germany, which has 24.6% of the market (Datamonitor, 2005). The larger ICT market, which includes hardware, software and telecommunications, had an estimated revenue of £86.6bn in 2007 (Keynote (b), 2008). The UK computer services industry demonstrated an average growth of 6% from 2003 to 2007, illustrating the emerging importance of services within the market (Keynote (b), 2008).

As growth has slowed down, technology standards have coalesced and business customers have started treating software as an investment by assessing its contribution to turnover and profit e.g. assessing its ROI (Keynote, 2005). The slowdown in growth rate indicates maturity in the market, characterised by businesses now tending to upgrade their software rather than buying it for the first time (Software2006, 2006).

The value of the business software sector was estimated by Keynote at £8.03bn at final selling prices in 2007 (see table 3.1). The business software sector divides at around 50:50 between applications and systems software. Applications software have been gradually increasing their share of the market, and sales of systems software have experienced steady growth between 2003 and 2007:

Table 3.1 The UK Business Software Sector Value (£m at final selling prices), 2003-2007

	2003	2004	2005	2006	2007
Applications	3,499	3,639	3,774	3,925	4,093
Systems Software	3,372	3,500	3,640	3,771	3,941
Total	**6,871**	**7,139**	**7,414**	**7,696**	**8,034**
% Change year on year		3.9	3.9	3.8	4.4

Source: Keynote (2008, p.15)

3.4.2 Market Segmentation

According to Keynote (2005), the software industry can be divided into six categories:

1. Business Systems Software, which can be further classified into infrastructure software and applications development tools software. This category includes operating systems, server software and middleware, which allows businesses to share computing resources across a range of software and hardware platforms.
2. Business Application Software, which include cross-industry applications addressing generic problems such as office automation and accounting (e.g. Microsoft Office), and vertical industry applications, where the software addresses problems which are unique to a particular industry (e.g. banking asset management software). Applications software is the largest and most fragmented sub sector of the business software sector. Many segments of the market are experiencing strong growth such as security software. However as organisations seek to substitute standard packages for bespoke software, there is a higher demand for more specialist, sophisticated and tailored functionality. Moreover, as companies seek to gain control over their operations, there is a growing demand for analytic software such as risk management analytics, CRM and website analytics (Keynote, 2005).

3. Leisure and Entertainment Software, which consists mainly of PC software including games and other non-business type software such as education and music making products.
4. Bespoke Software, which is a growing market due to the demand for tailored products developed to address organisations' specific problems.
5. Software Consulting, a growing segment particularly complementing bespoke software, as organisations seek external consultants to analyse their operations and recommend suitable software.
6. Systems Integration, another growing segment since the software market has reached its maturity stage, and where organisations have disparate systems which are required to 'talk to each other'. Integration also requires the sharing of knowledge and up-to-date information.

3.4.3 Industry Background

3.4.3.1 History

The structure of the software market is changing. Since 2000, the most notable trend witnessed is the consolidation of the industry. Consolidation has occurred as niche players have disappeared due to mergers and acquisitions, and also through the established players' extensions to product lines, which can force start-up software SMEs into difficulties and sometimes liquidation.

Since 2000, software applications development has become more of an industrial process, allowing vendors to improve margins in price-sensitive areas of the market. This has been achieved by both improving internal processes and offshoring parts of the process to take advantage of lower labour costs and strong skills (Keynote, 2005).

Scale advantages in the software market have also increased since 2000, particularly in product development, sales and marketing and customer loyalty. Developing new software involves the initial high cost of development and the very low marginal cost of selling additional copies. In recent years, product development costs have risen as functionality has increased, along with the

need for software to work across a range of platforms. Online distribution has however lowered the marginal cost of selling extra copies (Keynote, 2005).

Sales and marketing typically account for 40% of a software company's costs (Keynote, 2005). In the case of enterprise software, there are a number of established channels to market. Given the solution nature of the sales, the use of a direct sales force is reportedly the most effective sales channel, with a focus on developing appropriate customer relationships. As software companies seek to enter fast-growing emerging markets, the need to build a global distribution system has increased. Thus sales people are a valuable source of information on customers and competitors, creating a cycle whereby only the larger firms can afford a bigger and more expert sales force, which further enables growth (Keynote, 2005). Software companies are able to ensure customer loyalty through creating industry standards as they provide credibility to the software. As such, software companies can extract higher than normal profits as customers would rather pay more for a standard product, rather than incurring the risk of integrating non-standard ones. The importance of standards has increased as companies seek to gain control of the industry from players such as Microsoft (Keynote, 2005; Mohr *et al.*, 2005).

3.4.4 Distribution

Software companies distribute their products either through direct sales to customers, or by sales directed through resellers. Direct sales to customers include sales to original equipment manufacturers (OEMs), large enterprise customers, applications developers and direct sales over the internet. Most software companies distribute their products through independent non-exclusive distributors and resellers. When selling software in bulk through volume licensing deals, most software companies have licensing programmes that are designed to provide flexible licensing and service solutions that are tailored to a customer's requirements. Another important distribution channel for software is that of value-added distributors which include value-added resellers, systems integrators, consultants, custom applications developers, solution developers, internet service and hosting organisations as well as

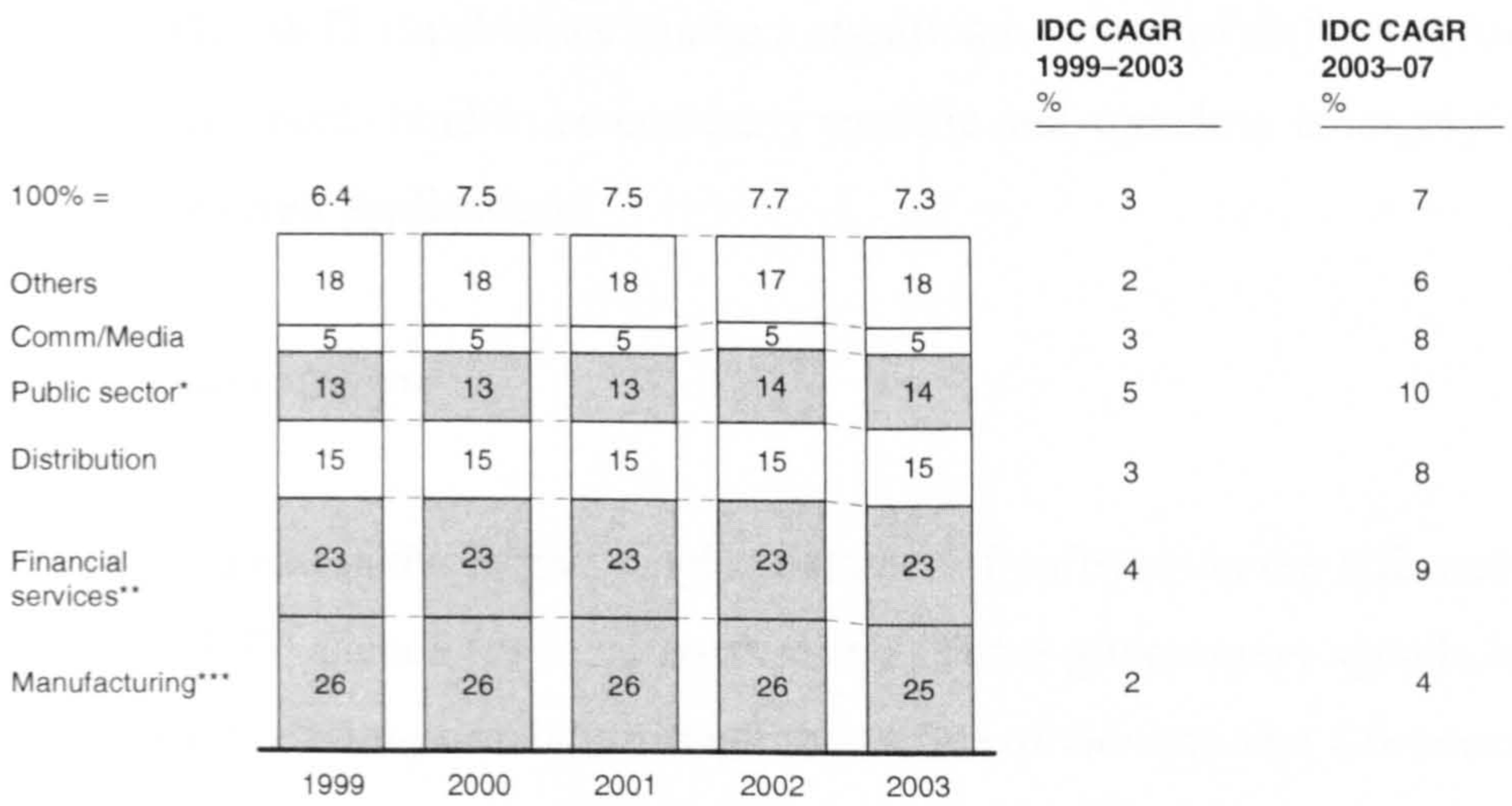
technical support and training organisations (Keynote, 2008). However, it is becoming increasingly apparent that customers are looking for business models other than the traditional license and maintenance model, including subscription or on-demand models (Software2007, 2007).

3.4.5 Software purchasing patterns by industry

The manufacturing and financial services sectors are the two largest consumers of software, representing 25% and 23% respectively of U.K consumption in 2003. This is followed by distribution and the public sector with 15% and 14% respectively (see figure 3.1).

Figure 3.1 UK Software Consumption by Industry

U.K. SOFTWARE CONSUMPTION BY INDUSTRY, 1999–2002
Revenue £b



* Includes local and central government and education
** Includes banking, insurance and other financial services
*** Includes process and discrete manufacturing
Source: IDC

Source: DTI (2004, p.18)

3.4.5.1 Manufacturing

Manufacturing organisations spend approximately 2% of revenues on IT (hardware and software) (DTI, 2004). Software applications purchased or developed in-house tend to be administrative and horizontal. ERP[2] systems are also widely used to manage, integrate and store data. Manufacturing companies tend to be price sensitive as they seek to minimise costs, and software decision making is increasingly becoming more centralised at a regional or even global level. The implications of such centralised decision making are increasing difficulties for local software SMEs to win business by decentralised units (DTI, 2004).

3.4.5.2 Financial Services

Financial organisations typically spend approximately 7% of their revenue on IT (DTI, 2004). As IT capabilities can be a significant source of differentiation, software requirements tend to be company specific and spending is largely on vertical and tailored applications.

3.4.5.3 UK Public Sector

Central government is the largest single customer of software in the UK, and it sets the overall IT agenda for local government. The e-government agenda has driven software consumption but through the Office of Government Commerce there has been attempts to consolidate government spend and exert pressure on pricing. Although the public sector continues to advocate the use of SMEs as government suppliers, government frameworks for supplier selection have historically acted as a barrier for SMEs, which can only gain access to large contracts via partnerships with selected large suppliers.

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[2] Enterprise Resource Planning

3.4.6 Market Trends

Even though the software industry has experienced rapid growth, during the period between 2001 and 2003, many organisations delayed large-scale IT projects, IT budgets were evaluated on a short term basis and organisations tended to provide funding for smaller/tactical software projects as opposed to larger-scale strategic software projects. However, since this relatively cautious period, many larger-scale IT projects are coming back into fashion and overall levels of expenditure are increasing, including increases in software's share of IT budgets (Software2007, 2007). Nevertheless, control over IT costs remain firm, making it difficult for software organisations to make a sale as they need to prove return on investment (ROI) prior to purchase or deployment. Consequently there is a greater demand for pilot projects which can demonstrate the vale of software (Keynote, 2005). This trend has arisen also due to the number of software implementation projects which have failed in the past, as well as the need to visualise the product prior to purchase. Moreover, many organisations have opted to use cheaper open source software such as Unix and Linux at the expense of higher priced software such as Windows (Keynote, 2005). Open source software will be discussed at greater length in section 3.4.2.

The growth of e-business (Internet, e-commerce, intranets and extranets) has helped drive the demand for software products as software products and demonstrations can be downloaded and produced from anywhere in the world. Furthermore, the growth of the internet and networking is also increasing the demand for software such as security products, network management products and enterprise systems management software. The growth in areas such as Customer Relationship Management has led to growth in software storage and analytical products (Keynote, 2005). Data security is another growing area due to the threat of terrorism and identity fraud. Online technologies are also providing the tools for software vendors to engage current or potential customers via online user communities (online forums, blogs), which constitute a low cost and non-intrusive way of reaching lead users (Software2007, 2007).

A new trend that has emerged as a mechanism for acquiring software is software rental as opposed to paying for the software product, along with ongoing 'maintenance' charges. Software rental is similar to a licensing agreement, but tends to involve payments which are extended over several years. An example is Microsoft's Multi-Year Open licence which is aimed at SMEs. A survey of software companies indicated that 80% plan some spending in subscription of on-demand models, and 60% plan to spend in a transaction-based model, indicating the increase in demand for such business models (Software2007, 2007).

Another trend is that of the increase in external funding for software companies. Venture capital and private equity funding has grown by over 32% annually since 2002, however they tend to favour later and expansion-stage opportunities over start-up and early stage investments (Software2006, 2006).

3.4.7 Competition

The market for software in the UK and other developed economies is dominated by a small number of large multinational companies such as Microsoft, Oracle and IBM. However in this industry which is characterised by rapid technological change, the high costs of R&D have kept even the largest organisations from becoming complacent (Datamonitor, 2005).

In order to diversify their product portfolios, larger companies have tended to make acquisitions of smaller software SMEs. Furthermore, large scale mergers have been necessary to meet the demands of the corporate customers who demand cheaper technology that is easy to use and customised to their specific needs. The large number of mergers and takeovers which have been taking place are a response to this trend. Oracle acquired PeopleSoft for $10.3 billion in October 2004, which is the largest software deal in history. Software Business Online (2007) reported that the enterprise applications market has experienced further consolidation as merger and acquisition activities reached a new milestone of 550 deals with an aggregated value of at least $74 billion between 2004 and 2006 (IDC report cited in Software Business Online, 2007).

The headlines in any software journals, magazines and key trade journals are constantly dominated by news and reports of mergers and acquisitions among the software industry. The trend in acquisitions and mergers is leading to a consolidated software industry (Datamonitor, 2005).

The business software sector is intensely competitive and is evolving rapidly. In the UK, supply is dominated by multinational companies and is relatively concentrated, with the leading 15 providers controlling over half of the market (see table 3.2). There are only four UK companies among these 15, and of the largest UK software companies, half are vertical applications providers which primarily focus on financial services.

Table 3.2 The Largest Business Software Companies in the UK by Value Sales (%), 2004

Microsoft	18
IBM	9
Oracle	7
SAP AG	4
Sage PLC	2
Hewlett-Packard	2
Computer Associates	2
BMC Software	2
Symantec	1
SAS Institute	1
Research Machines	1
Unisys	1
Adobe	1
Logica CMG	1
Misys	1
Other	46

Source: Keynote (2005, p.14)

3.4.8 Leading Companies

The leading three players in the UK software industry are all US companies. Microsoft's leadership is due to its dominance on the desktop applications and low-to-mid range servers, and recorded global revenues of $51 billion during 2007. International Business Machines (IBM) is the world's largest computer services organisation and is the leading provider of mainframes and key software, and offers Linux, the free operating system, across all its platforms. IBM's total revenue in 2007 was $101 billion. Oracle is an enterprise software company with its products categorised into two broad areas: database software and applications software. The company recorded revenues of $21 billion during 2007 (Keynote, 2008).

Recent figures show that Sage Group, Autonomy and Logica CMG are the leading three UK software companies (FT UK 500, 2008). These larger software houses have the advantage of economies of scale, can sustain large investments in new software and are able to tap into a diverse global skills base, however SMEs can establish a competitive advantage if they have an innovative solution and specialise in a narrow area.

3.4.9 Software Companies in the UK

Despite the large conglomerates which tend to dominate the software market, there are hundreds of small and mid-sized software firms operating in the market. In fact, there are more software start-ups in the UK than anywhere else in Europe. In 2007, there were 1,990 UK VAT-based enterprises engaged in software, of which 89% had turnovers of less than £500,000. This demonstrates the small-scale nature of the software production base in the UK. The total number of enterprises has fallen from 2,565 in 2004, reflecting the consolidation in the industry over the past three years. Moreover, table 3.3 shows that the majority of these companies (85.7%) employed fewer than five people (Keynote, 2008).

Table 3.3 Number of UK VAT-Based Local Units Engaged in Software by Employment Sizeband (number of employees and %), 2007

Number of Employees	Number of Local Units	% of Total
0-4	1,705	85.7
5-9	135	6.8
10-19	85	4.3
20-49	50	2.5
50-99	15	0.8
100-249	0	0.0
250+	0	0.0
Total	1,990	100.0

Source: Keynote (2008, p.23)

The small-scale software development companies play an important role, particularly in innovation and technological development. They are flexible and can change rapidly with the market requirements. They can address niche markets and develop close relations with customers in order to fully understand their businesses and thus software needs. However, credibility is important in the eyes of large corporate customers, and is normally provided by scale, which can only be achieved by the larger software companies (Keynote, 2005).

3.4.10 Market Forecasts

The trend of strategic acquisitions and alliances are forecasted to continue, consolidating the industry. Company success will therefore be increasingly driven by the ability to take advantage of scale. Success will also depend on product and sector diversification, access to the best channels of distribution and having the best development talent pool. (Keynote, 2005).

The period 2005-2009 was expected to see the continued rise of open-source software. However the take up has been quite slow (Keynote, 2008). The concept could however increase as commercial companies increasingly seek to make money from their involvement in open-source (charging for maintenance, add-ons etc), and as organisations particularly in the public sector realise the potential cost savings of open source software.

Software organisations are like to feel the impact of the 'credit crunch' as large businesses cut back on computer projects and postpone new investments. However, ongoing IT services need to be maintained. Additionally, organisations will be using IT software and services to help them improve their efficiency (Keynote, 2008).

3.5 The Welsh Software Industry

3.5.1 Overview

The specific focus of this research project is the Welsh ICT sector, in particular the software industry in Wales. There is limited information on the software industry in Wales apart from an overview of the sector by the National Assembly. The Assembly refers to the sector as 'the software and IT services sector' which includes companies that develop software and companies providing IT support and technical consultancy. The software industry appears to be a growing industry in Wales, employing approximately 6,000 people. It is becoming an increasingly attractive location for start-up software SMEs to set-up due to the business infrastructure, technology incubators, available grants, favourable location costs and the attractive quality of life (Welsh Assembly Government, 2004). The first ever conference for the software industry in Wales took place in March 2007 (IT Wales, 2007).

3.5.2 Industry Valuation

There is a lack of independent valuation figures for the Welsh software market. Research undertaken by the National Assembly in 2004 has shown that the ten

leading players within the Welsh software and IT services sector are growing at a rate 7.0 times higher than that of tech MARK[3] listed companies, and have a potential market value of £709 million. The research compared software and IT services organisations with similar FTSE techMARK companies and whilst techMARK companies had grown by 3.9% per annum during the period 2000-2003, the Welsh companies had grown by 27.5% per annum (Welsh Assembly Government, 2004). It is important to note, however that these figures are theoretical only.

As part of the National Assembly's research, the leading companies' executives were interviewed in order to establish the key drivers behind the apparent growth in the sector. It was generally thought that a culture of innovation was developing in Wales and that the extent of innovation was considerable, with examples of software companies leading the market for software in the UK travel industry and the consumer and commercial finance markets. Other factors for growth mentioned included the attractive environment for start- ups, the assistance available to companies, the quality of life in Wales and the education system providing quality graduates and staff of all levels (Welsh Assembly Government, 2004).

3.5.3 Collaboration

As well as innovation, collaboration within the software industry is encouraged and practiced in Wales. There are an increasing number of partnerships, particularly with global players such as Microsoft, which have fuelled the sector's expansion, giving the industry additional credibility and enhancing its reputation.

There are twenty accredited centres for excellence of technology and industrial collaboration in Wales, developed by both academia and the Welsh Assembly Government. They were developed in order to promote the software and IT services industry in Wales, to attract technology and knowledge intensive

[3] Comparable technology companies in FTSE

organisations to the area and to provide incubation for such organisations. Furthermore, universities are playing a significant role in the collaborative efforts of the industry, in particular by generating spin-out companies such as Aquan, Rockfield Software and e-Semi (Welsh Assembly Government, 2004). It thus appears that the Welsh software industry is following an American-type model, where entrepreneurship, collaboration and academic spin-offs are encouraged.

Professional bodies have also been set up to encourage and aid collaboration in the industry, such as the Welsh Electronics Forum, which focuses specifically on the Welsh technology industry. Other bodies which help to facilitate collaboration include IT Wales, International Business Wales, Business Eye Wales, Contract Shop and Venture Wales, although most of these aren't specifically focused on the software sector.

3.5.4 Niche Players

The Welsh software industry is characterised by software SMEs which target particular market niches with innovative software products. Many of the SMEs are also attempting to enter mainstream markets, in order to increase their customer base, and secure long term growth and profitability. However the competition for large contracts is tough, as the SMEs come up against large, established enterprises which tend to be more experienced, reputable and credible.

3.5.5 Government Support

Government support is provided to software and IT service organisations in Wales by providing a range of funding opportunities, setting up dedicated bodies which offer business and signposting services, and encouraging collaboration within the industry and among industry and academia.

One government initiative is the Knowledge Transfer Partnership (KTP) scheme which has been deployed throughout Wales. KTP helps businesses

improve their competitiveness and productivity through access to technology and expertise from the UK's knowledge base.

Examples of available funding include the grant for Research and Development (also known as the 'SMARTCymru' award), which is designed to help SMEs research and develop technologically innovative products and processes. Another grant is the RSA[4] grant, established by the Welsh Assembly government to aid businesses in assisted areas. RSA takes the form of discretionary grants to encourage firms to locate or expand in these assisted areas. Projects must either create new employment or safeguard jobs.

3.6 Conclusion

This chapter has described the UK software market and the Welsh software market, and along with the literature review sets the background for the research methodology, which is detailed in the next chapter. Relevant themes identified have included the consolidating but collaborative nature of the software industry and the increased focus on software as a service. These themes as well as the challenges in the software industry will later be discussed in relation to the case studies.

[4] Regional Selective Assistance

4.0 METHODOLOGY

4.1 Summary

The methodology applied to this research involved a combined approach using multiple and mixed research methods. A combination of qualitative and quantitative data was gathered at different stages of this investigation. The research design which was followed is described in depth within this chapter, whilst the chapter provides a detailed explanation and justification of each research method applied during the research process.

4.2 Research Design

Due to the relatively uncharted nature of the research problem, the first stage of the research was exploratory, in order to increase understanding of the concepts and to identify important variables to be studied further. The exploratory stage of the research was dominated by the use of qualitative methods. The use of qualitative methods allowed the researcher to become familiar with the area of interest, explore the field and investigate the dimensions involved due to their open-ended, unlimited nature. Furthermore such an approach provides a holistic view of the research area (Gilmore and Carson, 1996). The exploratory stage was then followed by conclusive, quantitative investigation that used the qualitative results to embrace all the facets of the researched problem.

In social sciences there has been a long-standing debate regarding which philosophical position research methods should follow, and the two main contenders are 'positivism' and 'phenomenology'. The positivistic idea holds that the social world exists through objective methods, whereas the phenomenological view sees reality as subjective, which has been socially constructed and given meaning by people (Milliken, 2001). Thus the scientific approach and quantitative methods derive from positivism, and the inductive, theory building approach and qualitative methods derive from the

phenomenological approach. The differences in both approaches are summarised in table 4.1.

Table 4.1 Qualitative methods vs Quantitative methods

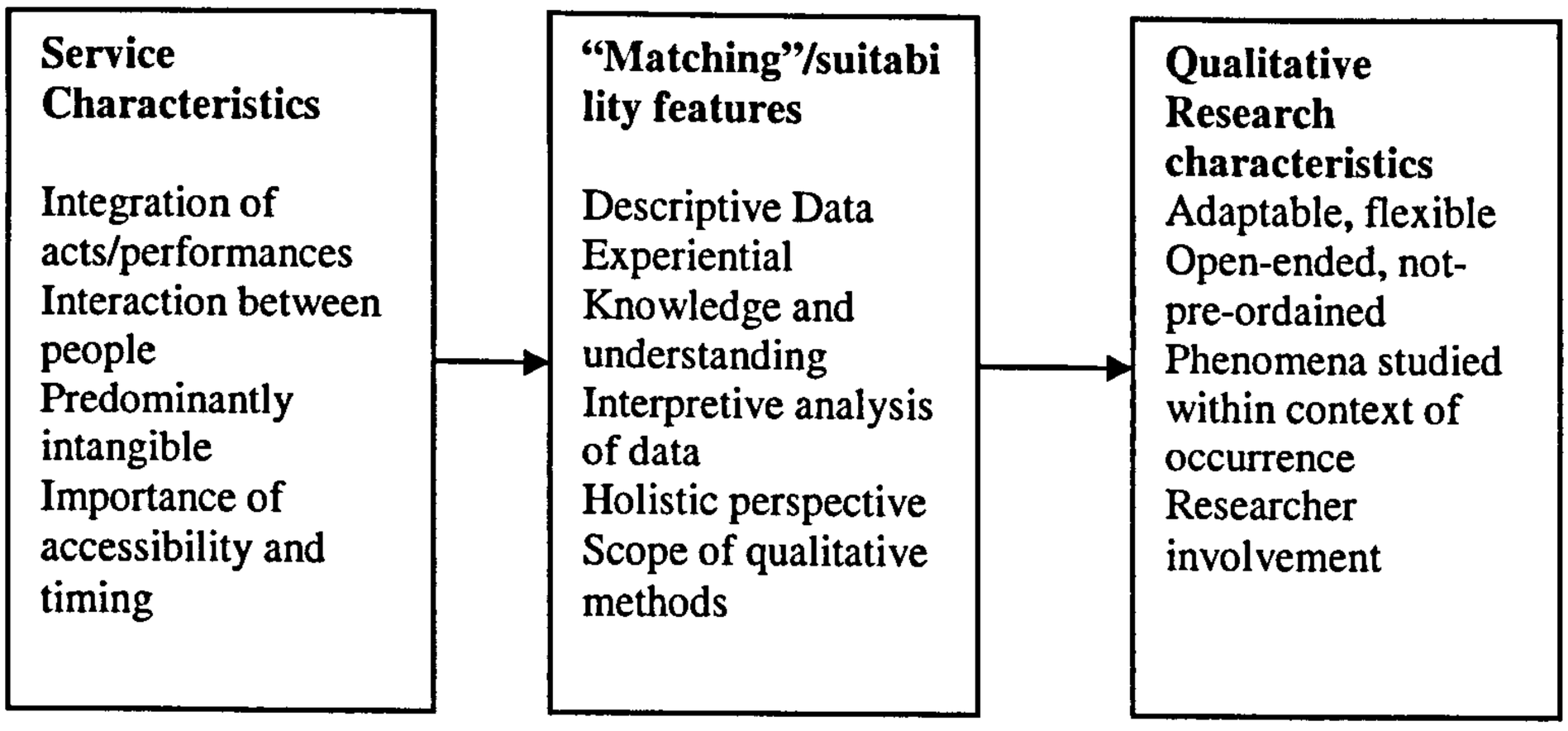
Qualitative (Inductive) methods vs Quantitative (Deductive) methods	
Qualitative Methods	Quantitative Methods
• Small sample size • Substantial, in-depth and rich data gathered from respondents • Can discover hidden motivations and values • Opportunity for probing research subjects • Subjective, interpretive analysis • Low generalizeability • Suitable for exploratory research • Theory building	• Large sample size • Amount of data varies in terms of detail and richness • Useful in tracking trends • Limited opportunity for probing • Objective, statistical analysis • High degree of generaliseability • Suitable for descriptive or causal research • Theory testing

Gummesson (2003) uses the metaphor of a multi-storey building to describe the research edifice, with the basement being the foundation for research, middle floors for data generation and analysis, and the penthouse as the research outcome. He argues that "all research starts in the basement with the researcher's paradigm and pre-understanding" (Gummesson, 2003, p.486). This stage is essentially interpretive, qualitative and subjective.

The use of multiple methods refers to the adoption of more than one data collection technique and analysis procedure to answer the research question. This choice is increasingly advocated within business and management research (Curran and Blackburn, 2001 cited in Saunders *et al.*, 2007) whereby a research project may use qualitative and quantitative techniques in combination as well as using primary and secondary data. Historically, the positivist approach has been favoured in certain fields such as management and

especially marketing, however a trend of combining both approaches in order to off-set each other's limitations has since appeared (Milliken, 2001). The mixed methods approach refers to the fact that both quantitative and qualitative data collection techniques are combined, and this was the approach followed in this research. An integrative approach to qualitative research was adopted at the exploratory stage of the research, and a focussed approach to quantitative research was subsequently adopted as a plausibility check for the qualitative data, and to aid in the development of the marketing model for SMEs. The notion of "Integrative" qualitative methods in a services context is further supported by Gilmore and Carson (1996) who argue that the use of qualitative methods are "well-suited to the characteristics of services (as) service delivery occurs through human interaction" The suitability is illustrated through the following model:

Figure 4.1 Suitability of qualitative research methods for services marketing



Source: Gilmore and Carson (1996, p22)

What is significant with regards to this model is the importance of the involvement of the researcher in a fast-changing environment. This is especially pertinent to the software industry which is characterised by volatility and is essentially a fast-paced market. The holistic dimension of the research is

also emphasised in order to gain a comprehensive and complete picture of the context being studied, and it provides flexibility to the number of methods which can be used.

Carson and Coviello (1996) contend that a 'stream of research' can be achieved by integrating methods such as case studies of successful and unsuccessful organisations, a small-scale exploratory study, a large scale survey and controlled field studies to enable the study of causal relationships. The benefit derived from a 'stream of research' is that it allows the researcher to combine the best and most suitable research methods at the appropriate stages of the research (Carson and Coviello, 1996).

4.3 Exploratory Phase: Qualitative Research

The initial review of the literature indicated a lack of previous research conducted in the area of marketing of high tech products, especially in the context of SMEs and within the software industry. Qualitative research has been supported for investigation into SMEs with a focus on inductive approach and quantitative data collection (Gibb, 1990 cited in Stokes, 2000). The first stage of the research was therefore intended to be purely exploratory and mainly qualitative. The research tools adopted included case studies, in-depth interviews and ethnography.

4.3.1 Case Study Method

The nature of the research project stipulated that the author worked alongside a local SME during the course of the research. This allowed the author to undertake a detailed case study analysis relevant to the research problem. Case studies involve in-depth, contextual analyses of organisations, and offer a holistic view of the research topic, without seeking to explain universal truths (Patton and Appelbaum, 2003). The method itself has been defined by Yin (1994, p.13) as:

> "...an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident."

The case study allows an investigation of real-life events by exploring a full variety of evidence: documents, artefacts, interviews and observations. The case research methodology tends to usually address research problems within the realism or constructivist paradigms rather than the positivist paradigm and focuses on inductive theory building as opposed to theory testing (Perry, 2001). However, Perry does note that pure induction without prior theory might prevent the researcher from benefiting from existing theory, just as pure deduction might prevent the development of new and useful theory. It is inevitable that the researcher will be influenced by ideas stemming from the literature before it is used to develop the questions for an interviewer's guide and is beneficial in that it can provide a focus to the data collection phase (Perry, 2001).

The case study method has been widely supported as a research method in marketing and as a research method for exploring SMEs (Bonoma, 1985; Chetty, 1996; Perry, 1998; Romano, 1989). Chetty (1996) investigates the use of this method for research in SMEs and although she specifically investigates the exporting activities of SMEs, the article demonstrates that the case study research method is a rigorous methodology that allows decision-making processes and causality to be studied. Furthermore the case study is ideal for studying topics where existing theory is inadequate, it allows a firm to be studied from multiple perspectives and it allows a more detailed analysis than a quantitative survey. It offers a multi-sided view and is welcomed in new situations where little is known about the phenomenon. The methodological framework presented by Romano (1989) stresses the need to adopt a mixed methodological approach in understanding small business but does advocate the case study approach as a suitable method especially when intimate details need to be collected. Bennett and Elman (2006) describe case studies as "useful but limited" research method, which is beneficial when combined with statistical and other formal methods.

Opposing views of the case study approach are contrasted in the work of Yin (1994) and Eisendhart (1989). Eisendhart (1989) describes the method as a very flexible process that has inductive features such as 'flexible and opportunistic data collection methods' that allow additions to questions in an interviewer's guide during a series of interviews. Moreover she thinks that the initial research problem 'may shift during the research' as data is gathered.

In contrast, Yin (1994, p.16) contends that a tight structure should be set up before interviews are begun with "the posing of clear questions…and the use of theory and reviews of previous research to develop hypotheses and rival hypotheses; the collection of empirical data is to test these hypotheses and rival hypotheses" therefore no changes are allowed in direction after the research has begun. Furthermore, they both differ in their opinion on what constitutes a suitable number of cases to investigate within the research project.

For this research problem, a combination of Eisendhart's theoretical framework and Yin's case study method was followed. Eisendhart's framework was deemed suitable due to its flexibility. Her proposed process of building theory was therefore followed. After defining the initial research question and objectives, the cases were selected purposively and data collection was conducted in order to become familiar with the cases. Data was collected from numerous sources in order to aid triangulation. As recognised in Eisendhart's research framework, adjustments were sometimes made to the data collection instruments such as the addition of questions to an interview protocol, as it allowed the researcher to probe emergent themes or to take advantage of special opportunities in a given situation. Throughout the case study process, a consistent focus was placed on searching for cross-case patterns, shaping of hypotheses and comparing of themes to the extant literature in order to enhance the level of theory building from the research.

The theoretical framework used in analysing the case studies and more specifically to compare and contrast the two case studies used in the research, was the case study methodology proposed by Yin (1994). This model is a replication approach proposed by Yin as a way of conducting multiple case

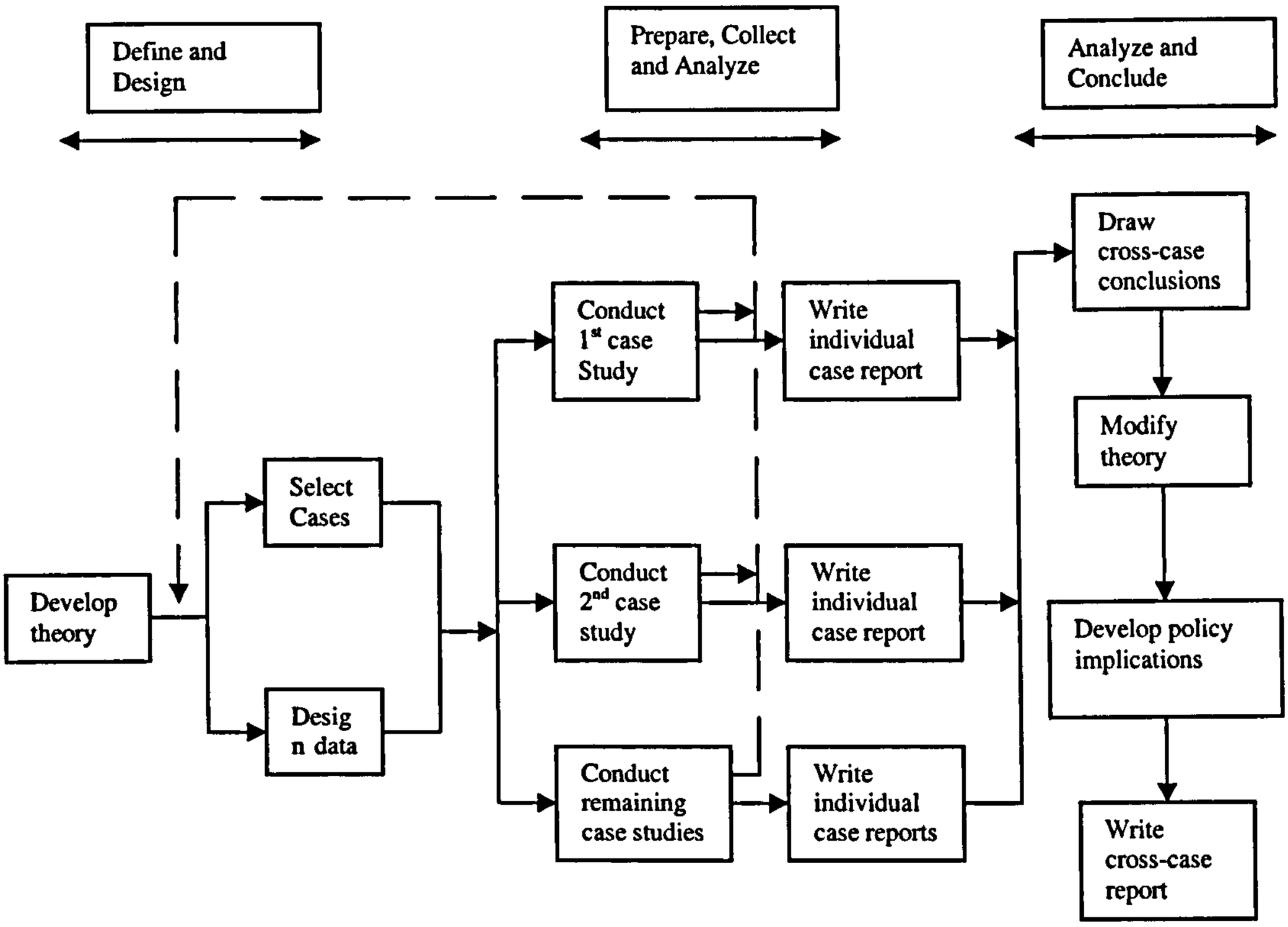
studies (see figure 4.2). When conducting comparative/multiple case studies, it is argued that each case must be carefully selected so that it either:

a) predicts similar results (literal replication);
b) produces contrasting results but for predictable reasons (theoretical replication).

This study aimed to achieve theoretical replication as both cases contrasted under very similar conditions.

Yin (1994) contends that the case study method begins with theory development, followed by case selection and the definition of specific measures. Each individual case study in this study consisted of a "whole" study, in which convergent evidence was sought, and each case's conclusions were then considered to be the information needing replication by the other case. With regards to the number of cases, the small number of cases was justified as external conditions were not thought to produce much variation in the phenomenon being studied and thus a smaller number of theoretical replications was sufficient (Yin, 1994). Moreover, the researcher faced geographical project constraints as not many similar cases were available.

Figure 4.2 A replication approach for conducting multiple case studies



Source: Yin (1994, p.49)

4.3.2 An investigation of two case studies

Two case studies of local software SMEs were investigated during the course of the research; one that was studied for three months which then went into liquidation after six years of operation, whilst the other was investigated over a period of two and a half years so that it became a longitudinal case study. The amount of case studies researched fell below Eisendhart's recommended number of between four and ten cases, however Yin (1994) provides justification for a single case study, which is that it can confirm, challenge or extend the theory when the case meets all of the conditions for testing a theory. Furthermore, the single case can be used to determine whether a theory's propositions are correct or whether some alternative set of explanations might be more relevant. A second rationale is when the case represents a unique case.

A third rationale is that a case is revelatory in its nature. The case here meets the second rationale.

The advantage of multiple case research is that the evidence is often regarded as more robust, reliable and generaliseability of findings is more likely. However, it can take extensive resources and time beyond the means of a single researcher to conduct a number of detailed case studies (Yin, 1994).

Guided by the research objectives, there was a need to establish early on in the research, the critical success factors for small ICT companies. Two contrasting cases of small software companies based in North Wales were used to identify these criteria. A recent study sought to identify critical growth factors of ICT start-ups (Lasch *et al.*, 2007), and was supported by existing data sets for French SMEs. On the other hand the present study attempted to attain a greater depth of analysis. The analysis and comparisons of both Welsh SME cases focused on their marketing activities or lack of marketing activities; external and internal business relationships. The '6 sources of Evidence' proposed by Yin (1994) were used as a guide to collecting data:

1. Documentation: letters, emails, memos, minutes of meetings, media articles, written reports, plans. The strengths of analysing such materials were that documents could be reviewed repeatedly, it was unobtrusive and exact.
2. Archival Records: historical tender documents, older plans and personal records. The advantages here were that records were usually precise, unobtrusive and could be viewed repeatedly.
3. Interviews: interviews referred to here are interviews with members of the organisation. Respondents could be considered 'informants' which provided the researcher with insights into the matter. Interviews tended to be open ended and informal during these case studies.
4. Direct Observation: of meetings, activities, work, sales exhibitions, field visits etc. Direct observation covered events in real time and it covered the context of event. Most direct observation included listening to and observing within-organisation conversations and organisation-customer discussions. Disadvantages to direct observation with the

organisation's knowledge is that conversations and events may proceed differently because they are aware of being observed, and although there are such limitations, it was unlikely that they would arise as the researcher was treated, and accepted as a work colleague within the organisation.

5. Participant observation: included serving as a staff member within the organisations. This provided an opportunity to perceive reality from the viewpoint of someone "inside" the case study rather than external to it. A risk here is of potential bias due to investigator's manipulation of events, however measures were applied to avoid bias.
6. Physical Artefacts: a technological device, a tool or instrument or some other physical evidence. Within these cases, the physical artefacts were the software products themselves, although they were not the main objects of investigation as the focus of the research was on customer-supplier relationships and marketing operations.

4.3.3 Validity and Reliability

The most commonly used criteria for judging the quality of case research are Yin, 1994's four tests of quality:

- Construct Validity: For case studies, the use of multiple sources of evidence can increase construct validity, as well as establishing a chain of evidence during data collection and having the draft case study reviewed by key informants. This was accomplished during this research process.
- Internal Validity: the soundness of the cause and effect relationships discovered, which was verified by comparing results with published data.
- External Validity: the extent to which a study's findings are generaliseable beyond the immediate case study. Critics typically state that a single case study offers a poor basis for generalising, but these critics are usually comparing the situation to survey research, which is incorrect as survey research relies on statistical generalisation as opposed to analytical generalisation.

- Reliability: minimising the errors and biases in a study and assessing how consistently a technique measures concepts so that other researchers will get the same result. In this study, the researcher strived to increase reliability by having an independent researcher compare and cross check findings, an example being the coding of the interviews which was done by two researchers. The need to document procedures is also important to achieve reliability, which was also done throughout the research process.

4.3.4 Case Study A

Company A was a software development company based in the North Wales area. The company is a bespoke software development SME with ten employees which has been operating since 2000. The researcher observed the organisation for a period of two and a half years, of which half the time was as a participant observer and half the time as a direct observer. As a participant observer, the researcher was able to undertake market research activities on behalf of the SME whilst simultaneously gaining an understanding of the industry, the product and the company's target markets. Whilst observing Company A, the researcher was able to peruse various corporate documents and marketing collateral including business plans, charts, the intranet and the company's own website. Other documents included emails, newsletters, award entry forms, the company's database, tender notices and documents, press releases and articles as well as other external websites including partner, network and trade associations websites in order to get a comprehensive view of the SME context and software industry in Wales and the UK.

No formal interviews were conducted with the employees. Alternatively, ad hoc questions were asked by the observer throughout the course of the research, and informal discussions took place within the organisation as part of the direct and participative observation. Extensive notes were taken periodically. Direct observation also took place in numerous sales exhibitions and conferences in which the SME attended, in particular at the SMEs networking and relationship building activities and prospective consumers'

initial perceptions of the SME. Formal interviews were conducted with the SME's customers (these are described in Chapter Six).

4.3.5 Case Study B

Company B was a local software development company based in North Wales. The company was set up in 1999 and had developed to the extent of employing a total of 14 employees (including part time staff) and had developed a project management software tool. The researcher observed the organisation for three months, most of which was spent inside the organisation as a participant observer. The investigation period was short as the SME went into liquidation. During the study, all corporate documents were explored, including the website and marketing collateral, the customer and prospect database and the software product itself. The researcher was able to participate in most internal company meetings which included prospective customers and internal employees. The researcher was also able to peruse emails and memos, and observe real time conversations among departments, even between the organisation and some of its employees who worked remotely (at home) and abroad (two employees were based in Australia).

In order to get a more detailed insight into the companies internal and external business relationships, four exploratory interviews were undertaken with company employees, three of the employees were software developers and one employee was the sole sales and marketing manager One interview was also conducted with one of their two customers. Employee interviews were conducted over the telephone (by this time the company had gone into liquidation and they weren't able to meet face-to-face) whilst the other two interviews were conducted face to face. The interviews were not recorded as this was the respondents' preference but extensive notes were taken during and after the interviews, and subsequently validated by the respondents. The customer was also interviewed face to face, the interview recorded and subsequently transcribed verbatim. All interviews lasted an average of 45 minutes each and followed a semi-structured format. An interview guide focused on the marketing activities of the organisation, the state of the

customer-supplier relationships as well as internal relationships within the organisation. Due to the knowledge management nature of the product and vision of the organisation, some questions on knowledge management were included in the interview guide in order to assess the respondents' perceptions and extent of knowledge management within the organisation. (see appendix 1 and 2 for the interview guides).

XSight qualitative analysis software was employed in order to analyse both cases concurrently and to identify the common themes arising from both case studies as well as the differences in perceptions of interviewees. This software aids the inductive element of research as it allows a mapping of ideas based on findings from the interview transcripts.

4.3.6 Exploratory Survey

As part of the exploratory stage of the research, a short survey was designed and carried out in order to examine how aware the local potential customers were of Company A. It was also an opportunity to investigate the perceptions of the software development market in Wales. Another objective was to establish what factors or attributes respondents deem important when buying software, as these attributes would subsequently provide an input into conjoint analysis at the later stages of the research.

The questionnaire consisted of eight questions in total, and they were exploratory in nature (see a copy of the questionnaire in appendix 3). Data collection was carried out at The National Eisteddfod over a period of one week. The National Eisteddfod is primarily a cultural Welsh festival but attracts approximately 300-400 commercial organisations, either as visitors or exhibitors. A convenience sampling method was adopted in order to collect information from the members of the target population who were conveniently available to provide it. Convenience sampling is often used during the exploratory phase of a research project and is often the best way of getting some basic information quickly and efficiently (Sekaran, 2003). The questionnaires were administered personally through the medium of English or

Welsh, according to the respondents' preference, and they took an average time of 15 minutes each to complete. The total number of questionnaires completed was 65. Responses were compiled in a spreadsheet and the attributes cited by respondents were used, along with the in-depth interviews to inform the Conjoint Analysis.

4.4 Qualitative Depth Interviews

> "An interview is a purposeful discussion between two or more people" (Kahn and Cannell, 1957 cited in Saunders *et al.*, 2007, p.310).

In-depth interviews are an effective means of gathering rich and detailed qualitative data, and are an appropriate tool when the nature of the research is exploratory but also when explanations and descriptions of events, relationships and issues are sought. In-depth interviews follow the phenomenological research approach and can be structured, semi-structured or unstructured.

Semi-structured in-depth interviews are used in qualitative research in order to conduct exploratory discussions to reveal and understand not only the 'what' and the 'how' but also to explore the 'why'. Probing techniques can also be used during the interview to elaborate on certain topics, to look for meanings which respondents ascribe to phenomena and to uncover hidden motivations or issues (Saunders *et al.*, 2007). Depth interviews may also be used in order to understand the relationship between variables. In-depth interviews can be used to identify variables, and in this study examples included software quality, price and professionalism. These variables can subsequently be tested in quantitative research, and they were tested using conjoint analysis.

Depth interviews have a flexible characteristic which allows the researcher to adapt the nature of questioning either during the interview or between interviews, incorporating open or closed questions, or a variety of both. However a focus is still required even if the interviews are completely

unstructured and are purely exploratory. A list of topics/themes to cover, which can be readily adapted, is more common in business management research (Saunders *et al.*, 2007). Interview questions/themes may be derived from the literature, the author's experiences of a particular topic, discussion with co-workers, other researchers or a combination of these.

The interviewing method was chosen as the next stage of exploratory research in order to further investigate the dyadic relationships between Company A and their customers, and to get a more holistic view of the SME. All of Company A's customers were therefore targeted for interviews and all 16 clients were contacted. An email was initially sent, subsequently followed by a formal letter, both of which provided a summary of the research, an explanation of why the customers were being contacted, an assurance of confidentiality and a summary of what would be discussed in the interview. Semi structured interviews were conducted in order to allow respondents to discuss the issues freely but all the while retaining the research focus. Eleven interviews were conducted face-to-face (all of which took place in the customers' offices) and three were conducted over the telephone due to time limitations of the customers. The interview schedule consisted of relevant themes and certain questions which were derived from the literature (see appendix 4 for a copy of the interview schedule). A total of 14 customers took part in an interview, the respondents' organisational positions ranging from IT Manager to Managing Director. All interviews ranged from 20 minutes to 1 hour 30 minutes, the average interview being 50 minutes. Following the first five interviews and some preliminary analysis, some additional questions were added to provide focus. This adjustment is supported by Eisendhart (1989, p.539) who contended that "adjustments can be made to data collection instruments such as the addition of questions to an interview protocol as it allows the researcher to probe emergent themes".

Brief characteristics of customers is provided in table 4.2.

Table 4.2 Characteristics of Company A customers.

Customer	Industry	No of Employees	Interviews	Public/Private Sector
A	Financial Services	20	1 –Managing Director	Private
B	Chemical	560	1 –IT Manager	Private
C	Information Services	10	2 -Managing Director and Head of Systems (separately)	Not For Profit
D	Government	9000	1 - IT Manager	Public
E	Government	20000	1-ProgrammeManager	Public
F	Public Services	50	1 –IT Manager	Public
G	Agriculture	1	1 –Managing Director	Private
H	Sustainable Development	5	1 -Managing Director and Website Officer (combined)	Public
I	Utilities	15	1 -Finance Assistant	Private
J	Manufacturing	350	1 –IT Manager	Private
K	Government	3000	1 –IT Manager	Public
L	Emergency Services	1700	1 -ICT Software Engineer	Public
M	Government/ Economic Development	1000	2 -IT Manager and Project Manager (separate)	Public
N	Government	50	1 –Research and Grants Manager	Public

Subject areas covered in the interviews included the relationship between the customer and supplier, expectations of the supplier and of software suppliers in general, and attributes which were deemed important in the decision making process when making software purchases. The investigation of experiences and expectations of customers in a service context is supported by Gilmore and Carson (1996), as it can provide information about the reasons of opinions, attitudes and perceptions of customers. The attributes from the interviews, as

well as the attributes derived from the survey results were then used to inform the design of the ACA[1] survey.

A professional approach was taken during all interviews although the questioning style was mostly informal with the aim of putting respondents at ease. Open ended questioning techniques were primarily used, along with some closed questions for clarification purposes and to establish facts. The researcher attempted to limit the use of jargon in the interviews and the thought provoking and somewhat more complex questions were left until the second half of the interview. Probing and prompting techniques were also employed and included rephrasing/repeating the question, and using encouraging looks and nods of the head to make the respondent feel more comfortable. However as McGivern (2003) stated, it is important to keep a balance between encouraging the respondent to answer and putting words in their mouth. All respondents were asked whether they had any other comments to include at the end of each interview, giving them the opportunity to bring up any issues not already covered, which they deemed important and relevant.

Apart from one, all interviews were conducted with an individual respondent. A combined interview with two respondents was conducted for client H, at the request of the customer. This proved useful as the author was able to listen to different perspectives of the relationship.

Twelve out of the 14 clients had one primary contact within the firm, and it was these contacts that were interviewed. Two clients had more than one contact and varying levels of relationships thus two respondents were interviewed in each of these cases. This resulted in a total of 16 interviews. All interviews were recorded and transcribed verbatim, resulting in over 100 pages of data. Apart from one interview, all interviews were digitally recorded with the permission of respondents. The recording of interviews allowed the interviewer to concentrate on questioning and listening. Furthermore, it provided the interviewer with an accurate and unbiased record of the

[1] Adaptive Conjoint Analysis

conversation, and it allowed the interviewer to re-listen to the interview and conduct a thorough content analysis. One interviewee declined to be recorded, but with his permission, the interview was recorded by extensive note taking.

Following each interview, informal discussions were conducted with the Software Manager and the Managing Director at Company A, in order to gain insight into the supplier's view of the relationship with customers. Further insights were provided by the authors' participatory observation of the SME and extensive field notes were taken throughout the research project.

4.4.1 Analysis of In-depth Interviews

Before detailed content analysis was conducted on the interview transcripts, a summary of each interview was compiled, along with a list of key themes and issues arising from the interviews. This follows McGivern (2003)'s recommendation of:

- Organising the data: sorting out all the materials and listening again to the recordings.
- Getting to know the data: Reading through the transcripts and making notes of how things were said, tone of voice, body language, any recurring themes and comparing data from different types of respondents. McGivern states that the analyst should keep their mind open at all times to the possibility of new or alternative explanations and ideas.
- Getting to grips with what is going on: finding and recording patterns in attitudes, behaviour and opinions, patterns in how respondents express themselves and the language used to describe things, using headings of themes as general codes/headings e.g. 'expectations from software company' and listing all of the respondent's answers.
- Making links and looking for relationships: including compiling tables for summarising the reactions of different groups/types of respondents.

Content analysis is primarily a quantitative technique used to analyse the content of documents and texts in terms of pre-determined categories in a systematic, objective and replicable manner. However in terms of ethnography and in-depth interviews, there is an emphasis on allowing categories to emerge out of the data (Bryman, 2004).

The advantage of content analysis is that the coding scheme can be clearly set out so that replications and follow up studies are feasible. It is also an unobtrusive method and it can be applied to a wide variety of information (Bryman, 2004). The problems which can be encountered when conducting content analysis is the risk of overlaps in categories and the categories not being mutually exclusive. This was expected as software purchase motivations are complex. Moreover, coding inevitably involves some interpretation on the part of the coder, but one solution adopted was having an independent researcher interpret the data (Bryman, 2004). Although rigour is generally advocated in coding techniques, this is questioned by Carson and Coviello (1996) in certain qualitative research situations in a marketing/entrepreneurship context. It is argued here that following a rigid coding procedure may inhibit and suppress some of the richness of evaluation as it forces the data into restrictive categories. It was therefore decided to follow a consistent coding method, but to also analyse the data inductively to compare themes and issues arising via both approaches (Carson and Coviello, 1996).

For a detailed analysis of the interview transcriptions, content analysis was conducted using the SERVQUAL theoretical framework and the 7Ps Services Marketing Mix theoretical framework (see section 2.2.5 for a review of SERVQUAL). Saunders *et al.*, (2007) argue that the advantages of using a theoretical framework is that it links the research into the existing body of knowledge within the subject area and it provides the researcher with the opportunity to test the adequacy of the framework as a means of explaining the findings. Following the recommendations of Hill and Wright (2001), the analysis of the interview transcripts included data coding, moving from coding to interpretation, interpreting the data and generating meaning from the analysis.

For the purpose of this analysis, all 10 originally conceptualised dimensions of SERVQUAL were used to analyse the in-depth interviews, with the aim of attaining a more detailed analysis. Relevant key words and phrases from interview transcripts were coded into the 10 SERVQUAL variables. As some comments were favourable and some unfavourable, they were classified and categorised as such. As there was a certain amount of overlap, some comments were sometimes coded into the same variable. The 7Ps framework was applied to assess the customer expectations of small software suppliers. Therefore comments regarding expectations were coded into the seven relevant variables. As these variables applied to expectations only and not to past experiences and attitudes, the comments were not classified into favourable and unfavourable comments. Due to the risk of bias and to unreliability in the content analysis methodology, a second coder conducted the content analysis independently in order to increase reliability and validity. The methodology was explained to the individual to ensure that the analysis would be carried out in exactly the same manner.

As well as using a deductively-based analytical procedure, an inductive analytical approach was also taken during the course of the interviews in order to gain a more detailed analysis and to offset the risk of the deductive method not yielding sufficiently convincing answers to the research objectives. The inductive analysis included data reduction by summarising and simplifying the data collected, compiling a list of categories that represented the themes emerging from the data and illustrating the themes into models. A visual form of display was easy to generate, could be developed to fit the data specifically, and helped the researcher to develop analytical thinking (Miles and Huberman, 1994 cited in Saunders *et al.*, 2007).

4.4.2 Text Mining Analysis

To further analyse the in-depth interviews, STATISTICA text-mining software was used to scan and analyse the transcription documents. The text mining software is specifically designed as a general and open-architecture tool for mining unstructured information, and was used in this study to extract the most

common words used in the transcriptions, and to identify the importance of words cited in the interviews.

4.5 Ethnography

Ethnographic research derives from the field of anthropology and is the study of human behaviour in its natural context, involving observation of behaviour and physical setting (McDaniel and Gates, 2006). It is a natural part of major case study research in which the researcher immerses him/herself within the research setting, either as a participant/non-participant observer. It is a systematic and in-depth research method, documented by field notes, recordings and even photos. Ethnography is a purely primary research method which allows the researcher to gather data as events occur and is arguably a better method for capturing the whole event than with interviewing. However it is argued that it is best used as a supplement to other exploratory methods (Gummesson, 2003).

Direct observation of both SMEs in this research was justified by a number of reasons: to get a realistic view of operations, to understand the SME's decision making processes, and to evaluate the employees' attitudes towards management and customers. More specifically, it was valuable to observe the day-to-day behaviour of the organisations in terms of their relationships with customers, their marketing activities and the varying difficulties encountered. It was also convenient as both SMEs and markets were local and easily accessible (Gummesson, 2003).

A combination of participant observation and non-participant observation was employed throughout the case studies. Participant observation is where "the researcher attempts to participate fully in the lives and activities of the subjects and thus becomes a member of their group, organisation or community. This enables researchers to share their experiences by not merely observing what is happening but also feeling it" (Gill and Johnson, 2002, p.144 cited in Saunders *et al.*, 2007).

Saunders *et al.*, (2007) distinguish between four types of participant observer researcher roles. In relation to this study, the researcher's role was defined as 'Participant as Observer' whereby the researcher's role was revealed at the beginning of the research project and the researcher took part in company activities such as market research and attending exhibitions. Participative observation was advantageous as it gave the researcher the opportunity to view and then explain what was going on in the organisations, and the researcher could be made aware of the various processes and operations which took place daily, weekly and even monthly. The researcher could also experience the emotions of those who were being observed as they happened and virtually all data collected was useful (Saunders *et al.*, 2007). Furthermore, as the researcher was involved in hands on tasks, issues and problems were witnessed first hand, and as the employees got used to the researcher's presence they were more likely to treat the researcher as another colleague. In this respect, informative conversations could take place and questions could be asked, which were answered with minimal bias as trust had been established between the researcher and the research subjects.

The disadvantages of participant observation are that it can be very time consuming and there can exist high levels of role conflict for the researcher (e.g. 'colleague' versus researcher). Furthermore the closeness of the researcher to the situation being observed can lead to significant observer bias, but as the researcher was aware of these potential problems, measures were taken to minimise the chances of such issues. In some cases such as corporate exhibitions, data recording could be difficult and often important issues and information had to be confined to memory before they could be documented (Saunders *et al.*, 2007). Arguably the biggest risk with observation is the observer effect, which occurs when the observer's observation of behaviour changes the nature of the behaviour because the subjects are aware that they are being observed. The observer effect threatens the validity and reliability of data collected. With regards to this case study, it is believed that due to the length of time that the researcher was placed with the SME, the observer effect was minimised as trust was established, a professional approach was adopted

by both researcher and research subjects, and the data collected remained confidential throughout.

During the course of the case study, it is noteworthy that the role of the researcher changed from participant observer for the first half of the research project, to non-participant observer for the second half of the project. For the first half of the study, it had been beneficial for the researcher to be immersed as an employee, attending the company on a regular basis and carrying out marketing tasks and activities. However as the research enfolded and field work took priority, the nature of the observation changed and the researcher did not carry out as many hands on and participatory tasks for the SME. As access to the SME had been granted and a relationship with the owner-manager and the employees had been established, the researcher still attended the SME on a regular basis for updates, to converse with the research subjects and ask questions regarding marketing activities and business relationships. Extensive notes were consistently taken as well as a perusal of corporate documents, marketing collateral and news publications. However, the researcher's role in the SME had evolved from an 'employee' (participant observer) to 'observer' (non-participant observer).

4.6 Conjoint Analysis

Conjoint Analysis is a multivariate technique which ascertains consumer preferences for various products and services by examining the trade-offs consumers make during the decision making process. It is a hybrid type of multivariate technique for estimating dependence relationships. The method is unique in that it is decompositional in nature and results can be estimated aggregately and also separately for each respondent (Hair *et al.*, 2006).

There are other methods to determine attribute importance weights, the most direct being to simply ask people which attribute is important. The problem is that respondents usually indicate that all attributes are important. In conjoint analysis, the respondent is asked to make trade-off judgements (Aaker *et al.*, 2001). Therefore, assuming that products and services are made up of various

attributes, conjoint analysis seeks to establish the relative importance of each product attribute and attribute level by finding the utility that consumers attach to each attribute. It therefore provides a substantial insight into consumer preferences while maintaining a high degree of realism (Hair *et al.*, 2006).

The conjoint technique was originally developed in the fields of mathematics and psychology; the point of true origin is generally agreed to be a seminal paper by Luce and Tukey (1964). Following the work of Luce and Tukey, the first conjoint algorithm, MONANOVA, was designed by Kruskal in 1965. In the late sixties, Green and his colleagues started experimenting with the MONANOVA program and published the first marketing journal article on conjoint analysis in 1971. From that point onwards, conjoint analysis started to be more widely employed to measure consumer purchase decisions (Green and Srinivasan, 1978).

The mid 1970s was the rapid growth period for conjoint analysis, during which time a practitioner named Richard Johnson was working independently to solve a complex product problem. As he was dealing with a large number of attributes and levels, he broke the problem down into focussed trade-offs involving just two attributes at a time. He then went on to develop Adaptive Conjoint Analysis in the 1980s (Orme, 2006).

Conjoint analysis has increased in popularity over the last two decades and is entering its stage of maturity. Before 1980, it was estimated that the method was employed approximately 700 times, but during the period 1986-1991, according to a survey, there were almost 1,000 applications in Europe alone (Wittink and Cattin, 1989; Wittink *et al.*, 1994). Many commentators ascribe the increase in popularity to the availability of computer software packages (such as Adaptive and Choice-Based Conjoint Analysis by Sawtooth Software and a conjoint analysis option within SPSS[2]) which made it easier to conduct conjoint analysis (Auty, 1995; Curry, 1997; Green and Srinivasan, 1990).

[2] Statistical Software

In addition to the availability of computer programs, the method's popularity grew as more researchers were aware that the technique was a more realistic approximation of consumer purchase decisions. In traditional research, techniques which aim to establish the importance of various product attributes result in most attributes being classed as 'extremely important' due to the inability of respondents to trade-off attributes mirroring what they would do in real life situations. Conjoint Analysis is an indirect method of asking prospective customers about the relative importance of attributes and therefore avoids the problem of consumers saying one thing and doing another, thereby reflecting their actual behaviour. Moreover, conjoint analysis differs from other multivariate techniques in that it can be carried out at the individual level as well as the aggregate level, meaning that a separate model for predicting preferences can be generated for each respondent.

Over the last 30 years, conjoint analysis has been employed in various market research studies, nominally to inform management decisions on product design issues, consumer usage and sales forecasts. Conjoint analysis has primarily been employed in B2C contexts more so than B2B contexts, and although originally applied to products, there has been an increase in the use of conjoint analysis to evaluate services. The largest conjoint analysis project in terms of attributes and levels was the Marriott Courtyard project undertaken in the 1980s to design an 'optimal' hotel chain targeted to business travellers. The conjoint analysis incorporated 50 attributes and a total of 160 levels. The study was deemed a success as Marriott decided to implement almost all of the design recommendations and have since developed over 450 courtyard hotels (Green *et al.*, 2001). Another recognised conjoint analysis project was the Ez-Pass toll collection project undertaken in 1992 with over 3,000 respondents spread over two American states. Conjoint analysis has become a diverse technique used to investigate a range of product of services including studies into food groups, particularly cheese and meat (Walley *et al.*, 1999), the car and hotel industry. Other sectors which have made use of conjoint analysis studies include higher education, in order to establish students' preferences for university (Soutar and Turner, 2002) and to improve university courses (Wiklund and Wiklund, 1999). Conjoint studies have also been applied in

human resource management to aid hiring decisions and assess prospective employee traits (Moy, 2006), and a recent study was conducted to examine leadership attributes and to explore the trade-offs followers make about leaders (Soutar and Ridley, 2008). A few unorthodox applications are also apparent in the literature, such as the use of conjoint analysis in assessing ethical perceptions of sub-cultural groups in the USA (Shepherd *et al.*, 2002) and use of conjoint analysis to evaluate consumer opinions on "really new" traffic systems (Krieger *et al.*, 2003). Conjoint analysis has even been used to investigate which seminal attributes should be used in the positioning of teeth-whitening products (Arora, 2006).

4.6.1 Application of conjoint analysis in the ICT industry

This study investigates the important attributes considered by customers and prospective customers, and general attitudes when purchasing software as a service. The relationship aspect to software purchasing is hypothesised as valuable and this was confirmed in the exploratory stage of the research. The list of attributes provided by interview and survey respondents proved extensive, and as it is practically unrealistic for a supplier to be able to meet all desired attributes by customers, it is necessary to establish which attributes are top of the customer's mind when faced with realistic trade-offs among software suppliers. As conjoint analysis is a popular method for establishing a hierarchy of relevant attributes, this method was deemed the logical choice. Moreover, Adaptive Conjoint Analysis was a better method due to its ability to handle a large number of attributes and its user friendliness.

Conjoint analysis has moved from examining trade offs in purchase of physical products towards examining trade-offs in decision-making processes (Franke *et al.*, 2008). Specifically within the ICT industry, conjoint analysis has been applied in order to investigate online information privacy concerns (Horn Hann *et al.*, 2007), and to examine preferred attributes in multi-channel electronic banking (Laukkanen, 2007). These studies also investigate motivations and decision-making processes of prospective customers.

The focus of this study is RM therefore the attributes of interest are those which relate to the human side of the supplier-customer relationship such as communication, reputation and trust. A study by Naude and Buttle (2000), which also employed conjoint analysis in their investigation of relationship quality, listed 11 similar attributes; Trust, Satisfaction, Commitment, Coordination, Communication, Joint Problem Solving, Bonds, Goal Congruence, Investments, Power and Profit. These attributes were derived from the RM literature, and as the full profile conjoint method was used, respondents were initially asked to state their most important attributes. Subsequently the list was shortened to five attributes as these were found to dominate the list (Trust, Power, Integration, Mutual Understanding of Needs and Profit). The full profile conjoint analysis method was used in this study to understand how the various constructs would be traded off against each other in different relationship settings.

Mohr *et al.*, (2005) provides rationale for application of conjoint analysis in the high tech market, and support is provided for using conjoint analysis in new product development by Kang *et al.*, (2007). A recent study highlights the evolution and development of conjoint analysis, as it applied a truth-telling mechanism for conjoint applications, the study being conducted on Apple's iPod (Ding, 2007). The results showed this method to substantially improve purchase prediction compared with standard conjoint analysis. Conjoint analysis has even been previously applied to assist a high tech SME explore strategic policies concerning product offerings (Schmidt and Gary, 2002).

4.6.2 Defining Attributes and Levels

The first step in conjoint analysis is defining the attributes and attribute levels to be incorporated in the design. It is of paramount importance that the correct attributes and levels are included in the study in order to gain a correct and valid understanding of consumer decision-making. Such design issues are important because they affect the effectiveness of the stimuli, the accuracy of the results and subsequently the managerial relevance of the results (Hair *et al.*, 2006). The attributes and levels should be communicable and actionable:

- Communicable attributes: The attributes should be easily communicated to the respondents. Written descriptions are the most common method used in conjoint analysis. However pictorial descriptions can also be used as well as virtual reality and multimedia effects to describe the nature of the attributes. Written descriptions were adopted in this study as the attributes were intangible.
- Actionable attributes: The attributes and levels must be capable of being put into practice. Difficulties arose in this respect when attempting to define hard-to-specify attributes such as Software Quality, but it was an inevitable attribute with regards to software service. Ideally the attribute levels should not be defined in imprecise terms such as low, moderate or high because of the perceptual differences among individuals as to what they actually mean. However, there was no other way around defining levels of the Price attribute due to the varying costs of bespoke software solutions (Hair *et al.*, 2006).

Exploratory research methods including the in-depth interviews were invaluable for identification of pertinent product attributes and levels (Green and Srinivasan, 1978). For validation purposes, an independent software consultant carried out the same tasks as the researcher and compared attributes until concurrence was reached. It was also vital that the attributes were exhaustive and unambiguous to the respondent and as such a pilot test was beneficial for gauging reactions and any difficulties encountered with understanding the attributes and their levels.

Once attributes and attribute levels have been defined, all possible product combinations could be calculated. However even a small number of attributes and their levels would create a large number of possible product profiles, for example if there are four attributes each with four levels then there would be 256 possible product combinations. This would naturally be confusing and impossible to evaluate by an individual respondent. To overcome this problem, an orthogonal array is usually employed in order to reduce the number of product profiles to a manageable amount. The orthogonal array creates a subset

of all possible concepts based on a main effects model while still retaining statistical reliability (Green *et al.*, 2001).

The data obtained from conjoint analysis provides the part-worth of each level of each attribute, which is a numerical expression of the value consumers place on an attribute level. It represents the relative 'worth' of the attribute. A low part-worth indicates less value and a high part-worth indicates more value. The average importances or 'utility' of each attribute can thus be calculated in order to see which attribute is most important to the consumer. Assuming that an additive model is applied, the impact of each level is calculated as the difference from the overall mean ranking (Hair *et al.*, 2006).

In traditional conjoint analysis, the researcher must specify the basic model form. The most common and basic composition rule is an additive model, which assumes that individuals 'add-up' the part-worths to calculate an overall score indicating utility or preference. Thus the total utility of any defined stimulus can be calculated as the sum of the parts (Hair *et al.*, 2006). The additive model is the basic model applied in Adaptive Conjoint Analysis, which can be considered a limitation to a certain extent as it limited the researcher's choice. Both the additive and interaction model are applied in Choice-Based Conjoint Analysis. The interactive model is similar to the additive model but differs in that it allows for certain combinations of levels to be more or less than just their sum in order to portray the composition rule more realistically. However it requires a more complex choice task for the respondent (Hair *et al.*, 2006).

Another issue to be taken into account with regards to attributes and levels is factor multicollinearity, also known as interattribute correlation. This problem arises when certain levels cannot realistically be paired in all combinations. The solutions for overcoming interattribute correlations include creating superattributes or specifying prohibited pairs in the conjoint design. When creating a superattribute, the researcher takes the two attributes and creates new levels that represent realistic amounts of both attributes. A second solution is specifying which combination of levels to be eliminated thus presenting

respondents only with believable stimuli. This is known as prohibited pairs. This was relevant in this design and is the solution which was applied to minimise factor multicollinearity (Hair *et al.*, 2006).

It is necessary to consider the unique role of Price as an attribute, as it is relevant to this conjoint study. Price is an attribute which is considered in many conjoint studies as it represents a distinct component of value for many products and services, however it inevitably has a high degree of interattribute correlation with other attributes e.g. price and quality. It is argued that the researcher should not avoid the use of price but instead consider price carefully and adjust the design and interpretation as required (Hair *et al.*, 2006). The risk in conjoint analysis is that the inclusion of price as an attribute will distort outcomes as the value of Price as an attribute may be underestimated.

With regards to the number of levels, it is argued that the number of levels should be balanced across attributes as the estimated importance of the attribute tends to increase as the number of levels increase. This is known as the 'number of levels effect'. The number of levels in this study thus varied between two and four.

The next step in implementing conjoint analysis is selecting a data collection method. The two main types of data collection are 'full profile' and 'paired comparisons'. The full profile presentation method includes profiles of all attribute configurations and requires the respondent to rank the profiles according to preference. This approach is popular because of its perceived realism, however as the number of factors increase, so does the possibility of information overload (Hair *et al.*, 2006). It is argued that the maximum number of attributes for which the full profile method should be used is six (Curry, 1997; Green and Srinivasan, 1978).

The pairwise combination presentation is a comparison of two profiles, with the respondent usually rating strength of preference for one profile over the other. The profile typically does not contain all the attributes, but instead only a few attributes at a time in order to simplify the task if the number of attributes

is large (Hair *et al.*, 2006). Presentation of the product concepts should also be taken into account at the design stage, and can include paragraph descriptions, key words to summarise the products or even pictorial representations of the product concepts. Due to the nature of the attributes in this study, key words and phrases were used to present the attribute levels.

The following table (see table 4.3) presents a comparison of three conjoint methodologies, and illustrates the justification of the ACA method for this study. Its ability to handle up to 30 attributes and the ability of the rating stimuli to present subsets of attributes was particularly relevant to this study, especially as there were 12 attributes of an intangible nature.

Table 4.3 Comparison of three conjoint methodologies.

	Conjoint Methodology		
Characteristic	Traditional Conjoint	Adaptive Conjoint Analysis	Choice-Based Conjoint Analysis
Maximum No. of Attributes	9	30	6
Level of Analysis	Individual	Individual	Aggregate or Individual
Model Form	Additive	Additive	Additive and Interaction
Choice Task	Evaluation of Full-Profile stimuli one at a time	Rating stimuli containing subsets of attributes	Choice between sets of stimuli
Data collection format	Any format	Generally computer-based	Any format

Source: Hair *et al.*, (2006, p.479)

4.6.3 Choice-Based Conjoint Analysis

Choice-based conjoint analysis (CBC) is a relatively new approach to conjoint analysis. It was developed in the early 1980s and is an alternative form of conjoint task for collecting responses. The main difference is that respondents

select a single full profile stimulus from a choice set, instead of ranking or rating each stimulus separately. This is arguably a more realistic of the actual process of selecting a product from a set of competing products. Moreover, CBC provides a no-choice option which the respondent can choose if the alternative stimuli are unattractive. However, this method due to its limitations was not suitable for handling this design as it can only include a maximum of six attributes.

4.6.4 Adaptive Conjoint Analysis (ACA)

Often the research objectives create situations which are not handled as well by traditional conjoint analysis thus the use of alternative methodologies is necessary. The full profile and trade off methods tend to become more unmanageable with more than 10 attributes, yet many products and attributes have 20 or 30 attributes. In such cases, an adapted conjoint task is required to simplify the data collection effort whilst simultaneously representing consumer preferences. A relatively new approach to conjoint analysis is Adaptive Conjoint Analysis, which is a hybrid approach that was originally developed by Johnson (1987) and includes a self-explicated evaluation, the pairwise technique, and partial-profile descriptions. The uniqueness of ACA is that it 'adapts' each respondent's interview based on the answers provided during the importance ratings sections, and hence concentrates on the areas of greatest interest to the respondent. It therefore learns from the prior self explicated importances and uses this information to construct subsequent paired comparison questions. The survey design will therefore vary per respondent. The second advantage of ACA is in its ability to handle a large number of attributes (up to 30) which is a major improvement over traditional conjoint methods. The self-explicated ratings reduces the fractional factorial design size and makes the process more manageable and the stimuli are presented in a similar way to traditional conjoint analysis (Hair *et al.*, 2006; Johnson, 1987). ACA is therefore more suitable to investigate complex products which have numerous attributes and attribute levels. The method was invented to shorten the time of interviews and reduce the burden on respondents while still enabling a large number of attributes and levels to be investigated. The

adaptiveness of the method makes it an interactive data collection method and the software packages are easy to use and versatile. Although ACA's internal validity has been questioned (Agarwal and Green, 1991), ACA's predictive ability has been shown to be as effective as traditional conjoint analysis especially when dealing with a large number of attributes (Green *et al.*, 1991; Johnson, 1987).

There are four phases to the ACA survey:

1. In phase one, each respondent ranks his/her preferences for each level of each attribute in turn (some can be ranked a priory e.g. low price =best, high price=worst).
2. In phase two, the respondent is presented the best and worst levels (from the phase one rankings) for each attribute in turn. The respondent then rates the importance of each attribute on a ratings scale.
3. In phase three, the respondent receives a set of paired partial profiles. In each paired comparison the respondent indicates which of the two profiles is preferred and by how much.
4. In phase four, the respondent receives from two to nine profile descriptions that are each composed, at most, of eight attributes. The respondent rates each calibration profile on a 0-100 likelihood-of-purchase scale (Green *et al.*, 1991).

4.6.4.1 Hierarchical Bayes in ACA

ACA is recommended in the literature, mainly on the basis of its ability to cope with a larger number of attributes, and is thus suitable to investigate complex products. Further development of this technique is an inclusion of the Hierarchical Bayes algorithm to estimate individual part-worths. This recent addition to the ACA module is able to produce more accurate results, especially in terms of adequately capturing consumers' heterogeneity in empirical data (Backhaus *et al.*, 2006; Moore, 2004).

The HB algorithm works by producing betas that fit each individual's outcome reasonably well, but "borrows" information from other respondents to stabilise

the estimates. It is a robust form of analysis and it allows estimation at the individual level models, allowing marketers to more accurately target individuals (Backhaus *et al.*, 2006; Orme, 2000). HB derives from the Bayes' theorem, which is based on defining two probability values: the prior probability and the likelihood probability. By combining both probabilities, a more accurate estimation of the probability can be made (Hair *et al.*, 2006). HB supports the view that marketers should focus on profiling individuals and segments as opposed to the market average. Furthermore, the use of HB provides a more theoretically sound way of combining data from the self-explicated and paired comparisons, and HB estimation improves the reliability and predictive validity of the models (Orme, 2000). This model also allows greater flexibility (Bradlow, 2005).

Some limitations to the Bayesian estimation include the need for a large sample as it depends on the sample for the estimates of prior possibilities. Hair *et al.*, (2006) note that a 'large' sample is typically 200 or more respondents, which was satisfied by this study. Another drawback is that the HB estimation procedure requires more computing resources because it takes an iterative approach to the estimation. Analysis will therefore take hours instead of minutes using the traditional means (Hair *et al.*, 2006). This problem has been solved by development of both software and hardware resources available to researchers.

The unique advantage of conjoint analysis is its ability to represent the preferences for each individual in an objective manner (i.e. part-worth utilities). For managerial purposes, conjoint analysis can help identify customers' needs, prioritise those needs, and then translate those needs into actual strategies. The most common managerial and academic applications of conjoint analysis in conjunction with its portrayal of the consumer's preference structure include segmentation, profitability analysis and conjoint simulators (Hair *et al.*, 2006).

4.6.5 The ACA Approach

The attributes identified via qualitative methods were used as the basis of ACA. During the in-depth interviews and short surveys, all respondents were encouraged to cite attributes they considered important when deciding on software purchases. Due to the open-ended nature of the questions, a total of 23 attributes were provided from in-depth interviews and a total of 38 attributes were provided from the personally administered surveys. Both lists were compiled in the order of the frequency in which they were cited. Many of the attributes overlapped and were cited numerous times whereas some attributes were cited only once. Between the depth interviews and the surveys, the total number of attributes cited was 48. On closer examination of the attributes it became clear that many could be grouped in order to make the study more manageable e.g. ease of use and well-tested software → "quality of software", after-sales support and customer service → "service". All attributes were therefore grouped and the final number of attributes was 12. The grouping exercise was carried out with participation of a software consultant and was verified by an independent researcher with ACA experience.

Due to the number of attributes, web-based Adaptive Conjoint Analysis was employed to collate data. ACA can employ up to 30 attributes within a study and although the attributes could have arguably been grouped into more detailed variables, the length of the survey would have also increased significantly and respondent fatigue would become a significant risk. A balance was thus aimed for between the number of attributes and length of the survey. The total number of attributes was 12, each attribute consisting of between two and four levels, making the number of all possible combinations 147,456. A list of the attributes and levels is provided in table 4.4.

4.6.6 Questionnaire Design

The software package used for survey design was ACA HB by Sawtooth Software, which is one of the most widely used software packages for administering ACA in commercial product development. Following the

refinement of the attributes and their levels, they were entered into the software and the ACA interview sections were set up automatically. Sections included ratings, pair-wise and calibrations, where respondents were asked to rate individual scenarios on a 0-100 point purchase likelihood scale. Some additional interviewing questions were designed for the beginning of the survey. These questions aimed to ascertain:

- size of organisation;
- industry;
- role/job title of respondent;
- type of software bought in the organisation;
- how software purchases were made;
- type of software supplier likely to be used.

A ranking question was included at the end of the questionnaire, which asked the respondents to rank each of the 12 attributes in order of importance. This question was included to check the validity of the ACA responses. An open-ended question was also added at the end of the questionnaire, prompting the respondents to list any other attributes they deemed important when selecting a software supplier (see appendix 5 to view screenshots of the ACA survey).

4.6.7 Pilot Study

A pilot survey was personally administered to 10 respondents from the local business park in Bangor, North Wales. The respondents were mostly from the high tech industry, not for profit industry and the public sector, and the size of the organisations ranged from micro (seven employees) to large (over 250 employees). The ACA survey was administered via CAPI (Computer Aided Personal Interview) which enabled the researcher to visualise any practical difficulties encountered with the software whilst the respondents completed the survey. A pilot study was also deemed necessary to check the timings of the survey, to confirm the clarity, wording and plausibility of the questions and to receive feedback on the questions, ACA attributes and levels. The respondents' feedback can be summarised as follows:

- The feedback was generally positive and no real difficulty with using the software was reported.
- A re-wording of one question was required –'which of these software companies are you most likely to use?' instead of 'which of these software companies are you likely to use?'
- A re-definition of certain attribute levels was suggested. The first pertained to Location levels (local software company in Wales → Local software company as a software company based in Cardiff would not be considered 'local' if the customer was based in Bangor). Levels of Software Quality, Software Functionality and Understanding of Customer Requirements were also amended.
- Respondents reported that they felt slightly frustrated that the survey seemed to 'ask the same questions more than once but in a different format'. It was explained that this was the nature of the ACA method, as it attempted to narrow down and establish the customer's most important attribute when faced with realistic trade-offs. It was subsequently decided to include an explanation of the nature of the survey in the introductory e-mail.
- With regards to the ranking question, respondents encountered some difficulty with ranking 12 attributes in order of importance and it proved time consuming. The question was therefore removed for the main data survey.
- Following a discussion with each pilot respondent at the end of the survey, it was concluded that although all levels were mutually exclusive, some were difficult to define, especially Software Quality. Their opinions were asked as to how they would define software quality and feedback was also received from a software consultant and software developers. The general disposition was that quality primarily pertains to the user experience of the software and the level of software testing.

Following the respondent feedback and some feedback from industry consultants, the necessary amendments were made to the survey.

4.7 Sampling and Data Collection

Following the amendments to the survey design and the uploading of the amended survey to the web, a sample of firms were researched and compiled into a database using the following criteria:

Target Population:

- Demographics: Organisations located in Wales and North West/Cheshire, which were logical geographical locations in, and in proximity to Wales, and organisations of any size which used or were likely to purchase software applications.
- Psychographics: The aim was to gauge the various organisational attitudes towards software suppliers. Thus there was no preference as to the type of attitudes and opinions held by prospective respondents.
- Product Usage: The aim was to target organisations which had a medium to heavy use of software applications in business processes, whether it be tracking customers, managing websites, stock control, mapping etc or even using simple accounts packages and spreadsheets.
- Brand Preferences: There were no criteria for selecting respondents on the basis of their brand preferences. However a respondent with a preference to bespoke applications as opposed to off-the-shelf applications would be valuable in terms of attitudes as this type of purchase was hypothesised to more likely to require a relationship.
- Decision Process: The aim was to investigate the decision making processes of all types of organisations in terms of software purchases. Thus no discriminations were made among organisations with different decision making processes. It was essential to target a decision maker or an influencer in terms of software purchasing, and although one person per organisation was surveyed, the aim of the study was to ascertain views of organisational decision-making processes, not individual decision making.

Therefore in summary, organisations targeted had the following characteristics:

- size –any size organisation;

- sector –public or private;
- age –any;
- industry–any including government, business support/information, manufacturing, public services, business services, retail;
- location –Wales, although certain companies were located outside of Wales;
- role of respondent –decision maker such as an IT Manager, Software Manager, Procurement/Purchasing Manager.

In the process of data collection, the criteria were not strictly followed as the aim was to create a database of all types of organisations who would buy software. The database therefore included various types of organisations both within the public and private sector who had varying IT budgets and software requirements.

Public organisations surveyed included:

- education –colleges and universities;
- sector Skills Agencies;
- Regional Development Agencies;
- local councils;
- other government bodies –public services;
- within Wales –companies with Welsh/bilingual issues.

Private organisations surveyed included:

- large organisations –The Strategic Wales (Top 300) directory was used as all these organisations were presumed to have an IT manager/IT department or procurement manager/procurement department;
- not-for-profit organisations.

Sample sizes for conjoint studies generally range from about 150 to 1,200 respondents. Orme (2006) suggests 300 respondents for robust quantitative results, but for developing hypotheses about a market, suggests that between 30 and 60 respondents is enough. Curry (1997) proposed that a study with

multiple segments should have sample sizes ranging from 200 to 400, although this was in relation to consumer studies as opposed to industrial studies. The researcher decided to aim for approximately 250 ACA respondents by means of convenience and snowball sampling, on the basis that the need for a representative sample as well as a large number of suitable respondents counteracted the option of using random sampling. Furthermore, out of traditional full profile conjoint analysis, CBC and ACA, ACA is reported as being the best at reducing measurement error (Orme, 2006). The lack of previous similar surveys meant there was a lack of parameter estimates to be consulted, thus the aim was for a judicious and adequate amount of respondents as opposed to calculated.

To begin data collection, a convenience sample of 353 Welsh organisations from the database was emailed with an explanation of the research objectives and a link to the web survey. Thirty seven web surveys were completed, providing a response rate of 13% (64 emails were returned undelivered). A reminder was subsequently sent three weeks later to all email addresses, which provided an additional 10 responses. A secondary approach of purposive sampling was adopted by calling each organisation, introducing the research to the relevant decision maker and gaining their permission before sending the email. This approach resulted in additional surveys being completed at a higher response rate.

The final number of web surveys collated was 256 over a period of three months. Analysis was subsequently conducted in four stages. Firstly, the part worth utilities were calculated via Ordinary Least Squares which is the default estimation method within ACA. For further insight, the data was exported into ACA Hierarchical Bayes (HB) and part worth utilities were thus calculated via HB. Thirdly, ACA simulations were run and clustering was applied as a final stage of analysis.

4.8 ACA Simulations

Looking only at average preferences (part worth utilities) can mask important market forces caused by patterns of preference at the segment or individual level. The average responses could fail to detect important segments of the market that have unique preferences. It was therefore deemed useful to conduct market simulations based on the part-worth utilities. Simulations of market choices provide 'what-if' scenarios, which arguably present more practical knowledge to managers deciding on how to develop a product or service.

Market simulations were carried out in SMRT and constituted the third stage of the analysis, in order to discover optimal combinations of attributes and present ideal scenarios of varying software organisations. The market simulator offered five models by which to run simulations:

1. First Choice.
2. Share of Preference.[3]
3. Share of Preference with correction for similarity.
4. Purchase Likelihood.
5. Randomized First Choice.

4.8.1 First Choice

First Choice is sometimes referred to as the "Maximum Utility Rule." It assumes that the respondent chooses the product with the highest overall utility. The First Choice model requires individual-level utilities, such as those generated by ACA. It is intuitive and easy to implement, but its weakness is that the share of preference results are generally more extreme than the other simulation models.

[3] 'Share of Preference' predictions indicate relative indications of preference, and are not predictors of market share.

4.8.2 Share of Preference

The Share of Preference models (both with and without correction for similarity) use the logit rule for estimating shares, and result in "flatter" scaling of share predictions than the First Choice Model. However it can perform poorly when very similar products are placed in competitive scenarios, but with individual-level utility models such as ACA, the problem is reduced.

4.8.3 Purchase Likelihood

The Purchase-likelihood model estimates the stated purchase likelihood for products specified in the simulator, and each product is considered independently. The Purchase-Likelihood model can be used if the ACA calibration concepts have been asked (they were in this study) and used in utility estimation, in order to produce accurate predictions.

4.8.4 Randomized First Choice

The Randomized First Choice model combines the desirable elements of the Firs Choice Model and the Share of Preference models. Rather than using the part worth utilities as point estimates of preference, RFC recognizes that there is some degree of error around these points and thus adds unique random error (variation) to the part worth utilities. Each respondent is sampled many times to stabilize the share estimates. The RFC model is appropriate for all types of conjoint simulations, based on either aggregate- or individual-level utilities.

A number of different scenarios were run using the HB part-worth utilities, each scenario with various manipulated levels. Due to their associated benefits and problems, combinations of the five models were used to analyse the scenarios.

Due to certain limitations of Sawtooth SMRT software, the raw data was exported into a generic software package, STATISTICA to enable cluster analysis and chi-square analysis to be conducted on the data. This constituted

the final stage of the analysis. The text-mining element of STATISTICA was also used to analyse the survey's open question, in order to see which words were cited most often by respondents in terms of attributes expected by the software supplier.

4.9 Cluster Analysis

Cluster analysis is a multivariate technique which groups individuals or objects into clusters so that objects in the same cluster are more similar to one another than they are to objects in other clusters. Its objective is to maximise homogeneity within clusters and maximise heterogeneity between clusters (Hair *et al.*, 2006). The method was employed in this study to further analysis of the raw data, and to establish whether there were any natural taxonomies in the data. The conjoint analysis had provided a hierarchy of attributes from most important to least important, and part-worth utilities of each of the attribute levels, but it didn't classify the respondents into groups and did not indicate whether certain classes of respondents preferences' were different to others. Any indication of groups or classes which would differ according to their decision making criteria would be invaluable as SMEs could thus tailor their marketing approach to varying groups.

Cluster analysis has been used in a range of research studies, but in relation to business and marketing, it is most often used for segmentation analysis of markets. Moreover, it has previously been used in assessing customer perceptions of services (Bowen, 1990). The clustering method has also been previously used as a complementary technique to conjoint analysis (Albers-Miller, 1999; Laukkanen, 2007; Murphy *et al.*, 2004; Odekerken-Schroder *et al.*, 2003; Zampetakis and Moustakis, 2007). Common benefits associated with clustering are that it can reduce information from an entire population or sample into smaller, more manageable groups. It is also useful to generate hypotheses or to confirm or reject previously stated hypotheses. The objectives of cluster analysis are therefore to describe taxonomies in the data, simplify the data and identify relationships in the data (Hair *et al.*, 2006).

The clustering method uses distances between objects when forming the clusters. Several distance measures are available, each with specific characteristics. Euclidean distance is the most commonly recognised measure of distance, also known as the straight-line distance, and is the measure employed in this cluster analysis. Other distance measures include City-block, Chebychev and Power Distance (Hair *et al.*, 2006).

In this study the individual respondents were clustered, as opposed to objects. Many of the respondents were managers, and although clustering managers based on their software decision making processes has not been previously conducted, clustering of managers based on leadership traits and managerial characteristics has been undertaken (Koman and Wolff, 2008; Shim *et al.*, 2002). The technique which was adopted was the k-means clustering technique. This leads to a problematic issue in clustering, which is determining the number of clusters which is most representative of the data. There are almost always natural clusters occurring within sets of data, but whether these clusters are meaningful is another question (Hair *et al.*, 2006). However the k-means clustering technique allowed certain flexibility, as one could evaluate the clusters, determine their significance, and adopt a trial-and-error type approach until an optimal number of clusters was established (Hair *et al.*, 2006). In this case, the procedure was ran a number of times in order to find an optimal solution which had groups with maximum similarity, and after taking into account the ANOVA of all variables, a final cluster solution was found.

4.10 Limitations of the Research

Limitations of the research include a certain degree of subjective judgement in deciding on the optimal number of clusters, and a certain degree of subjective judgement in setting of ACA simulations. The scenarios chosen were based on the researcher's own assumptions i.e. the scenario 'SME vs large supplier' assumes that the larger supplier would not be as prepared to enter into a relationship with its customers, and perhaps would offer lower priced software.

The limitations of having Price as an attribute has been discussed in general terms, but pertinent to this study was the fact that price was not defined in numerical terms. As the levels were 'low' and 'high', it was not possible to visualise changes in other attributes importances and attribute levels based on manipulation of numerical figures.

It could be argued that perhaps some attributes were omitted, but this problem was addressed with an open-ended question at the end of the ACA survey to allow respondents to include other attributes. Furthermore, the in-depth interviews, exploratory survey and contributions from independent researchers and a software consultant meant that precautions were taken to ensure that the list of attributes were comprehensive and realistic.

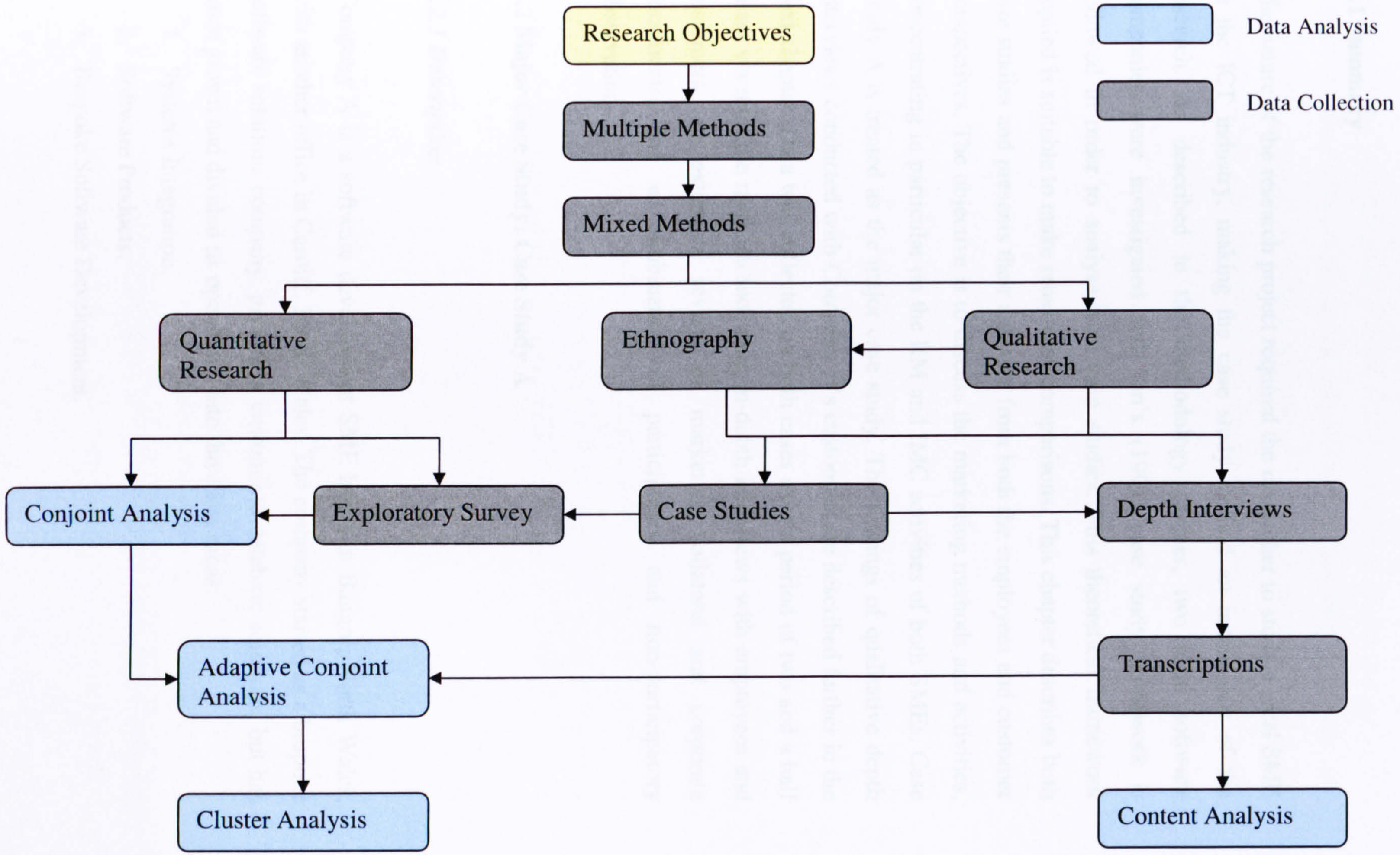
With regards to the in-depth interviews, there may be differences between interviews conducted in English and Welsh in terms of perception and understanding of the questions, which could constitute a possible limitation. However some respondents preferred to be interviewed in Welsh and were given the opportunity to be interviewed in Welsh. Moreover, the fact that interviews were conducted with all customers of a single company (Company A), means that generalisations cannot be made beyond expectations of customers of Company A i.e. their expectations of software suppliers in general are influenced by their experiences with Company A.

It was not possible to attain information on location of surveyed respondents as the question was not asked. In retrospect, it could have been useful if this information was asked as the following categories could have been formed and cross-tabulated against the clusters: Welsh in Wales, non-Welsh in Wales (nWW) and outside of Wales (oW). Therefore possible differences in expectations, particularly with regards to the bilingual and location attributes could have been identified. The research may have discovered whether Welsh organisations-in-Wales (WW) are usually concerned with language and look for closer relationship with suppliers, whilst perhaps non-Welsh organisations in Wales (nWW) require an access to bilingual software if their customers are Welsh, and companies outside Wales are probably impartial to national

Table 4.4 A list of attributes and levels used in the ACA survey

Attributes	Levels
1. Understanding of Customer Requirements	The software supplier has a comprehensive understanding of customer requirements The software supplier has a good understanding of customer requirements The software supplier has a limited understanding of customer requirements
2. Price	Low Priced Software High Priced Software
3. Relationship with supplier	Mutual and long-term relationship with the software supplier. Future purchases likely. Transactional and short-term relationship with the software supplier. One off software purchase.
4. Software Functionality	Software has useful functionality Software functionality is limited
5. Bilingual Capability	Software supplier offering bilingual software Software supplier offering English software only
6. Expertise of Employees	Software developers have extensive experience in the IT industry and recognised qualifications Software developers have extensive experience in the IT industry but no recognised qualifications Software developers have recognised qualifications but no practical experience in the IT industry Software developers have limited experience in the IT industry and no recognised qualifications
7. Trustworthiness of supplier	The customer has confidence in the supplier's reliability and integrity by means of past experiences The customer deems the supplier to be reliable and has confidence in the supplier through reccomendations and references only The customer and supplier have no past experiences and trust is yet to be established
8. Software Quality	Well-tested software providing positive user experience User friendly software but not thoroughly tested Well-tested software but difficult for users to use Un-tested software which is difficult to use
9. Professionalism of software supplier	Supplier is reliable and has high standard formal processes in place Supplier is reliable but has no formal processes in place Supplier has formal processes in place but can be unreliable Supplier can be unreliable at times and no formal processes in place
10. Location	Local software company Software company based anywhere in the UK
11. Communication	Structured communication with the software supplier Ad hoc communication with the software supplier
12. Service	Full end-to-end service offered including training and after-sales support. After sales support is included but no training provided by the software company Training is provided with the software, but no after-sales support offered. Software product delivered only. No training and no after-sales support included in the price.

Figure 4.3 Methodological Process



5.0 CASE STUDY RESEARCH AND DISCUSSION.

5.1 Summary

The nature of the research project required the researcher to study a local SME in the ICT industry, making the case study method an innate part of the research. As described in the methodology chapter, two local software companies were investigated and Yin's (1994) case study framework is followed in order to analyse both case studies. This theoretical framework applied is suitable to make cross-case comparisons. This chapter describes both case studies and presents their analyses from both the employees and customer perspectives. The objective is to discuss the marketing methods and activities, concentrating in particular on the RM and IMC activities of both SMEs. Case Study A is treated as the major case study. The findings of qualitative depth interviews conducted with Company A's customers are described further in the next chapter. Data was collected on both cases over a period of two and a half years via multiple methods including in-depth interviews with employees and customers, an extensive review of marketing collateral and corporate documents, and a combination of participatory and non-participatory observation.

5.2 Major Case Study: Case Study A

5.2.1 Description

Company A is a software development SME based in Bangor, North Wales, with another office in Cardiff, South Wales. The company started as a bespoke software solutions company, providing customised database solutions, but has since grown and divided its operations into three key areas:

1. Systems Integration.
2. Software Products.
3. Bespoke Software Development.

Company A is managed by its owner-manager and at the time the researcher observed the SME, there were eight full time employees. The company has been operating for eight years and has a customer base of approximately 20. As a result of relationship building and networking, the company have been able to establish partnerships with a number of key organisations and this has subsequently had a positive effect on business development. The SME's core competencies include language support, bilingual software solutions and web-based information databases.

5.2.2 History

Company A was founded by its owner/manager in 1999. The owner-manager has a background in software and 20 years experience in the IT industry. His vision was to set up a successful software development company in North Wales and to be part of a potentially prosperous software industry in Wales. He believed that the Welsh software industry could develop into a key sector in terms of innovation, job creation and growth, especially when considering the convenient transport links to Ireland and North West England.

The owner/manager initially worked from home, before employing two software developers and moving to an office on Anglesey. In 2000, following further growth, they moved to larger premises in Bangor.

5.2.3 Structure

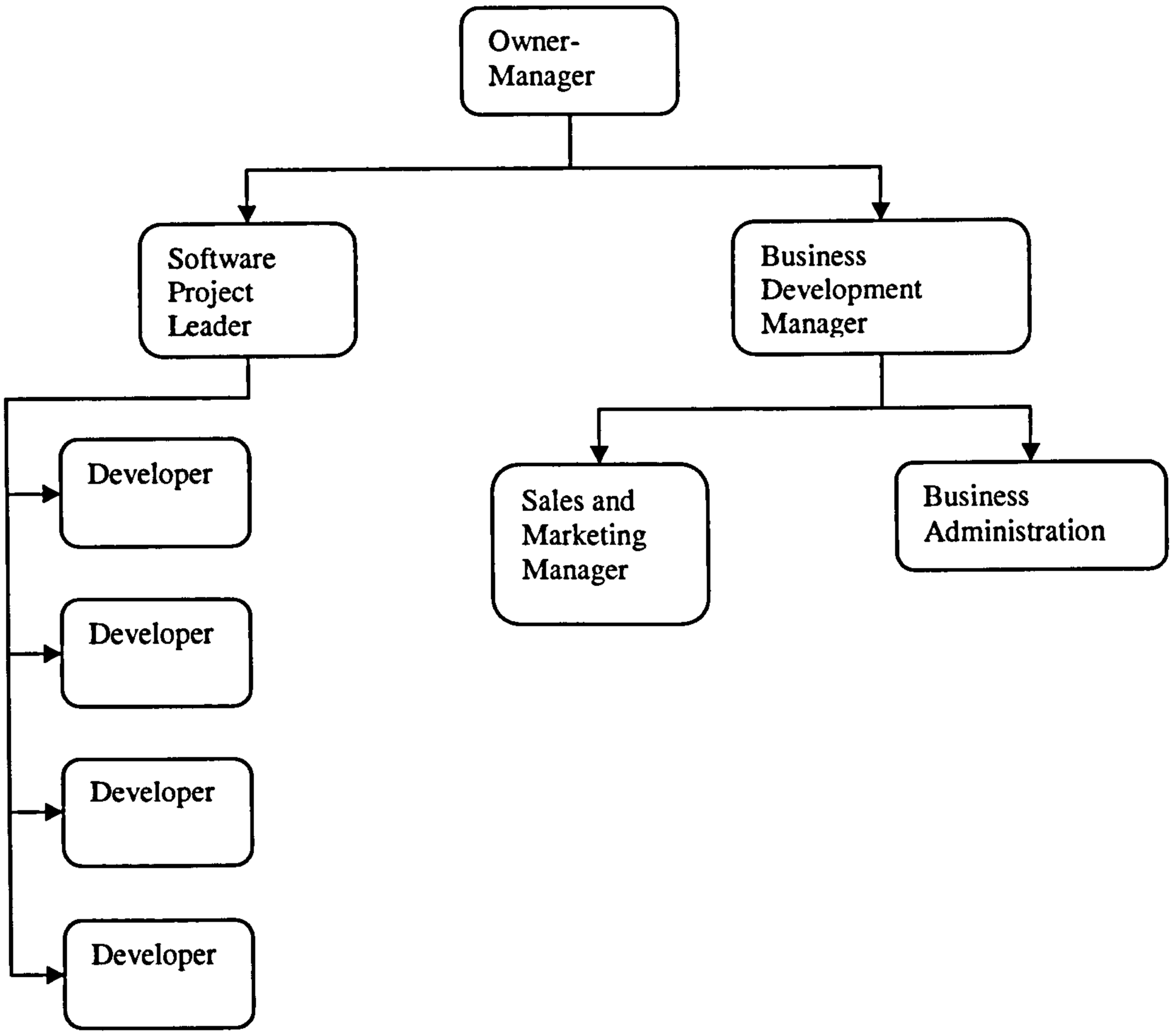
During the period of observation, the number of employees had ranged from eight to 13. As the SME increased its customer base, certain changes were made to the internal structure in order to match company resources to the workload. Initially, the owner-manager fulfilled all business development roles, but then hired a business development manager and sales and marketing manager. The organisation was divided into the software development area and business development area. Present roles within the company are illustrated in figure 5.1.

The owner/manager closely oversaw all aspects of operations, including software development. As a result of improvements in project management, customer feedback and internal collaboration, the software development team became project led and thus each project was allocated a project leader, who then managed the project by using further developers as and when required. This closely followed a project management protocol such as PRINCE2[1] as well as liaising with the customer on a regular basis.

Due to the micro size of the organisation, its organisational structure was relatively flat, where the sharing of knowledge was advocated and encouraged via regular team and departmental meetings, regular communication and the use of the intranet and shared resources to capture information, knowledge and innovative discussions.

[1] PRINCE2 (PRojects IN Controlled Environments) is a Project Management methodology

Figure 5.1 Organisational Structure of Company A March 2007.



5.2.4 Products and Services

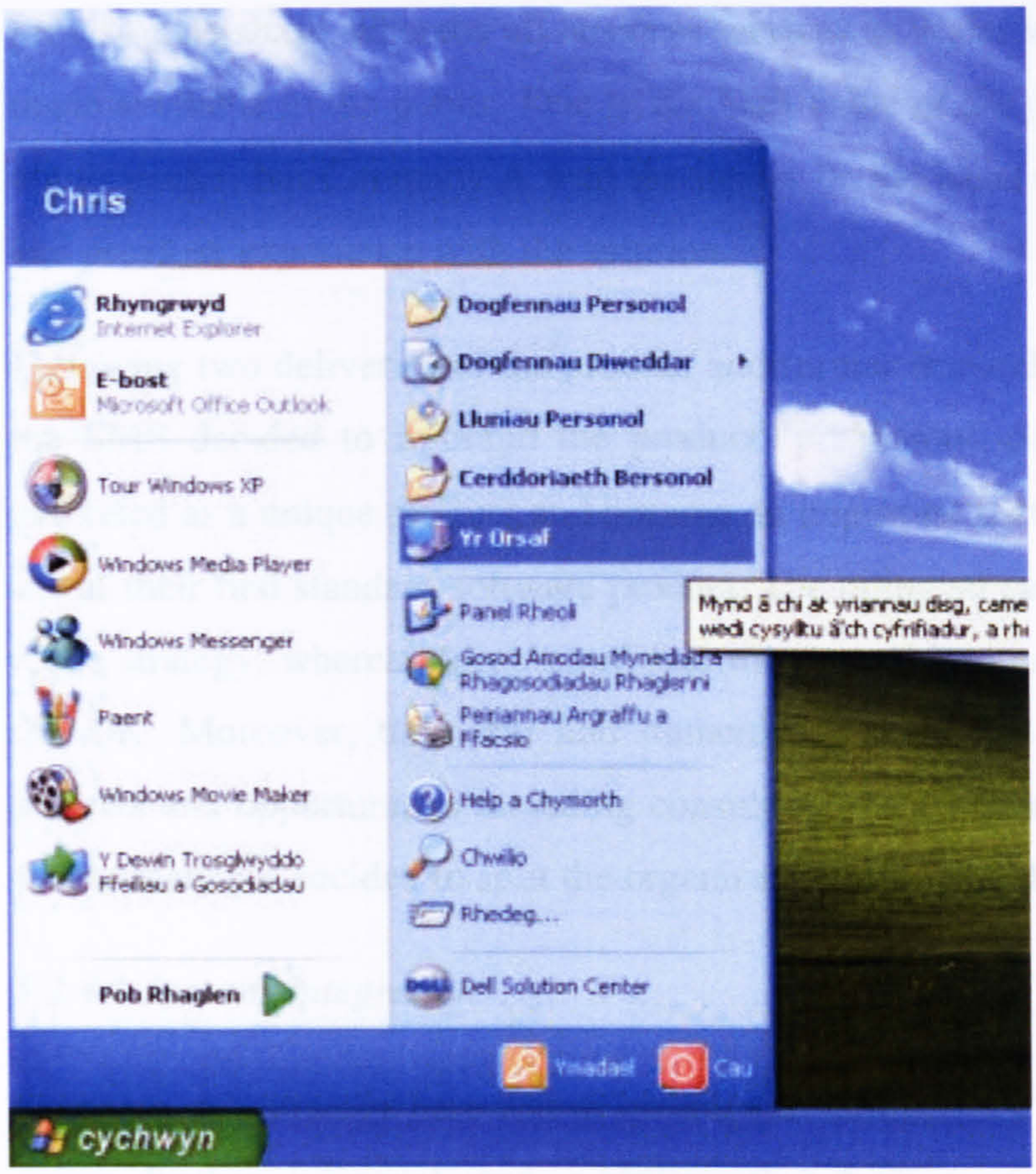
When the company was founded, the owner/manager aimed to provide high value solutions to customers based on their specific problems and software needs. The company's web-based architecture[2] provided a software base product which could be built upon depending on customer requirements. The SME therefore offered tailor made products, initially to local and regional customers in Wales which had a physical proximity to the company. A prevailing vision of the SME was to deliver all projects on time and on budget, despite the size and value of the project. This is still rare in the software

[2] A web development framework for databases

industry and is often highlighted as one of the sector's biggest problems (Keynote, 2005).

As the customer base started to expand, and following feedback from customers, networking and market research, a gap was highlighted for bilingual software solutions in the Welsh market. Furthermore, the SME found that there was a growing demand for enterprise-level web-based information directories. The company therefore decided to follow the market by working on their language/bilingual capability, and soon released a software utility that makes typing Welsh characters much easier. The application could be used by organisations and individuals alike and was offered free of charge as part of a marketing strategy to create awareness about the company and the brand name. The success of the product encouraged the SME to pursue other language/bilingual software opportunities. A key opportunity was Microsoft's localisation project, whereby Microsoft required a translation of their current desktop applications into Welsh, as part of Microsoft's route to other markets. The SME tendered for the project in collaboration with a translation company and a Welsh Language multilingual centre, and were later selected as the technology partner to localise Windows XP and Office 2003 (see figure 5.2).

Figure 5.2 Screenshot of Welsh Language interface in Windows XP



The project's success led to a partnership with Microsoft, a commission to write a bilingual software standards document, and later the production of a 'Language Control Centre', making it easier for customers to switch among their preferred language interfaces. In order to try and improve their bilingual capabilities, the SME subsequently decided to develop a bilingual add-on to Microsoft CRM[3] and Microsoft Sharepoint[4].

In parallel to the bilingual capability, and as an attempt to diversify into other markets, the SME concentrated on developing a software product in response to market requirements: a web-based information directory. They were initially commissioned by a local public sector body to develop a pilot software product containing all local individual support provisions, primarily employment, career and education related, which could be managed by the provision

[3] Microsoft's CRM (Customer Relationship Management) Business Software Solution
[4] Microsoft's intranet software

providers themselves, and easier for individuals to use. The project's success ensured that the system was to be rolled out across Wales as a business support provision database, whereby all business services in Wales would be stored and made available to the public. Due to the high value of the project, it had to go out to tender, but Company A won the tender on the basis of their capabilities and previous experience with the solution.

Following two deliveries of the product and further research and development, the SME decided to re-brand the product 'proVision'. Subsequently it was marketed as a unique product and became an important part of the company as it was their first standard software product. The bilingual capability remained a niche strategy, whereas 'proVision' had the potential to enter markets across the UK. Moreover, they still had numerous service and bespoke solutions projects and opportunities including consulting and integration. Therefore, the owner-manager decided to split the organisation into three distinct areas:

5.2.4.1 Systems Integration

Company A's strategy here was to leverage its competence in bilingualism and create further bilingual and multilingual solutions, as well as offering associated services including integration. Integration was deemed essential in terms of the bilingual CRM and bilingual SharePoint, as they were add-ons to existing Microsoft products and would thus need to be fully integrated with the original Microsoft CRM product in order for it to be operational The SME attempted to market the bilingual CRM solution to bilingual and Welsh organisations as it contained features such as language preference and address management, but they were limited to organisations who owned or wanted to purchase Microsoft CRM. Similarly, the bilingual version of SharePoint was also marketed primarily in the Welsh market but the SME believed that it had potential to be marketed as a multilingual product in other multilingual countries.

5.2.4.2 Products

The SME's first software product was proVision, the web-based information directory which provided a comprehensive range of features to enable an organisation to publish and maintain online directories. It had a number of potential applications in a variety of industries including local authorities and business gateway services.

Having a finished software product which is ready to be marketed has huge advantages for software companies, primarily as the production of additional copies of the software bears no additional costs to the supplier. Costs will only be incurred if the product needs to be modified to suit the individual customer, and the SME had retained its flexibility in this strategic area as a certain degree of customisation is almost always required for customers to get the exact software product which solves their particular business problems. Other products included Interceptor[5] and Tô Bach[6], although Tô Bach was a free product and Interceptor was still in development.

5.2.4.3 Bespoke Software Solutions and Consulting

The company started off as a bespoke software development company, which allowed them to produce tailored software solutions which matched specific customer needs. This is generally considered a costly process for software companies, and it has been in this case. However, the SME had a web-based infrastructure platform, on which custom software applications could be built upon. This was developed in order to reduce start-up project development costs thus provided a head start in the software production process. These benefits were intended to be subsequently passed on to the consumer, in the form of competitive prices for their software.

Due to the SME's bespoke software development skills, the SME attracted a number of local Welsh customers from the manufacturing, financial and

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[5] A product which can make any online application multilingual without changing any of the functionality of the underlying software.
[6] A simple utility that makes it easier to type Welsh characters on a keyboard

utilities sector; all with various software requirements. These customers remained with the SME for a number of years as they continuously strived to satisfy their software needs through software upgrades, after-sales services and other products. In the long term, it was the SME's wish to downscale the bespoke software solutions area, in order to reap the benefits of offering products. However, there were drawbacks to this strategy: it seemed that the SME's flexibility and tailoring capability was key to the retention of their existing customer base as well as attraction of new customers through word-of-mouth. Through the development of bespoke software development, the SME had expanded its technical capabilities, considered a range of sectors and their associated requirements and turned such bespoke solutions into company products. Moreover, as local customers often tended to be smaller organisations, they did not always require enterprise-level software, and if they did, would perhaps buy an off-the shelf package which would be cheaper. Company A recognised that there was always the potential for a customised software solution to be made into a mainstream software product which could then be marketed to the relevant vertical market. Therefore, for this SME to succeed, and to meet customer needs, it was believed that a customising element to the company was essential, in order to attract an initial customer base, and test the market to establish whether it could be rolled out as a major product (see appendix 6 for a more detailed description of Company A's products and services).

5.2.5 Markets and Customers

The SME had approximately 20 customers, the majority of which were located in Wales. Their first customer was a local utility supply and management company for which they developed a utility billing and customer management system. They approached this customer as they had had previous personal contacts. The SME was subsequently selected by the customer on the basis of their capability. However a number of local customers (approximately five) selected the SME as a software supplier because of their locality and due to a need to have a nearby software supplier. The remaining customers were located throughout Wales and England. The SME won these customers either through

the tendering process, via alliances with larger software players, or a combination of networking and relationship building.

Initially, the company did not have a formalised and established process of acquiring new customers, which could be due to the fact that offering of bespoke software development could be applied to any prospective customer with a software requirement. This illustrates one problem of being a bespoke software development company: lack of focus. The offering was difficult to organise and potential customers would be identified in an ad hoc manner. The owner-manager often commented that the SME was "crisis-led" or "opportunity-led", meaning that resources and business plans had to be re-organised as a result of a new company direction. However, following the launch and successful delivery of proVision to significant customers (including the Welsh Assembly Government), their process had become more structured as they were able to recognise potential markets, undertake the relevant market research and select potential customers via cold-calling. An effort was then made to create a dialogue with the prospective customer with the aim of developing a relationship.

A number of Welsh organisations had selected the SME as a supplier because of their language and bilingual technical capability. Their involvement in the Microsoft localisation project and the development of Tô Bach provided them with additional credibility in the eyes of Welsh organisations. Their expertise in developing software such as bilingual websites and content management systems was soon confirmed in terms of a growing number of customers.

Even though the SME had always thought of Wales as their primary market, their product development highlighted other opportunities and prospective markets. Following the implementation of the web-based directory for the Welsh Assembly Government, the natural target market were all similar UK institutions (Regional Development Agencies), with a view of eventually targeting European RDAs, especially when considering the SMEs multilingual capability. A second target market identified due its similarities was the UK Sector Skills Councils. Other vertical markets were subsequently identified and

targeted, as they had the potential to expand its proVision capabilities as well as spreading the risk via a broader portfolio of clients. One such target market was the local authority market. Following a successful tender for the council's adult resource directory for an English local authority, Company A implemented its proVision product. Later the SME identified a potential need for a similar directory in children's and young people's services as well as business services.

The recurring trend was the targeting of solutions towards the public sector, but despite the SME's expertise in software development and a number of reference customers and case studies, the public sector still remained a difficult market for SMEs to enter. A number of factors contributed to this difficulty, including the bureaucracy, procurement policies and numerous levels of decision makers. Furthermore was the barrier to entry presented by government buying frameworks such as Catalist[7]. Catalist eliminates the need by public sector organisations to go through the lengthy process of OJEU tendering, whilst complying with EC procurement legislation. It is a competitive procurement process to be awarded a framework agreement with Catalist.

5.2.6 Partners and Networks

It is widely reported in the literature on marketing in SMEs that partnering and networking are essential in SME business development (Gilmore *et al.*, 2006; Street and Cameron, 2007). Networking is an activity which can be carried out relatively easily by an organisation of any size, and for SMEs in particular, as the use of the owner/manager's Personal Contact Network (PCN) can provide a stepping stone for identifying further opportunities in the market. Sections 5.2.6.1 and 5.2.6.2 below illustrates the importance of partnering and networking for Company A.

[7] Office of Government Commerce's buying solutions e-catalogue

5.2.6.1 Partnering

The SME were aware of the benefits that partnering could bring and had always worked towards collaborating with key organisations in order to exploit potential opportunities. Working alongside a strategic partner had often been a vital requirement when tendering for high value software projects, as the combination of a large, credible organisation with a specialised SME can reduce the customer's perceived risk. By tendering alone for high value projects, especially within the public sector, they would rarely have moved passed the pre-qualification questionnaire (PQQ) stage without partnership with a key player.

The SME viewed its partners as strategic partners or capability partners[8], a strategic partner providing route to market opportunities, and a capability partner providing expertise and technical competencies which could aid in the SME's market offering and vice versa. The most significant partnership in SME's lifetime was their partnership with Microsoft. Preceding the localisation project they became certified partners in 1999, and a Gold partner in 2006. The partnership is awarded based on a system of points and points are awarded via a combination of staff qualifications, the fee requirement and customer references (see figure 5.3). The SME was the first bespoke software developer in Wales to achieve Microsoft Gold Partner status, and the partnership was awarded on the basis of the SME's employees' capability as they became qualified in particular Microsoft architectures and solutions. The level of research and development of their main product, proVision also contributed to their certification. Additionally, points were awarded following customer references on key projects based on the SME's language competency such as the Language Control Centre, the authorship of the software standards and the bilingual CRM. Benefits provided by Microsoft included:

- Access to technical and marketing training courses.

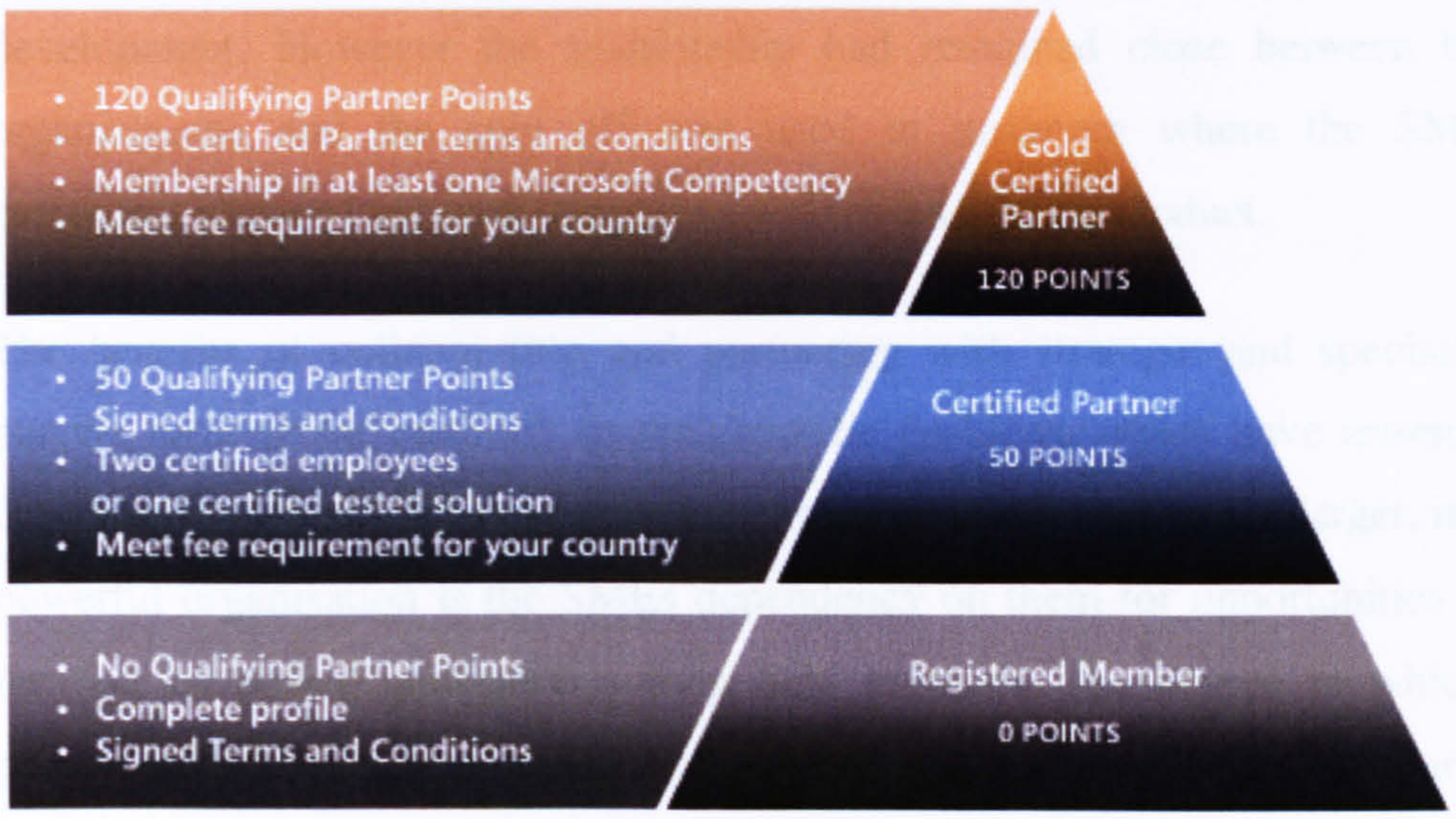
[8] Partners that contribute to the development of solutions by providing resources/services e.g. translation companies and web-designers

- Access to Microsoft developer tools, licenses, operating systems, servers, and productivity applications.

- Technical sales assistance by Microsoft pre-sales professionals.

- Access to the Microsoft Partner Marketing Centre which provided resources to help SMEs deliver customised campaigns to prospects and customers.

Figure 5.3 Microsoft Partnership Requirements.



Source:https://partner.microsoft.com/global/program/managemembership/partnerpoints

Despite the reported benefits by Microsoft, the biggest benefit it had brought to the company was the brand name's credibility and perceived security in the eyes of customers and prospects when deciding whether to use Company A as a software supplier. The access to training and qualification resources was also useful in improving staff capability and thereby increasing their motivation. However as far as specific marketing support is concerned, the SME had not reaped any significant benefits from their partner resources.

Other strategic partners include Computacenter and Hedra. Computacenter is a leading independent provider of IT infrastructure services, and Company A's partnership with them resulted in delivery of bespoke development services to several of their clients based in Wales. Hedra is one of the UK's leading

consulting companies, who the SME teamed up with to deliver a large-scale public sector software project.

The majority of the case study's capability partners were local SMEs including a local translation company, a web design company and a network management company. These SMEs were previously known to Company A, and relationships were already formed via local networking activities and personal connections. The computer network management SME was previously a part of their operations, but was spun off as a separate organisation in 2005, to enable the SME to concentrate solely on software development. However the relationship had remained close between both organisations and the spin off was used in instances where the SME's customers required network support as well as a software product.

The benefits of collaborating and partnering with strategic and specialised players have so far certainly outweighed the problems which have arisen for Company A. One of the main problems linked to partnering with a larger, more powerful organisation is the SMEs dependency on them for opportunities and the risk of power imbalance among both partners. The degree to which a partner would be taken advantage of depends on the degree to which a partner is replaceable, meaning that an SME needs to bring something of value to the partnership (Brennan *et al.*, 2007). The nature of the relationship and the person representing the partnership also needs to be taken into account. If the partnership consists of a close relationship between the SME owner/manager and one contact in the partnering organisation, this could present problems in the future. In the case of Computacenter, there was a strong relationship between the leading organisation's contact and the SME's owner-manager, which led to a number of opportunities. But the danger here is if the organisation's contact left, the SME would need to develop a brand new relationship with the new replacement contact, which would mean extra time and effort for both partners. Therefore when dealing with a key strategic partner, it is arguably wise to develop relationships with other company personnel.

5.2.6.2 Networking and Memberships

Despite limited time and resources, the SME took every opportunity to network with the aim of developing new relationships with prospective customers and other stakeholders and to keep informed about the market. It was also considered a useful means of indirect monitoring of immediate competitors. Networking took place in a variety of locations such as local and regional business exhibitions, business seminars and conferences, and business award ceremonies. Some events were open to all businesses but other networking events were exclusive to members of associations. The SME had therefore built up a number of memberships since their inception, which included:

- IAMCP (International Association of Microsoft Certified Partners);
- Institute of Welsh Affairs;
- Cymdeithas Meddalwedd Cymraeg (Welsh Software Association);
- Gwynedd Business Network;
- Welsh Electronics Forum;
- Chambers of Commerce –North and South Wales;
- Business on Anglesey.

The question is whether these memberships and networking events resulted in new business for the SME? Following discussions with the SME's owner/manager and employees, the consensus seems to be that involvement in networking and memberships did not result in direct sales, but they were useful in scanning the market environment, especially in Wales where documented market research and industry information was limited. This concurs with the literature, as it is unclear whether networked firms are more profitable (Kulmala and Rauva, 2005). The SME's owner-manager believed that networking was more likely to work indirectly as relationships were formed or strengthened as a result of network meetings. In an area such as North Wales, networking events were perceived as useful for sharing general business ideas, and finding out what others in the industry were doing but quite poor for finding prospective clients to purchase software. Networking is discussed in

further detail in section 5.7.6.2.

5.3 Marketing at Company A

This section provides an overview of marketing activities at Company A. A literature-related discussion and cross-case comparisons are presented later in the chapter.

5.3.1 Marketing and Sales Events

Since their inception, the SME have attended numerous events and exhibited in Welsh business events five times. An interesting example is The National Eisteddfod, which is a unique cultural and business exhibition in Wales where many of the key Welsh organisations exhibit and attend. Company A had decided to exhibit at this event as a result of the collaboration between them and another Welsh Language software organisation, and found that a number of public sector bodies and commercial businesses attended including influencers and key decision makers of such organisations. As the SMEs brand can be easily identified with Wales in the sense that it's a red logo with a dragon and a Welsh name, their presence at the National Eisteddfod was required. Furthermore their expertise in bilingualism and language support made them a suitable exhibitor at the event, and the fact that they had products which everyone could use gave them a wider appeal. This event proved valuable in building relationships and business was subsequently won on the basis of their exhibition at the Eisteddfod. Company A had also exhibited at the Welsh Local Government Association (WLGA) conference, and the B2B[9] Wales exhibition. These events proved useful for establishing new contacts and networking but not as successful in developing relationships as The National Eisteddfod. The downside to exhibiting at the Eisteddfod was the time and resources required as it is an eight day event. Therefore for future events, the SME are considering attending only for two or three days and using it as a relationship-building and networking activity. As well as attending and

[9] Business to Business Wales Trade Exhibition

exhibiting, the SME have successfully held events at their business premises, as part of their promotional and product launch strategy. Invitation-only seminars were considered a cheaper way of targeting selected customers and prospects (Brennan *et al.*, 2007).

5.3.2 Web Marketing

Web Marketing is an aspect of marketing which supports the development of IMC as it encourages interactivity and provides an opportunity for real-time exchange and feedback from customers on new software solutions. Company A have consistently been keen to leverage their website and have therefore researched web marketing activities such as paid placement programs, search engine optimization and use of reciprocal links with the objective of increasing their web presence. The SME joined the Google AdWords paid placement program in order to try and drive more traffic to the website. So far this activity has not proved to bring in more direct business, but a few stakeholders and prospective customers have remarked that they had found the company via the web. One idea that the SME have had is to develop a web portal for Welsh software, which would provide information on all aspects of Welsh language software. This could be of value to the wider community of stakeholders as well as supporting their leadership position by showcasing their own products. This idea supports the notion of collaboration and alliances in the industry, as all Welsh software providers would be involved.

5.3.3 Promotion and Advertising

Other marketing promotional material included quarterly newsletters, which were printed and published on the website and sent to all contacts. The SME also produced information sheets with case studies, customer references, descriptions of products and services and their capabilities. When the researcher joined the SME, they had 10 information sheets which could be sent, bilingually to prospective customers. By the end of the observation they had 30 different sheets, reflecting growth in customer and product base. Other corporate collateral included banners, posters and promotional items which

were used in exhibitions settings. All promotional collateral were uniform in style and colour, in order to emphasise the brand-name and image. Press releases were sometimes used to create awareness of the SME's achievements and events, and news articles were often published in the regional newspapers.

5.3.4 Integrated Marketing Communications at Company A

As far as IMC was practiced at the SME, there was definitely an awareness that message consistency was essential, but it was not planned in the strategic sense. The message was consistent in terms of cosmetic image and style, but it had not been planned at the outset. The SME seemed to be at the second level of the theoretical IMC model, as they focussed on gathering customer knowledge and were driven by customers and their needs (Schultz and Kitchen, 2000). Although the company had the resources to achieve stage three of the model, the data was not being used strategically to aid communications planning. There is further discussion of IMC in both case companies in section 5.7.3.

In order for the SME to be able to concentrate on the proVision software solution, management decided to split the company into three areas, one of which being the proVision area. They designed a separate brand for that software solution in an attempt to move away from the Welsh image and compete more effectively against English competitors. Arguably there were two messages here, which could be construed as confusing to the prospective customer. However being a bespoke software company, they were targeting their messages towards different needs and not limiting themselves to the Welsh marketplace. In terms of promotional tools, personal selling, direct marketing and business events were primarily used to convey their promotional message.

5.3.5 Sales/Account Management

Account management was practised at the SME, and during the observation period, it had evolved from an unplanned activity carried out haphazardly by

one person, to a more organised, team activity carried out with specific objectives. All contacts were managed through a CRM system. The CRM system allowed a large amount of customer and prospective customer information to be contained, such as corporate information, call logs, services and contact preferences, relationship type and language preference. However the system was not used to its full potential due to the SMEs lack of time and staff resources. Product quotes, sales leads and opportunities were also managed via the CRM system. It is important to note that the SME realised that each customer contact was essentially an account management activity:

> "The relationship is not functional but company-wide. The importance needs to be distributed throughout (Company A) so that value within the relationship is created and augmented via every contact with the customer" (Company A owner-manager).

This corresponds with Gummesson's notion of all employees being 'part-time marketers' (Gummesson, 1991).

5.3.6 Software Standards

As a result of market and technological uncertainty associated with the marketing of high tech products such as software, having credibility in the eyes of potential customers is critical to a company's success (Mohr *et al.*, 2005). Credibility can be gained through a variety of means including word of mouth, customer references and quality products and services but also by creating standards in the marketplace, either by being the first company to launch a product into the market, which subsequently becomes a standard product, or by setting standards which other companies have to follow and adhere to.

Iaith Pawb, the Welsh Assembly Government's strategic document for the Welsh Language required an IT strategy for the Welsh language to be drafted. This strategy was in two parts:

1. A Strategy Document which notes suggestions for advancing the Welsh Language in the field of IT.
2. A Standards Document, a technical document for the use of individuals and

institutions wishing to provide IT facilities of all types bilingually (Welsh Language Board, 2006).

Following the SME's success in the Windows localisation project, and their background in developing bilingual software solutions, they were commissioned by the Welsh Language Board to write this standards document in order to provide a common and agreed understanding of what it meant for software applications to be bilingual.

The Standards Document has now been released for public consultation across Wales. Although it has not yet been enforced, it is being recognised as a valuable resource to guide the development of bilingual software applications, it aims to encourage IT companies to develop solutions bilingually and it conveys the benefits associated with developing bilingual solutions.

5.3.7 Business Awards and Industry Certifications

Business awards and industry certifications can provide further credibility in the eyes of prospective customers. Since their inception, the SME have won two awards based on their bilingual capability, and one award for 'science and technology' company, which recognised their innovative and technical capability. The additional benefits that accompanied the winning of business awards were the relatively low cost publicity and public relations opportunities. However it primarily added to their perceived credibility in the marketplace.

Industry certifications refer to certifications by larger, credible partners as well as generic certification such as the ISO[10] and Investors in People[11] standards. Standards which specifically apply to the software industry are both ISO9001 and the Capability Maturity Model (CMM), which is a process-focussed quality standard, although research indicates that the state of quality-management practices in the software industry is generally weak, especially in

[10] International Organisation for Standardisation. ISO 9000 is the internationally recognised standard for an organisation's internal Quality Management.
[11] Investors in People is a standard which recognises that organisations use different means to achieve success through their people

SMEs (McAdam and Fulton, 2002). It is expected that the actual quality of the product and service provided directly affect the level of customer satisfaction, and subsequently the level of customer loyalty. The question is whether an ISO certification can improve relationships to a larger extent than word of mouth, or targeted marketing communications? Arguably it can improve a prospective buyer's perception in the early stages of a relationship, by providing the additional credibility and guarantee of quality which buyers need (McAdam and Fulton, 2002). Company A aim to become ISO certified, but have so far been hindered by resource and cost limitations. Other standards that Company A have worked within included e-government standards and guidelines, and W3C Accessibility standards[12].

5.3.8 Competition

In terms of products and services, and a niche market focus, the SME perceived itself as having no direct competitors in the market. It was apparent that there were no other companies offering exactly the same product and expertise. In Company A's immediate competitive environment, there were other software companies who developed bespoke software and database systems for enterprise level customers, although they tended to market themselves primarily as web designers with software development capabilities. Nevertheless these firms were competing for the same tenders and contracts as Company A so they had to be considered as direct competitors. The SME's niche market and Welsh competency was unique in the sense that no other company could compete on the bilingual capability and expertise (bilingual SharePoint, bilingual CRM), but whether this type of capability is enough to create a Unique Selling Point that warrants success in the marketplace is a question which this study attempts to answer.

In terms of the bilingual CRM, the core system was provided by Microsoft, and tendering for contracts was conducted via partnership with Microsoft and another larger player. In the proVision market, where there were similar,

[12] the practice of making websites usable by people of all abilities and disabilities.

generic and mainstream products, the SME were faced with intense competition, and had struggled to display a unique selling proposition. The price here seemed to play an important role as well as the quality of the software product. However, when the SME won a contract with an English local authority, it seemed that proVision was in fact a strong contender in the market:

> "We won this (contract) in an open field, competing against all the other directory solution providers i.e. it was the strength and capability of the product alone that won the opportunity" (Company A owner-manager).

Interestingly, relationship building did not account for their success in this case:

> "(the local authority) had never heard of us before, they're not in Wales and we didn't do any warming up or relationship building activities" (Company A owner-manager).

5.4 Exploratory Research

As described in the methodology chapter, the exploratory stage of the research consisted of a short survey distributed at the National Eisteddfod in Wales, and qualitative depth interviews with the SME's customers, which were subsequently analysed using a Services Marketing framework. This section reports the findings of the short survey, whilst the findings of the interviews with Company B's employees and customer are described in section 5.5.4.

5.4.1 Eisteddfod Survey Findings

An exploratory survey was distributed amongst commercial visitors and exhibitors at The National Eisteddfod in Wales, in order to gauge the awareness of Company A in the Welsh marketplace, to ascertain prospective customers' expectations of software customers in Wales and to identify the important factors and attributes considered by customers when buying software. The responses were collected on their exhibition stand as well as other organisations' exhibition stands. Sixty five responses were collected and

subsequently analysed.

Out of all respondents surveyed, 63% had heard of the company prior to their attendance at the Eisteddfod. When asked what understanding they had of what Company A did, 22% said they had little or no understanding, and 17% had a fair understanding. These respondents were aware that they were an organisation in the Welsh ICT sector and that they had developed Welsh Windows and the software utility 'Tô Bach'. Sixty one per cent of respondents had a good understanding of Company A and stipulated that they were a software development company who produced bilingual software and bespoke software solutions. It can thus be argued that the SME had so far been successful in getting their message and offering across in the Welsh marketplace.

One question sought to identify how respondents had heard of the company, and the results are illustrated in table 5.1:

Table 5.1 Sources of awareness of Company A

How Respondents had heard of Case A	**%**
Word of Mouth	29
Advertising	22
Press	5
Business Network/Conference	15
Current Relationship	12
Internet	7
Other	10

The final four questions were designed as open-ended questions in order to identify perceptions of the Welsh software industry and expectations of software suppliers. When asked about the respondents' thoughts regarding Company A's image, 'Professional' was cited mostly, followed by 'Very Good', 'Welsh' and 'Good Branding'. The SME was also seen to be supporting

the Welsh language and the development of Welsh/bilingual software, but it was commented more than once that they needed a heightened awareness and increased publicity in the marketplace (see table 5.2).

Table 5.2 Perceptions of Company A and its brand in the Welsh marketplace.

Thoughts Regarding Company A's Image	No of Responses
Professional	7
Very Good Image	5
Welsh	4
Don't Know	4
Good Branding	4
Need more publicity/awareness	4
Supporting the Welsh Language and the development of Welsh Software	4
Effective Colours	3
Bilingual	3
High Profile company	3
Effective	3
Positive	3
Attractive	3
OK	2
Modern	2
Red	2
Cutting Edge	2

The majority perceived the Welsh software industry as a growing and developing industry, but a smaller number of respondents had contrasting views as they perceived the industry to be 'weak'. Further responses expressed the need for improvement in the area of standards and innovation, more players to stimulate competition thus additional support from the National Assembly especially for SMEs. The software industry in Wales was perceived to be characterised by SMEs, but lacked publicity and awareness; some respondents had not heard of any software companies in Wales. Overall however, the responses were positive as respondents believed the sector to be promising with huge potential providing that software companies were given the correct support and listened to the marketplace requirements. Unsurprisingly in this

research setting, the supporting and promoting of the Welsh language in terms of developing Welsh or bilingual software solutions was deemed important.

It was expected that Welsh software companies create awareness in the marketplace either by advertising or collaborating with other local organisations as well as Welsh universities. Further expectations included bringing economic benefits into the area including job creation and supplying local companies. Specific company expectations were for software companies to be innovative and competitive "as well as any other software company in England", to provide quality software products, to be professional and to provide a responsive customer service.

One open-ended question was included to identify important factors considered in the purchase of business software, in order to inform the ACA survey design. The most important attribute cited by the respondents was the software application's ease of use, followed by the after sales support and the product's fitness for purpose. A high quality software product was also cited as well as price, the availability of Welsh utilities, software scalability, a helpdesk and software training. Interestingly, a relationship with the software supplier was only mentioned by two respondents as an important factor in the decision making process. It could be contended that the majority of respondents were merely thinking about the software product itself as opposed to the whole service provided by the supplier, although many respondents highlighted the importance of service elements. It was thus deemed appropriate to investigate the issue further by conducting in-depth interviews with Company A's customers, in order to establish whether in fact the relationship aspect is an important attribute in the customer's decision making process and whether relationship sub-attributes such as reputation, communication and trust play a vital part in the consumer's mind.

5.5 Minor Case Study: Case Study B

5.5.1 History and Description of Company B

Company B was a small software development company located in Bangor, North Wales. The company was founded in 2000 by two partners and grew to 14 full and part time staff: two owner-managers, nine software developers, one office manager, one sales and marketing manager and one systems administrator. The company was set up by two partners who shared a vision of developing an innovative project management software tool, based on new technologies, following best practice project management methodology. The target market would thus include organisations which had to follow stringent project management methodologies.

The company was initially financed by the owner-managers' capital and a major focus was placed on the company's research and development function to develop the project management software. The company therefore received regular funding in the form of grants. Consequently, there seemed to be an increased reliance on this type of funding as opposed to revenues collected from product sales.

Since its inception, the SME had only this one software product on offer; the project management tool used to manage and control projects. It was based on the popular PRINCE2 project management methodology and intended to be marketed as the first non-paper based PRINCE2 system. The company's vision was to offer an easier way of applying project management best practise especially pertinent to large scale enterprise projects. The SME wanted to market the product to large organisations, whose projects are often delayed and risk losing money due to project management problems. The software application was inherently a knowledge management tool due to its collaboration capabilities and role based approach (all rights and responsibilities within a project were allocated to roles as opposed to individuals thereby limiting knowledge redundancy). This was considered innovative as knowledge management is currently developing as a concept and

management discipline, and is increasingly being recognised for its importance in organisations (Beijerse, 2000; Chase, 1997; Dale, 2005). In order to leverage their product, the project management tool became the default tool from which the SME organised its own projects internally. The daily use of the software allowed the users to spot issues and difficulties early, which could be amended and improved accordingly. The software tool allowed the storing and sharing of information in a central repository, it allowed project managers to run meetings in real time as well as encouraging collaboration via instant messaging and notifications.

The company had two clients throughout its lifespan, namely a local council and a large pharmaceutical trials company. The latter's relationship with the company was developed via an initiative by the regional development agency. The local council became a client through some relatively ad hoc meetings based on a requirement for a project management tool.

5.5.2 Observation

The researcher observed Company B for three months. Some observation was participatory, but most was of a non-participatory nature. Non-participatory observation included listening to internal conversations, sitting in on sales and marketing meetings, asking questions to staff and management and an extensive review of all corporate documents and marketing collateral. Five in-depth interviews were also conducted; one with a customer and others with the SME's employees.

Due to the nature of the research problem, the main interest was in the SME's relationships with its customers and other stakeholders, as well as the broad marketing function of the company. In order to get a rounded view of the SME and its activities, other aspects of the organisation were researched, including level of planning: general and specific, internal workings of the company and the external support provided.

5.5.3 Analysis using McKinsey 7S Model

An internal analysis of Company B was conducted using McKinsey's 7S model, which is a framework incorporating three hard elements which are easily identified (Strategy, Structure and Systems), and four soft elements, which are tacit elements embedded within the organisation and are often difficult to describe.

5.5.3.1 Strategy

Company B did not have a formal strategy or a written business plan. They managed to arrange meetings with prospective customers, which were usually positive, and a positive review was written by an independent and highly respected project management journal. Despite efforts to move in the right direction, there were many issues associated with the SME and the product itself. The fact that they had only one product to sell was a weakness in itself as this limited their potential customer base. However the bigger issues related to the fact that the product itself was permanently unfinished despite the large amount of resources devoted to R&D. One of the main issues was the technology adopted to develop the software. The product was based on non-standard, unproven technology which posed great problems when trying to sell to large, enterprise customers. Most prospective customers were found to have a strong aversion to the risks presented by untested technologies as the potential costs of project failure is huge. Therefore these product issues caused problems when trying to attract new customers.

The software product was not developed from market research and established user requirements but instead, it was built upon management's vision of best practise. This created problems demonstrating the product to prospective clients as well as difficulties for the existing customer as the product had many features which the customer did not want. Moreover, there was no flexibility by management to customise the product in any way, which further limited the potential market.

Another opportunity available to the SME was the customisation of the product in order to meet specific customer requirements. There was also an opportunity to develop a lighter, simpler version of the product, which may have been an attractive offering to smaller customers. Again, market research would have provided answers to such speculations, but this was not feasible due to limited resources and lack of long term planning.

Despite its lack of planning and ineffective processes, the SME was able to leverage all available external support, not only funding but advice, support and consulting from local government agencies. However, marketing support in particular was not sought, even though none of the partners had background experience and knowledge in marketing. The company did employ a sales and marketing manager, who was in charge of researching and gathering prospective leads for the company, but scarce resources and lack of a finished product further limited his role.

With regards to other marketing activities, there was no formal process of attracting and prospecting new customers. Instead, the two directors and sales and marketing manager would sometimes attend local networking events and collect business cards. The sales manager rarely contacted prospects via telephone and when he did, it was in an unprepared and ad hoc manner. There was neither a set process for any marketing activity or a marketing plan to be followed. The background of major decision makers i.e. partners (engineering and finance) further hampered the marketing function of Company B.

5.5.3.2 Structure

The organisation was characterised by a relatively flat structure with flexible roles with all employees performing different tasks and collaborating according to specific needs. The software developers operated in an open plan environment and some of the employees worked from abroad.

The fact that the software product itself was being used internally was an opportunity in itself to showcase its innovativeness and capability to potential

customers. However due to technical issues, the product was not utilised to its full potential. Its effectiveness as an internal knowledge management tool was impaired by lack of user friendliness as it was difficult to access the information once it had been entered into the system.

5.5.3.3 Systems

Company B's systems revolved around the main software project: the project management tool based on PRINCE2. The SME used their own product to manage their software projects and to organise their workload, however the system was sometimes difficult for the non-technical employees to use. In terms of procedures used to manage the organisation, there was no formal performance measurement or reward system in place and only basic planning and budgeting systems existed, which were required to satisfy the bank or aid in the completion of grant applications. Moreover, there was no database to collect, store and maintain prospective customers and other stakeholders' information.

5.5.3.4 Style/Culture

Company B's culture was one over-dominated by innovation and R&D. This focus on ever-improving the product without taking it into the market led to internal problems as well as problems with external customers. With regards to existing business relationships, it was apparent from the offset that relationships were strained and problematic. It appeared that managers weren't able to focus on customer requirements but constantly suggested ways of improvement beyond the customer knowledge comfort zone. Although the concept of innovating for the customer is encouraged in the literature (Lagrosen, 2005), it is suggested that customers often do not know what they want in terms of technology. It thus seems that communication and listening to the customer are the key success factor Company B was lacking. The SME was often reluctant to listen and communicate with customers. Instead, they attempted to pressurise the customer into adopting a different feature or technology. The SME was extremely innovative and new ideas were constantly

being thought generated, but evidently too quickly for the customers, who merely wanted the software product they were initially promised.

5.5.3.5 Staff and Skills

One of the SME's strengths was the technical capability and intellectual capital of its software development employees. They had a broad range of ICT skills including software consulting and web design. These opportunities were presented by the employees themselves as a means of diversification and additional service offerings, but were discarded by the directors who wanted to concentrate solely on the main software product.

5.5.3.6 Shared Values

Company B's management and employees shared a strong commitment to innovativeness, and this was apparent during the success of externally funded projects such as SMART[13] . However, there was a fundamental conflict among the two directors, who had different values and visions for the company. This resulted in inconsistency and later a failure in leadership which subsequently ensured that the individuals lost their motivation and were not able to collaborate as a team. Following the breakdown in internal relationships, problems with existing customer and the failure in attracting new customers, the company went into liquidation in 2005.

5.5.4 Exploratory Qualitative Depth Interviews

In order to get a detailed insight into Company B's reasons for failure, and to further the 7S analysis, five exploratory depth interviews were conducted: one with an existing client (face to face in-depth interview), three interviews with software developers (two telephone interviews and one face to face) and one interview with the sales and marketing manager (face to face). The interviews focussed on the information flow within the company and with customers, the

[13] SMART grants are innovation, research and development grants funded by the government

relationship with customers, internal issues and marketing activities of the company. An initial analysis of the interviews identified specific similarities and differences among respondents' opinions on the topics raised.

5.5.4.1 Similarities

- All interviewees explained that the information flow was predominantly from managers to developers and consisted mainly of a list of customer requirements. The information was stored within the system and organised as projects. However the weaknesses of the product prevented the employees from accessing that information. One respondent said:

  "It wasn't easy to find information in the system although we knew it was there...We didn't have the knowledge to know where to go to find that knowledge" (Company B employee).

- All respondents mentioned that only management talked to customers and a need was identified for software developers to contribute to these meetings in order to identify customer's software requirements. There was a general consensus that regular communication was needed with customers at all levels of the company. This was identified as a solution by all software developers as a result of the problems encountered. One respondent noted that one client initially didn't know exactly what they wanted, but as the developers' only source of customer requirements came through management, the client's true requirements were not captured. One respondent said "During the project, (one partner) would have flashes of brilliance, and even if some were good ideas, they weren't consulted with the customer". (Company B employee).

- All respondents concurred that customer relationships were weak especially due to the lack of on-time delivery of software and the failure to meet deadlines. Top management followed their own judgement without taking into consideration feedback from customer and

employees. This approach led to decreased collaboration within the team: there was no brainstorming, no sharing of knowledge, and no encouragement of new ideas. One employee said "Because we couldn't discuss things, we developed substandard products that were rarely used...No single application was ever finished and taken to the market, no sales were made and no new customers were found" (Company B employee).

- All respondents said that there was no proactiveness with regards to marketing. There was a general consensus that the sales material and website were too technically worded. The product was difficult to define and therefore difficult to sell. One director wanted to develop a lighter version of the project management tool, which may have been easier to market in terms of description and pricing, and could be targeted towards smaller, mainly private sector companies. However the second director disagreed as he feared that it did not embrace the knowledge management vision.

- All respondents cited that no feedback was collected from clients. This goes hand in hand with the lack of marketing efforts including a lack of market research and lack of knowledge on how to satisfy consumers.

- All interviews were in agreement that no formal registration of complaints and suggestions from customers was introduced by the company. It is important to note here that many SME's of this size often do not have a formal registration of customer complaints and instead deal with complaints as and when they arise. However there was an area within the system where users could request changes. One respondent said:

"There were areas within the system where clients were able to raise an issue/RFC, the theory being that the project leader would evaluate and solve the issue...But issues were ignored –in one instance, a client had 150 issues stacked up but ignored...The company seemed to regard

complaints as irritations rather than useful feedback for improvement". (Company B employee).

- All respondents felt that there was no strategy for finding new customers and existing customers seemed to have become customers by "chance".

- All respondents discussed the volatile relationship of both directors. It was evident (from the interviews and the researcher's observation) that they rarely agreed on anything and didn't get along. According to one employee "(one partner) even disagreed on principle if the other partner wanted to make changes. (One partner) specifically told the developers not to talk to (other partner) re changes to software system changes". Their poor relationship affected the client relations as there were often two sets of conversations going on with decision makers. This type of poor communication led to confusion regarding client requirements, and ultimately created frustration for the customer.

- Suggestions proposed from the development team to improve the flow of information included better communications, weekly meetings, follow ups and better management of the software development team. Additionally, a closer relationship between the sales and marketing department with the software development department was identified as essential.

- All respondents had made their feelings known to management at some point but they perceived that the owner/managers generally didn't take their ideas aboard. If the ideas were taken aboard, no action plan followed to address and resolve issues, and therefore no subsequent changes were seen.

- All interviews made the point that the culture of the company had a greater focus on research and development and not enough focus on the commercial side.

5.5.4.2 Differences

- Working for free. This was identified as a major issue by one respondent. Both partners often agreed to do some work for a client but as they didn't have sufficient software knowledge and didn't know exactly what was involved, they would soon realise after talking to the software development team that it would take more time and resources than anticipated. This is another interesting angle as it shows that the company was terrified of losing the client and were desperate to keep the client happy even at a loss.

- Incompatible technology. From a marketing perspective, the technology used was non-standard as opposed to proven technology from Oracle or Microsoft. The importance of standards in high tech marketing is emphasised in the literature (Mohr *et al.*, 2005).

- Quality assurance. Problems with the lack of quality assurance procedures such as software testing were also mentioned. According to one of the employees the software team may have been spending more of their time on fixing existing problems with the software than on actual software development.

- Lost market knowledge. The sales and marketing manager's departure caused loss of information and market knowledge. Effort and resources had to be dedicated to re-collecting sales leads, revamping the website and company marketing material.

- Customer view: Company B's level of commitment and vision was its strength as was its capability of coming up with novel solutions. It was the delivery and "failure to come to close on the project" which was the primary problematic issue. By contrast, most of the employees interviewed said that one of the main problems was a lack of vision and no clear objectives set by management. The client recognised that the employees were very technically competent and "loved to solve the

problem even if it wasn't the right problem to solve...they worked hard not smart".

- The interviews showed that the frequency of contacts on a technical basis (issues relating to the operation of the software product) were as often as three or four times a day. Most of the time the company were always available on a technical basis and this was important to the client. Business development/sales contacts weren't required as often. As the contacts from the client were mainly technical decision makers, they perhaps felt that there was no need to form a significant relationship with the business development team.

5.6 Cross Case Comparisons

Following Yin's proposed methodology, and to analyse both cases in depth, a list of common themes are identified and cross case comparisons are made. Both employee and customer perspectives are highlighted in the analysis. A model of factors contributing to SME failure, and a model of factors contributing to SME success are then presented using input from both case studies.

5.6.1 Communication

Communication was a major recurring theme throughout both internally and externally. As is illustrated in the next section, Company A's communication with its customers was generally open, honest and frequent. Company A's owner-manager made a consistent effort to communicate with all customers via email, direct mail and telephone as well as face-to-face meetings especially at the beginning of the relationship. Depending on the stage of the buying process, the frequency of communications varied, thus if software requirements were being drawn to facilitate the SME's development of a bespoke solution, there would be multiple meetings with the customer. These meetings were necessary to listen and comprehend customer needs and objectives, to learn

about the customer's business and to come up with a match between customer need and Company A's offering. When the solution had been successfully delivered, communication was still deemed important. Even if Company A did not have a support and maintenance agreement, the owner-manager would still pick up the phone to re-assure customers. This was an inherent part of their relationship management activities as it was an opportunity to gather further customer knowledge, to gauge for further selling opportunities and to retain customer satisfaction (Gronroos, 2007).

As for Company B, communications with customers were also frequent, but not as seamless or healthy. Customers normally had to contact the company with issues and complaints as Company B would often modify the product without consulting the customer and they were often late on delivery of the solution. There was also issues regarding testing of the software, which required frequent interactions between both parties.

The communication issues of Company B were pertinent to the internal organisation as well as with external customers. There was clearly a lack of information sharing within the organisation:

> "The idea was that all data would be contained in a central repository and would overcome the need for communications to a certain extent. But this didn't work in practice as important information was never shared" (Company B Employee).

The direct implication of this was the lack of collaboration among employees, as they often didn't know what others in the team were doing:

> "there was very little collaboration between the team as a whole...all team members had separate modules. We didn't work as a team" (Company B Employee).

The system itself was a potential knowledge management system, which could be used to store and share information and knowledge. However, it is argued in the literature on knowledge management, that IT systems and tools are not sufficient in order to reap the benefits of Knowledge Management (Despres,

1999; Kautz, 2001; McCann and Buckner, 2004). Furthermore, the literature concurs that a knowledge management vision should emanate from management (McCann and Buckner, 2004; Wong and Aspinall, 2005). Although the knowledge management vision existed in Company B, it seemed to be system-related as opposed to encouraging interpersonal communication, teamwork and collaboration:

> "Share information...Management needs to deliver a consistent message... More use of email, personal interactions, be proactive...Not too much reliance on the system." (Company B Employee).

Improvement areas required by employees of Company B were related to internal communication i.e. staff meetings and collaborative discussions, and more importantly a consistent message from both managers.

Conversely, internal communication among the employees at Company A was generally strong. Daily meetings were held by both parts of the business: business development and software development, as well as a weekly company-wide meeting. Therefore all employees were informed of company activities. Moreover, brainstorming and idea generation was encouraged at meetings, resulting in a culture of openness and sharing of knowledge. IT tools such as the intranet and CRM were used to facilitate such internal communication. Unlike Company B, Company A's employees actively communicated with customers. Some customers developed relationships with software developers, when technical issues needed to be discussed. Occasionally, internal communication was hampered: by turf wars and internal politics: for instance when a software development manager was employed, some information started to be kept from the owner-manager, and the software development side of the business became separated from the company as a whole, which was against the owner-manager's vision. Internal Marketing and internal communications is discussed further in section 5.7.4.

5.6.2 Management Styles

The management styles of the leaders of both cases differed quite significantly. The differences arose from the fact that Company A had one owner-manager, and Company B was a partnership and thus had two owner-managers. Company A's owner-manager had a fairly democratic and hands-on style, but due to the nature of the organisation and the low number of employees, it was inevitable that all major decisions would be taken by him or at least consulted with him, which is typical in SMEs management practice (Carson *et al.*, 1995). It is fair to say that apart from the actual software development, and certain administration duties, the owner-manager took responsibility for managing the business. His tasks therefore included telemarketing, attending customer meetings, writing tenders and proposals, networking, drawing up business plans and long-term strategies as well as managing the SMEs employees. He constantly visualised company growth, along with the hiring of departmental managers, and longed to hand over much responsibility to such roles. He consistently asked for employees' and consultants' advice and opinions, and always considered them when making decisions. Company A's owner manager was also highly motivated, ambitious and driven, with an ethical and just style with regards to the treatment of his employees. He demanded hard work and commitment in exchange for rewards including competitive salaries, benefits, training and opportunities for personal and career development. As for Company A's employees, they clearly respected and admired their owner manager:

> "(The owner-manager) is a 'hands on' manager who is keen to pass on his extensive knowledge and experience to the team. Though he does not suffer fools, he is approachable, a good motivator, and a great sounding-board for ideas." (Company A employee).

It is evident from the researchers' observation of Company B, and the interviews conducted, that there were some serious concerns with both partners of the SME, which consequently affected the effectiveness of their management styles. Their daily operational management style was quite laissez-faire, as they encouraged innovation and new ideas, but it was without adequate process and planning. It soon became clear that both partners did not

share the same values, and had different visions for the organisation. One partner had a technical and engineering background, and thrived in new product development, whilst the other partner, with a background in business and finance, realised that products had to be finished and marketed. Instead of both set of backgrounds complementing each other, they clashed and often attempted to gain power over one another by using and manipulating the employees and customers:

> "There was constant infighting, internal conflict which led to one director having one set of contacts/relationships and the other having another set of contacts/relationships. There were two different sets of conversations with clients which led to internal conflict then conflict with the client...no constructive communication between both directors" (Company B Employee).

Linked to the communication theme was the fact that one of the managers often refused to listen to staff ideas, unless they concurred with his ideas:

> "It was hard to get things happening unless it was (the manager)'s idea" (Company B Employee).

> "Problems between (both managers) affected client relationships" (Company B Employee).

As no interview was conducted with either of the directors, it is difficult to get to the root of the problem. However it is clear that there was a clash of personalities and internal power struggles among both directors within the company. As a result, the employees became demotivated. They were frustrated by the lack of leadership, especially as there was a large, multi-skilled and capable software development team with potential to produce a range of products. As the employees were never focussed, without a plan of action and lacking management support, no products were completed and delivered.

5.6.3 Delivery

One of Company A's promises to prospective customers was timely and effective delivery of the software solution. On their home web page their tag-line is:

> "We pride ourselves on our ability and proven track record in delivering 100% of projects on time and within budget" (Source: www.draig.co.uk).

In view of the problems regarding project overruns and failures within the software industry, this is an attractive assurance, and a promise which Company A has consistently aimed to keep. For most customers, delivery has been on time and on budget. However for one key customer, initial delivery of the solution failed, and this was an instance the owner-manager himself called a "disaster". The failure to deliver was due to internal problems and not enough information sharing among the company. Following these problems, Company A's owner-manager decided to restructure the company, which resulted in a general feeling of fresh start based on fixing remaining issues for existing clients, learning from mistakes and creating a new business. This example is referred to in order to contrast with Company B, whereby mistakes were made but nothing learned. In the face of crisis, Company A's owner-manager re-evaluated the company. He considered their strengths and weaknesses and ultimately brought the company to previous form, namely satisfying and delivering according to customer requests. Moreover, employees at Company A were encouraged to raise concerns early and to work closely with customers. As for the customer, they were prepared to work through the issues with Company A as the relationship was considered to be important to both players in terms of technical and future development. The bespoke solution developed by Company A was considered key to the customer's strategy and as both companies had had successful dealings and experiences in the past, there was commitment from both parties to work together to resolve the issues. Similar complications in relationships were also observed, but Company A's strength was its determination to resolve issues for the customer's benefit.

Consequently, Company A did deliver every work order successfully and as a result have not lost a single customer.

The primary reason why sales and marketing at Company B never really got off the ground was due to a lack of finished product ready to take into the market:

> "No single application was ever finished and taken to the market, no sales, no customers" (Company B Employee).

Company B did not once deliver a product effectively and timely to a customer, resulting in a damaging reputation. This problem further hindered their quest for attracting new customers, as there was no case study/reference from past customers. Prospective customers soon learnt that no software product had previously been delivered successfully, despite the fact that the company had been operating for five years. Thus a high risk was associated with dealing with the company, and in a highly competitive arena, it was easy for prospective customers to be approached by a more reputable counterpart.

5.6.4 Market Research and Planning

As is advocated in numerous marketing texts and articles, conducting market research and formulating a marketing plan in SMEs is vital in gathering customer needs, wants and attitudes, and matching company resources to these needs (Carson and Cromie, 1990).

Company A's owner-manager was very keen to formulate a plan, in order to set objectives, list tasks, and to consider budget and resources required to accomplish objectives. Moreover, he wanted to be able to compare objectives with achievements, to have a historical record to refer to, and to make consistent improvements. Company A had two business plans, a short-term plan and a long-term plan. The short-term plan was much more detailed and contained lists of tasks with employees' names and dates by which they should be achieved. The long-term plan was more flexible, and contained long-term objectives which the company aspired to, such as to increase the number of

employees and increase customer base, to innovate new products and extend their service operations. As for specific departmental planning, there was a business development plan and a software development plan. The business development plan was split into areas including partnering, market research, tendering process, account management, events and public sector activities. All areas were then assigned to a member of staff with tasks, duties and ideas. This proved quite an effective way of organising and managing work, following work schedules and achieving deadlines. When it came to holding or attending a conference or an exhibition, an event-specific plan was drawn up, making the organisation of such events a success. As the National Eisteddfod was attended more than once, the plan was adapted annually depending on location and event objectives. Company A was also able to visualise opportunities for improvement and learn from past mistakes.

When the researcher asked to see a marketing or a business plan at Company B, it never materialised. They had formulated plans to attract funding and also to deal with the bank, but these were mainly financial as opposed to strategic, which is why they may have been reluctant to disclose them. They realised that it was important and aimed to formulate a business plan but claimed that product development took priority due to lack of a business or marketing manager.

Market research was generally weak in both cases, largely due to limited resources. In Company A, the owner-manager collated market information via networking, talking to customers and other stakeholders and attending events. The information was often used to aid decision making, but rarely carried out in a systematic manner and not recorded in CRM. Some research was conducted on competitors and prospective customers, and stored in the intranet. Similarly, Company B did not carry out systematic research of prospective customers but targeted large public sector organisations, and collated information through contacts and networks. They didn't believe that they had any direct competitors in Wales, but realised that they were in fact in competition with the likes of Microsoft, which also offered project management software as an off-the shelf package. Unlike Company A,

Company B did not have a database with prospective customers and contacts. As a result, each partner and the sales manager had their own list of contacts. Company B's general sales and marketing activities were fairly limited and ad hoc. They seemed to aim at very expensive marketing activities, such as advertising in quality Project Management magazines and attending exhibitions abroad. In 2004, Company B attended a project management exhibition in Australia, but failed to follow up on leads that were generated. There was minimal local marketing apart from ad hoc telesales to some of the larger public sector organisations and attending some local networking events. Furthermore, as tendering is a requirement for a chance to win high value contracts, the SME would fail at the pre-qualification stage because of their lack of financial stability.

Company B's promotional material consisted of an organisational leaflet and a website. The problem with the content was that it described the company's vision and methodologies as opposed to a software product offering being a solution to business problems. The benefits to purchasing the product were not clear. Moreover, the marketing collateral was fairly unattractive and contained technical jargon to describe the software:

> "There were some sales literature but it was written from a technical standpoint therefore not effective to present to customers...There was no exciting sales collateral –the product wasn't inviting to purchase" (Company B Employee).

The lack of focused promotional material meant that no integration was achieved in the SME's communications. Although they strived to satisfy its customers, building long-term relationships with customers was not a priority. The SME had two customers from its inception and strived to retain them for their own survival instead of mutual benefits. The interview with the customer showed that the SME had some innovative ideas but couldn't deliver to the customer's satisfaction:

> "(Company B) had some neat development concepts much earlier than other software houses. Very innovative. Good development concepts of rapid software evolution...The tools of development used could have

been a massive competitive advantage for them *if* converted into delivery" (Company B Customer).

As a result, both customers dissolved their relationships with the SME. Even when the loss of a customer was inevitable and could be foreseen, there was no action plan for attracting new customers, which contributed to the SME's liquidation.

Overall, Company A made a considerable effort to market its products and services, and developed a foundation for such activities through their detailed planning. Marketing was conducted mainly through developing relationships with customers and their activities within networks including political networks. Other tools used included web marketing, direct marketing, local and national events and trade exhibitions, telemarketing and use of local press. Some marketing activities were more successful than others. Their success in business awards aided in attracting new customers as well as providing press coverage, contributing to greater awareness of the SME and a stronger brand image. However, web marketing had yet to deliver direct sales, although the initial e-marketing objectives were to raise awareness and stimulate interest in the company. The SME's owner-manager was open to trying out new marketing methods and activities to see what worked best. Illustrated in the next chapter are Company A's promotional efforts from the customer's perspective.

5.6.5 Customer Orientation

The degree of customer orientation in both cases was an interesting theme, and one which was studied closely as the RM theme featured strongly in both case studies.

Company A demonstrated a high degree of customer orientation, and as is illustrated in the next chapter, customers have been generally satisfied with the service received. From the outset of any developing relationship, Company A recognised the importance of customer orientation, listening to customer needs

and tailoring solutions and services to customer requirements. They also believed that a balance was necessary between the level of innovation and customer needs, and that a comprehensive understanding of their customer's business was vital in developing an optimal software solution for their needs. Similarly, they welcomed customer feedback on prototype software products. Customers often commented that the users considered the software to be difficult to use, and other suggestions were made regarding branding and design, therefore Company A made the necessary amendments to satisfy customers and user requests.

As for Company B, their focus was not first and foremost on the consumer, but on creating its own visualised innovative software solution. No market research was undertaken to establish whether there was a demand in the market for such a product, and if there was demand, further research and testing was not done to identify the features demanded by customers. Nevertheless the product was sold to two customers, but when it came to tailoring and adapting the software to the consumer's particular needs, the SME resorted to amending the product the way it wanted to as opposed to the way the customer wanted it adapting:

> "(The SME) listened to our needs but went outside the scope, exploring further in the way of improvements, ideas, innovation" (Company B Customer).

> "We have never been in a situation where we were completely satisfied with the product and service. The level of satisfaction varied. Not coming to closure on version two of the project was disappointing and frustrating on everyone's behalf" (Company B Customer).

These quotes illustrate that Company B did not listen to the customer, and didn't strive to understand their business and their business needs. Their focus was merely on the product itself, innovation and re-developing the product. They believed that this is what a customer would want: the most innovative product on the market, but they failed to realise that customers ultimately want a product that would solve a problem, and a product that would ease their business processes. To certain customers, this solution may not necessarily represent the most advanced product on the market.

As for other aspects of customer orientation, including customer service, Company A appeared to make a consistent effort. They were happy to travel to meet a prospective customer, to conduct research beforehand, and prepare diligently for meetings and presentations. Their owner-manager would normally lead these preparations, in order that each member of the team knew exactly what they were doing. In contrast, Company B's customer service was not planned and managed. They were eager to please the customer, but many requests for change were left unresolved, much to the customer's annoyance.

5.6.6 Culture

Company A's organisational culture was one of hard work and ambition, where employees were dedicated to getting the job done. In exchange, they were duly rewarded. The owner-manager encouraged his employees to share information and ideas and make suggestions for improvement in order to stimulate growth and job satisfaction. Company A was consistently aware of the competition, especially by larger players, and so aimed to deliver products and services competently and professionally. They were very aware that developing a large and satisfied customer base would probably lead to higher turnover and consequent increased growth.

Company A also had a culture of teamwork, whereby everyone was 'in it together'. The owner-manager often stressed that Company A would only grow as a result of everyone's team efforts, and so made an effort of telling all employees how key their role in the organisation was.

The lack of customer orientation in Company B can be ascribed to the intrinsic research culture of the organisation. The culture ensured that ideas, innovation and R&D took priority over customer needs. This was apparent to employees and customers alike:

> "they weren't a commercial business" (Company B Employee).

> "(the customer) felt that interesting ideas were being followed as opposed to the project deadline...Research culture of (the SME)" (Company B Customer).

The undertaking of product research was positive in the sense that the SME acquired extensive funding to develop ideas and create innovative products. However the SME became reliant on funding as opposed to product sales. Company B developed into a company which didn't know how to function without external financial assistance.

At the beginning, the employees felt excited to be part of Company B's company as the owners' vision and software product ideas were innovative. They believed that, if marketed and taken to prospective customers in the correct manner, the software product would be a success. As it became apparent that the product was not going to be easily sold, as well as the internal negative issues escalated within the company, employees became demotivated and worried for their positions in the company. Although it was interesting to follow up on innovative ideas and break new grounds, it was obvious that the company would fail unless sales were made to keep the SME afloat.

Table 5.3 illustrates the common themes identified within both case studies.

Table 5.3 A Summary of Cross Case Comparisons

Case Study Themes	Company A	Company B
Communication	Strong and consistent – internally and externally. Open and frequent. Essential for understanding of customer needs	Frequent, but of a negative nature –complaints. Lack of information sharing internally.
Management Style	Hands-on style, part of the team, ambitious.	Power struggles among management Encouraged and supported innovation
Delivery	Effective, but also a learning process	Unsuccessful delivery due to lack of finished product
Market Research and Planning	Business plans formulated. Ad hoc market research	No business planning and weak market research
Customer Orientation	A high degree of customer orientation, tailoring solutions to customers and welcoming feedback	Product first, customer second Lack of customer satisfaction
Culture	A balance between R&D and commercialism.	A predominant research culture

In order to summarise the case study analysis, two models are presented, one illustrating the primary reasons why Company B went into liquidation, and the other illustrating factors which contribute to SME success based on Company A. Both are shown in figures 5.4 and 5.5.

Figure 5.4 A model of factors contributing to Company B failure

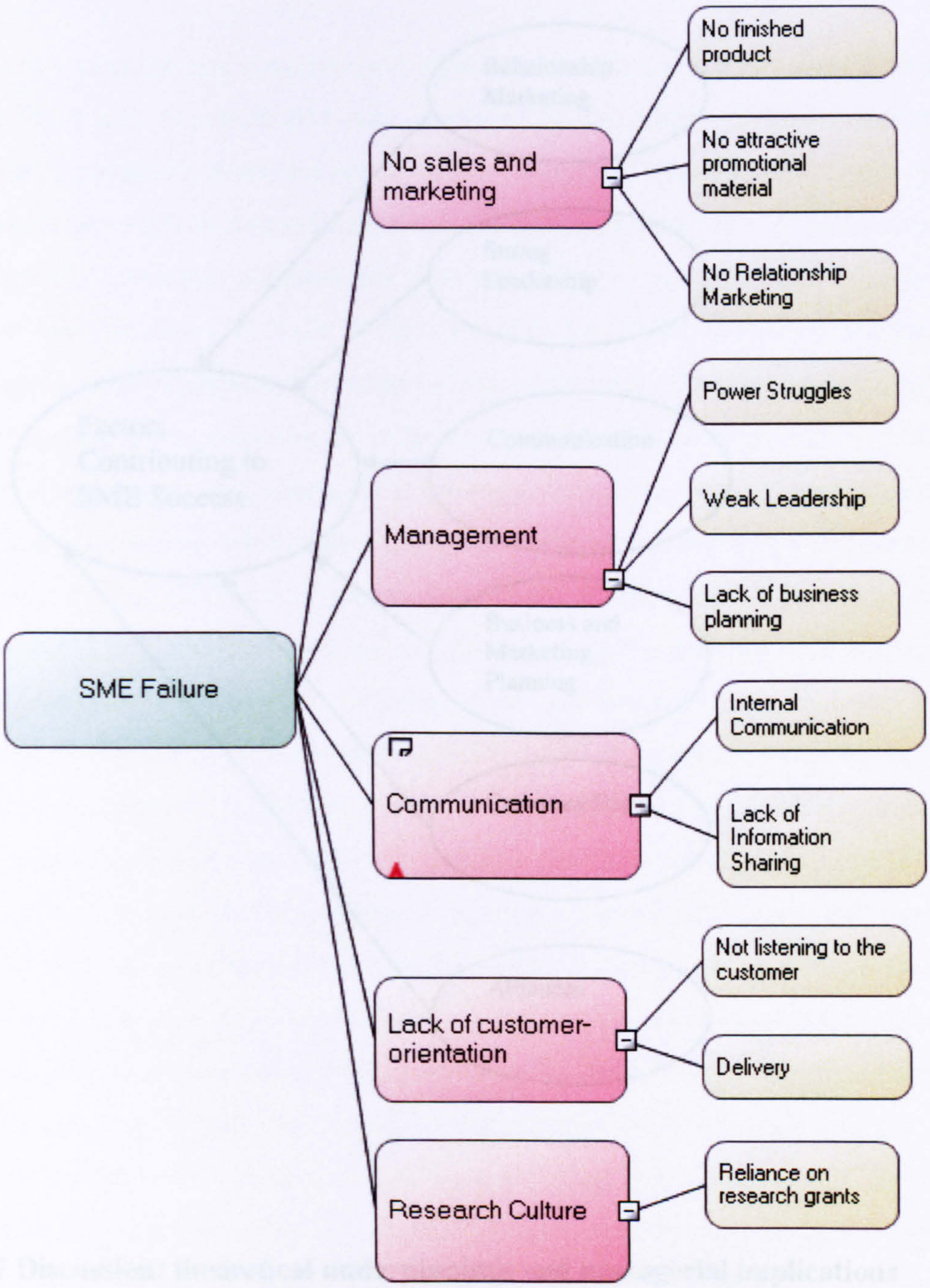
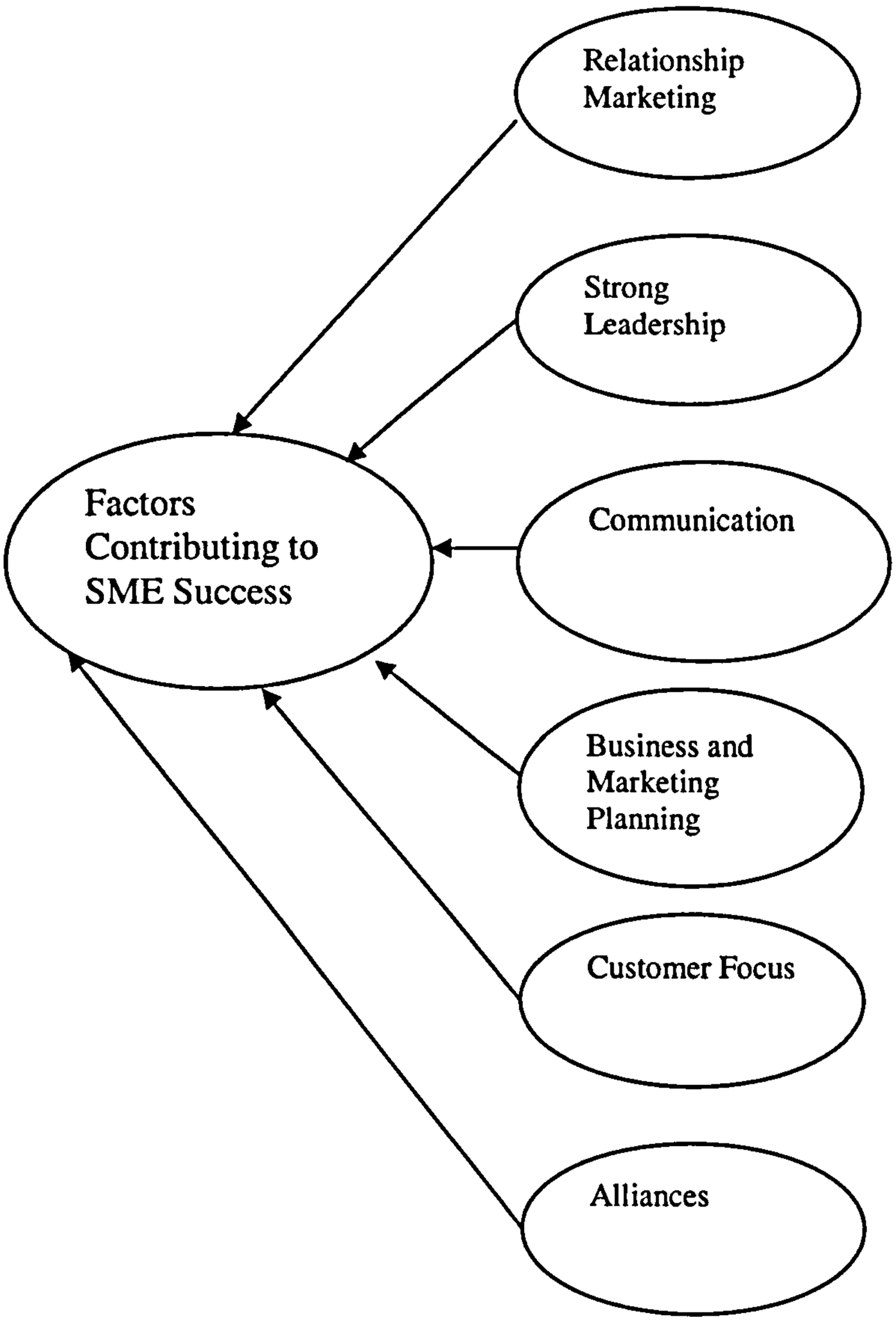


Figure 5.5 Factors Contributing to SME success



5.7 Discussion: theoretical underpinnings and managerial implications

5.7.1 Overview

The case study research findings identified from ethnography, discussions with employees and documents have so far been presented, and cross case comparisons discussed The findings are now discussed in relation to the relevant literature including RM, IMC, networking and alliances, marketing in SMEs and the marketing of software.

5.7.2 Relationship Marketing: Supplier Perspective

RM is one of the key concepts investigated in this research study, thus finding out the extent to which RM was employed in the SMEs was an important research objective. From the outset of the researcher's placing with the major case, Company A, it was evident that developing relationships with prospective customers and other stakeholders was one of the owner manager's focuses. This was necessary in light of the fact that the SME customises software solutions, thus Company A recognised the importance of initiating a dialogue with prospective customers, in order to understand their needs and business problems. Overall, pursuing an RM approach seemed to win and impress their customers, the growing customer base being proof of this. Conversely, Company B's failure to develop and retain relationships with customers evidently contributed to their downfall. Following the delivery of a software solution from Company A, the owner-manager remained keen to retain the customer and therefore made consistent efforts to maintain the relationship, by offering after-sales support and technical assistance. Even if these elements were not required by the customer, Company A were proactive in keeping in touch with the customer, by calling or emailing to check that everything was in order with the system and to gauge for opportunities which could potentially further the relationship. Company A's positive attitude towards Relationship Marketing and its associated efforts to develop relationships concurs with an extensive part of the RM literature, in particular the six markets model, as relationships were developed with partners, suppliers and members of the public sector (Christopher *et al.*, 1991; Gronroos, 1994; Gummesson, 1997; Sheth and Parvatiyar, 2002). Furthermore, Company A's eagerness to pursue an RM strategy supports Christy, Oliver and Penn (1996)'s theory that complex and tailored products and services have high relationship potential. However, there were instances which actually showed that following an RM approach was not always in their best interest. They often attempted to initiate relationships with key stakeholders and prospective customers, attempting to understand their software needs. As a result of favourable feedback, Company A developed alliances with larger IT companies in order to compete for software projects. However as tendering was required for high value projects,

when it came down to selecting software suppliers, price was often a key decider. Therefore the winning of contracts in these instances did not rely on the SME's RM. In one instance where Company A succeeded in winning a contract to develop software for an English county council, they did so without an RM strategy. The contract was won purely on the basis of Company A's technical capability and price of the software solution. These findings suggest that an RM strategy is not always the main success factor (Fournier *et al.*, 2001; O'Malley and Prothero, 2004). In terms of Company B, their weak financial position meant that they could not attempt to tender for software projects, as their application would be rejected at the first stage. Thus developing relationships was arguably their best strategy for gaining small projects perhaps with local customers. However there was little evidence that they made any efforts in this respect.

5.7.2.1 Customer Relationship Management

A CRM system was installed at Company A, and was intended for use as part of its account management. However, the problems identified within the literature corresponded with issues that arose in the case study. These issues included not using the CRM system to its full extent (data mining, customer lifetime value), the difficulty of measuring its success, and although Company A had a comprehensive understanding of the system's technical capabilities, there was a lack of company-wide understanding of CRM and its Relationship Marketing objectives (Nguyen *et al.*, 2007; Ryals and Knox, 2001; Wangstitstaporn and Jones, 2006). The CRM Value Chain cited by Buttle (2006) seemed to have no real practical value for Company A. Although the SME demonstrated that they had the supporting elements including leadership and culture, data, IT and people, they did not obviously follow the five stages, but were still able to retain its customers. Company B did not have a CRM system.

5.7.3 Integrated Marketing Communications

The second concept explored in relation to the case studies was IMC. The aim was to establish the extent to which IMC was understood and applied within the SMEs. In contrast to RM and CRM, which were both recognised and understood as concepts and marketing approaches within the SMEs, the term IMC was a new concept to both Company A and Company B. Neither SME actively pursued an IMC strategy, but Company A did attempt to integrate their communications in terms of consistent branding and sending unified messages via press releases, marketing information and website content. Company A believed that sending consistent and clear communications to the target audience would result in better understanding of their organisation by prospective customers, and a reduction in confusion as people are bombarded by numerous promotional messages. This concurs with the benefits highlighted in the IMC literature (see e.g. Smith and Taylor, 2004). Moreover, Company A endeavoured to create and sustain a frequent dialogue with its customers and stakeholders, which is cited as an underpinning of IMC (McGrath, 2005). It is contended in the literature that IMC can provide an organisation with a competitive advantage (Duncan, 2002; Schultz *et al.*, 1994), but this was not identified in either case. This may be perhaps as IMC is more of a complementary tool to RM in SMEs, and benefits can only be achieved when pursuing both approaches. Furthermore, Company A were evidently placed in the second stage of Kitchen *et al.*, (2004)'s IMC model. Therefore although they have achieved the tactical coordination of marketing communications, actively gather information on customers via market research and evaluate feedback from existing customers, the model argues that organisations are required to reach stage four of the model: financial and strategic integration, in order to achieve true integration and reap its associated competitive advantage. In Company A, there was no clear focus on IMC, and there was certainly no attempt to achieve financial and strategic integration. There is limited literature on IMC in SMEs, but as SMEs have limited resources and tend to conduct their own marketing instead of hiring agencies, the model proposed by Kitchen *et al.*, (2004) might not be relevant and is lacking in concrete guidance for smaller companies. Company B did not follow an IMC approach at all, and had

not even reached the first stage of Kitchen *et al*'s model: their limited marketing collateral was inconsistent, unclear and contained technical jargon. However, the lack of IMC in Company B cannot solely be attributed to the organisation's failure, as it simultaneously cannot be concluded that Company A's IMC efforts can be attributed to its success.

5.7.4 Internal Marketing

As this section focuses on how marketing functions in the investigated cases, the internal marketing can not be omitted, especially in the context of Marketing of Services.

Although the term 'internal marketing' was never used either in Company A or Company B, elements of internal marketing activities within Company A were identified, such as training, management support and IT support. Company A's owner-manager was keen for all employees to liaise with customers where necessary in order to improve their customer service and improve the customer's experience, which is consistent with Gummesson's notion of 'part-time marketers' (1991). Company A's employees were encouraged to share ideas formally via meetings as well as informally, and an intranet system was employed to facilitate such internal communications. There was an active encouragement of employees, and empowering and enabling employees was a serious concern of the owner-manager, as he endeavoured to retain highly skilled software developers. This concurs with Gronroos (2007)'s prerequisites to internal marketing. Interestingly, the geographical location of the SME itself may have been an additional motivator for the owner-manager to attract and retain capable employees, as historically it is not an area known for abundance of skills and human capital.

Conversely, Company B's owner-managers did not allow employees to talk to customers, and there was minimal sharing of ideas and knowledge. It is contended in the literature that SMEs are less likely to be political than large firms (Brouthers *et al.*, 1998), but it was evident at Company B that there was a

certain level of coalition building, information manipulation and agenda control, which ultimately affected the employees.

Teamwork, particularly cross-functional teams is advocated in the literature as a basis for internal marketing (Gronroos, 2007). As was described in chapter five, Company A's organisation had a business development team and a software development team, therefore the teams were not cross-functional, but all employees communicated in organisation-wide meetings as well as informally, particularly regarding external customer relationships. In a paper on 'Relationship Marketing Teams' (Helfert and Vith, 1999), the issue of social competence is raised, which was particularly relevant to the SMEs in this case as some software developers are technical experts thus often fail to explain and relate to customers who are more business-minded as opposed to technically orientated staff. Company A was able to overcome this issue by assigning the more socially confident employees, normally the project leaders to liaise with customers. With regards to Company B, even the owner-managers were somewhat more technically oriented thus difficulties arose in their dialogues with customers. Another case study finding which is supported by the literature is the existence of project teams and project managers in SMEs, which can contribute to the success of projects as they follow project planning techniques and completion schedules (Murphy and Ledwith, 2007). This is apparent in both Company A and Company B, where project leaders managed customers' projects.

5.7.5 Marketing in SMEs

The issues raised in the literature on SMEs and the marketing in SMEs were certainly identified in both case studies. The difficulties encountered included a lack of resources, limited finance and lack of marketing expertise (Carson, 1990). Although Company A's owner-manager consulted with his employees, and sometimes external consultants, the power and decision making was concentrated solely in the manager and decisions were sometimes made based on instinct and personal preferences, as opposed to a strategic and logical assessment of the environment (Chaston, 1997). However, decisions often had

to be made quickly and were based on what information was available to the SME at that time. In Company B, decisions were made without any analysis of opportunities and the environment. Moreover different decisions were made by both partners, and they were reluctant to consult each other, causing conflict among the partners. A lack of formal planning is identified as a major issue in the SME Marketing literature (Carson and Cromie, 1989), and Company B had no long term plans in place. However careful planning was conducted at Company A, concurring with the literature that SMEs which conduct market planning are more likely to survive and take off (Walker *et al.*, 1992). Thus in relation to Carson (1990)'s six marketing models, formal marketing planning at Company A was balanced as opposed to minimal. In Carson's five stages of marketing development, Company A seems to be placed at the third stage, 'Entrepreneurial Marketing', which consists primarily of instinctive marketing, but which is carried out as part of a plan. It also includes some trial and error marketing, which Company A displayed on numerous occasions as they endeavoured to try new marketing approaches. Examples included web-marketing activities, attending different trade exhibitions and hiring adequate marketing and sales personnel as they wanted to see what worked better and what was sensible with regards to finance and limited resources. Thus, the marketing was often fragmented, and it was both reactive and proactive. Reactive marketing was apparent in the sense that an opportunity would present itself in the form of an invitation to tender, or by identifying imminent opportunities via networking with personal contacts. However, their marketing was proactive in the sense that Company A made consistent efforts to develop relationships, they tried various marketing activities and aimed to plan most activities. Company A recognised that marketing was important, but sometimes struggled to decide which activities to focus on. As for Company B, their marketing was haphazard, reactive and very basic thus they would be placed in the first stage of Carson's model, 'Reactive Stage'. Similarly, they could be classified as a 'Marketing Weak' organisation, whilst Company A could be classed as a 'Marketing-Led' organisation (Simpson *et al.*, 2006).

In the 'Marketing-Led' group, competition is tough, which was certainly true for Company A although interestingly, they did not consider themselves as

having any direct competitors (O'Donnell *et al.*, 2002). Information on competitors was mostly gathered at trade exhibitions, contract award notices as well as through personal contact networks. Being market-led meant that Company A's markets changed over time, either as a reaction to a decline in certain market segments, or the identification of new market segments. The targeting of proVision product to new segments such as social and youth services is an example of this, as initially, Company A aimed to target the product to Regional Development Agencies. Similarly, the move into the Intranet (SharePoint) market was a reaction to market demand and opportunities. Therefore, although Company A retained a fairly narrow market focus, their diversification meant that they were no longer dependant on selling bespoke software solutions. They were willing to move from niche markets into closely related markets as the market required (O'Donnell *et al.*, 2002). In contrast, Company B was not willing to be led by the market, or to respond to market demand or opportunities thus they struggled to market their niche product.

5.7.6 Alliances and Networking

5.7.6.1 Alliances

Due to the nature of the software industry, and the difficulties that SMEs face when trying to win large contracts, developing alliances and partnering in order to strengthen their service offering has become a key trend. In Company A, it was apparent that they made efforts to form alliances with strategic and capability partners, their key partnership being that with Microsoft. This certification provided Company A with additional credibility, and contributed to their winning of further contracts. Their success as a result of collaboration and forming alliances concurs with the literature which states that forming external alliances is an important strategy (Mohr and Spekman, 1996), especially for SMEs (Forrest, 1990; Street and Cameron, 2007). Forming alliances was particularly important to Company A as they tendered for a number of public sector contracts, thus they required a stable partner to support their proposal. Even with a large robust partner, tendering for government

contracts was difficult because of government buying frameworks such as OCG Catalist and the estimate that more than 80% of government IT spending goes to just 11 companies (VNU Net, 2006). Company B had no partnerships or certifications, and attempted to win business alone.

There are problems associated with partnering, and are discussed in the literature in relation to the resource dependency theory (Hunt *et al.*, 2002; Street and Cameron, 2007). Issues identified in Company A included the higher level of control and power exerted by larger partners, but benefits included access to resources and increased stability for the SME. Overdependence can also be a problem, but Company A did not seem to be over-reliant on one partner, as they endeavoured to deal with multiple partners and thus spread the risk. The findings by Miles *et al.*, (1999) indicate that managers need to ensure that participating in an alliance is an option rather than a necessity for survival, and those alliances are not always a cure-all for struggling young high-tech firms. This suggests that alliances would not have been a solution to Company B's problems as it "did not strive to develop itself as a viable independent entity" (Miles *et al.*, 1999). It certainly seemed like a positive option for Company A, and not a necessity for survival as they already had an established customer base. Finally, it is estimated that many alliances are unsuccessful due to lack of trust, commitment, communication and opportunistic behaviour (Hunt *et al.*, 2002), and although Company A were the less powerful partner, behaviours such as lack of commitment and opportunism were not witnessed among their partners.

It is contended in the literature that alliance partner selection is not always logical and rational, but instead based on personal relationship and a complex negotiation process (Pidduck, 2006). However, in Company A, their choices of partners were mainly based on the solution or the project in which they would be involved. More often than not, there was no pre-existing relationship and Company A would simply approach a potential partner with a proposal that benefited both parties.

The literature states that to foster alliance success, the alliance should create an idiosyncratic resource which is unique and difficult to imitate (Hunt *et al.*, 2002). Company A's unique offering was its capability of developing bilingual software solutions and this may be why their partnerships have worked well.

5.7.6.2 Networking

It is clear that SMEs actively network in order to obtain knowledge, identify opportunities and learn from others' experiences (Gilmore *et al.*, 2006), and cooperation within social, vertical and horizontal networks are important to the growth of organisations (Wilson and Appiah-Kubi, 2002). Furthermore, it is suggested that it constitutes a more sophisticated level of marketing and that there is a link between the level of networking activity and the extent to which they do marketing. In Company A, it was evident that the owner-manager attempted to network at each available opportunity, and they created their own events and associations to enable more networking (e.g. CMC[14]). It is difficult to estimate directly how networking affected their successes, but benefits were definitely reaped from networking, including access to market knowledge, learning about competitors' operations and developing relationships with key stakeholder figures. Networking was certainly an aspect of Company A's proactive marketing, which they were able to utilise and take advantage of as the business grew. However, an issue highlighted in the literature which was relevant to Company A included 'network myopia' (O'Driscoll *et al.*, 2000) where networks cease to be useful. This was particularly relevant to Company A's local networks such as Gwynedd Business Network, whereby expertise and access to market information was limited. However, Company A felt that it was difficult to opt-out of such networks due to strong ties with particular members and a wish to retain its strong local presence. A study by Vainio (2005) proposes a framework classifying the different relationships according to network characteristics. Out of the four groups, Company A appears to belong to the 'Radical, emerging value system' where social capital between the members is high, the actor bonds emerge dynamically and there are often

[14] Cymdeithas Meddalwedd Cymraeg (Welsh Software Association)

no formal rules for operating in the network. Another classification is proposed by Kulmala and Uusi-Rauva (2005), whereby Company A clearly belong to group one 'Networked Firms'.

5.7.7 High Tech Marketing in SMEs

The case studies' general marketing activities and styles have been discussed, but as the focus is the software industry, it is necessary to consider the high tech marketing approaches adopted by both Company A and Company B. The characteristics described by Mohr *et al.*, (2005) were certainly visible in Company A's market: market uncertainty, buyer's reluctance to commit to purchase due to anxiety regarding non-standardised products and anxiety relating to functionality of the product. In Company A, the endorsement of their product by one customer meant that it was easier to attract the second customer, and the bilingual software industry standards created by Company A aided in reducing uncertainty as it demonstrated them as being the leader in developing bilingual software solutions. The concept of "customers as innovators" seemed alien to Company B, as they did not wish to listen to customer needs and requirements, but conversely Company A recognised the importance of listening to customer needs, especially when developing bespoke solutions. Moreover, it appeared that often customers did not know exactly what they wanted, and so further changes needed to be made following the development of a prototype (Thomke and Von Hippel, 2002). As Company A were tolerant in this respect, it ultimately strengthened their customer relationships. In terms of crossing the chasm, Company A did not seem to have entered any mainstream markets (Moore, 1991) and remained in the early-adopters market, whilst Company B strived to market its product to innovators.

The literature highlights the difficulties often encountered between Marketing and R&D within high-tech companies. No major difficulties were identified in Company A, and no function was considered superior. At Company B, problems were evident as the SMEs culture valued technical knowledge more than marketing knowledge, which concurs with the literature proposing that spending on R&D in the high-tech sector is more important than marketing

(Ko, 2005). Company B was committed to innovation and new product development, but contrary to the literature, there was no early involvement of functional groups including marketing and no early market testing (Owens, 2007). Company B's fate seems to concur with Berry's study (1996) which found that technology-driven companies are less successful in terms of corporate performance.

5.7.7.1Marketing of Software in SMEs

The activities of Company A seem to correspond with some of the literature on the marketing of software (Alajoutsijarvi *et al.*, 2000; Easingwood *et al.*, 2006). Tactics include collaborating with complementary organisations and forming alliances, which was discussed earlier. Other marketing tactics include versioning software products and pre-announcing products as part of launching new solutions. The suggestion that software companies tend to run a business based on projects was true in both case studies, but neither case had developed into a 'productised' company, which is arguably key to sustained growth (Alajoutsijarvi *et al.*, 2000). Although Company A deemed it necessary to aim towards a productisation strategy, because of its associated benefits, their success was due to their ability to provide solution services which matched customer needs (Hedaa and Ritter, 2005). Moreover, Alajoutsijarvi *et al*'s paper contends that software companies do not consider the development of relationships as an aspect of marketing, which was true in Company B, however Company A clearly did consider relationships as a vital aspect of their marketing. Helander and Ulkuniemi (2006) argue that the successful marketing of software requires a relational competency which involves a comprehensive understanding of the technology as well as the customers' business, and Company A seemed to have mastered both elements.

5.8 Conclusion

This chapter has presented the case study analysis of two SMEs in the Welsh software sector, the findings of the research and a literature-related discussion.

Both cases evidently contrast each other, one being a success case, the other being a failure case. The next chapter delves into customer perspectives of Company A, in order to achieve a dyadic view of the major case study and to identify the general expectations of software suppliers.

6.0 QUALITATIVE FINDINGS AND DISCUSSION

6.1 Introduction

To follow on from the exploratory research via case studies, and to get a detailed customer perspective, in-depth interviews were conducted with 16 of Company A's customers. Issues explored in the interviews included customer perceptions of the SME as a supplier and their expectations of software suppliers in general. Content Analysis was subsequently conducted on the interviews using the SERVQUAL model and the Services Marketing (7Ps) Framework, and the findings are discussed in this chapter. After presenting the findings, a literature-related discussion on the key themes follows. The interviews were also analysed using text-mining software and the findings are presented later in the chapter. The in-depth interviews had a separate objective, which was to identify the attributes to be used in Adaptive Conjoint Analysis. The respondents were therefore asked to think about what attributes they deemed important when purchasing software solutions. The ACA findings are presented in chapter 7.

6.2 Qualitative Analysis using the SERVQUAL model

Customer perceptions and attitudes of Company A were explored during in-depth interviews with the SME's customers, and transcriptions of these interviews were analysed using the SERVQUAL theoretical framework. The model was suggested by Parasuraman, Zeithaml and Berry (1988) and is made up of five dimensions: tangibles, reliability, responsiveness, assurance and empathy. However for the purpose of this analysis, all 10 originally conceptualised dimensions were used to analyse the in-depth interviews, with the aim of attaining a more detailed analysis. Key quotes and words were categorised into each dimension and validated by an independent researcher. All ten dimensions are described in the literature review and are considered separately here, with respect to the findings of in-depth interviews:

6.2.1 Access

The perceptions of Company A's customers with regards to Access were predominantly of those surrounding their locality and physical location, and how this benefited the customer. Even for customers for whom they were not a local supplier, they were deemed easily contactable via all communication channels:

> "They are easily accessible… Accessibility is very important to us".

Moreover there was a consensus that the SME would go out of their way to meet customers at any time. Some customers based in South Wales cited the SME's location as a disadvantage since they lacked the regular face-to-face contact with their supplier, but it wasn't considered a major problem. Their ability to deliver on time and under budget was also highlighted:

> "They are able to turn things around on time and within budget, which is critical in the IT world".

Conversely, two customers cited the SME's "inability to deliver on time", as their particular software development projects had encountered problems. However they were quick to emphasise the SME's commitment and efforts towards rectification of problems.

6.2.2 Reliability

Company A's consistency and reliability were apparent during the depth interviews. It was evident that the SME was always prepared to talk to customers, they responded quickly to customers and the customer appreciated knowing exactly at what stage the project was. They were cited numerous times as "honest" "open" and "flexible":

> "Words that come to mind when thinking about (the SME) and our relationship with them are reliable and high quality".

> "They deliver everything they say they're going to deliver on time and if they can't meet that timescale, they phone us well in advance and we come up with an alternative".

The few negative comments regarding reliability were particular to the product itself as opposed to the SME and its people. Some lack of testing was reported hence a failure to deliver effectively:

> "(the software) often hasn't worked first time".

This implies that customers could cope with temporary product malfunctions as long as the company was reliable in terms of communication and responsiveness.

6.2.3 Credibility

Company A's credibility was perceived based on past experiences with the company, the company's track record in terms of product implementations, case studies of other customers and their general reputation in the market:

> "They're giving us confidence and they give the project credibility because they have a good reputation and they are very credible and very competent".

The SME's bilingual competence, which they had actively promoted, seemed to increase customers' confidence of working with them, in particular the customers who were concerned with bilingualism. The fact that they had written the bilingual software guidelines and standards, with which all IT companies producing bilingual solutions are encouraged to comply, gave them additional credibility. This supports Mohr *et al.*, (2005) who argue that developing standards reduces customer uncertainty in the high tech market. Their alliances with larger software players provided further credibility to customers:

> "(Company A) had links with all kinds of different people like Microsoft".

> "It was really impressive that they had worked closely with Microsoft and had been responsible for developing the Welsh language guidelines".

Winning the business award underlined the SME's bilingual capability and thus provided additional credibility to customers:

> "They won an award... for bilingual company of the year 2005".

The elements which prompted unfavourable comments regarding the SME's credibility were the size of the company and the lack of robust processes in software development and project management:

> "their smallness does show through their written document skills, their approaches to project management".

This comment highlighted the perceived rudimentary nature of the SME, which correlates with the SME literature (Carson *et al.*, 1995).

6.2.4 Security

The security which Company A's customers felt was emphasised by their desire to prolong the relationship and to keep the SME as a supplier:

> "they are a company with which I would like to stay with for a number of years to come".

A number of customers felt valued by the SME and felt secure due to the company's portfolio (their being debt-free, customer references and recommendations, and the number of years which they had been operating). Other practical elements such as the SME's regular reporting to customers had a positive effect and made customers feel even more comfortable:

> "We do feel valued by (them)...we feel safe as a customer".

> "I trust that (they) could deliver for us".

The word "trust" was used to describe the relationship in some cases, and even where it wasn't mentioned explicitly, it was felt that trust did exist within the customer-supplier relationship. Again this supports the extant literature on RM, and the role of trust as a key factor in the development of long-term relationships (Ivens, 2005).

However, the risk factor of dealing with a small software supplier was apparent:

> "If (they) go bust, we do take a risk...in that case we would need the source code or the ability to understand the source code".

> "If we entered into a big software development project, we would want to formalise the arrangements and we would want a formal structure".

Again, there were some reservations regarding the functionality of the software itself, and this seemed to make certain customers more insecure about the SME:

> "There are certain parts of the functionality which we feel that don't work in a standard way which makes it impossible to work with the system".

Here was an example of specific product issues, and although important for the SME to be aware of, perhaps didn't seem to affect the relationship long term.

6.2.5 Understanding of Customer

Almost all respondents had positive perceptions regarding Company A's understanding of the customer. It was evidently important that the supplier not only had an understanding of the business problem, but strived to understand the customer's business itself, their objectives and even an overview of the customer industry. In some cases the SME had achieved this:

> "They understand what we are trying to achieve, they understand the way that we work and they bend over backwards to accommodate our wishes".

"They take their time to understand what you're trying to do and what you're trying to achieve".

The SME's ability to listen to customers was also emphasised as well as their proactiveness in offering suggestions and new ideas to the customer. However some respondents felt that the company would move a project forward quickly and ahead of which the customer felt comfortable. Some managers from the customer's organisation who were in charge of the software project but didn't have as much technical expertise felt somewhat intimidated and therefore wanted the SME to take them through the project at a slower pace:

"They should give more guidance, talk through the project and consequences etc".

The costing issue arose in a number of interviews, and are discussed in more detail in section 6.4.2. The general consensus was that customers preferred to be given a fixed price for the software solution whilst the software supplier preferred to work on a time and materials basis. This was sometimes construed by some customers as a misunderstanding of their needs.

6.2.6 Responsiveness

Company A was perceived as being very responsive by all customers. They were described as "prompt" and again, the regular communication and reporting was deemed beneficial:

"They might be busy but they'll come up and have a talk anyway –and that's all you really want –for the supplier to show an interest and to engage with the work".

Furthermore, the SME were cited as "realistic" numerous times throughout the interviews, in terms of what services they could and could not provide the customer. If there was a service required by the customer, but one which the SME could not fulfil, they would bring in a specialised partner to fulfil that requirement. Alternatively they would recommend alternative suppliers to the customer, and this was evidently appreciated by all customers.

There were some rare negative comments regarding responsiveness. Some issues categorised under the 'responsiveness' dimension included the lack of on-time delivery and their lack of proactiveness in certain cases.

6.2.7 Courtesy

Company A was commonly perceived as a friendly company with pleasant employees who were eager to please but equally professional:

> "The relationship is symbiotic, friendly, cordial, useful".

However, in certain cases, especially evident among their larger, public sector customers, it was commented that their friendliness and down to earth appeal may work against them when dealing with high value software projects:

> "They have got this friendly, family approach, and it works for the small stuff, but if they were to move into medium to large projects, have they really got the formal approach?"

Thus the need for a more formal approach was yet again underlined, although the courteousness of the SME was illustrated as important to these customers throughout the development and maintenance of relationships.

6.2.8 Competence

Positive perceptions of the SME regarding competence factors included the expertise and knowledge of the employees, the software standards to which they adhered to, their project management skills and their bilingual/language competence:

> "Their expertise in that particular area –their knowledge of Wales, their way of working and their expertise".

> "I think they've got an exceptional development team –I think that is their main strength".

Some respondents mentioned that although the software service was of high quality, the initial roll-out was not always effective, sometimes due to a lack of rigorous testing of the software. The company's lack of skills in complementary areas was also identified:

> "If (they) could have done everything in house including the design work, (it) would have been even better".

Their project management methods were also cited by one respondent as "parochial", and as has been mentioned earlier, a number of respondents discussed the importance of a formal and effective project management approach:

> "Their approach and lack of systematic methods shows through. It is these methods which sell –the approach, Project Management methods and a company's comfortableness with the methods, terminology…".

These comments highlight the need for established processes in software organisations, particularly software SMEs.

6.2.9 Communication

The communication between the supplier and customers was generally perceived as excellent. From a practical point of view, the respondents were satisfied with the regular status reports provided by the supplier, and felt that both parties' responsibilities were clarified. Moreover, the bilingual communication was welcomed. All customers felt comfortable with the communication aspect of their relationship and the communication was also perceived as open, honest and professional, but also informal and "relaxed":

> "It's a very close relationship. We have a dialogue, we are able to talk to each other, and if we have a problem we're able to go there and discuss (it) with them".

An element which was raised by many respondents was the SME's realism in communicating, which was deemed unique:

> "They're very good because they're very clear about what they can and can't do for us".

One respondent was impressed with the fact that the SME had a CRM system and were therefore able to track and update customer information. Interestingly, this respondent mentioned the risk of excessively contacting the customer, as a result of using the CRM, as this would be an undesired effect.

It was evident that customers generally preferred personal, one-to-one contact with the supplier as opposed to above the line communications, and this was evidently provided by the SME. The close dialogue seemed to strengthen the relationship and mutual understanding among both parties:

> "(There is a) need to get to another level of maturity and focus the marketing on Relationship Management not necessarily in terms of advertising, newsletters etc. Work on Relationship Management…important as it is easier to keep a customer than win a new one".

The negative comments regarding communication were related to the technical language used. The language tended to intimidate certain customers, especially those who were not IT specialists, such as a CEO of another SME:

> "There's too much jargon and technical language that someone like myself doesn't understand what they are doing".

Another issue related to costing came up again in terms of communication:

> "People need to be happy with the costs and how the company communicates the costs…this communication is vital".

One customer suggested that the SME provided "touch points through the money", similar to the status reports, in order to ensure that the project didn't over-run its budget, subsequently meeting customer requirements. Therefore, communication of costs and project status were identified as important customer expectations.

6.2.10 Tangibles

The positive perceptions pertaining to tangible factors included the SME's marketing material, the fact that it was bilingual, and their corporate logo which was deemed "bold" and "catchy". Moreover, the SMEs professionalism, attention to detail and tailoring of services to the customer requirements were noticeable in the tender documents submitted by Company A:

> "They put themselves over very professionally in exhibitions, in the media –more so than other SMEs in the ICT sector".

> "They care about what the customer thinks and this showed through in their tender documents".

However, some respondents perceived the SME's lack of formal appearance as a disadvantage, especially when compared to competitors:

> "Some companies presented themselves more stylishly in terms of how they presented the product and their company".

This seemed to be a bigger problem at the beginning of the relationship, when appearances and first impressions of the SME would dominate in the customer's mind. Another respondent supported this perception as he commented how a "man in suit" provides reassurance in the customer's mind, as well as the company's portfolio (history, customer base, reputation etc).

6.3 Conclusions of SERVQUAL Dimensions Analysis

The analysis of the in-depth interviews using the SERVQUAL framework leads to the conclusion that all ten dimensions are supported as important in measuring service quality, indicating that the model is robust when applied to software services. The key insights arrived at through this method are the importance of a one-to-one relationship and collaboration among customer and supplier during a software project, both of which can lead to a win-win relationship among both parties as they both understand each other's needs, objectives and responsibilities. Moreover, trust, honesty and effective

communication seem to be vital in the ongoing progression of the relationship. The tangibles variable was least important out of the ten dimensions, supporting the view that the humanistic relationship is valued to a greater degree than tangible evidence, although the corporate portfolio and 'look' of the supplier is significant at the beginning of the relationship.

One issue raised a number of times was the immaturity of Company A's project management method, an approach which is especially critical when serving larger, particularly public sector customers. It has been apparent that this issue is recognised by the SME and steps have been taken to improve project management processes. The biggest hurdle is yet again the time and resource limitation of SMEs. The aim of Project Management is to ensure that projects are delivered within the allocated time and budget, and although the lack of formality by SMEs has been mentioned by the customers during the in-depth interviews, Company A's capability to deliver software on time and under budget was cited by all but two respondents.

The SME's bilingual capability was referred to by a number of respondents as a strong point, indicating the Unique Selling Proposition which Company A has created for itself. However, the threat of this USP is its applicability to Wales only, and the risk of imitation by competitors. Therefore, Company A's next move was to focus on the product market, and take products into vertical markets, using Wales as a starting point. In this respect, the bilingual aspect would be one service element, but not the key selling point, particularly when marketing in England.

6.4 An Analysis of Customer Expectations using the 7Ps Model

The analysis of customer expectations was undertaken using the services marketing framework of the 7Ps model. The 7Ps are Product, Price, Promotion, Place, People, Process and Physical Evidence, and were evolved from McCarthy's traditional 4Ps as a solution to the Marketing of Services (Booms and Bitner, 1981 cited in Gummesson, 2006). Similar to the analysis of the SERVQUAL dimensions, quotes and key words were grouped under the

relevant 'P' and validated by an independent researcher. The expectations area of the in-depth interviews with Company A's customers are hereby reported per variable and subsequently discussed, and an adapted model is presented (see figure 6.1).

6.4.1 Product

The predominant expectations with regards to the product was the requirement for the product to be fit for purpose, that the product should be of high quality, easy to use and, particularly for Company A's customers in Wales, for there to be a bilingual capability to the product. Another factor which dominated was the need for the product to be flexible in terms of integration with customer's existing systems and in terms of future adaptations to the product, including the scalability requirement. It is unsurprising that the fitness for purpose expectation arose in almost all in-depth interviews considering that the SME is a bespoke software development company, tailoring products specifically to customer needs:

> "The knowledge that our product needs to be different because we have different needs. It needs not only be different in looks, but different in interface, interaction".

Software is required to solve a particular business problem, and for most customers at the early stages of the business relationship, the software requirements would be specified in advance, often via public tender notice. Although some customers foresee that future changes would need to be made due to the evolution of software, the meeting of the initial requirements is deemed imperative:

> "We have to know that if we give a spec to a software company, that they are able to perform, that we will get what we asked for and within the timeframe we've specified".

The bilingual capability of the product was also an important expectation, both for certain larger, public sector customers and smaller private sector customers in Wales:

> "Operating in Wales... It's important to be able to work with a company who understand the means of an audience (bilingualism)".

> "The bilingual factor is important...the ability of the company to deliver bilingual systems certainly featured when we were looking for a company to work with".

Furthermore, the fact that Company A have written the bilingual software standards and worked in partnership with Microsoft on the localisation project has provided further credibility to customers when they were considering whether to go ahead with the SME as a product supplier.

6.4.2 Price

Despite the stress placed on the importance of relationships and RM, it is evident that price remains one of the key factors which determines whether a customer will enter into a relationship with a software supplier. Almost all respondents quoted a reasonable "price" or "cost" of software as a primary expectation:

> "Cost... the cost of software should be within reasonable limits i.e. affordable".

Having said this, many respondents elaborated on the importance of the product itself, the flexibility of the supplier and the opportunity to enter into a long term relationship as being of equal importance. Therefore it can be argued that even though customers are willing to develop and maintain a two-way relationship, the price sensitivity of customers does not necessarily decrease as the relationship progresses, due to the customers' own pressures to minimise costs and remain under budget. The public sector's views on price could be explained by the fact that they have to adhere to stringent and inflexible contract and procurement processes.

Interestingly, costing issues arose more than once during the depth interviews. The cost model preferred by most customers was the fixed cost model, whereby a one off payment is made to the software supplier following the

agreed requirements analysis. This way, if there are any problems during software development, the supplier takes the responsibility:

> "The biggest problem was finding a model for paying (Company A). Initially the model was time and materials... We needed a price for the job... so that took some time to resolve the issue and find the best way forward. Now we do get a price from them, because the spec is fairly tight and they now say if the product goes outside that spec, we pay more –this is not a problem".

The cost model which seemed to be preferred by the software supplier was the time and materials cost model, in which an estimate price is provided up-front, but is subject to change as the project moves forward. The time and materials cost model allows unprecedented changes to be made to the software, perhaps following feedback from the users, and the supplier will be paid accordingly for resources used. From the customer's point of view, the risk is of the project over-running its budget, which is notorious within the software industry, however the SME does not want to incur financial losses either. Considering these two models, it could be argued that the requirements analysis and agreement between both parties is essential at the initiation of the project. However it is often impossible for customers to visualise exactly what they want from a bespoke software system thus requests for changes are inevitable following the development of a prototype. Arguably, whichever cost model is employed, it is the transparency and communication of the cost by the supplier which is important and thus the software supplier should endeavour to prove value for money to the customer, especially in such a competitive market. Furthermore, software suppliers need to manage expectations of customers in terms of the customer's role. The interviews displayed an interesting insight into those non-IT orientated customers and those who were experienced in IT. Those who were inexperienced seemed to have higher expectations of the product, expecting it to work first time whilst those who were more experienced were not surprised that the project planning and the software had to be adapted. In some cases, where software solutions had to be adapted and where costs increased exponentially, Company A have historically stood the cost of these problems in order to protect the relationship with the customer.

6.4.3 Promotion

As the 7Ps model was employed here to assess customer expectations of software suppliers, it was not surprising that the software company's promotion and marketing strategy were not forefront in the customer's mind when deciding whether they would enter into their relationship with the SME. However it was evident that Company A's partnership with larger players such as Microsoft and Computacenter did reduce their uncertainty of entering into their relationship with a small software company. Although such alliances were not cited as an expectation of customers, it was clear that without such partnerships, the SME would not have won certain contracts. Some customers were aware of and appreciated their language/bilingual capability and their niche market and therefore commented that the SME should promote Wales and promote bilingualism. However these expectations were evidently secondary to other factors such as price, the product itself and their relationship with the supplier.

6.4.4 Place

With regards to expectations of the software supplier's location, there were mixed findings. To certain customers, Company A's local presence was imperative:

> "We were definitely after someone local who was within an hour or so distance from us, just to make the interaction between the customer and the supplier easier".

To others, the location of the software company was a desirable as opposed to a deciding factor. However many respondents perceived bilingualism as important and referred to their being located in Wales as synonymous with the company's bilingualism:

> "Operating in Wales… It's important to be able to work with a company who understand the means of an audience (bilingualism)".

> "(Bilingualism/Welsh factor), a very high importance, it's a huge issue- that's one of the most important factors".

Therefore, bilingualism in the model is positioned under Product and Place. All but one of the respondents were Welsh customers, and many of them had become customers because of Company A's bilingual capability. Due to the small sample size (16 customers) it cannot be generalised that all Welsh companies require bilingual software. It is important to note that for the single customer which was located in England, their expectations did not include location or bilingualism, but merely a software company which provided the right product at the right price as well as the opportunity to develop a long term relationship.

6.4.5 People

When describing their expectations of software companies, many customers referred to the human side of the customer-supplier relationship as being imperative. Most of them were keen to develop a win-win long term relationship with their software supplier and perceived their relationship to be a partnership in which both would work together:

> "working with the company...if it's something like an infrastructure thing which is long term, then the relationship with the supplier is very important, probably more important than price in that respect".

> "The opportunity to build a relationship with them. This is important because if you have a good relationship with the company, you are a lot more likely to achieve your objectives because you can talk to them easily, they will understand you, you can build up the rapport, they will know where you're coming from and you can both move forward together".

Other words cited by more than one respondent were the need for openness in terms of communication, honesty, trust and loyalty. This supports the literature on RM and the need to develop a long term relationship with the supplier of complex products (Christy *et al.*, 1996). Similarly, the practical expectations of people were also described: the technical expertise of the employees, their (and the company's) reputation and also their approachability:

> "You also have to be able to work with the company day-to-day, so I guess the softer side that can't be documented so the relationship, basically. Can you work with the people, the company, can they fit into the culture of your organisation?...You need to be able to get along as individuals".

These comments illustrate the importance of the human-side of the relationship, including the manner as well as the expertise of employees.

6.4.6 Process

The process of a software company was a significant expectation of many respondents. The primary expectations in terms of process were effective delivery of the software product and effective project management processes:

> "We have to know that if we give a spec to a software company, that they are able to perform, that we will get what we've asked for and within the timeframe we've specified".

> "Services…change management processes, configuration management, testing…industrial strength IT processes need to be in place. We need to know that (the company) know what they're talking about, what Project Management methods they are using…".

It is evident that all respondents expect the same degree of professionalism, high standards and attention to detail from a software company of any size, from any location. However as previously noted, the fact that Company A is a small company did introduce the element of risk to potential customers, especially when customers wanted to enter into large scale projects. This was pertinent to larger, especially public sector customers.

The importance of after sales services was also highlighted as an expectation:

> "Software companies now have to look at the whole life cycle from the business process re-engineering, through to the delivery, from specification to delivery and ultimately the support and then the ongoing optimisation so they don't just walk away when they've delivered".

These comments highlighted the need for an overall service package to be provided to customers, emphasising protection and security following delivery of the software solution.

6.4.7 Physical Evidence

With regards to physical evidence, this was not highlighted as an important expectation by respondents. However it was deemed important that the software company was an established company and could display their history, track record and general portfolio:

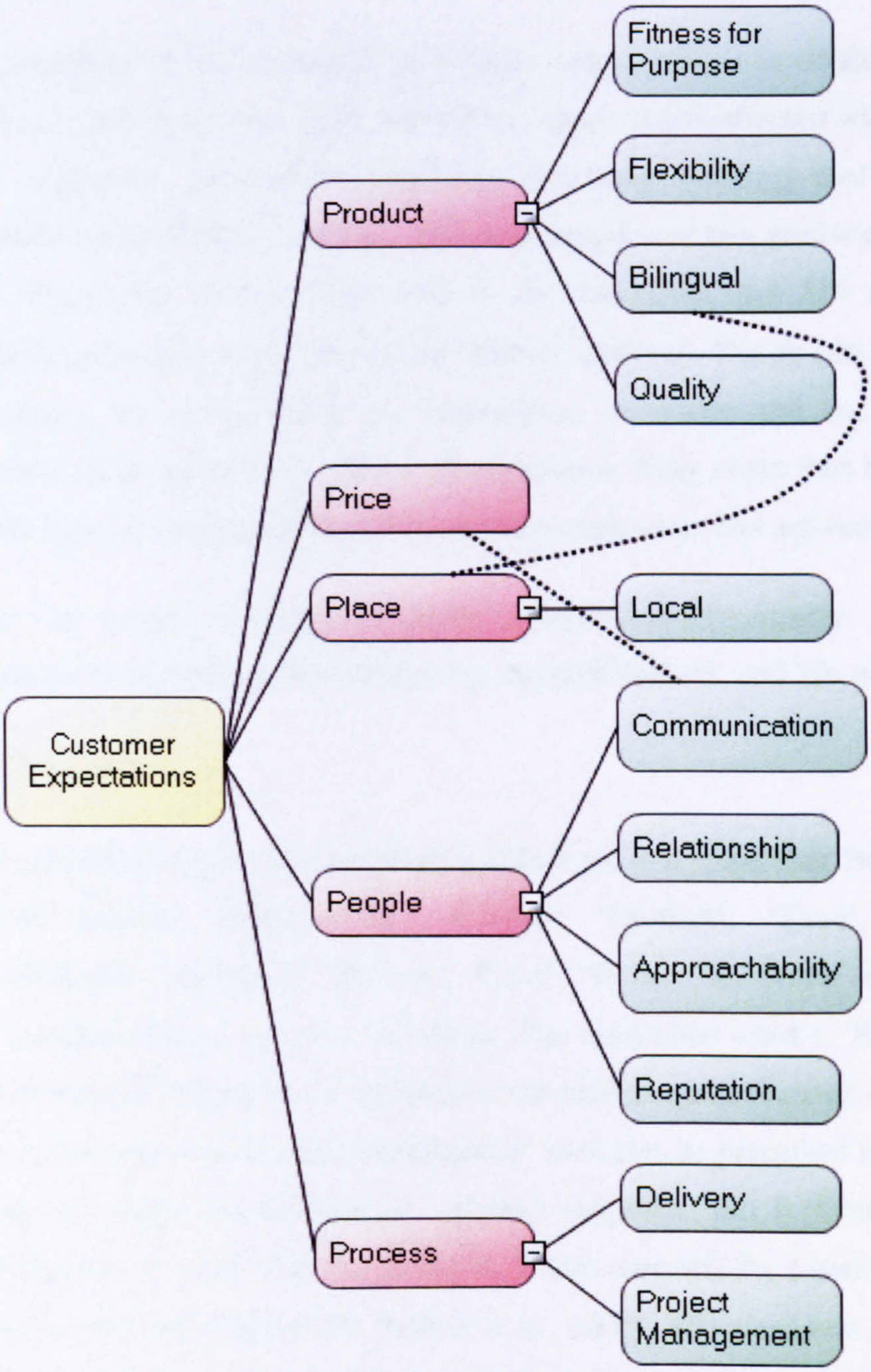
> "The portfolio of their work so that you can see their whole history".

It can be argued that corporate information sheets, written information from other sources such as trade journals, news articles and the company's website with customer references and history details, are tangible evidence of a company's portfolio. They can therefore provide a potential customer with additional knowledge when deciding whether to adopt the service offered.

6.5 Summary and Adapted Model

Following the analysis of the depth interviews using the 7Ps framework, an adapted model is presented below (see figure 6.1). The model displays the most important of the 7Ps to consider when examining customer expectations of small software companies and more importantly, when considering software companies as service-based organisations. Further to the findings of the in-depth interviews, it is concluded that in terms of customer expectations, the five important elements to consider are Product, Price, Place, People and Process. Physical evidence and Promotion are omitted on the basis that these dimensions are not forefront in the customer's mind when considering a software services supplier. Subcategories under each 'P' are included to illustrate expectations of software SMEs in Wales.

Figure 6.1 Five Ps for SMEs in the software sector.



6.6 Qualitative Interviews: Text-Mining Analysis

6.6.1 Overview

As described in the methodology chapter, text mining was conducted on the sixteen transcripts of in-depth interviews, which was conducted with Company A's customers. Text-mining was used as a complementary tool in order to support the qualitative findings. The text-mining analysis produced results on the importance of all words used in the transcripts, but 114 of the most significant words were selected for further analysis. The results showed the frequency of words cited, the importance of words and the number of documents in which the words were mentioned. They could thus be compared to the type of respondent as well as industry represented by a given respondent.

The text mining findings are firstly described independently, and then in relation to the findings identified using the SERVQUAL and 7Ps models.

6.6.2 Analysis

By examining the words summary (table 6.1), it is clear that the most cited words include 'Relationship', 'Project', 'Product', 'Time', 'Supplier', 'Understand', 'Bilingual', 'Service', 'Cost', 'Welsh', 'Response' and 'People', all mentioned from 60 up to 267 times. The most cited word is 'Relationship', which strongly supports the qualitative and case research findings. The fact that the respondents mentioned 'Relationship' indicates its perceived importance in relation to their expectations of software suppliers, and is something which they believe to exist with Company A. It also supports the extant literature on RM (Harker and Egan, 2006; Palmer *et al.*, 2005). The word was mentioned in all 16 documents, which further supports its importance, and has a value of 100.00 in Word Importance (see table 6.2). However this could also be explained by the fact that the researcher prompted the interviewees to discuss their relationship with Company A. The word 'Service' is mentioned 122 times, indicating the significance of service elements by software suppliers. Moreover, 'Support' and 'After-sales' are cited in 10 and 11 number of documents respectively, and other words such as 'Assist', 'Maintenance' and 'Bespoke' are mentioned by many respondents, again supporting the

importance of services required by software buyers. However, 'Product' and 'Project' are also mentioned in nearly all documents, stressing the fundamental importance of the suitability and effectiveness of the actual software product.

In concurrence with the qualitative findings, 'Cost', and 'Money' are cited 81 and 35 times respectively, and are mentioned in 12 out of the 16 documents, emphasising the role of price in the customer decision-making process. However, other words mentioned more frequently include 'Bilingual', 'Understand' and 'Time'. The words 'Welsh and 'Wales' are also cited a number of times and are mentioned in all documents, which arguably supports the 'bilingual' factor which is so far a recurring theme throughout the case research and qualitative depth interviews. The importance of 'Bilingual' is 39.99 (see table 6.2), indicating the need for software suppliers in Wales to provide bilingual or Welsh software. However this statement cannot be generalised as these were customers of one software SME which offered bilingual software. Linked to the Welsh theme is 'Local' which was cited 42 times and in nine of the documents, suggesting that these customers prefer a local supplier and supporting the earlier qualitative findings that some customers may favour a local supplier. The frequency of 'Understand' is significant, and supports the analysis using SERVQUAL as 'Understanding of the customer' is one of its dimensions. This also links with 'Relationship', and indicates that customers perceive that a relationship with the software supplier can improve a supplier's understanding of their needs. The word 'Time' is cited 127 times, indicating the long-term nature of the required relationship. Other words of interest that are cited frequently include 'People', 'Informal', 'Response' and 'Community', indicating the role of people, communication and interaction within the relationship. However as was clear in the qualitative findings, an informal relationship is not sufficient to guarantee future software projects: processes and formal project management methodologies need to be proven in order to display professionalism and to reduce the perceived risk of entering into a contract. To support this argument, the word 'Deliver' is cited 46 times and in 11 of the transcripts, and 'experience' is cited 37 times and in all transcripts, illustrating the importance of expertise and ability to deliver the solution under the relevant criteria. Interestingly, the word 'Happy' was used

54 times and by 12 respondents, which could signify their feelings towards software purchased and their relationship with the SME, or it may have been used to describe the SME's employees. 'Satisfied' was cited 55 times, and cited by all documents indicating that all of Company A's customers were satisfied with the SME.

Table 6.1 Text Mining Words Summary

Words	Frequency	Number of Documents
Ability	14	7
Achieve	16	10
Adapt	3	3
after-sales	11	9
Applicable	4	3
Assist	12	3
Attitude	7	3
Bespoke	11	5
Bilingual	85	13
Brand	4	3
Budget	16	6
Chase	8	3
Cheaper	3	3
Committed	3	3
Community	37	13
Competent	6	3
Competitive	5	3
Complaint	8	3
Confident	18	7
Control	7	3
Cost	81	12
Data	10	4
Database	18	5
Deadline	10	4
Deliver	46	11
Expense	15	7
Experience	37	16
Expert	3	3
Expertise	9	5
Fair	25	7
Fault	7	4
Finance	4	3
Financial	7	3
Fix	17	6
Flexible	21	3
Friendly	15	9
Government	5	4
Grow	4	4
Growth	4	4
Happy	54	12
Hassle	3	3
Honest	11	7
in-house	5	4
Informal	31	11
Inspire	4	3
Interaction	3	3
Interface	8	3

Words	Frequency	Number of Documents
Knowledge	10	4
Language	30	10
Local	42	9
Long-term	3	3
Maintenance	22	9
Market	63	16
Microsoft	24	8
Money	35	12
Newsletter	10	7
off-the-shelf	4	3
Opportunity	14	6
Original	7	4
Outsource	8	3
Partner	22	7
Partnership	7	4
People	69	11
Person	33	8
Potential	8	6
Price	22	10
Proactive	3	3
Product	165	16
Professional	38	10
Project	185	15
Promote	10	4
Prompt	9	5
Purchase	39	16
Quality	30	16
Quote	18	4
Relationship	267	16
Reliably	7	4
Request	8	4
Require	69	14
Research	5	4
Resolve	21	11
Resource	6	3
Respect	10	6
Respond	24	10
Response	71	16
Revenue	3	3
Richard	41	11
Risk	18	8
Sale	12	11
Satisfied	55	16
Service	122	16
Skills	14	6
Smes	3	3
Solution	33	16
Solve	4	3
Staff	27	16
Success	14	5
Supplier	93	15
Support	31	11
Team	16	6
Technical	17	11
Technology	39	9
Tender	36	9
Test	22	9
Time	127	16
Train	14	7
Trust	13	7
Understand	91	14

Words	Frequency	Number of Documents
Understood	5	5
User	30	5
Value	16	8
Wales	49	16
Website	30	9
Welsh	64	14

Table 6.2 Text Mining Word Importance

Words	Word Importance
Ability	8.4574
Achieve	8.4574
Adapt	2.4414
after-sales	5.4592
Applicable	3.4527
Assist	14.2360
Attitude	6.4595
Bespoke	9.2432
Bilingual	39.9930
Brand	3.4527
Budget	10.5483
Chase	7.7205
Cheaper	2.4414
Committed	2.4414
Community	18.8588
Competent	5.2741
Competitive	4.6750
Complaint	7.1874
Confident	10.5483
Control	5.8118
Cost	45.0401
Data	7.7205
Database	14.3748
Deadline	8.4574
Deliver	26.3706
Expense	8.5741
Experience	19.9841
Expert	2.4414
Expertise	6.7601
Fair	13.8827
Fault	6.1442
Finance	3.4527
Financial	6.1442
Fix	11.8772
Flexible	22.0633
Friendly	7.8482
Government	3.7294
Grow	2.8191
Growth	2.8191
Happy	27.7653
Hassle	2.4414
Honest	7.0478
in-house	3.7294
Informal	15.8850
Inspire	3.4527
Interaction	2.4414
Interface	7.1874
Knowledge	7.4587

Words	Word Importance
Language	18.8060
Local	27.5498
Long-term	2.4414
Maintenance	13.6663
Market	26.4834
Microsoft	14.0957
Money	27.8724
Newsletter	5.6383
off-the-shelf	3.4527
Opportunity	11.9606
Original	5.0823
Outsource	7.1874
Partner	13.8109
Partnership	5.4592
People	36.6759
Person	23.6287
Potential	4.8829
Price	12.9189
Proactive	2.4414
Product	65.4350
Professional	19.8344
Project	90.1353
Promote	8.4574
Prompt	6.7601
Purchase	14.3056
Quality	11.7933
Quote	15.0501
Relationship	100.0000
Reliably	5.0823
Request	5.9803
Require	30.4611
Research	3.7294
Resolve	12.0434
Resource	5.9803
Respect	6.3038
Respond	10.9185
Response	28.2969
Revenue	2.4414
Richard	27.4414
Risk	12.1256
Sale	5.2741
Satisfied	20.8597
Service	45.8056
Skills	10.5483
Smes	2.4414
Solution	16.4986
Solve	3.4527
Staff	11.8772
Success	12.2883
Supplier	64.8862
Support	14.4438
Team	9.7658
Technical	8.5741
Technology	19.3784
Tender	25.5284
Test	11.7933
Time	52.0397
Train	9.7658
Trust	7.3243
Understand	38.6284
Understood	3.1519
User	22.8159

Words	Word Importance
Value	10.7350
Wales	20.2802
Website	20.7164
Welsh	30.4284

Table 6.2 displays mean word importance and effectively summarises the results of table 6.1. Thus the words with the highest means are 'Relationship', 'Cost', 'Bilingual', 'Deliver', 'Happy', 'People', 'Product' and 'Project'.

Text mining also calculated the word occurrences in each file, enabling the researcher to look closer at the most common words and to view the respondents who cited those particular words. The word 'Bilingual' and 'Language' were mostly cited by respondents from the public sector, but were not used at all by certain respondents, indicating that it is not an element required by all customers. With regards to 'Local', three customers were more pronounced in their use of the word whilst some did not mention it at all. This supports the argument that being a local software SME is a desirable factor as opposed to essential, and there may be only a small number of customers who deem it an essential factor. 'Cost', 'Product' and 'Project' were cited by respondents from both the public and private sector. Similarly, 'Relationship', 'Service', 'People' and 'Time' were mentioned by all respondents within both sectors. In some cases, frequent words were cited a number of times by one respondent, such as 'Community', 'Experience' and 'Flexible' suggesting that these factors may not be general expectations but are vital to certain customers.

It is interesting to note some unexpected results from the text mining, which include the limited use of words such as 'Trust' and 'Committed' which prevail the RM literature (Geyskens and Steenkamp, 1995; Ivens, 2005; Takala and Usitalo, 1996). However, although they are not explicitly stated as expectations, it does not mean that they are not required and vital for the relationship to be a success. There was also limited use of the word 'original' and not one respondent mentioned the word 'innovation' suggesting that innovative and cutting-edge software solutions are not forefront in the customer's mind when selecting a software supplier. It could also indicate that

these customers represent the mainstream or 'early/late majority' categories of high tech purchasers (Mohr *et al.*, 2005; Moore, 1991).

6.7 Literature-Related Discussion

6.7.1 Overview

This section is a discussion centred around Company A's customer's perceptions and expectations of software suppliers, with a particular focus on relationship issues as seen by software firm customers.

6.7.2 Perceptions of Software Supplier

Overall, Company A's customers had a positive attitude towards their software supplier. The SME was perceived to be easily accessible, easily contactable and reliable. They were deemed as a committed supplier, who was eager to please the customer. Customers commented that the company made consistent efforts to listen and understand their issues, and they were perceived as friendly, courteous and capable. Although the risk of dealing with an SME was perceived as higher, their alliances with strategic partners, their professionalism and expertise seemed to confirm their credibility as a quality software supplier.

6.7.3 Customer Expectations of Software Suppliers

The predominant expectations of software suppliers found in this study were centred around service expectations. They included a need for the supplier to be reliable, to provide a whole service solution including after-sales service, that the employees had the necessary expertise to develop the software solution, a high level of professionalism, and that the supplier was realistic in terms of what it could provide. Specifically in terms of the 7Ps:

- Product should be fit for purpose;
- Price should be competitive;
- Promotion should reflect credibility;

- Place is irrelevant, although a local supplier is desirable;
- People should be capable, professional and courteous;
- Process should reflect professional project management and software development standards;
- Physical evidence should reflect experience and competence of the supplier.

(As is seen in Figure 6.1, Promotion and Physical Evidence are omitted from the adapted 7Ps model, in order to more accurately demonstrate customer expectations of software suppliers).

All ten SERVQUAL dimensions were supported as relevant to the software's supplier's measurement of service quality. The least relevant out of the ten was Tangibles, although tender documentation and marketing material could be classed under this dimension.

As software is an intangible product, many of the expectations are related to services. There are different levels of expectations, related to different aspects of the services, concurring with the technical and functional dimensions of services (Gronroos, 2007). Specific to software suppliers in Wales, the technical dimensions expected include a product which is fit for purpose, a well-tested product, a product that is easy to use and where necessary, has a bilingual capability. Other technical expectations include the flexibility of the software, and its ability to adapt and integrate with customers' pre-existing systems. Functional expectations include an understanding of the customer, professionalism, reliability, expertise and experience in software development, credibility in the marketplace and honesty of the supplier.

With regards to the whole software service, it was found that customers expected more than the delivery of a software product. As a high involvement and complex purchase, customers required a value-supporting offering which predominantly included after-sales service. In terms of the extent of after-sales service, each customer was different and required varying elements. Some required a complete after-sales service including maintenance, helpdesk and

repair, whilst others required only a helpdesk for possible system issues. This corresponds with the Service Marketing literature paradigm which assumes that a total service offering must include the physical product as the core solution, as well as service processes such as deliveries, installation, repair maintenance and customer training. The service also includes hidden services consisting of billing, complaints handling, extranets and product documentation (Gronroos, 2007). As far as training was concerned, this was not an important expectation highlighted in this study.

Reliability was cited as one of the most important expectations by Company A's customers, and has previously been identified as an important dimension of service quality (Bebko, 2000). Some of the SME's customers had previously worked with larger suppliers, and occasionally they had turned out to be unreliable. Thus one of the attractions of working with a smaller software supplier was the promise of improved customer service, including responsiveness and reliability.

The perception that Company A was realistic and honest in what they could deliver was deemed impressive by the customers. Whether this was an expectation before embarking on a relationship with the SME is not known, but after their experience with Company A it certainly became an expectation of software suppliers in general. Being a realistic supplier is important as customer's expectations are often 'fuzzy' (Ojasalo, 2001). They often do not always have a clear understanding of what they want from the service provider and although they have a business problem, sometimes they do not know exactly what software solution is suitable. Therefore if the service provider realises that the expectation is something that they cannot meet, being honest and refusing the business would serve both the customer and supplier in the long term (Ojasalo, 2001). It is a mistake for the supplier to continue to push its own solutions when it is not connected to the buyer's needs (Edvardsson *et al.*, 2008).

Gronroos (1998) distinguishes four elements affecting expectations in his perceived service quality model: market communication, image, word of

mouth and customer needs. With regards to Company A, their image, word of mouth and customer needs affected customer expectations more so than market communication designed and sent to the audience by the SME. Aspects of the SME's image which affected customer expectations was their Welshness, their association with Microsoft and the recognition of capability and expertise in their business awards. Word of mouth seemed to have had an effect on customer expectations as existing customers had recommended the SME as a supplier. Positive word of mouth was essential for the SME as SMEs rely in general on word-of-mouth for increased awareness and promotion (Stokes, 2000). An additional element relevant to existing customer expectations was their past experiences with Company A, which if positive affected their decision on whether they would go ahead on a second or third software project.

Using the SERVQUAL dimensions was useful in assessing customer expectations, as quality is defined as the gap between customers' expectations and perceptions. Sources of expectations found in this study included past experience, informal and formal recommendations, the price of the solution and the SME's image (Robledo, 2001).

Some negative aspects related to expectations which were identified, and should be commented on included the perceived risk of dealing with an SME, and Company A's lack of formal project management methodologies. The fact that Company A was a small organisation was a hindrance in some customers' decision making process. Their size meant that they could not provide complementary services such as web design, and the risk that they were not as financially sound as their larger counterparts worried some clients. The SME's response to such concerns was to partner with larger software players, which worked in reducing customer uncertainty and improving their credibility (Mohr *et al.*, 2005). Moreover, Company A's lack of formality in terms of project management methodologies made some clients reluctant to take Company A on as a supplier, despite the interest in their service and software solution. In these cases, clients would insist that they partner with a reputable player in order to reduce the risk for the customer (Forrest, 1990; Street and Cameron, 2007). Company A consistently complied with such demands.

6.7.4 Relationship Marketing: Customer Perspective

RM from the supplier's point of view has already been considered. It has been identified that Company A had always sought to develop relationships with all its customers as a means of retaining them. Now we consider whether a relationship is sought from the customer. This is an interesting angle from which to consider RM, as the literature has generally focussed on the supplier's point of view: how and why to develop relationships, and managing relationships. The customer's view is rarely considered in studies of RM (Blois, 2007).

From the qualitative findings, it is evident that most customers wanted to develop a long term relationship with Company A. The findings are now discussed in relation to the RM literature.

The attraction of a relationship to customers is the knowledge that the supplier will be available to them when required. Company A's customers wanted a supplier which was responsive, accessible and easily contactable. The importance of communication is highlighted in the RM literature (Ndubisi, 2007; Hunt *et al.*, 2006). They appreciated the face-to-face contact as well as regular contact via telephone or email. If something went wrong or if there was an immediate issue with the software, the customer wanted to be reassured that the supplier would be available to resolve problems. The availability of the software supplier was particularly important to customers without a great deal of IT personnel. This illustrates the argument that developing relationships with suppliers of complex products is in the customer's best interest (Christy et al., 1996), especially when concerning technology-based innovations (Bonnin *et al.*, 2005).

Company A's customers appreciated the informal style of communication as long as there was regular dialogue. This supports entrepreneurs' preference of 'conversational' relationships in which they can have contact with the customers, can listen to them and respond accordingly, as opposed to carrying out formal market research to understand the marketplace (Zontanos and

Anderson, 2004). This was particularly relevant in this case as the SME developed bespoke solutions to clients, thus an extensive review of the market via market research would not negate the need to evaluate individual customers' needs. Other customer benefits from entering into a relationship with a small supplier included the strong customer focus, flexibility of the supplier and personal contact between the customer and supplier (Zontanos and Anderson, 2004).

Trustworthiness of the supplier was deemed important by the customer, which made them feel secure in the relationship. Trust is largely presented as a key facet of RM (Berry, 1995; Morgan and Hunt, 1994). The outcomes of trust identified by Morgan and Hunt (1994) were visible in Company A's customer relationships: acquiescence and a lower propensity to leave, co-operation, lower functional conflict and lower uncertainty in decision making. Some of Company A's customers had experienced difficulties with previous suppliers and developing trust had consequently been problematic, thus when trust was established between them and Company A, they felt that it was in both their interests to maintain and further the relationship. To a certain extent, Company A would be allowed to make some mistakes as long as their service recovery rectified the problem. It was clear from observation and in depth interviews that problems had been encountered, and were it not for the strength of the relationship, the relationship would have dissolved. The findings from the in depth interviews concur that trust has a positive relationship with customer satisfaction, and thus it can influence customer loyalty (Hennig-Thurau *et al.*, 2002; Ndubisi, 2007).

Another important incentive for the customer to develop a relationship with the software supplier is the potential for the supplier to understand their software needs, and to understand their organisation and objectives through regular dialogue and collaboration. From the customer's point of view, this level of understanding is crucial for the supplier to develop the right solution for them. Company A's customers preferred personal, one-to-one communication which enabled them to explain what they required. Furthermore, they believed that collaboration between them and Company A would result in the best solution

being developed for their business. Both sides of the relationship recognised that the quality of the relationship was dependent on the efforts of both parties. For instance, many customers recognised the importance of providing detailed specifications of their desired solution, and they did consider themselves as co-producers in terms of providing user feedback on a software prototype, and informing the supplier how they would like to see the software develop (Eiriz and Wilson, 2006).

Some of the RM literature proposes that customer price sensitivity decreases as the relationship develops (Gronroos, 1994; Reichheld and Sasser, 1990). However this was not identified in Company A. Despite the fact that all of the SME's customers wanted a relationship and were willing to work at the relationship, they still expected Company A to offer a competitive price. This was predominant when suppliers had to tender for contracts.

Although their price sensitivity remained unchanged, there was evidence that social bonds had developed as well as structural bonds (Rao and Perry, 2002). Some customers commented that they had a personal relationship with Company A's owner-manager. Interdependence was apparent among Company A and some customers, meaning that asset reciprocity held the partners together and created high barriers to leave the relationship because of the high costs involved (Wilson and Jantrannia, 1994 cited in Rao and Perry, 2002), but due to the commitment and trust between both sides of the relationship, the interdependence was not viewed upon negatively.

Overall, RM from the customer's point of view was regarded as beneficial, especially as customers and their requirements were heterogeneous and derived from varying industries. Relationships were also sought due to the complex and high value nature of software solutions.

6.8 Conclusion

This chapter has delved into Company A's customer perspectives and their expectations of software suppliers using two theoretical models from the Services Marketing literature. The major findings include the need for a comprehensive understanding of the customer's needs as well as customers' desire to develop a long-term relationship with their supplier as benefits include responsiveness, after-sales service and future collaborations. The text-mining analysis of the in-depth interviews concurs with these findings. The secondary objective of the qualitative interviews was to ascertain the key attributes for Adaptive Conjoint Analysis. The ACA findings and further analysis are presented in the next chapter.

7.0 A CONJOINT ANALYSIS AND DISCUSSION OF SUPPLIER CHOICE CRITERIA

7.1 Summary

This chapter reports the findings of the Adaptive Conjoint Analysis web surveys, which were analysed using both Sawtooth Software SMRT and STATISTICA statistical software package. The average importances and part-worths of the conjoint analysis attributes and their levels are firstly described, followed by an analysis using the Hierarchical Bayes estimation method. In the second part of the chapter, market simulations of software organisations are presented using the attributes and their utilities, and further analysis is conducted using cluster analysis and text mining. The third part of the chapter is devoted to a discussion of the findings, in order to compare the ACA findings with past research.

7.2 ACA Results using OLS Regression

7.2.1 Average Importances

These part-worth utilities were initially calculated using SMRT Ordinary Least Squares regression, which is the default estimation of Adaptive Conjoint Analysis results. Out of the 12 attributes, the findings revealed that Software Quality is the most important attribute perceived by prospective buyers in the software purchase decision making process, indicating that software quality is the main driver of software purchase. Software Functionality is the second most important attribute, followed by Professionalism and Understanding of Customer Requirement, all four of which score higher than a 10 (see table 7.1).

Table 7.1 Average Importances using OLS regression

Software Quality	11.56
Software Functionality	11.22
Professionalism	10.58
Understanding of Requirements	10.20
Expertise of Supplier's employees	9.07
Trustworthiness of the supplier	8.99
Service	8.83
Price	7.49
Relationship	6.80
Communication	5.91
Bilingual Capability	4.82
Supplier Office Location	4.53

From initial observation of the findings, it is apparent that service-related attributes such as Professionalism, Trustworthiness and Expertise of Employees are equally important as the product-related attributes. Interestingly, Price is not perceived as a primary driver of software purchase, although it was identified in the exploratory stage of research as an important factor in the decision making process. The most interesting of the attributes are the scores obtained by Relationship and Communication, which are generally not perceived to be the most important factors pertaining to the selection of software supplier. The lowest importance attributes are Location and Bilingual Capability of the software, which seem to be desirable rather than essential attributes to prospective customers. This concurs with the depth interview findings. Furthermore the Service attribute lies mid-range among the attributes.

7.2.2 Average Utility Values

In order to analyse the attributes in more detail, it was necessary to look at each level of each attribute. The data obtained from conjoint analysis provides the part-worth of each level of each attribute, which is a numerical expression of

the value consumers place on an attribute level. It represents the relative 'worth' of the level. A low part-worth indicates less value and a high part-worth indicates a higher value which customers ascribe to a given level.

In terms of the Relationship attribute and its associated levels, it is apparent that a mutual and long term relationship is desirable over a short term, transactional relationship with a software supplier (see table 7.2). This is not surprising considering the complex nature of software, the customisation required and the lifetime cost of software (Helander and Ulkuniemi, 2006). Equally, a comprehensive understanding of customer requirements is preferred by prospective customers as well as the extensive experience and expertise of the software supplier's staff. In terms of Trust, the existence of past experiences and a confidence in the supplier is indicated to be of paramount importance to the customer (Ivens, 2005; Mohr and Spekman, 1994). Moreover a structured communication is preferred over ad hoc communication as well as the knowledge that the software supplier is reliable. All of these levels point to the need for a long term, established, mutually respectful relationship which is built around a thorough understanding of customer needs, high formal processes and an end-to-end service by the software supplier, which often results in bespoke or modified solutions tailored to the customer's requirements (Schmidt *et al.*, 2007). As it was seen from the average importances scores, the Relationship attribute was not generally perceived as a primary factor in the decision making process, however it is contended that the desired form of communication, the level of understanding, and the need for past experiences with the software supplier requires an established relationship. In other words, it is clear that it is not possible to have past experiences and structured communication without that underlying relationship.

With regards to Professionalism, the need for formal processes is evident, confirming the results from the depth interviews as well as the case study observation. This is of particular relevance to SMEs, which often tend to avoid the processes due to lack of time and resources as well as their short term perspective (O'Donnell *et al.*, 2002: Scozzi *et al.*, 2005).

Table 7.2 Part-worth Utility Values using OLS regression

Understanding of Requirement	The software supplier has a comprehensive understanding of customer requirements	55.82
	The software supplier has a good understanding of customer requirements	9.93
	The software supplier has a limited understanding of customer requirements	-65.75
Price	Low Priced Software	44.50
	High Priced Software	-44.50
Relationship	Mutual and long-term relationship with the software supplier. Future purchases likely.	33.81
	Transactional and short-term relationship with the software supplier. One off software purchase.	-33.81
Software Functionality	Software has useful functionality	67.33
	Software functionality is limited	-67.33
Bilingual Capability	Software supplier offering bilingual software	1.96
	Software supplier offering English software only	-1.96

Expertise of Supplier's employees	Software developers have extensive experience in the IT industry and recognised qualifications	53.06
	Software developers have extensive experience in the IT industry but no recognised qualifications	19.37
	Software developers have recognised qualifications but no practical experience in the IT industry	-18.59
	Software developers have limited experience in the IT industry and no recognised qualifications	-53.85
Trustworthiness of Supplier	The customer has confidence in the supplier's reliability and integrity by means of past experiences	51.87
	The customer deems the supplier to be reliable and has confidence in the supplier through recommendations and references only	3.54
	The customer and supplier have no past experiences and trust is yet to be established	-55.41
Software Quality	Well-tested software providing positive user experience	69.43
	User friendly software but not thoroughly tested	22.05
	Well-tested software but difficult for users to use	-22.80
	Un-tested software which is difficult to use	-68.67

Professionalism	Supplier is reliable and has high standard formal processes in place	62.90
	Supplier is reliable but has no formal processes in place	20.66
	Supplier has formal processes in place but can be unreliable	-20.24
	Supplier can be unreliable at times and no formal processes in place	-63.32
Supplier Office Location	Local software company	1.81
	Software company based anywhere in the UK	-1.81
Communication	Structured communication with the software supplier	24.35
	Ad hoc communication with the software supplier	-24.35
Service	Full end-to-end service offered including training and after-sales support.	53.08
	After sales support is included but no training provided by the software company	15.51
		-17.57
	Training is provided with the software, but no after-sales support offered.	-51.01
	Software product delivered only. No training and no after-sales support included in the price.	

7.3 ACA HB Results

In order to get more accurate part-worths, a Hierarchical Bayes estimation was conducted using Sawtooth Software's HB Module. As explained in the methodology (see section 4.6.4.1), running the data through HB provides more robust results since the model 'borrows' from other respondents in order to stabilise the estimates. Here are the revised average importances calculated using HB (see table 7.3).

Table 7.3 Average Importances using HB

Software Quality	12.80
Professionalism	11.50
Understanding of Requirement	11.40
Software Functionality	10.33
Expertise of Supplier's employees	9.53
Service	8.80
Trustworthiness of the supplier	8.79
Price	6.82
Relationship	6.10
Communication	5.29
Bilingual Capability	4.63
Supplier Office Location	4.01

The HB findings indicate that Software Quality is definitely the most important attribute perceived by potential customers when deciding on software suppliers. The HB estimates an even higher average importance at 12.80. In contrast to the ACA OLS results, the second most important attribute is Professionalism, followed by Understanding of Requirement and Software Functionality (ACA OLS estimated Software Functionality to be the second most important attribute). Interestingly the importance of Trust is slightly lower here than in the OLS results but only marginally. Overall there are no major differences between both set of results. However the fact that both Professionalism and

Understanding of Customer score higher via HB analysis underlies the argument that the service elements of software suppliers are equally as important as the product elements. Furthermore the Service attribute itself scores higher via HB analysis. The only surprising factor is that Trustworthiness of the supplier's perceived importance falls compared to the OLS findings. In order to investigate why, a detailed analysis of the part-worths of each level was conducted (see table 7.4).

Understanding of Requirement	The software supplier has a comprehensive understanding of customer requirements	61.62
	The software supplier has a good understanding of customer requirements	13.56
	The software supplier has a limited understanding of customer requirements	-75.18
Price	Low Priced Software	40.90
	High Priced Software	-40.90
Relationship	Mutual and long-term relationship with the software supplier. Future purchases likely.	27.16
	Transactional and short-term relationship with the software supplier. One off software purchase.	-27.16
Software Functionality	Software has useful functionality	62.00
	Software functionality is limited	-62.00
Bilingual Capability	Software supplier offering bilingual software	-4.17
	Software supplier offering English software only	4.17

Expertise of Supplier's employees	Software developers have extensive experience in the IT industry and recognised qualifications	57.06
	Software developers have extensive experience in the IT industry but no recognised qualifications	21.11
	Software developers have recognised qualifications but no practical experience in the IT industry	-20.83
	Software developers have limited experience in the IT industry and no recognised qualifications.	-57.34
Trustworthiness of Supplier	The customer has confidence in the supplier's reliability and integrity by means of past experiences	50.78
	The customer deems the supplier to be reliable and has confidence in the supplier through recommendations and references only	3.92
	The customer and supplier have no past experiences and trust is yet to be established	-54.70
Software Quality	Well-tested software providing positive user experience	76.70
	User friendly software but not thoroughly tested	25.91
	Well-tested software but difficult for users to use	-25.73
	Un-tested software which is difficult to use	-76.87

Professionalism	Supplier is reliable and has high standard formal processes in place	69.95
	Supplier is reliable but has no formal processes in place	22.19
	Supplier has formal processes in place but can be unreliable	-24.06
	Supplier can be unreliable at times and no formal processes in place	-68.08
Supplier Office Location	Local software company	-3.11
	Software company based anywhere in the UK	3.11
Communication	Structured communication with the software supplier	17.65
	Ad hoc communication with the software supplier	-17.65
Service	Full end-to-end service offered including training and after-sales support.	54.44
	After sales support is included but no training provided by the software company	15.76
		-19.02
	Training is provided with the software, but no after-sales support offered.	-51.17
	Software product delivered only. No training and no after-sales support included in the price.	

7.3.1 Part-worth utilities obtained with HB

7.3.1.1 Understanding of Customer Requirement

This attribute has three levels, the first level, 'A comprehensive understanding of customer requirements' has the highest utility with a value of 61.62, inferring that customers prefer this level of understanding as opposed to 'good' or 'limited'. The second level 'A good understanding of customer requirements' has a lower value, but it remains a positive value at 13.56, implying that it is still acceptable to customers. The final level 'A limited understanding of customer requirements' has a negative value of -75.18, which implies that it is unacceptable for software suppliers to have a limited understanding of their customers' needs.

7.3.1.2 Price

There are two levels associated with this attribute, 'Low-priced software' and 'High-priced software'. As for all other attributes with only two levels, the values are mutually exclusive, with 'low-priced software' scoring a positive value of 40.90. This result implies that customers generally prefer low-priced software, all other things being equal. However, as it was explained in the methodology chapter, care must be taken when evaluating Price as an attribute, as people often tend to associate higher price with a higher quality. As is seen in the qualitative findings, price is certainly an issue during the software purchase decision making, however it appears from its ranking position that customers are not comfortable trading-off Service and Quality for a lower Price.

7.3.1.3 Relationship

There are two levels to the Relationship attribute, 'Mutual and long term Relationship' and 'Short-term Relationship'. A higher utility is placed with the first level, 'Mutual and long-term Relationship', indicating that a long-term relationship with a software supplier is preferred over a short-term, one-off relationship. Although the positive value is not high at 27.16, it has major

implications for this research, and concurs with the exploratory and qualitative findings which suggests that the opportunity to develop a relationship is important for a customer. Furthermore, even though other attributes have scored higher in importance on average, such as Professionalism and Understanding of customer requirement, it can be argued that these elements cannot be achieved and leveraged without an underlying relationship with the software supplier (Helander and Ulkuniemi, 2006).

7.3.1.4 Software Functionality

The first level for this attribute, 'Software has useful functionality' has a positive utility value of 62.0, whilst the second level 'Software has limited functionality' has a negative utility value of -62.0. It is expected that customers would prefer useful as opposed to limited functionality, and the attribute Software Functionality has a high overall average importance, indicating the importance of the software product itself. Service quality, Professionalism and the Relationship elements are all arguably important, but are of no use to the customer if the software product does not perform adequately. The software product is expected to solve a business problem or to make a business process easier, and this is highlighted in this study as a priority for purchasers when choosing a software supplier.

7.3.1.5 Bilingual Capability of Software

As Wales is a bilingual country, and the focus of the research is Welsh software SMEs, the bilingual element was a necessary aspect of research. Therefore, the bilingualism attribute had two levels, 'Software supplier offering bilingual software' and 'Software supplier offering English software only'. The second level, 'English software only' scored a positive utility value of 4.17, suggesting that prospective customers prefer English software to bilingual software. It could be that a certain segment of respondents did prefer bilingual software, but not the majority, and further analysis is required via clustering to establish such segments. Even if some respondents would require

bilingual software, it is likely that it would be a desirable rather than a deciding factor.

7.3.1.6 Expertise of Employees

The first level of this attribute, 'Software developers have extensive experience in the IT industry and recognised qualifications' scored a high positive utility value of 57.06, indicating that this is the preferred level of expertise of the software company's employees. The second level, 'Software developers have extensive experience in the IT industry but no recognised qualifications', also scored a positive value of 21.11, whilst the third level, 'Software developers have recognised qualifications but no practical experience in the IT industry' scored a negative utility value of -20.83. These results suggest that experience of the supplier's employees is valued more so than recognised qualifications in the software industry. As expected, the final level, 'Software developers have limited experience in the IT industry and no recognised qualifications' scores a negative value of -57.34, indicating that lack of experience as well as lack of qualifications is unacceptable for a software supplier.

7.3.1.7 Trustworthiness of the Software Supplier

The first level of this attribute, 'The customer has confidence in the supplier's reliability and integrity by means of past experiences' has a positive utility value of 50.78, revealing that having confidence in the supplier is an important aspect of the software purchasing process. This attribute as a whole scores a higher average than the 'Relationship' attribute, with its level 'Mutual and Long term relationship' scoring only 27.16. However, to have this level of confidence in a supplier is arguably impossible without the underlying relationship between both customer and supplier (Ivens, 2005). This first level indicates the importance of 'past experiences', and implies positive past experiences with the software supplier, which again cannot have happened without a relationship. The second level, 'The customer deems the supplier to be reliable and has confidence in the supplier through recommendations and references only' also has a positive utility value of 3.92. This suggests that

most businesses would prefer to have had dealings with software suppliers in the past. However as this is not always possible, the next best thing is to consult personal networks and contacts as well as historical customers for recommendations and references, which is an aspect of informational interaction within networks (Brennan *et al.*, 2007). If recommendations are favourable, certain organisations would perhaps develop a basic level of trust before the development of a relationship. However as was seen in the depth interview findings, a pilot project would likely be given to a software supplier initially, with a view to remaining with the supplier if the project was successful, and also to minimise risk in the short term. The final level 'The customer and supplier have no past experiences and trust is yet to be established' had a negative utility value of -54.70, implying that a certain level of trust needs to be established before a customer enters into a relationship with a software supplier, whether it be through introductory meetings, word-of-mouth, recommendations or the supplier's portfolio and history.

7.3.1.8 Software Quality

As it is seen in average importances, 'Software Quality' is the most important attribute perceived by customers within their software purchase decision making process. The first level, 'Well-tested software providing positive user experience' scored the highest utility level of 76.70. The second level, 'User friendly software but not thoroughly tested' had a positive utility value of 25.91, whilst the third level, 'Well-tested software but difficult for users to use' had a negative value of -25.73. This indicates that 'ease of use' is a vital facet of software quality, and is more important than how much testing the software product has undergone. As expected, the final level, 'Un-tested software which is difficult to use' scores the highest negative utility value of -76.87, revealing that this level of software quality is unacceptable to prospective customers.

7.3.1.9 Professionalism of the Supplier

From the revised calculations of the part-worth utilities using HB, the 'Professionalism' attribute was identified as the second most important

attribute. The first level, 'Supplier is reliable and has high standard formal processes in place' had a positive utility value of 69.95, indicating the importance of reliability and formal processes. The second level, 'Supplier is reliable but has no formal processes in place' had a positive utility value of 22.19, and the third level, 'Supplier has formal processes in place but can be unreliable' had a negative utility value of -24.06, suggesting that reliability as an element of Professionalism is more important than standard formal processes. This is a positive finding for SMEs, as it is difficult for them to set up standard procedures and policies like their larger counterparts, due to limited resources (Scozzi *et al.*, 2005). From the customer's point of view, Professionalism is perceived as reliability, which again concurs with in-depth interview findings. The final level 'Supplier can be unreliable at times and no formal processes in place' had a negative value of -68.08.

7.3.1.10 Location

This attribute had two levels, 'Local Software Company' and 'Software company based anywhere in the UK'. The attribute scored lowest in average importances, implying that customers do not perceive Location of the software company to be of paramount importance when deciding on a software supplier. This is not surprising due to technology advancements allowing regular communication through various channels and the ability for software products to be delivered from any location in the world. The first level, 'Local Software company' scored a negative utility value of -3.11, whilst the second level 'Software company based anywhere in the UK', scored a positive value of 3.11. These findings suggest that overall, being a local software company is not of importance to the majority of customers. This finding is however inconsistent with some in-depth interviews, which revealed that dealing with a local software company had specific advantages. However, they did indicate that locality was a desirable rather than an essential factor and would probably be traded off against other service-related factors.

7.3.1.11 Communication

This attribute also had two levels. The first level 'Structured communication with the software supplier' had a positive utility value of 17.65, whilst the second level, 'Ad hoc communication with the software supplier' had a negative utility value of -17.65. These findings indicate that customers prefer to have structured communication with their software supplier, further supporting the need for a long-term relationship as having such structured and regular communication with a supplier is an element of the relationship.

7.3.1.12 Service

The final attribute, 'Service', had four levels. The first level 'Full end-to-end service offered including training and after-sales support' scored a positive utility value of 54.44, revealing that customers prefer a complete service package as well as the software product. The second level, 'After sales support is included but no training provided by the software company' had a positive utility value of 15.76, and the third level, 'Training is provided with the software, but no after-sales support offered' had a negative utility value of -19.02. This finding indicated that after-sales support as a service element is more important than training. The final level, 'Software product delivered only. No training and no after-sales support included in the price' had a negative utility value of -51.17. Service as an attribute comes out as relatively high in average importances, implying the equal importance of software service as well as the software product.

7.4 Market Simulations

Three scenarios from the market simulations are presented here (see tables 7.7 and 7.8 for manipulated levels).

The first simulation aimed to compare preferences for different types of software suppliers, the four suppliers being defined by manipulating levels. A 'Good SME' was assumed to have the 'best' levels of all attributes i.e. a

comprehensive understanding of customer, high quality software and long-term relationship with the customer, whilst a 'Bad SME' would be assumed to have the worst levels of all attributes. 'Off-the shelf' would have a good understanding of customer requirement, but no service elements included. A 'Large supplier' would provide high quality and good functionality, as well as all service elements, but the supplier would not be local (see table 7.7. for a description of software companies). The results of the simulations are presented in Table 7.5 below.

Table 7.5 First Choice and Share of Preference simulation;

First Choice Simulation			Share of Preference Simulation		
	Share	Std Err		Share	Std Err
Off the shelf	10.16	1.89	Off the shelf	11.01	1.64
Good SME	56.25	3.10	Good SME	58.31	2.47
Bad SME	0.00	0.00	Bad SME	0.00	0.00
Large supplier	33.59	2.95	Large supplier	30.68	2.22

The findings indicate that the Good SME is preferred over and above the rest, followed by a larger software supplier. However the manipulation of levels is subjective, which constitutes a limitation in setting scenarios.

The second scenario focussed on the Welsh/bilingual aspect. In this case, all attribute levels were set exactly the same, apart from Location and Bilingual Capability (see table 7.8. for a detailed view of levels).

Table 7.6 presents the suppliers' shares of preference using the First Choice simulation model and the Randomized First Choice model:

Table 7.6 Suppliers shares of preference; First Choice and Randomized First Choice models.

First Choice Simulation Model			Randomized First Choice Model		
	Share	Std Err		Share	Std Err
Welsh Supplier	41.02	3.07	Welsh Supplier	41.22	2.59
UK Supplier	58.98	3.07	UK Supplier	58.78	2.59

Both models produce similar results, and show that a software supplier located anywhere in the UK supplier is preferred. In other words, Bilingual Capability and Location factors are not vital factors, but certainly need to be taken into account as here they have a 40% share of preference, indicating that they may be important to certain segments of customers.

Table 7.7 Simulation 1 –Different Types of Suppliers

Attributes	Good SME	Bad SME	Large Software Supplier	Off the shelf Software
	Attribute Levels			
Understanding of Customer Requirements	Comprehensive	Good	Good	Good
Price	High	High	High	Low
Relationship	Long term	Short term	Long term	Short Term
Software Functionality	Useful	Limited	Useful	Useful
Bilingual Capability	Yes	No	No	No
Expertise of Employees	Extensive	Limited	Extensive	Extensive
Trustworthiness	Confidence through past experiences	Trust yet to be established	Confidence through recommendations	Confidence through recommendations
Software Quality	Well-tested and user friendly	Well-tested but difficult to use	Well-tested and user friendly	Well-tested and user friendly
Professionalism	Reliable with high standard processes	Unreliable at times and no formal processes	Reliable with high standard processes	Reliable with high standard processes
Location	Local	Anywhere in UK	Anywhere in UK	Anywhere in UK
Communication	Structured	Ad hoc	Structured	Ad hoc
Service	After-sales service but no software training	After-sales service but no software training	Full end-to-end service including training	Software product delivered only

Table 7.8 Simulation 2 –Welsh Supplier vs UK Supplier

Attributes	Welsh Supplier	UK Supplier
	Attribute Levels	
Understanding of Customer Requirements	Comprehensive	Comprehensive
Price	High	High
Relationship	Long term	Long term
Software Functionality	Useful	Useful
Bilingual Capability	Yes	No
Expertise of Employees	Extensive	Extensive
Trustworthiness	Confidence through past experiences	Confidence through past experiences
Software Quality	Well-tested and user friendly	Well-tested and user friendly
Professionalism	Reliable with high standard processes	Reliable with high standard processes
Location	Local	Anywhere in UK
Communication	Structured	Structured
Service	Full end-to-end service	Full end-to-end service

7.5 Cluster Analysis

In order to broaden the quantitative analysis of the ACA results, the clustering method was chosen to establish whether there were natural taxonomies in the data and to establish how these groups would perhaps differ in terms of expectations of software suppliers. Therefore a K-means clustering technique was run on the raw data.

As it is difficult to determine an optimal number of clusters beforehand, the algorithm was initially run on a different numbers of clusters, then after taking into account ANOVA (see table 7.9), a four cluster solution was deemed to be the optimal number of clusters. Cluster one had 41 members, cluster two had 84 members, cluster three had 81 members, and cluster four had 50 members.

Clustering was run on all utilities of all attributes (variables) and each individual p-value was considered. For reliability and validity purposes, all utilities with p-values greater than 0.05 would be excluded from further analysis. Furthermore, the aim was for the clusters to be as different as possible, thus running the analysis on all variables enabled the researcher to look at the source of differences between clusters.

7.5.1 Findings from ANOVA

ANOVA is used to find significant differences between groups. In this study, clustering was done first, then the ANOVA indicated whether the clusters were different on the basis of the variables used for clustering.

ANOVA was run on all levels of all attributes in order to identify how significant the differences were between the clusters. The results are shown in table 7.9. All levels of the first attribute, Understanding of Customer requirement are significant. Price, the second attribute is not significant as both levels have a p-value of 0.098562. Therefore Price is excluded from further analysis and it is concluded that there is no significant difference in how

respondents viewed the Price attribute. In other words, no clusters are different in terms of Price.

All levels of the Relationship, Software Functionality and Bilingual Capability attributes were found to be significant variables. The significance of Bilingual Capability was expected as the focus was on Wales, a bilingual country, and many organisations expect and often need bilingual software. However, many companies in Wales are non-Welsh and thus would not expect or wish for their software to be bilingual. Therefore, cluster differences on this basis were expected.

All levels of the attribute 'Expertise of Employees' were shown to be insignificant (p-values >0.05). Therefore it is concluded that clusters do not differ on the basis of this feature. It is likely that all respondents expect a high level of expertise from their software suppliers, in terms of experience and qualifications, and perhaps would not trade off this attribute for another such as lower price, or a more convenient location.

The Trust attribute has interesting results. The first level (The customer has confidence in the supplier's reliability and integrity by means of past experience) is excluded with a p-value of 0.26. Again, it can be argued that every respondent expects this level of Trust and confidence in the supplier. However, past experience is not always possible, for instance if an organisation is trying a software supplier for the first time. In this case, references from past customers or personal contact networks are relied upon (Brennan *et al.*, 2007). However, no matter how good the credentials, there will always be certain people who will want to have dealt with the supplier in the past.

The next attribute, Software Quality gave a similar result. All levels of the attribute are significant apart from the second level ('user-friendly software but not thoroughly tested') which is excluded on the basis that no clusters differ in terms of this level. Respondents can differ in terms of their expectation of user-friendliness and level of testing, and as software quality is difficult to define, many of the respondents may define it differently. Moreover, many of the

respondents were IT operators, who may not consider user-friendliness as important as they are apt and able to use most software programs. However it is the end-users who must understand and use the software. Some IT experts may be more interested in the processes followed when writing the software. On the other hand, for someone who isn't an IT 'expert', the user-friendliness and ease of use of the software is an important indication of quality. This is supported by the exploratory research questionnaire (see section 5.4). A more detailed analysis of the software quality levels is reported in the cluster means section (see section 7.5.2).

All levels of the Professionalism attribute apart from the top level are included in analysis of clusters. The top level ('Supplier is reliable and has high standard formal processes in place') is narrowly excluded with a p-value of 0.076, indicating that clusters do not differ on this factor. This can be explained in a similar manner to the Trust attribute, in that every prospective organisation expects this level of Professionalism from their supplier. However it is not always possible, and it is often unrealistic to expect a start-up SME to have standard formal procedures and policies in place for some time due to resource constraints. In some cases, customers realise this and do not mind as long as the supplier is reliable. This was found in the case research and in-depth interview findings. Conversely, large software suppliers tend to have extensive formal procedures but there is a risk of bureaucracy hindering the innovation, and their level of flexibility and opportunity to adopt a flatter structure is often not that of smaller software suppliers (McAdam *et al.*, 2004).

The final three attributes, Location, Communication and Service and all associated levels are all significant and are included in further analysis of the clusters. Therefore, out of a total of 34 levels/variables, nine are excluded on the basis that clusters do not differ significantly on these factors.

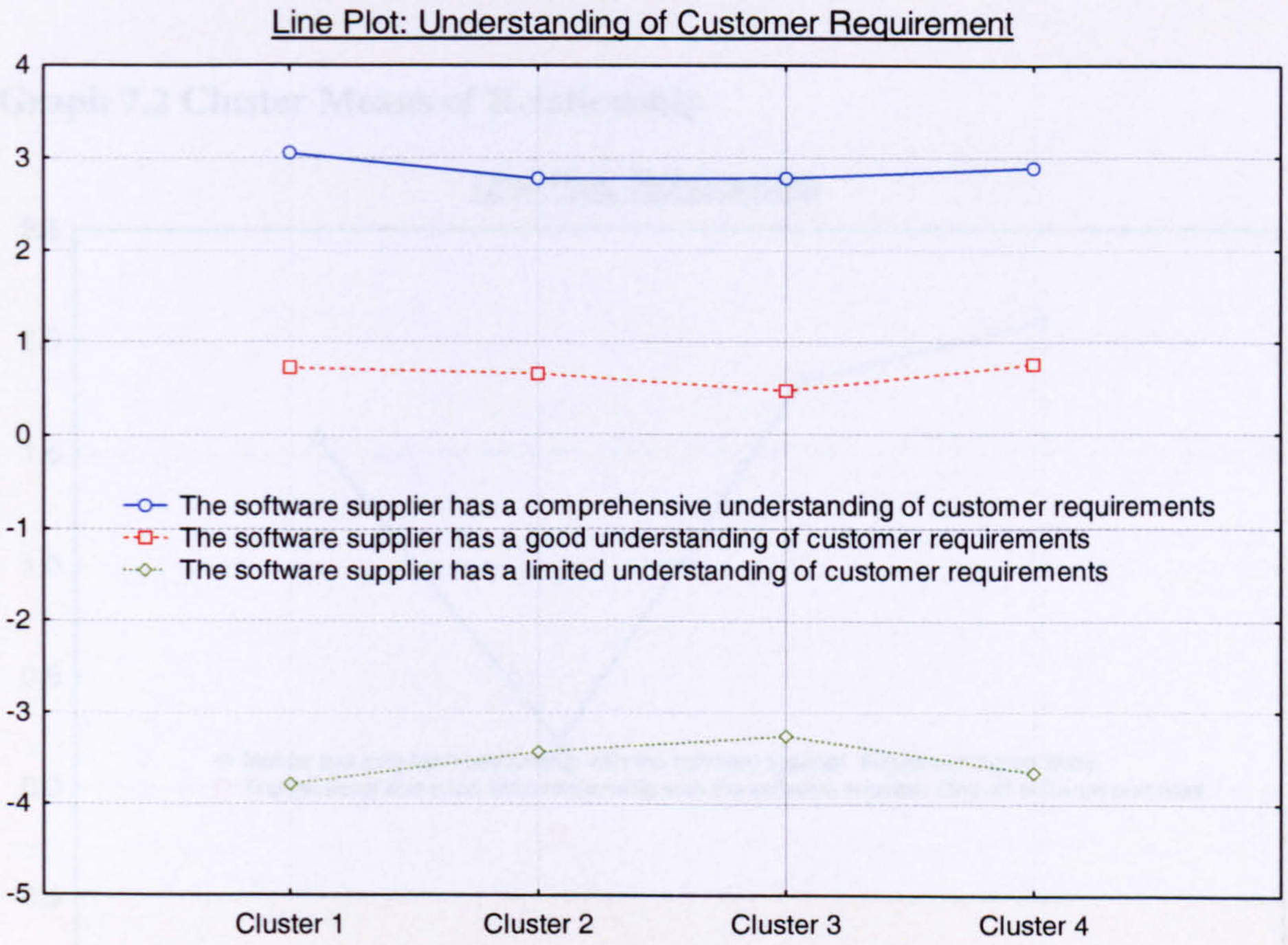
After the inclusion of all variables, the ones that were not different were excluded and are highlighted in blue (see table 7.9 with all relevant variables).

7.5.2 Analysis of Cluster Means

In this section, the cluster means of each attribute level are analysed, to see what differences there are in each cluster, followed by a detailed description of each cluster. Graphs are used to illustrate the results.

The first level, 'the software supplier has a comprehensive understanding of customer requirements' has a high cluster mean across all four clusters, which corresponds with the ACA results and infers that an understanding of customer requirements is essential across all four clusters. However it is more predominant in cluster one, which is therefore deemed the cluster most concerned about a comprehensive understanding by their software supplier. The other three clusters' perceptions of this level are fairly equal. The second level, 'a good understanding by the software supplier' follows a similar pattern, but with cluster four attaching higher perceived importance to the level than cluster one. As expected, the numerical values are not as high as the first level as ideally, customers want their suppliers to have a comprehensive understanding of customer needs. The third level, 'The software supplier has a limited understanding of customer requirements' scores negatively by all clusters, even more so by cluster one, which further supports the argument that understanding of customer requirement is vital in cluster one's expectations of software suppliers. Cluster means of this attribute is illustrated in graph 7.1.

Graph 7.1 Cluster Means of Understanding of Customer Requirement

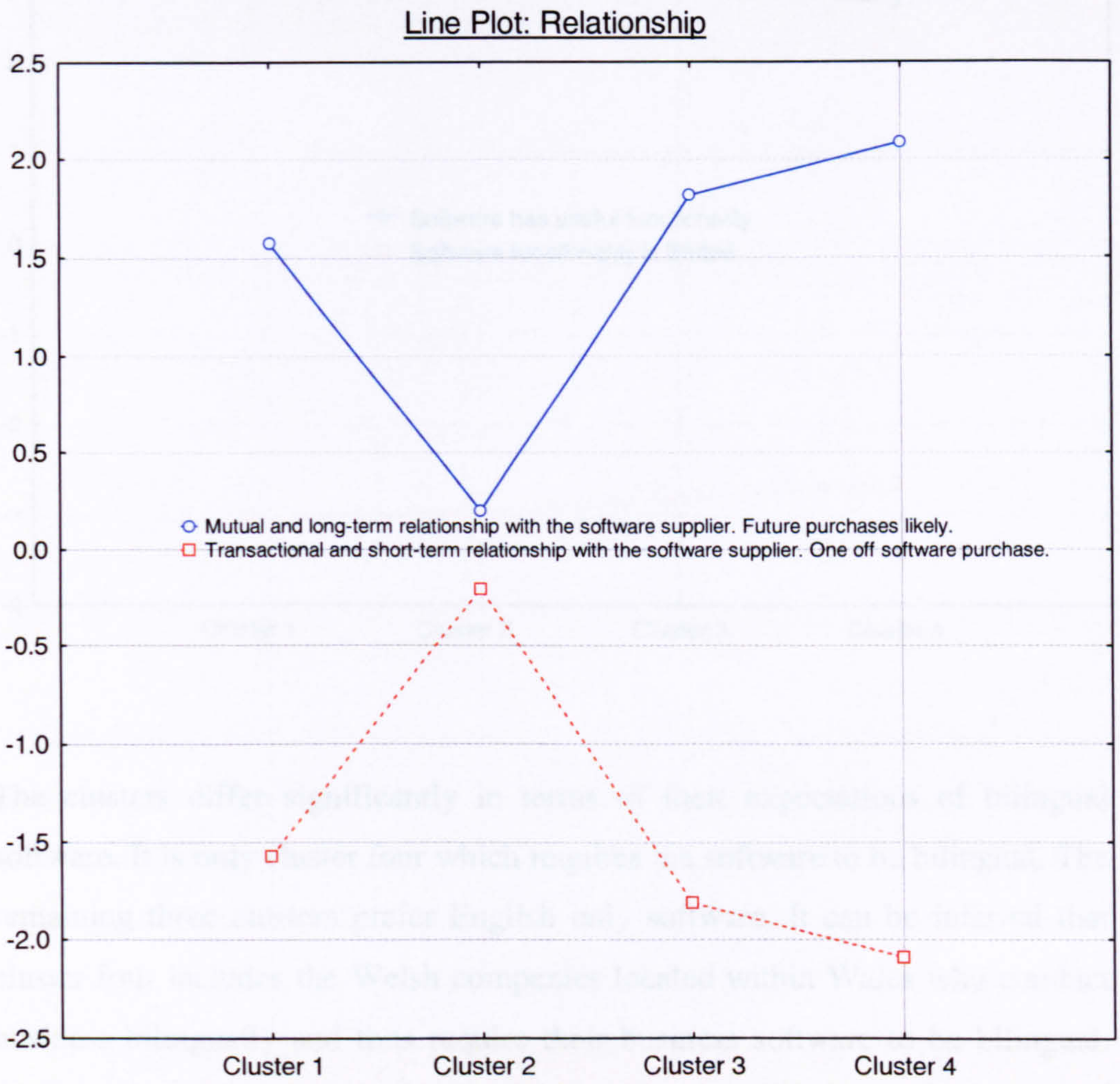


With regards to Price, cluster two is shown to be the most price conscious, but as is seen in the ANOVA results, this result is not statistically significant and thus cannot be used to differ the clusters.

The cluster means differ significantly in terms of Relationship expectations. The first Relationship level 'Mutual and long term relationship with the software supplier' is generally favoured as opposed to 'Transactional and short term relationship with the software supplier' but it appears that a relationship is much more important to cluster number four than the other clusters. Thus the extent to which members of cluster four are able to develop a mutual, long term relationship with their software supplier would be a major factor in their decision making process. Cluster number two on the other hand prefers a long term relationship, but only by a small amount. It appears that a long term relationship is not a priority for cluster two, but is preferred over short term relationships. As for clusters three and four, the results are similar and again, a long term relationship is preferred more so than cluster two, but there may be other more weighty factors which would influence their decision making

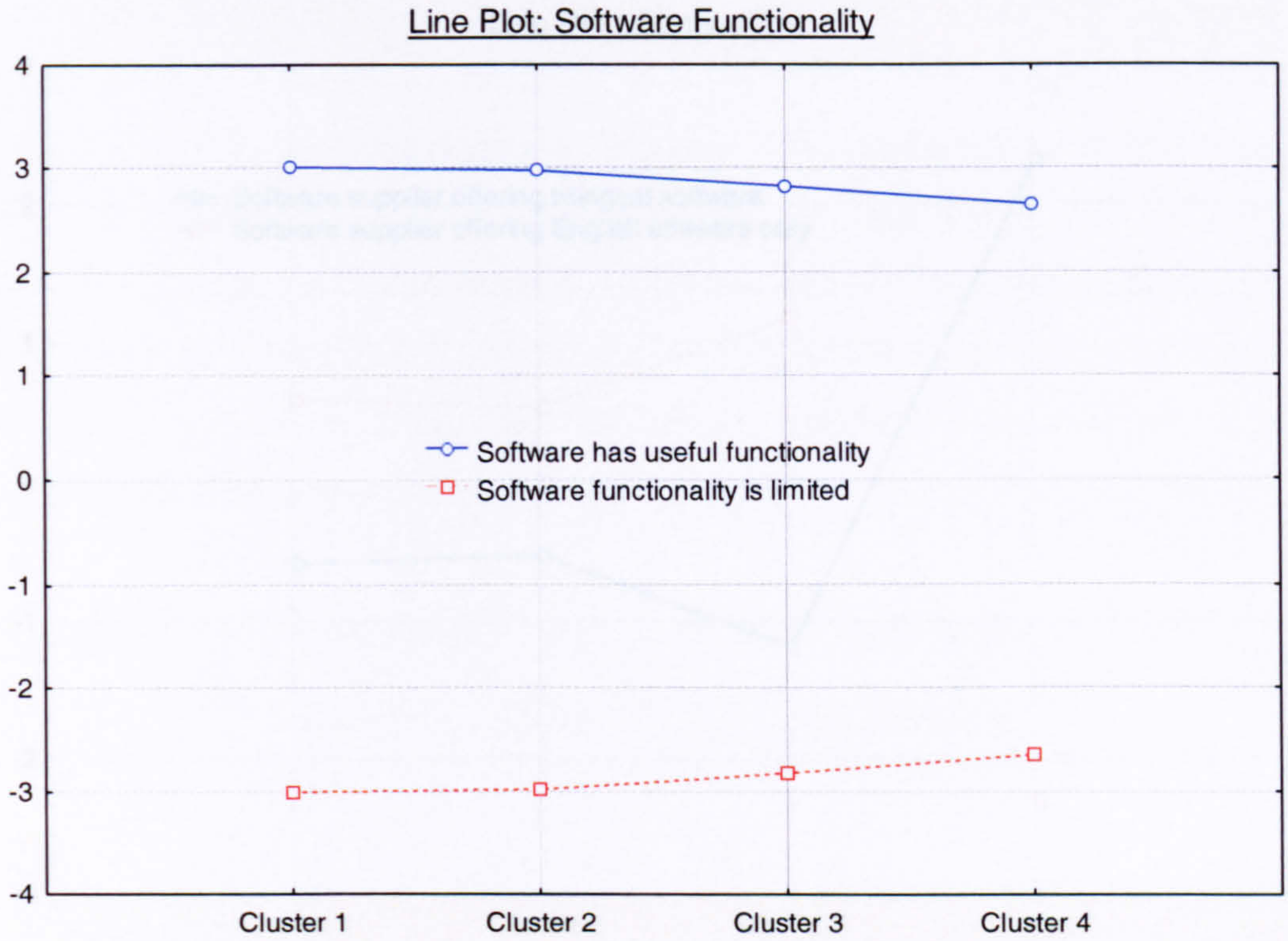
process. These figures are highly significant at 0.000 (ANOVA figures). The results are illustrated in graph 7.2.

Graph 7.2 Cluster Means of Relationship



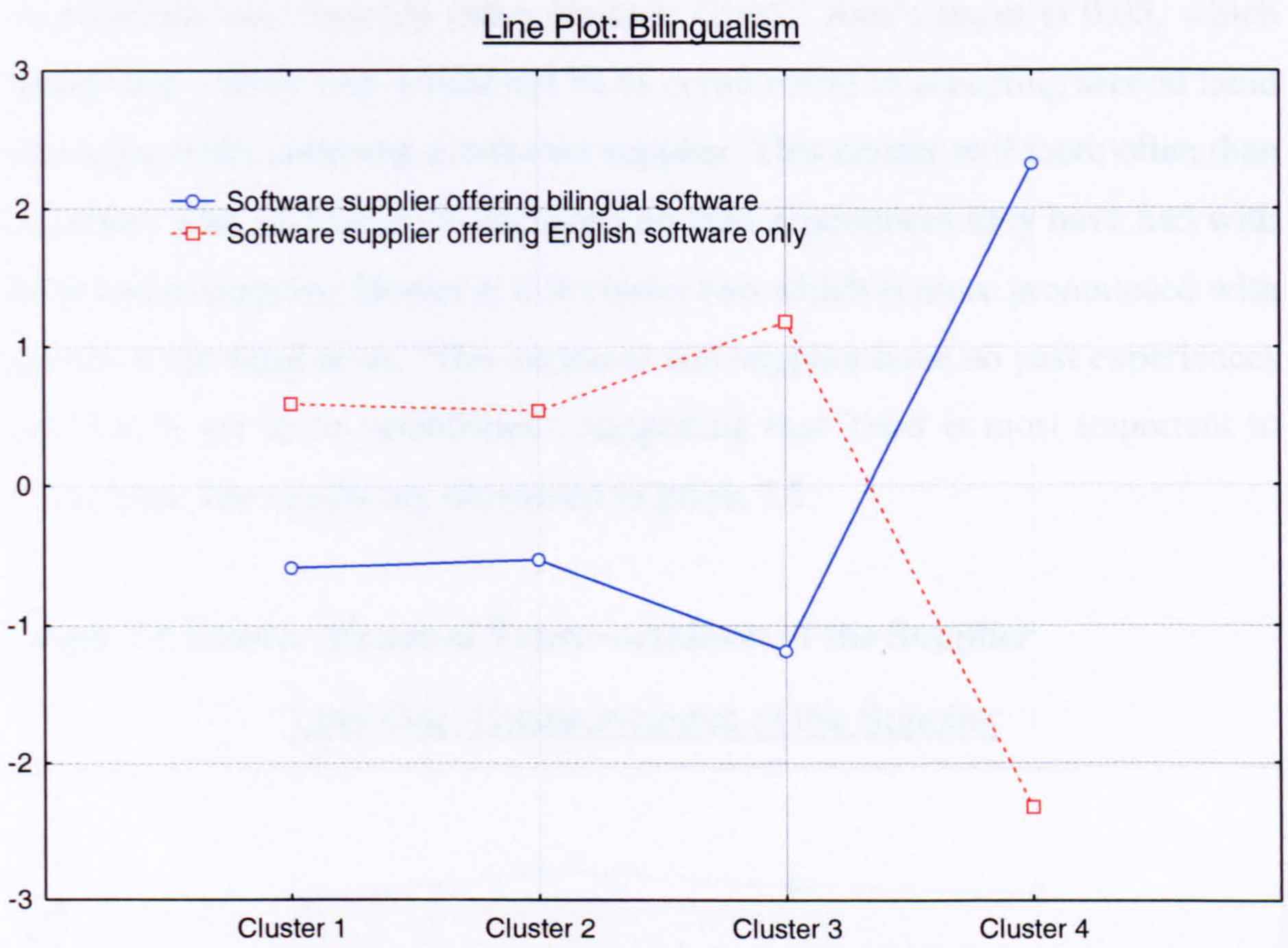
The Functionality attribute has two levels, and all four clusters naturally prefer useful functionality over limited functionality. The cluster which places most emphasis on useful functionality is cluster one, whereas out of the four, cluster four places least emphasis on useful functionality, even though it is still deemed important. Graph 7.3 illustrates the results.

Graph 7.3 Cluster Means of Software Functionality



The clusters differ significantly in terms of their expectations of bilingual software. It is only cluster four which requires the software to be bilingual. The remaining three clusters prefer English only software. It can be inferred that cluster four includes the Welsh companies located within Wales who conduct business bilingually and thus require their business software to be bilingual. Clusters one and two are of a similar opinion that bilingual software is not necessary, but do not feel as strongly as cluster three. It may also be inferred that clusters one and two are also Welsh organisations within Wales, but bilingualism may not be mandatory or even encouraged within the organisations, and therefore they may choose English software perhaps due to cost reasons. Cluster three may have consisted of companies who are located in Wales, but are non-Welsh. The results are illustrated in graph 7.4.

Graph 7.4 Cluster Means of Bilingualism

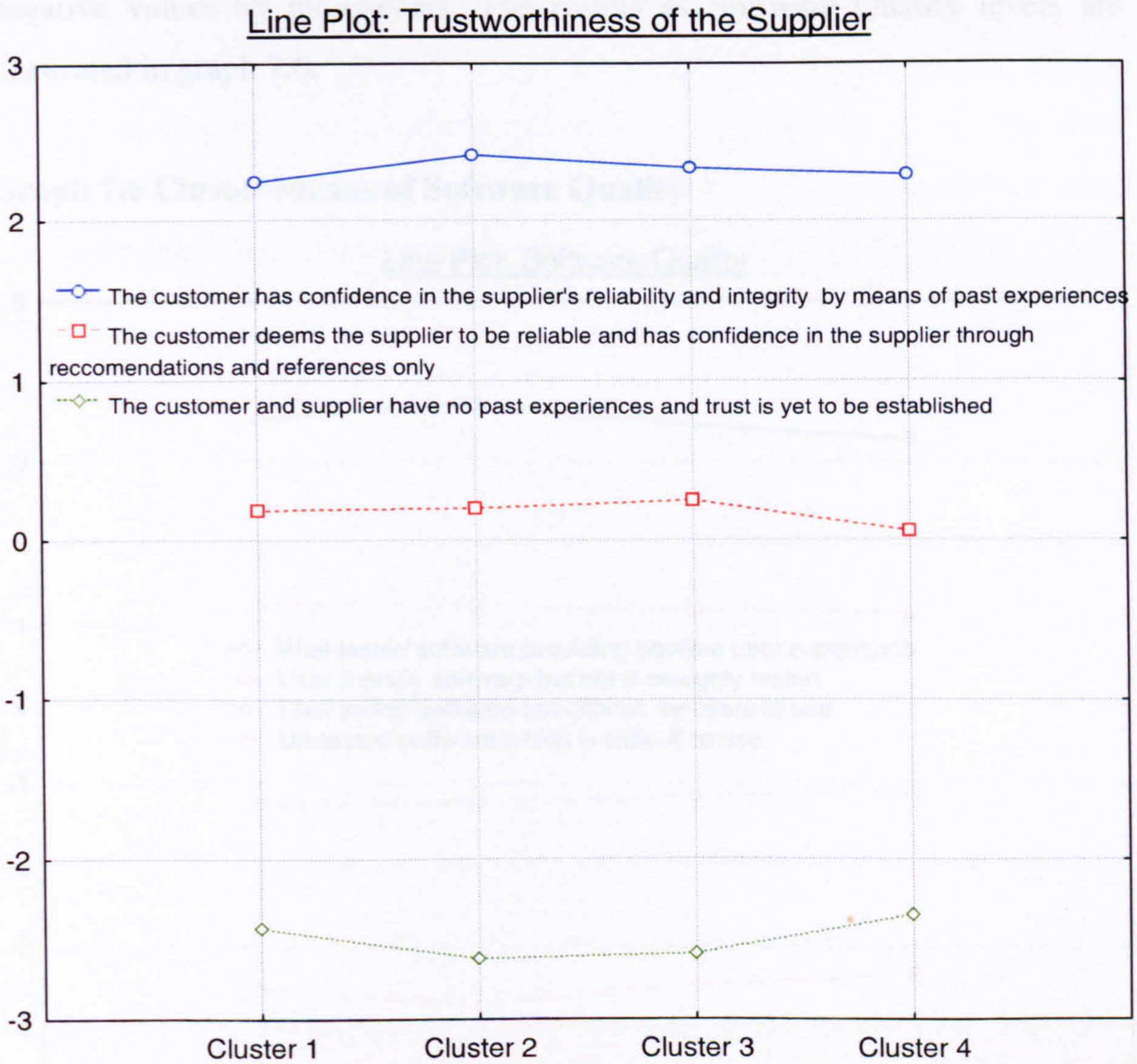


With regards to Expertise of Employees, it has already been identified that the clusters do not differ significantly on this basis. Looking at the cluster means, it appears that all clusters place a similar emphasis on the first level 'Software developers have extensive experience in the IT industry and recognised qualifications' and as ACA indicates, this is the preferred level. The second and third levels show that experience is valued by all clusters more so than qualifications when making software purchase decisions. However these figures are not statistically significant.

The next attribute, 'Trustworthiness of the supplier' has three levels. The first level was deemed insignificant, and after looking at the cluster means, it seems that no cluster differs on this basis. However, as the ACA part-worths indicate, it is deemed the most important level, indicating that all respondents expect this level of trust and would prefer to work with a supplier with which it has past experiences. The second level, 'the customer deems the supplier to be reliable and has confidence in the supplier through recommendations and references only' was highly significant with a p-value of 0.000. The cluster means are all positive values, but cluster three has the highest value, which

indicates that cluster three is more likely to rely on references and recommendations than the other clusters. Cluster four's mean is 0.05, which implies that cluster four would not be as comfortable in accepting second hand references when choosing a software supplier. This cluster will more often than the others want to base their decisions on past experiences they have had with the software supplier. However it is cluster two which is more pronounced with regards to the third level, 'The customer and supplier have no past experiences and trust is yet to be established', suggesting that Trust is most important to cluster two. The results are illustrated in graph 7.5.

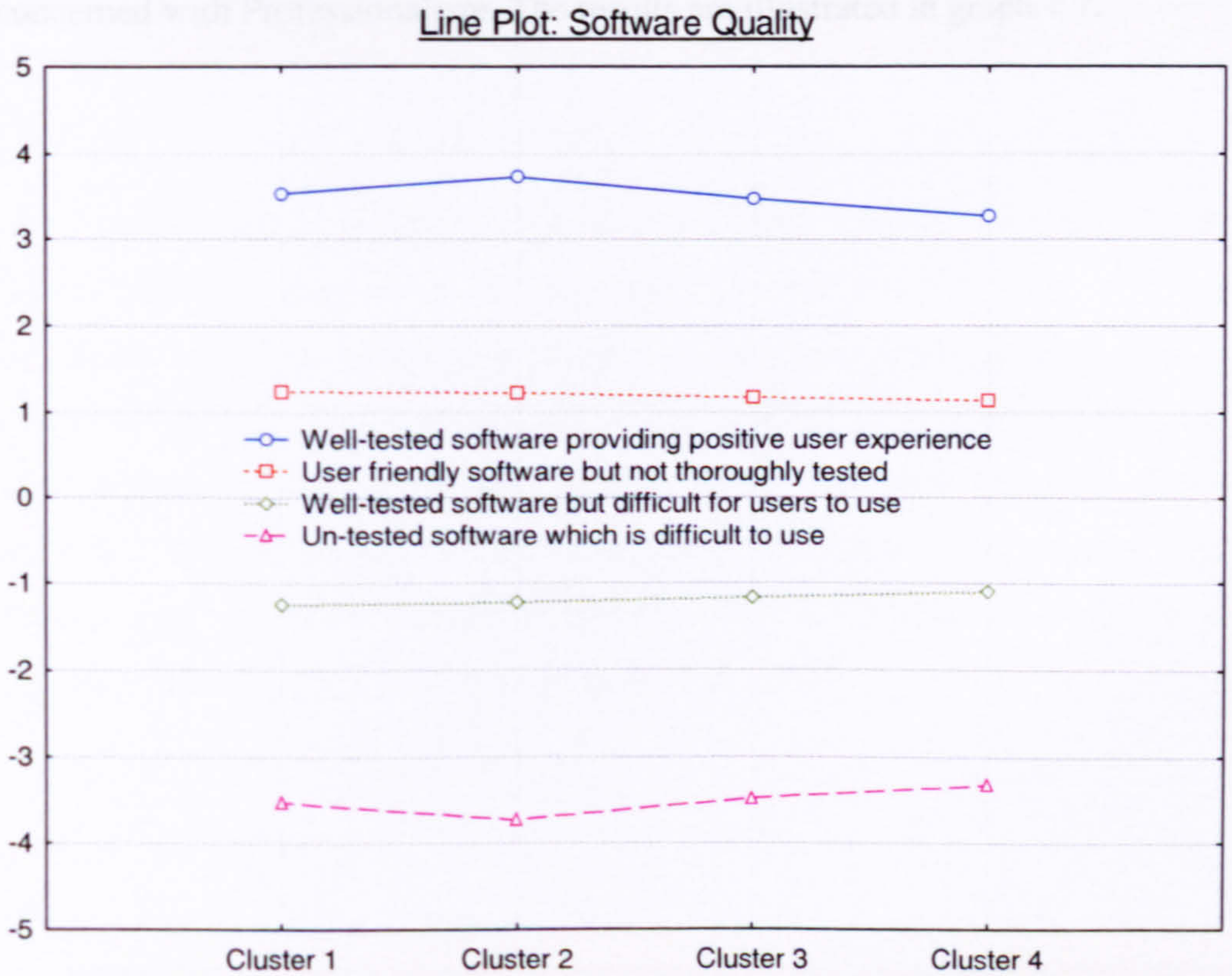
Graph 7.5 Cluster Means of Trustworthiness of the Supplier



The first level of the next attribute, Software Quality is 'Well-tested software providing positive user experience' which has high means in each cluster, more so in cluster two, which means that cluster two places a high importance on the

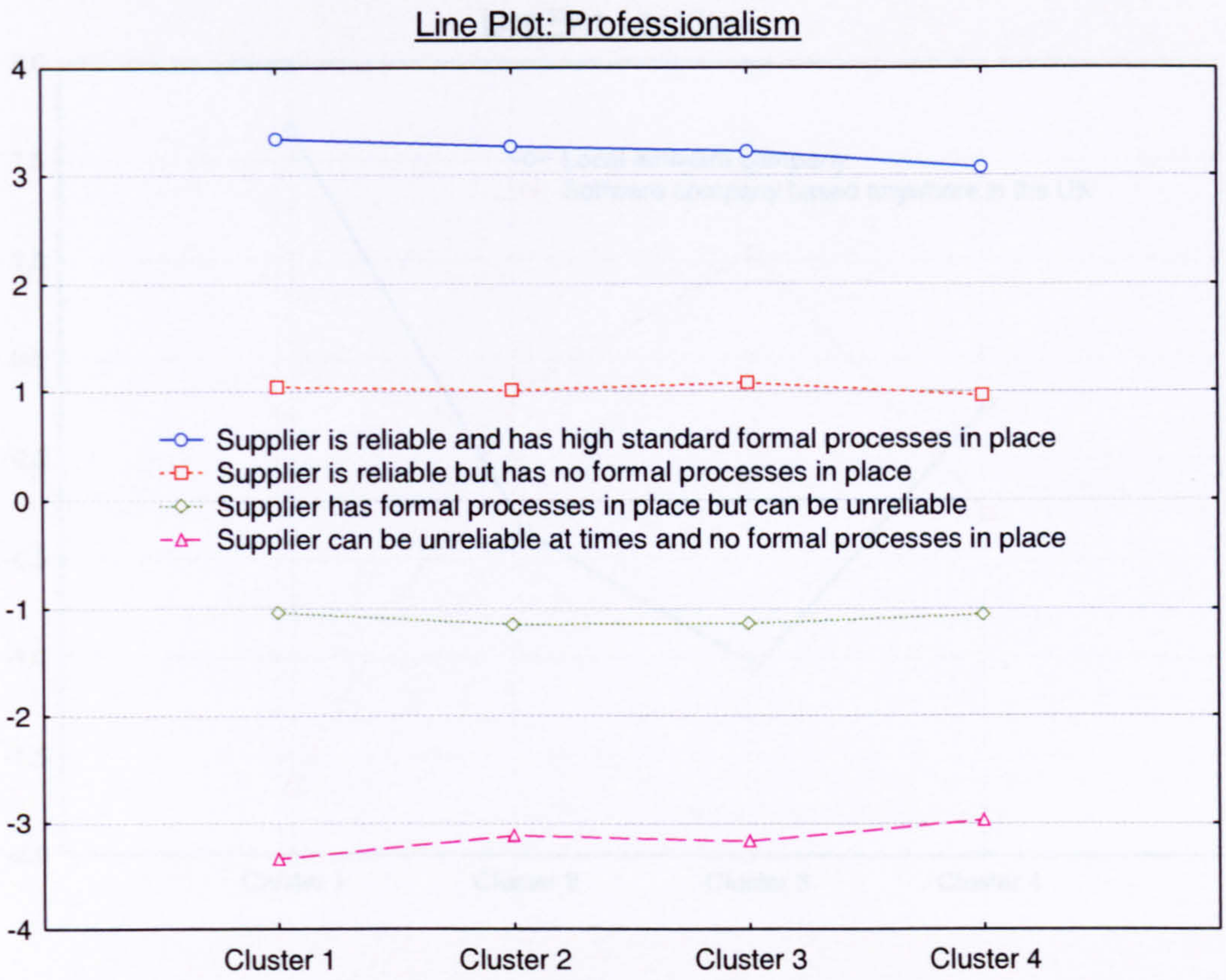
quality of its software. The second level, 'User-friendly software but not thoroughly tested' was not shown as significant in the ANOVA. User-friendliness is naturally an important factor, and respondents appear to believe that software should at least be user-friendly. As to the testing of software, this can be done in-house following the purchase of software, but it can also be done subsequent to delivery. This may explain the difference in clusters on the basis of user-friendliness and level of testing. With regards to the third level, 'well-tested software but difficult for users to use', the cluster means are all negative implying that no matter how well the software supplier tests the software, the customer will not perceive it to be of high quality unless it is easy to use. The final level, 'Un-tested software which is difficult to use', also have negative values by all clusters. The results of Software Quality levels are illustrated in graph 7.6.

Graph 7.6 Cluster Means of Software Quality



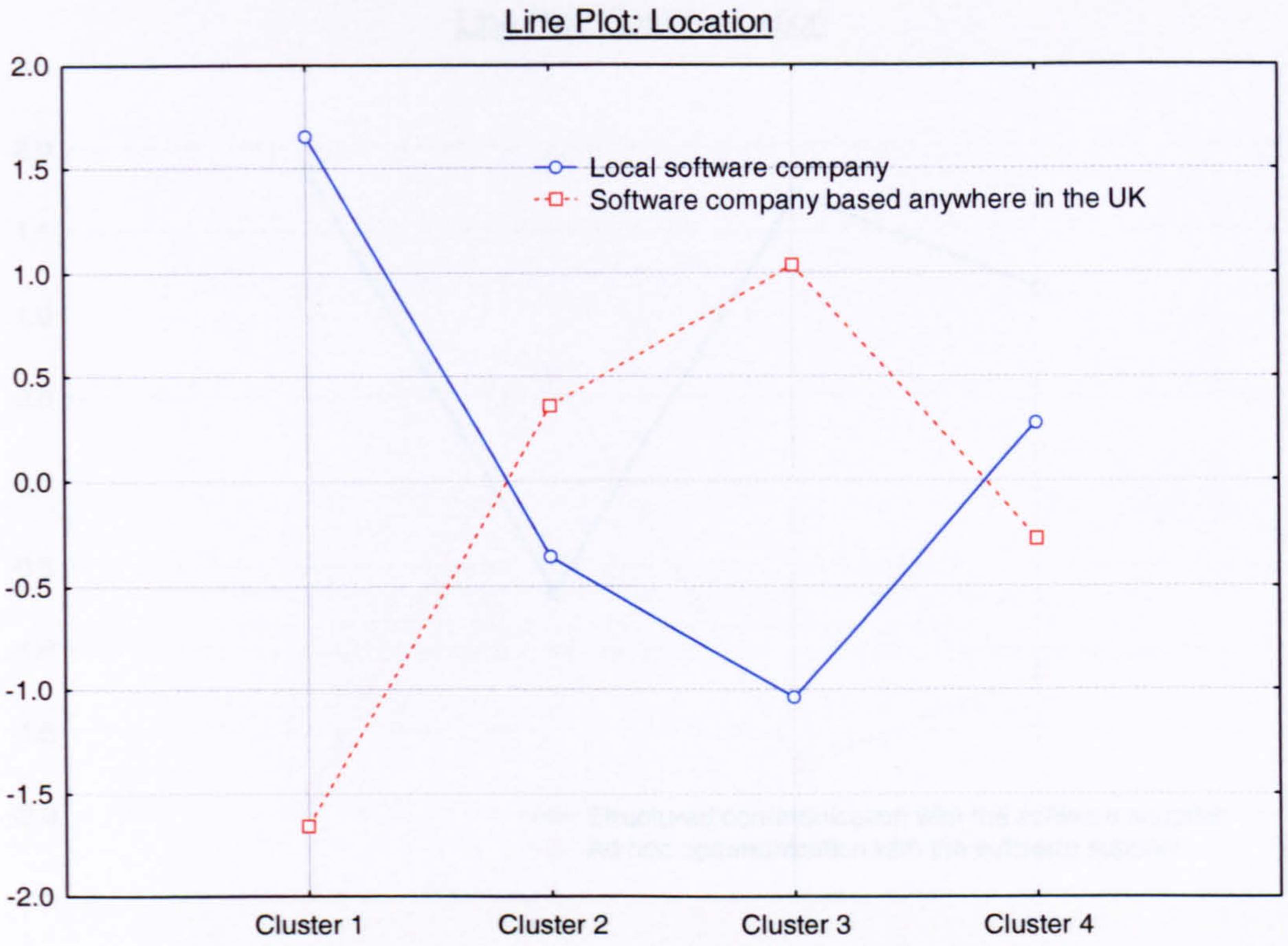
The first level of the Professionalism attribute, 'Supplier is reliable and has high standard processes in place' is significant at the 10% level, but not at the required 5% level. By looking at the cluster means, it appears that cluster one places most importance on this level. However as it is not highly significant, it must be concluded that the clusters cannot be differed on this basis. Thus it can be inferred that this level of Professionalism is desired in all cases. However, this level of professionalism isn't always possible, and thus customers may trade off between reliability, the processes followed and formality of the software supplier. With regards to the second level, 'supplier is reliable but has no formal processes in place', all cluster means are positive. The mean is highest in cluster three, which implies that cluster three places more importance on reliability. All clusters at the next level, 'the supplier has high standard processes in place, but can be unreliable' have negative means. Clusters two and three are similar in this respect, as they are in the final Professionalism level. Cluster four, out of all clusters seems to be the one least concerned with Professionalism. The results are illustrated in graph 7.7.

Graph 7.7 Cluster Means of Professionalism



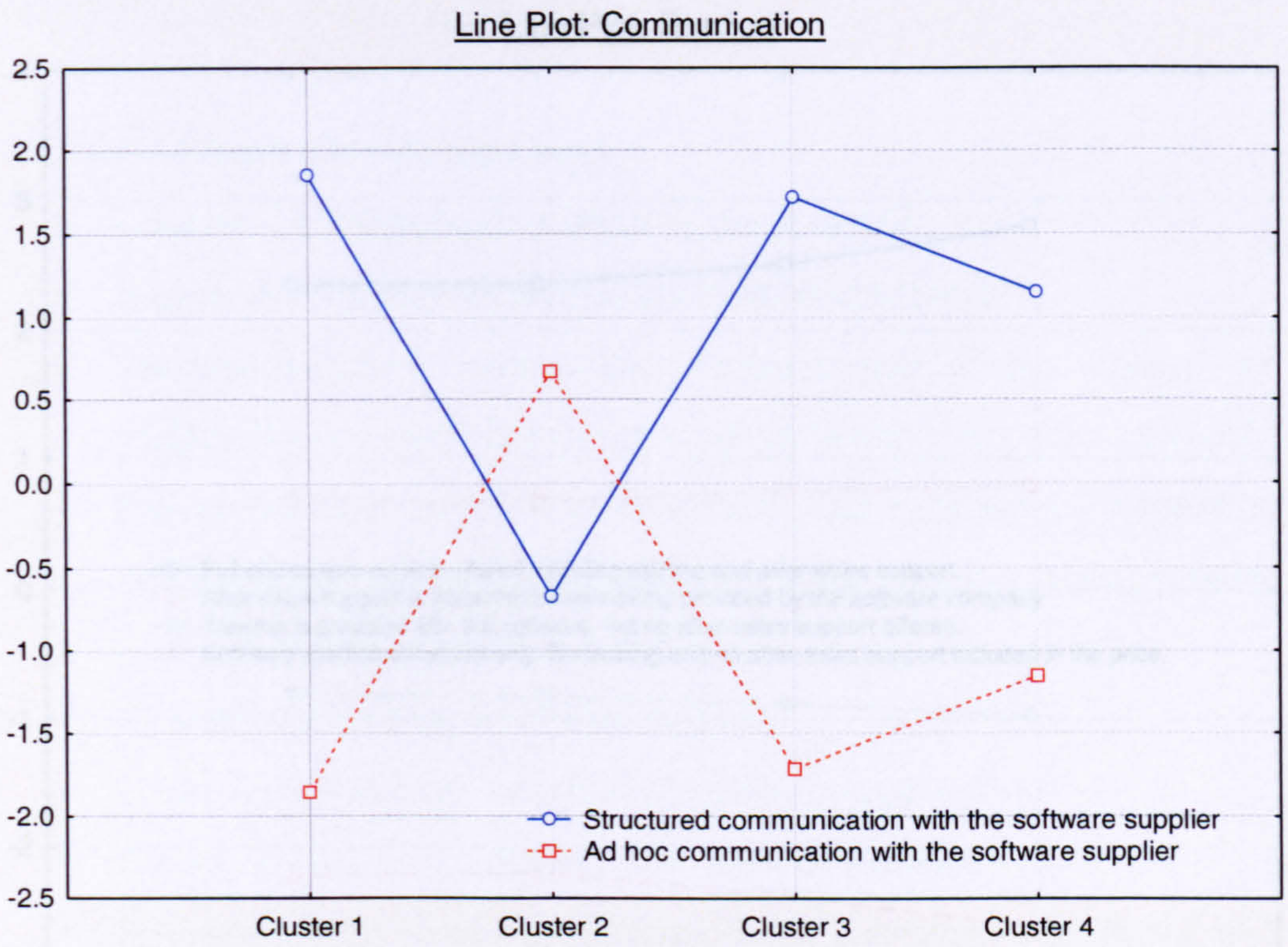
The Location attribute differs significantly among clusters. The first level, 'Local Software company' is deemed most important by cluster one, and next by cluster four. The means for clusters two and three are negative, implying that Location is not an important attribute in their decision-making processes. Simultaneously, concerning the second level, 'Software supplier based anywhere in the UK', cluster three has the highest positive value, meaning that cluster three is the one least concerned about the Location of its software supplier. The results are illustrated in graph 7.8.

Graph 7.8 Cluster Means of Location



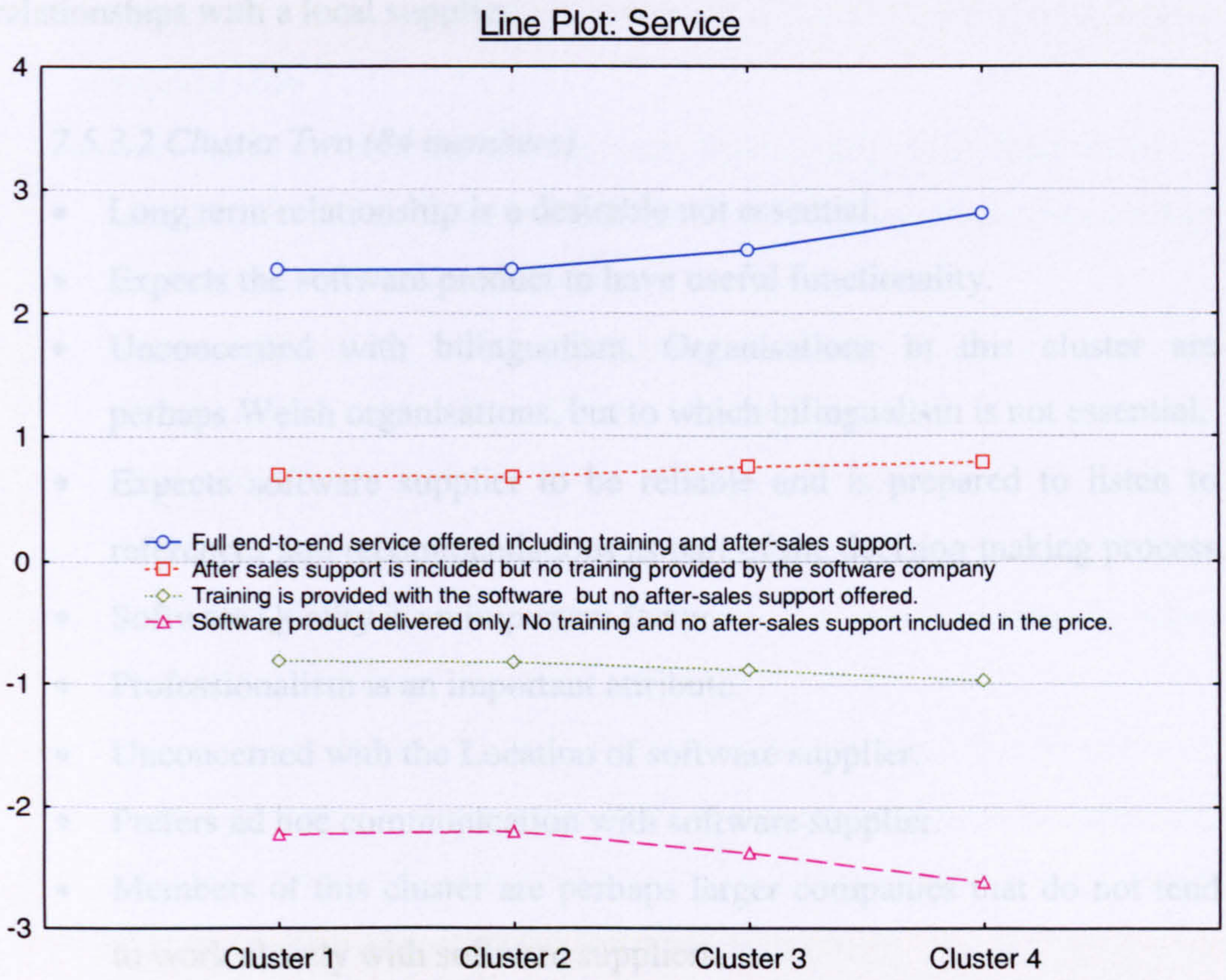
Similar to Location, the clusters differ significantly in their expectations of communication with their software suppliers. The first level, 'Structured Communication with the software supplier' is deemed important by clusters one, three and four as all means are positive. Cluster one places the highest importance on structured communication. The second level, 'Ad hoc communication with the software supplier' is important only to cluster two, but the cluster's preference is not as pronounced as the other clusters' preferences. The figures are illustrated in graph 7.9.

Graph 7.9 Cluster Means of Communication



The final attribute, Service has four levels, and all clusters differ in terms of levels, but not by a large amount. The first level, 'Full end to end service offered including training and after-sales support' is important to all clusters but more so to cluster number four. The second level, 'after-sales support is included but no training provided by the software company' is also more important to cluster number four, indicating that after-sales service is vital to cluster four. Furthermore it can be inferred that training is desirable but not essential. This is supported by the negative cluster means accompanying the third level. With regard to the last two levels, it can be concluded that the Service element is least important to clusters one and two. The results are illustrated in graph 7.10.

Graph 7.10 Cluster Means of Service



7.5.3 Description of Clusters

7.5.3.1 Cluster One (41 members)

- Expects the software supplier to have a comprehensive understanding of their needs.
- Expects the software product to have useful functionality.
- Unconcerned with bilingual software: probably non-Welsh organisations based in Wales.
- Emphasis on user-friendly software.
- Professionalism is important. Requires reliability as well as high standard formal processes.
- Prefers local software company.
- Prefers structured communication with software supplier.
- This cluster may be large companies which prefer to work closely with their software supplier but also need the formality.

This cluster could be classified as 'Oriented towards close and formal relationships with a local supplier'.

7.5.3.2 Cluster Two (84 members)

- Long term relationship is a desirable not essential.
- Expects the software product to have useful functionality.
- Unconcerned with bilingualism. Organisations in this cluster are perhaps Welsh organisations, but to which bilingualism is not essential.
- Expects software supplier to be reliable and is prepared to listen to references and recommendations as part of the decision making process.
- Software Quality is an important factor.
- Professionalism is an important attribute.
- Unconcerned with the Location of software supplier.
- Prefers ad hoc communication with software supplier.
- Members of this cluster are perhaps larger companies that do not tend to work closely with software suppliers.

This cluster could be classified as 'Oriented towards ad hoc relationships on a needs basis only'

7.5.3.3 Cluster Three (81 members)

- Prefers to develop a long term relationship with software supplier.
- Unconcerned with bilingual software: prefers English software only.
- Expects software supplier to be reliable and is prepared to listen to references and recommendations as part of the decision making process.
- Reliability is more important than formal process in terms of Professionalism of the software supplier.
- Unconcerned about Location.
- Prefers structured communication with the software supplier.
- Prefers full service including after-sales support, but training is a desirable rather than an essential factor.

This cluster could be classified as 'Oriented towards structured relationships with a reliable supplier'

7.5.3.4 Cluster Four (50 members)

- Expects the software supplier to have a good understanding of customer requirements.
- Very keen to develop a long term relationship with their software supplier, and enters into the relationship with a view to purchase future products and services with them.
- Expects software to be bilingual. Members of this cluster are probably Welsh companies within Wales who need to or wish to work bilingually.
- Prefers to work with suppliers with which they have worked previously, but they are not against using references and recommendations when choosing a supplier.
- Reliability is desirable, but this is the cluster least concerned with formal processes. These organisations are perhaps used to, and may even prefer to work with SMEs and therefore understand that it is not always possible or realistic to formalise everything.
- Prefers a local software company and might be inclined to support local software SMEs, perhaps because of previous links with them.
- Prefers a structured form of communication with the software supplier.
- Full end-to-end service is important, preferably including training as well as after-sales support. They may be small companies themselves who do not have in-house IT so are fully reliant on the supplier.

This cluster could be classified as 'Oriented towards close, consistent relationships with a supplier offering a whole service solution'

Table 7.9 ANOVA of Cluster Means

Variable/Attribute Level	Analysis of Variance Between SS	df	Within SS	df	F	P-value
Understanding of Customer						
The software supplier has a comprehensive understanding of customer requirements.	2.5443	3	69.7955	252	3.0621	0.028755
The software supplier has a good understanding of customer requirements	3.2455	3	20.5356	252	13.2757	0.000000
The software supplier has a limited understanding of customer requirements	9.3268	3	148.3737	252	5.2803	0.001510
Price						
Low-Priced Software	4.5500	3	180.5463	252	2.1169	0.098562
High-Priced Software	4.5500	3	180.5463	252	2.1169	0.098562
Relationship						
Mutual and Long Term Relationship with the software supplier. Future Purchases Likely	156.4111	3	419.0109	252	31.3561	0.000000
Transactional and short-term relationship with the software supplier. One off software purchase.	156.4111	3	419.0109	252	31.3561	0.000000
Software Functionality						
Software has useful functionality	4.4024	3	80.6922	252	4.5829	0.003823
Software functionality is limited	4.4024	3	80.6922	252	4.5829	0.003823
Bilingual Capability						
Software supplier offering bilingual software	410.3813	3	272.6952	252	126.4123	0.000000
Software supplier offering English software only	410.3813	3	272.6952	252	126.4123	0.000000

Expertise of Employees						
Software developers have extensive experience in the IT industry and recognised qualifications	0.8293	3	86.6729	252	0.8037	0.492829
Software developers have extensive experience in the IT industry but no recognised qualifications	0.0335	3	20.6812	252	0.1362	0.938381
Software developers have recognised qualifications but no practical experience in the IT industry	0.1676	3	13.5971	252	1.0351	0.377580
Software developers have limited experience in the IT industry and no recognised qualifications	0.5173	3	105.0542	252	0.4136	0.743349
Trustworthiness						
The customer has confidence in the supplier's reliability and integrity by means of past experiences	1.0609	3	66.6308	252	1.3375	0.262682
The customer deems the supplier to be reliable and has confidence in the supplier through reccomendations and references only	1.2077	3	7.0941	252	14.3000	0.000000
The customer and supplier have no past experiences and trust is yet to be established	3.0944	3	97.7815	252	2.6583	0.048847
Software Quality						
Well-tested software providing positive user experience	6.9040	3	108.9627	252	5.3224	0.001427
User friendly software but not thoroughly tested	0.3398	3	21.0271	252	1.3574	0.256360
Well-tested software but difficult for users to use	0.6559	3	13.3736	252	4.1197	0.007083

Un-tested software which is difficult to use	5.9170	3	133.7400	252	3.7164	0.012105
Professionalism						
Supplier is reliable and has high standard formal processes in place	1.8198	3	66.0930	252	2.3128	0.076560
Supplier is reliable but has no formal processes in place	0.5044	3	12.7420	252	3.3253	0.020318
Supplier has formal processes in place but can be unreliable	0.5618	3	9.1499	252	5.1575	0.001778
Supplier can be unreliable at times and no formal processes in place	3.1342	3	80.0953	252	3.2870	0.021373
Location						
Local software company	210.1473	3	291.0197	252	60.6570	0.000000
Software company based anywhere in the UK	210.1473	3	291.0197	252	60.6570	0.000000
Communication						
Structured communication with the software supplier	300.5208	3	271.1918	252	93.0845	0.000000
Ad hoc communication with the software supplier	300.5208	3	271.1918	252	93.0845	0.000000
Service						
Full end-to-end service offered including training and after-sales support	7.2952	3	101.0842	252	6.0622	0.000533
After sales support is included but no training provided by the software company	0.5430	3	10.8853	252	4.1905	0.006446
Training is provided with the software, but no after-sales support offered	0.8751	3	9.1975	252	7.9920	0.000041
Software product delivered only. No training and no after-sales support included in the price	6.0457	3	101.6249	252	4.9972	0.002201

7.6 Cross Tabulations and Chi-Square Analysis

The next step in the analysis was to identify which respondents belonged to which cluster. This information enabled the researcher to conduct cross-tabulations of clusters with demographics such as the size and type of the industry represented by the company, and role of the respondent within the organisation. A chi-square analysis was conducted on each cross-tabulation in order to establish the factors that place people into their respective clusters, and to get an idea of how, if at all, they correlate.

7.6.1 Cross-Tab of Clusters and Size of Respondent Organisations

Table 7.10 Cross-tab of clusters and size of respondent organisations

	Summary Frequency Table Marked cells have counts > 10 (Marginal summaries are not marked)					
	Size	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Row Totals
Count	Small	22	51	33	19	125
Total Percent		8.59%	19.92%	12.89%	7.42%	48.83%
Count	Medium	9	19	20	13	61
Total Percent		3.52%	7.42%	7.81%	5.08%	23.83%
Count	Large	10	14	28	18	70
Total Percent		3.91%	5.47%	10.94%	7.03%	27.34%
Count	All Grps	41	84	81	50	256
Total Percent		16.02%	32.81%	31.64%	19.53%	

Clusters one and two have the highest percentage of small organisations, while clusters three and four generally have equally distributed sizes. This is not surprising as nearly half of the respondents were from small organisations.

7.6.2 Cross-Tab of Clusters and Role of Respondent

Table 7.11 Cross-tab of clusters and role of respondent

	Summary Frequency Table Marked cells have counts > 10 (Marginal summaries are not marked)					
	Role	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Row Totals
Count	Managing Director	11	27	22	7	67
Total Percent		4.30%	10.55%	8.59%	2.73%	26.17%
Count	IT Manager	16	21	30	19	86
Total Percent		6.25%	8.20%	11.72%	7.42%	33.59%
Count	IT Developer	0	2	7	6	15
Total Percent		0.00%	0.78%	2.73%	2.34%	5.86%
Count	Purchasing Manager	1	2	1	0	4
Total Percent		0.39%	0.78%	0.39%	0.00%	1.56%
Count	Administrator	3	9	7	5	24
Total Percent		1.17%	3.52%	2.73%	1.95%	9.38%
Count	Other	10	23	14	13	60
Total Percent		3.91%	8.98%	5.47%	5.08%	23.44%
Count	All Grps	41	84	81	50	256
Total Percent		16.02%	32.81%	31.64%	19.53%	

The respondents consisted mainly of Managing Directors or IT managers, which were responsible for software purchasing within their organisations. With respect to clusters, IT Managers were the majority of the respondents in cluster one. Managing Directors were the majority of respondents in cluster two, implying that many organisations within cluster two were in fact small organisations. As SMEs tend not to have IT departments or IT managers, Managing Directors would therefore be in charge of software purchase. This is supported by the previous cross-tab, where 51 respondents out of 84 were from small organisations. Clusters three and four also have IT managers as their majority respondents.

7.6.3 Cross-Tab of Clusters and Industries

Table 7.12 Cross-tab of clusters and industries

	Summary Frequency Table Marked cells have counts > 10 (Marginal summaries are not marked)					
	Industry	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Row Totals
Count	Public Sector	5	6	9	11	31
Total Percent		1.95%	2.34%	3.52%	4.30%	12.11%
Count	Chemical	2	6	1	2	11
Total Percent		0.78%	2.34%	0.39%	0.78%	4.30%
Count	Information Technology	1	8	3	5	17
Total Percent		0.39%	3.13%	1.17%	1.95%	6.64%
Count	Retail/Consumer Goods	2	5	6	3	16
Total Percent		0.78%	1.95%	2.34%	1.17%	6.25%
Count	Financial/Insurance	2	4	4	2	12
Total Percent		0.78%	1.56%	1.56%	0.78%	4.69%
Count	Education	2	5	3	4	14
Total Percent		0.78%	1.95%	1.17%	1.56%	5.47%
Count	Pharmaceutical/Medical	2	2	3	1	8
Total Percent		0.78%	0.78%	1.17%	0.39%	3.13%
Count	Business Services	2	7	7	0	16
Total Percent		0.78%	2.73%	2.73%	0.00%	6.25%
Count	Media	3	0	1	3	7
Total Percent		1.17%	0.00%	0.39%	1.17%	2.73%
Count	Manufacturing/Distribution	6	22	21	5	54
Total Percent		2.34%	8.59%	8.20%	1.95%	21.09%
Count	Tourism/Leisure	3	6	4	2	15
Total Percent		1.17%	2.34%	1.56%	0.78%	5.86%
Count	Telecoms	0	2	1	0	3
Total Percent		0.00%	0.78%	0.39%	0.00%	1.17%
Count	Utilities	0	1	2	1	4
Total Percent		0.00%	0.39%	0.78%	0.39%	1.56%
Count	Not-for-Profit	2	1	4	4	11
Total Percent		0.78%	0.39%	1.56%	1.56%	4.30%
Count	Other	9	9	12	7	37
Total Percent		3.52%	3.52%	4.69%	2.73%	14.45%
Count	All Grps	41	84	81	50	256
Total Percent		16.02%	32.81%	31.64%	19.53%	

The organisations surveyed came from a wide range of industries, most of which were from the manufacturing/distribution industry and public sector. Clusters two and three appear to have the most manufacturing organisations as members, but these are also the largest clusters. Cluster four appears to have most of the respondents from the public sector. As no concrete conclusion

could be made from this cross-tabulation, the industries were further amalgamated into larger categories (see below).

7.6.4 Cross-Tab of Clusters and Re-categorised Industries

Table 7.13 Cross-tab of clusters and re-categorised industries

	Summary Frequency Table Marked cells have counts > 10 (Marginal summaries are not marked)					
	Industry2	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Row Totals
Count	Public Sector/Government	7	12	14	16	49
Total Percent		2.73%	4.69%	5.47%	6.25%	19.14%
Count	Service Sector	15	29	28	16	88
Total Percent		5.86%	11.33%	10.94%	6.25%	34.38%
Count	Chemical/Pharmaceutical	4	9	4	3	20
Total Percent		1.56%	3.52%	1.56%	1.17%	7.81%
Count	Manufacturing	8	26	22	6	62
Total Percent		3.13%	10.16%	8.59%	2.34%	24.22%
Count	Not-for-Profit	2	1	4	4	11
Total Percent		0.78%	0.39%	1.56%	1.56%	4.30%
Count	Retail/Consumer Goods	2	5	8	4	19
Total Percent		0.78%	1.95%	3.13%	1.56%	7.42%
Count	Environment/Agriculture	3	2	1	1	7
Total Percent		1.17%	0.78%	0.39%	0.39%	2.73%
Count	All Grps	41	84	81	50	256
Total Percent		16.02%	32.81%	31.64%	19.53%	

As there were many 'other' categories, these were also included in the amalgamation of industries. An additional category was also formed: Environment/Agriculture. Cluster one appeared to have a large proportion of service organisations. Cluster two and three had a large number of public sector, service and manufacturing organisations but cluster two, in particular had the majority of respondents from the chemical/pharmaceutical industry, whilst cluster three had the majority of respondents from the retail/consumer goods industry. Cluster four also had a large share of public sector/government and service sector organisations, and the smallest amount of manufacturing organisations.

7.6.5 Cross-Tab of Clusters and Purchasing Likelihood

Table 7.14 Cross-tab of clusters and purchasing likelihood

	Summary Frequency Table Marked cells have counts > 10 (Marginal summaries are not marked)					
	SMEorLarge	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Row Totals
Count	Small, local software supplier	11	18	17	10	56
Total Percent		4.30%	7.03%	6.64%	3.91%	21.88%
Count	Large software supplier	15	36	39	21	111
Total Percent		5.86%	14.06%	15.23%	8.20%	43.36%
Count	Of-the shelf software	15	22	20	14	71
Total Percent		5.86%	8.59%	7.81%	5.47%	27.73%
Count	In-house software developmen	0	8	5	5	18
Total Percent		0.00%	3.13%	1.95%	1.95%	7.03%
Count	All Grps	41	84	81	50	256
Total Percent		16.02%	32.81%	31.64%	19.53%	

It would appear from this table that most respondents prefer to purchase software from large software suppliers, followed by off-the shelf software, which is also pre-dominantly developed by large, multinational software companies. However, the clusters are not against dealing with small software suppliers. Out of 41 members of cluster one, 11 said they are likely to purchase from small software suppliers, which is higher than the 21.88% average.

7.7 Chi-Square Analysis

Chi-square analysis was run on all cross-tabulation results, but there were no significant differences between characteristics placed in the cross-tabs. The size characteristic was significant at the 10% level but not at the required 5% level.

7.8 Analysis of Open-Ended Question

The final question in the survey was 'What other attributes do you consider important when purchasing software?' It was an optional question set in order

to ensure that all important attributes would be included. 157 out of the total number of respondents answered the question, some with one or two word answers and some in more detail. Analysis of the responses was conducted with STATISTICA text mining software, as described in the methodology chapter.

Table 7.15 Text mining words summary

	Words summary	
	Frequency	Number of documents
applicable	8	8
available	9	8
can	15	15
company	15	13
compatible	8	8
cost	14	14
developed	13	13
ease	16	16
existing	8	8
function	16	15
future	9	8
good	12	10
import	8	8
integrate	9	9
must	9	8
need	18	17
price	11	11
product	11	10
purchase	13	11
reliably	14	14
required	15	15
sale	9	9
software	53	42
supplier	12	12
support	40	36
system	11	11
training	12	11
understand	9	9
use	31	29
user	17	13
value	9	8
work	11	10

In table 7.15, 'Number of documents' signifies the number of responses or the number of people who said it. 'Frequency' is a measure of weight. Here it

would denote the exact number of times a word was said, which would be higher if for example, one respondent said 'cost' twice in the same sentence.

Certain words can be disregarded such as 'company' and 'need' but the most frequently cited words seem to be 'support', 'cost', 'ease' and 'function'. Even 'can' can be deduced as an ability of the supplier to provide something. In terms of the number of documents, 'support' is cited 36 times, which is a crucial aspect of the overall service which a software company can offer and can include after-sales support ranging from a simple helpline to full after-sales support. This finding infers that respondents wish to maintain some form of relationship with their supplier once the product has been delivered (Gronroos, 2007). Whether the level of support consists of someone on the other end of an e-mail or a close, long-term relationship is another matter, and is one of the research questions attempting to be answered in this study. 'Training' is cited 11 times, which is an aspect of after-sales support. It is expected that organisations would want to form some kind of relationship, and be relatively comfortable with the supplier if the supplier was to enter the organisation to provide training to staff. Another word which provides a clue into the potential wish for a relationship is 'future', which is cited eight times. The word 'relationship' is not cited, but as it is already covered as an attribute in the ACA survey, the respondents may not have considered it to be an 'other' attribute.

There are many words cited which are associated with the product and its usefulness including 'compatible', 'function', 'ease' and 'use', 'integrate' and 'work', supporting the ACA results that product functionality and software quality is of utmost importance. Furthermore, 'price' and 'cost' are cited 11 and 14 times respectively, again stressing the importance of price in software purchasing, and supporting the qualitative findings. The word 'value' is also cited, which infers the desire to have a software product and service which is value for money.

Other words cited frequently include 'reliably', indicating that reliability of the software supplier is an important concept and hints at the need for trust and

confidence in the supplier. A software supplier cannot be deemed reliable without at least references or positive word of mouth from previous customers, and trust cannot be established without a relationship, which further implies a wish for more than a one-off purchase of software. The word 'understanding', which was cited nine times, again stresses the need for the software supplier to understand its customer's specific software requirements, meaning that the supplier needs the ability to understand its customer's business. This level of understanding cannot be reached without the supplier and customer entering into some form of relationship (Helander and Ulkuniemi, 2006).

7.9 A Discussion of the Conjoint Analysis Findings

7.9.1 Overview

The discussion will centre around the importance of the 12 attributes, and how the findings relate to the relevant literature. Although there are no directly similar studies which have previously been conducted, the findings will be contrasted to previous ACA studies in similar fields and studies pertaining to the attributes themselves.

7.9.2 Relevance of Attributes

7.9.2.1 Understanding of Customer

This attribute was ranked as the third most important attribute to software buyers when deciding on a software supplier. It is imperative that the software supplier understands the customer's business problem, need and thus what type of software system will solve the problem (Sureshchander and Leisten, 2005). In order to gain the required understanding, a dialogue and thus a relationship is necessary, especially when a customised software solution will be developed (Helander and Ulkuniemi, 2006). Time and effort from both sides of the relationship has to be invested in order for both parties to agree on a suitable solution. There is an apparent agreement here with the literature on RM, which states that investment in a long-term relationship can have a win-win outcome

for both parties: for the customer an assurance that the supplier understands their business and their needs, and for the supplier an assurance that it can profitably retain its customer (Gronroos, 1994). Understanding of the customer is arguably even more important when concerning innovation (Hauser *et al.*, 2006) as an innovative solution based on customer needs is much more likely to succeed in the marketplace. Specific to the software industry is an understanding of the end-user and appropriate use of terminology which should be understood by all parties to encourage customer participation in the dialogue (Isaac *et al.*, 2006; Saiedian and Dale, 2000).

7.9.2.2 Price

The Price attribute had some interesting findings in this research. In the depth interviews, price was indicated by Company A's customers as an important factor when considering software suppliers. However in the ACA study, whereby respondents had to trade off the attributes, it ranked eighth out of 12 attributes, implying that it's not as important as the whole service solution including Expertise of Employees, Trustworthiness and Professionalism of the supplier. (Agarwal and Rathod, 2006). 'Low-priced software' was unsurprisingly favoured over 'high-priced software', and when taking into account the depth interview findings, they seemed to indicate that although the service factors are more important, if the cost of the software is too high, customers will seek out an alternative supplier. Moreover, an assumption that as relationships develop and mature, customers become less price sensitive is not strongly supported by these findings (Gronroos, 1994; Reichheld and Sasser, 1990).

7.9.2.3 Relationship

Despite the support for relationships in the qualitative and case study findings, in terms of ranking, the Relationship attribute did not do quite so well. It was the ninth important attribute out of 12. Thus initially, one would deduce that even Price is more important than a long term relationship to potential customers. However, when considering the nature of some of the remaining

attributes, it can be argued that customers do require a relationship, even if it is not the first thing that comes to mind when considering what they want from a software supplier. For example, a comprehensive understanding of the customer cannot be achieved without a relationship and trust cannot be established without a relationship (Mohr and Spekman, 1994). Therefore, it can be argued that although potential customers do not explicitly demand a relationship as a main factor in their decision making process, it is certainly an important attribute as customers do require understanding, communication and professionalism (Brennan *et al.*, 2007).

7.9.2.4 Software Functionality

This attribute relates to the expectations of the product itself and illustrates the importance of the actual software product which is delivered to customers. Achieving the desired functionality of the product has previously been identified as a vital criterion in defining software project success (Agarwal and Rathod, 2006). Although software can be defined as a service, and no matter how good that service is, the software must work and contain the required functional elements. Software Functionality was ranked as the fourth most important attribute and supports the literature in Service Marketing which stresses the importance of the core service (Gronroos, 2007).

7.9.2.5 Bilingual Capability

Bilingual Capability was ranked as the eleventh important attribute out of 12, and is related to Software Functionality. It was cited as an important factor due to the bilingual nature of Wales and some of its organisations. As was illustrated in the cluster analysis however, the bilingual capability of software seems to be a desirable rather than an essential factor in software purchase. Although it may be essential for some organisations in Wales to practice bilingualism, especially within the public sector, it is not mandatory for them to procure bilingual systems as yet. Therefore Bilingual Capability would possibly be traded off for factors such as cost and after-sales service. However

it was apparent that in Company A, production of bilingual software for some customers had led to a competitive advantage for the customers.

7.9.2.6 Expertise of Employees

Expertise of Employees was also rated as an important attribute, ranking fifth out of the 12 attributes. The importance of employees is highlighted throughout the services literature, particularly internal marketing (Gronroos, 2007). When considering the case study and qualitative depth interviews findings, it is apparent that expertise does not only mean technical capability, but also the approachability, manner and professionalism of the employees in a software organisation. Moreover, the quality of the team in terms of customer service can positively influence the customer-supplier relationship (Helfert and Vith, 1999). Customer-orientated employees can even influence loyalty and positive word-of-mouth about the organisations (Macintosh, 2007). As the clusters identified did not differ with respect to Expertise of Employees, it can be inferred that the expectation of experienced and qualified employees is constant across all types of software purchasers. Past research into the software industry has found that individuals with superior knowledge, communication skills, motivation, team spirit, ability to change and dependability are essential for the success of a software project, which further highlights the importance of 'soft', human elements as well as technical expertise (Isaac *et al.*, 2006).

7.9.2.7 Trust

Trustworthiness of the supplier was ranked seventh out of the 12 attributes, and was placed before the Relationship attribute, which concurs with the literature proposing that trust is a characteristic of partnership success (Hennig-Thurau *et al.*, 2002; Mohr and Spekman, 1996). It is evident that Trust is important, and is perhaps something that can be established somewhat easier with an SME than a large software supplier, as communications are frequent and face-to-face (Chaston, 1997). It is interesting that Trust was rated higher than the Relationship attribute, as a relationship must arguably be established before trust can develop. However, prospective customers may be inclined to trust a

supplier based on recommendations from contacts or their established reputation and credibility in the marketplace. In this case, there is an element of trust before the relationship has begun.

7.9.2.8 Software Quality

Software Quality was ranked as the most important attribute, therefore the expectation related to product quality cannot be ignored. Software developers, managers and customers often have different perspectives regarding what constitutes software quality. Some focus on software development processes and the use of formal, rigorous approaches to software development, while others may focus on the use of change control and configuration management. There may be an emphasis on documentation, standards and quality assurance procedures, or there may be an emphasis on customer service or user participation (Wilson and Hall, 1998). It is relevant to note that many of the ACA respondents were IT managers, and had experience in using different types of software. Their perspective of software quality would therefore relate to ease of use, design, software development techniques and processes as well as the level of testing. Wilson and Hall (1998, p.72) argued that user participation or customer service approaches to quality were more likely to "produce a common vision of quality", which concurs with the findings that ease of use is imperative, as business software is not only bought to be used by IT experts, but mostly by users in non-technical roles. Although software quality implies product quality and is achieved through a combination of product and process quality, the softer aspects of quality include employee competence and customer focus which can enhance the overall quality of the software service (Isaac *et al.*, 2006; Hall *et al.*, 2007).

7.9.2.9 Professionalism of Supplier

This attribute was the second most important attribute according to the ACA findings, indicating that service quality of software companies is equally as important as product quality. Professionalism is an aspect of service quality as it relates to manner of employees, service processes as well as service tangibles

(Gronroos, 2007). A software company demonstrating professionalism is more likely to win customers and achieve positive word-of-mouth. Moreover it is not more difficult for an SME to display professionalism and integrity than a larger company, although they are more likely to indicate professionalism through manner, delivery and reliability rather than detailed, established processes.

7.9.2.10 Location

Out of the 12 attributes, Location was deemed the least important to potential software purchasers when deciding on a software supplier. This is unsurprising as the latest technology enables communications to be conducted from anywhere, and as software can be delivered and managed remotely. When examining the findings from the depth interviews, it was apparent that some customers perceived Company A's locality as an essential factor. In fact, one customer stated that Company A's location was the prime motivator in their decision whether to develop a relationship with them. Moreover, there were apparent differences among clusters as to the importance of location. Therefore it can be inferred that although Location is generally not as important as other attributes such as Professionalism and Expertise of Employees, some customers value the fact that their software suppliers has a physical proximity to them.

7.9.2.11 Communication

Communication was the tenth important attribute. The attribute levels indicated that structured communication with the software supplier is preferred over ad hoc communication, which concurs with some of the RM literature focussed on communication. Again, even though Communication is not rated as highly as other attributes, it can be contended that communication is vital for software suppliers to gain an understanding of customer needs and for the development of long-term relationships (Hunt *et al.*, 2006; Hall *et al.*, 2007).

7.9.2.12 Service

The Service attribute was ranked sixth out of the 12, enhancing the argument that the quality of service provided by software companies is equally essential as product quality. The Service attribute includes after-sales service, which is imperative to many software buyers in case they are faced with post-purchase technical or user problems. The importance of this attribute concurs with much of the Services Marketing literature, particularly the service experience aspect, which does not end once the product is delivered (Pine and Gilmore, 1999 cited in Gronroos, 2007). Moreover, it emphasises the importance of delivering a solution to the customer consisting of customer requirements definition, customisation and postdeployment support (Tuli *et al.*, 2007).

7.9.3 Summary of Clusters

The clustering of ACA respondents provided additional insights to the ACA findings. Four clusters were identified, which mainly differed on the basis of Location, Communication, Relationship and Bilingualism. In terms of Location and Bilingualism, the expectation of such attributes was required by one or two clusters, indicating the desired as opposed to the essential nature of these attributes. A long-term relationship was desired by all clusters, although in varying degrees. Structured communication was preferred by three out of four clusters, but ad-hoc communication was preferred by cluster two suggesting that certain customers wish to liaise with their software supplier as and when a need arises.

7.9.4 Previous ACA Studies

To the best of the researcher's knowledge, there are no previous conjoint studies which have investigated what attributes are considered important to software buyers when they're seeking a suitable supplier. The closest study in terms of RM seems to be that of Naude and Buttle (2000) who employed conjoint analysis in their investigation of relationship quality. This study used

five attributes and employed the full profile conjoint analysis method in order to understand how the various constructs would be traded off against each other in different relationship settings. Trust was one of these attributes, and although it was concluded that there is not one explanation of relationship quality, trust and mutual integration of needs seemed to be the most common attributes of relationship quality.

7.10 Conclusion

This chapter has presented the findings of the quantitative research employed in this study. The main method used was Adaptive Conjoint Analysis in order to establish what attributes are most important when customers are faced with trade-offs in their purchase decision. Software Quality was found to be the most important attribute, followed by Professionalism, a Comprehensive Understanding of the customer requirement and useful Software Functionality. The findings seem to indicate that software service quality and associated elements including a long-term relationship is just as important as the quality of the product itself, providing support to a large part of the RM and Services Marketing literature. Further statistical analysis including market simulations, cluster analysis and text-mining were employed to explore differences in customer requirements. Four significant clusters were identified which will have interesting implications for SMEs when approaching potential customers.

8.0 CONCLUSIONS AND MANAGERIAL IMPLICATIONS

8.1 Introduction

The PhD is the researcher's contribution to academic knowledge. This thesis is based on the Marketing of Innovation, and presents the case of an SME in the Welsh software industry. The theoretical concepts applied in the study include Relationship Marketing (RM), Integrated Marketing Communications (IMC) and the Marketing of Services, and through a comprehensive and varied methodology, the researcher has attempted to model customer expectations of software SMEs, as well as how SMEs should approach marketing in the software sector. As an outcome of the research findings, a theoretical model is presented which can be adopted by software SMEs to improve Relationship Marketing and company response to customer expectations. The model is introduced and described in this chapter along with overall conclusions, contribution to knowledge, implications for managers and future research avenues.

8.2 Meeting the Objectives of the Research

The introductory chapter set out the aims and objectives of this study. The main research objective "To contribute to the understanding of relationship formation and customer satisfaction in high technology, information based industrial markets" was expressed in a list of specific objectives, which have been addressed throughout the course of the study. Answering the research question and meeting the objectives is encapsulated in the findings of the research and models which are presented throughout the thesis. The answers to two key research questions are provided to remind the reader of the background, and the main model is presented later in the chapter.

8.2.1 Why do small software companies find it difficult to market their solutions effectively?

The case study research and observation of the SMEs showed that software SMEs suffer from similar marketing problems to SMEs in other industries, including limited resources and lack of marketing expertise forcing the owner-manager to manage all marketing-related activities. It was apparent that SMEs tend to take an informal and intuitive approach to marketing and thus lack long-term planning as they tend to focus on short-term objectives (Beaver and Harris, 1995).

The additional issues facing software SMEs include the level of competition in the marketplace, specifically the dominance of larger players such as Microsoft and Oracle. The standard software solutions in the marketplace make it difficult for small innovative organisations to sell their products, especially considering customers' general reluctance to invest in novel solutions which are not mainstream (Mohr *et al.*, 2005). On the other hand, some customers can see the software's potential to provide them with a competitive advantage. Even if the issue is not the innovative software, prospective customers are deterred by perceived risks of dealing with an SME. This was identified in Company A, when even large customers were reluctant to commit to investing in projects and often insisted on an introductory pilot project.

As was identified in Company B's case, the technical background of owner-managers' can affect marketing. The technical entrepreneur tends to relegate the marketing role in favour of research and development, as it is not considered a priority. Marketing seems to be something that is introduced when a company finds itself in difficulties, which was evident in Company B as they attempted to market their product within months of going into liquidation. The technical entrepreneur's belief in the innovation and vision of his/her organisation is great, transcending into confidence that the innovative solution will 'sell itself'. This was pronounced in Company B, even without sufficient market research to justify the level of new product development. There was a clear over-reliance on R&D in Company B, whereby constantly modifying and

improving the product for years took precedence over taking the software out into the market. This vicious circle led to a limited and stagnant customer base, no customer references and no portfolio of previous work, which again increased the perceived risks for prospective new customers.

8.2.2 How can SMEs effectively market software products and services?

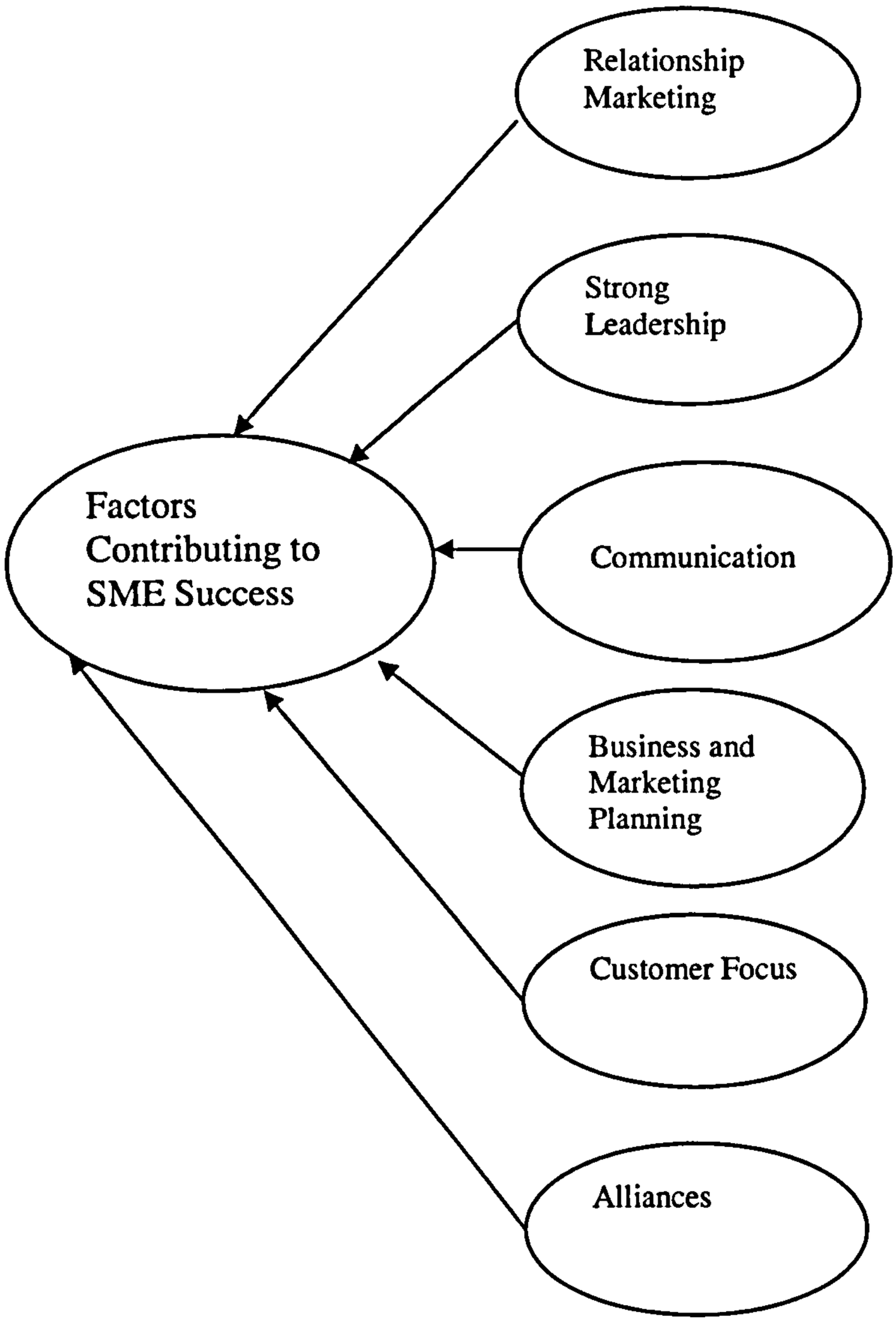
This is the key research question of this study, and is one which is answered in a model (see figure 8.1). The model which was introduced in chapter five displays a number of critical success factors which SMEs should adhere to when attempting to successfully market their software solutions:

- Alliances and partnerships can enable the SME to gain access to resources, improve the SME's credibility by being affiliated with a reputable brand name in the industry, and they can provide opportunities for SMEs to enter into large contracts, as the tendering process is made easier and the perceived risk of dealing with an SME is decreased. Due to risks of interdependency and to make itself attractive to potential partners, the SME must find a niche/gap in the market that is not being addressed by larger players. The aim is to get the larger players aboard and complement existing standards e.g. bilingual CRM is an add-on to Microsoft CRM, and is a competence that Company A could thrive in as they had intimate knowledge of the marketplace.
- The RM element of the model is considered in detail later in the chapter, but its existence as a critical success factor is a result of the findings that RM is vital in the success of software SMEs. These relationships are mainly with customers but also with other stakeholders including the press, government and employees. The key facets of the SME's relationships with customers are the understanding of their needs, their flexibility in terms of the product and service offered, and the role of people in the service offering.
- Communication is considered as a separate critical success factor and includes internal communications with employees and external communications with customers, both of which are part of Integrated

Marketing Communications (IMC). IMC can support RM as it advocates maintaining a dialogue with customers as well as the consistency in forms of communication. Creating awareness in the marketplace is essential for an SME, and one way in which Company A created awareness and generated interest was by giving a product away altruistically and promoting it.

- Market Research and market planning were strongly supported as critical success factors throughout the case research. Market research is essential in gathering customer requirements, competitor analysis and contract opportunities, whilst planning can make the SME more efficient in organising events, putting together tender documents and account/relationship management.
- Strong Leadership of an SME was identified as a critical success factor in both the case studies and in-depth interviews. Both customers and employees benefited from dealing with a motivated, reliable and committed owner-manager in Company A. This element was missing in Company B resulting in poor customer relations and a de-motivated workforce. The findings suggest that a strong owner-manager/manager is critical to an SME's success, but whether it has to be one leader - manager cannot be concluded based on this study and thus requires further research.
- Customer Focus is linked to RM, and is essential in the development of business software. This was highlighted in both case studies as Company B was not customer focussed whilst Company A listened to customer requirements. Understanding of customer requirements was also highlighted as essential in the depth interviews and ACA findings.

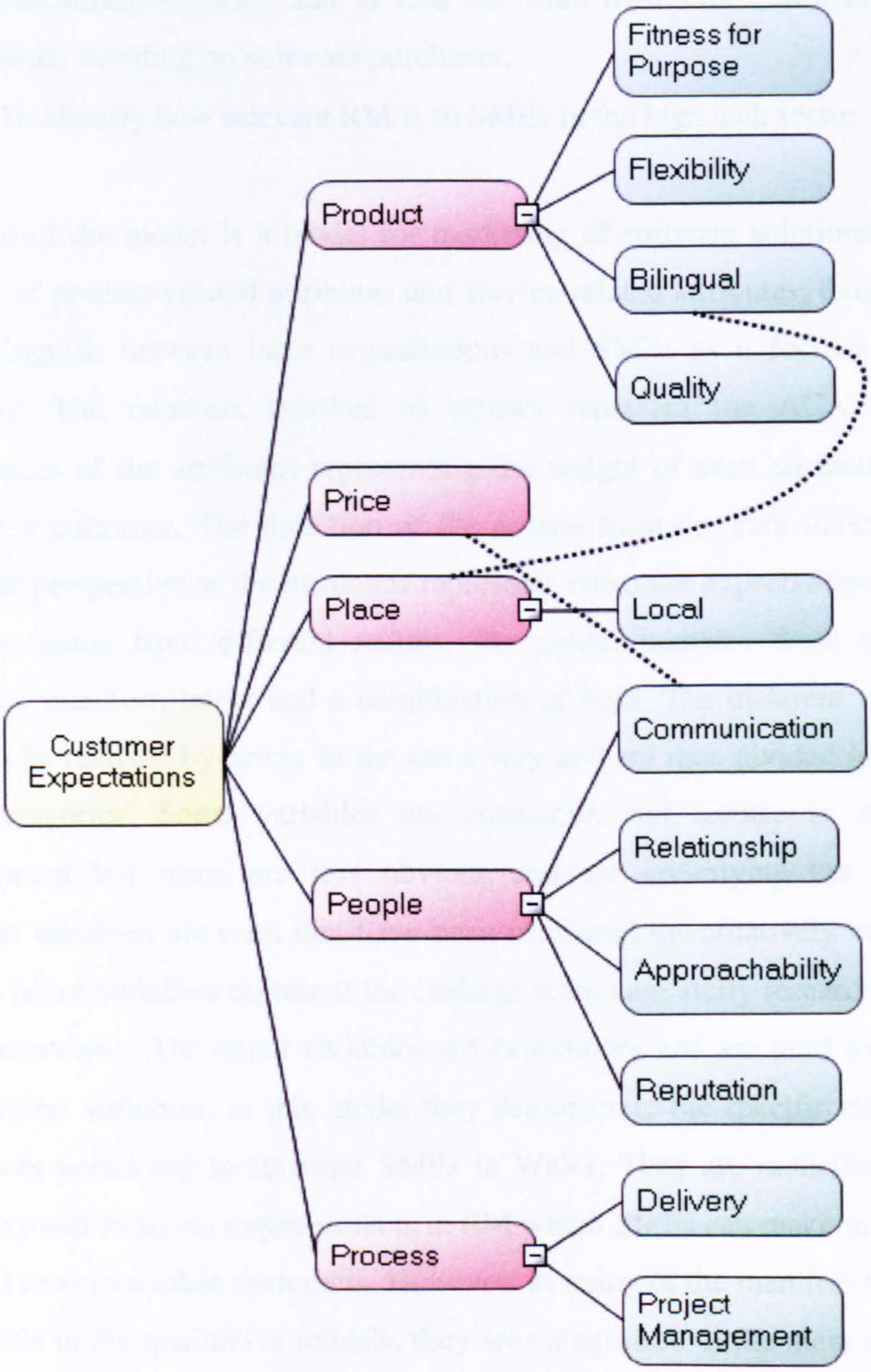
Figure 8.1 Factors contributing to SME success



8.2.3 Customer Expectations of Software SMEs

The findings of the in-depth interviews resulted in a model displaying expectations of software customers (see figure 8.2). The expectations centred around five of the '7Ps' and included similar dimensions as the previous model, including 'Relationship' and 'Communication'.

Figure 8.2 Five Ps for SMEs in the software sector



8.3 Development of Main Theoretical Model

8.3.1 Overview

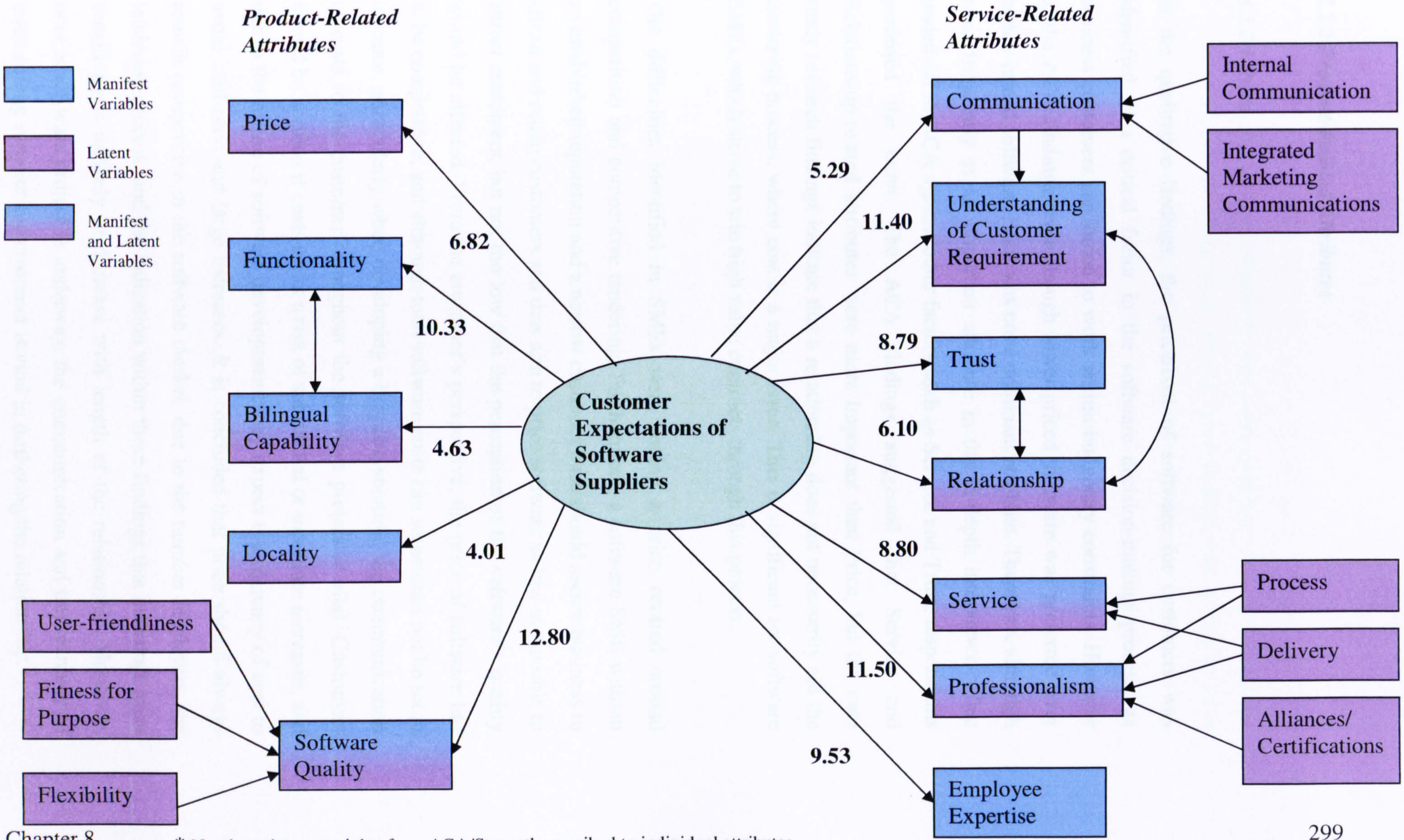
The theoretical model presented here encapsulates all the research findings and addresses all research objectives:

- To establish customer expectations of software suppliers.

- To discover the main attributes which customers deem important when purchasing software and to find out what trade-offs customers make when deciding on software purchases.
- To identify how relevant RM is to SMEs in the high tech sector.

The core of the model is a model for marketing of software solutions, which consists of product-related attributes and service-related attributes, thus it does not distinguish between large organisations and SMEs as it focuses on the customer. The numbers ascribed to arrows represent the ACA average importances of the attributes representing the weight of each attribute in the mind of a customer. The direction of the arrows from the core indicates the customer perspective as the attributes represents customer expectations. As the variables come from different realms, the model includes three types of variables: manifest, latent and a combination of both. The different variables may not be realised by actors in the same way and are thus divided into these three categories. Some variables are conscious and feature in everyday management but some are less obvious and are underlying the process. Manifest variables are ones that have been measured quantitatively via ACA, and the latent variables represent the findings from case study research and in-depth interviews. The latent variables are exploratory and are used to explain the manifest variables: in this model they demonstrate the specific challenges and issues pertaining to software SMEs in Wales. They are modelled on the periphery and focus on improvements in RM which SMEs can make in order to win and retain valuable customers. However, as many of the manifest variables are visible in the qualitative models, they are categorised in the main model as a combination of both qualitative and quantitative input. Below, all elements of the model are discussed separately and followed by final conclusions.

Figure 8.3 A Model displaying Customer Expectations of Software Suppliers



* Numbers denote weights from ACA/Strengths ascribed to individual attributes

8.3.2 Product-Related Attributes

8.3.2.1 Price

In the qualitative findings, the price/cost of software for customers was identified as a critical factor in the software decision-making process, as business customers are forced to work within budgetary constraints. However in the ACA findings, even though lower-priced software was preferred over higher-priced software, Price was not a dominant attribute. Therefore, although cited frequently as an important attribute in the in-depth interviews, when traded-off in ACA against other factors such as Service and Trust, respondents preferred the latter. The ACA findings suggested that Service and Relationship-related attributes were more important than Price, but the case study research findings indicate that a relationship does not necessarily aid the tendering process, where cost is a major issue. This is significant for software SMEs, which strive to win high value contracts through this process.

The difficulties identified in SMEs were setting a price centred around competition and competitive tendering. Furthermore, a software SME without an established reputation and a narrow customer base should secure business to attract and retain customers and thus aim to price software as low as possible to attract customers, but not too low that the perception of the software's quality would be affected. From the customer's perspective, the price of software has to be competitive, and although total software costs can sometimes not be set in advance, particularly when developing a bespoke solution, the communication of costs to the customer throughout the software project is vital. Customers should be notified if costs are at a risk of substantial or moderate increases, and due to the nature of software development, they expect transparency of cost to avoid confusion and large increases. It is concluded that price should always remain competitive in the software market, due to the number of players, the tendering process, and the indication within these findings that customer price sensitivity is unlikely to decrease with length of the relationship. However, once a software project is underway, the communication and transparency of costs among supplier and customer is vital in furthering the relationship.

8.3.2.2 Functionality

Software Functionality was ranked as the fourth most important attribute in the ACA findings, and as expected, 'useful functionality' was preferred over 'limited functionality'. This is a product-related attribute as it refers to the actual software product itself: whether it meets the customer requirements and detailed specifications in terms of functionality and whether it solves the business problem for which it is developed. In terms of this study, the majority of in-depth interviewees and ACA respondents were IT managers who tend to have a clear idea about what type of software functionality they need, stressing the need for SMEs to clarify what functionality their software offers and how it can solve the customer's business problem.

8.3.2.3 Bilingual Capability

The Bilingual Capability has been a dominant theme throughout this study. Much of the exploratory research pointed to bilingual software being an important attribute of software SMEs in Wales. It is a cultural aspect of the country, and is reflected in policies of many Welsh organisations and those companies that are in the Welsh market as they cater for both languages. Company A's core offering was bilingual software solutions, which was identified as a gap in the market following market research. The in-depth interviews were conducted with Company A's customers, and many of which cited a bilingual offering as an important factor in their decision-making process. However, the bilingualism attribute was traded off for almost all other attributes in the ACA survey, and respondents actually stated that they preferred English software only, albeit by a small amount. This could be because many of the respondents were from English companies located in Wales. When the clustering was ran on the ACA utilities, the clusters differed significantly in terms of their expectations of bilingual software. A 'Welsh' cluster was identified, whose members required the software to be bilingual. This particular cluster appeared to have a majority of its members from the public sector, inferring that these organisations were in fact from the Welsh public sector, as were a number of in-depth interviews' respondents. It is

concluded that bilingual software is a niche market in Wales, and not expected from all types of organisations. Company A has successfully entered this market with a unique offering, and although there is a strong demand from certain customers in Wales, the fact that it is a niche market justifies their diversification into other markets in order to grow.

8.3.2.4 Location

The findings related to Location of the software supplier were similar to those of Bilingual Capability. Location was ranked the least important attribute out of the 12 attributes. In terms of levels, a software company located anywhere in the UK was preferred to a local software company, clearly indicating that location is not an important factor in the software purchase decision making process. However, by looking at the results of clustering, cluster one clearly prefers a local software company, and cluster four also appeared to prefer a local software supplier. As both these clusters had a lower number of members than clusters two and three, this could explain the initial ACA results. The in-depth interviews provided an insight into why certain customers prefer a local supplier, the main reason being the ease of face-to-face meetings at short notice, which was deemed vital in developing a complex bespoke product. Moreover, in some instances there was a need for Company A's software developers to work closely with customers' in-house employees, which was made easier if they were in physical proximity to each other. In conclusion, although Location is not one of the pre-dominant factors in customers' minds when selecting a software supplier, it is an imperative attribute to certain customers.

8.3.2.5 Software Quality

The Software Quality attribute is placed under product-related attributes as the respondents perceive software to be of high quality if it is easy-to-use, fit for purpose and flexible. Ease-of-use, flexibility and fitness-for-purpose are included as latent variables in the model due to strong qualitative findings supporting them as aspects of Software Quality. According to the ACA

findings, Software Quality is the most important attribute considered in the decision-making process when customers purchase software. As has already been discussed, defining software quality is difficult. An examination into the exploratory questionnaires and in-depth interviews indicated that different types of customers had different expectations of quality products, for instance some customers wanted software scalability, and others wanted the ability to integrate the software with other programs, whilst others focused on ease of use and design of the software. Scalability, integration and testing are tangible facets of software quality, but examining the ranking of other attributes suggests that product quality with physical attributes is not all that customers expect. The service and intangible aspects of quality such as professionalism, relationship with the supplier and employee expertise seem to contribute to the decision making to a large extent, indicating that software quality is a combination of service and product quality. The implications of these findings are discussed in 8.5.

8.3.3 Service-Related Attributes

The following attributes are included in the model as intangible, service-related terms which affect the relationship between the supplier and customer.

8.3.3.1 Communication

Communication was a recurring theme throughout the study, albeit in different formats. Although communication was not ranked highly in contrast to the other attributes, the case research and qualitative findings indicated that internal communication, external communication and IMC play key roles in furthering relationships within a software SME, as well as with its customers and other stakeholders. The importance of internal communication was highlighted in Company B, as a lack of information sharing, teamwork and weak leadership led to a de-motivated workforce. The lack of communication among both owner-managers resulted in poor external communications with customers and their conflicting ideas about the software product meant that no finished product was taken into the market. Company A contrasted in this

respect, whereby employees were encouraged to share knowledge and ideas in order to collectively develop a successful software solution. It seems that IMC can support the development of RM. It is a broadened concept concerned with putting together all forms of communication. Company A did not strategically and consciously work towards IMC, although their promotional images, branding and colours were uniform, which aided customer awareness. In terms of communication type, and according to the ACA findings, structured communication was preferred over ad hoc communication, again supporting the development of a long-term relationship. However, when clustering the respondents, it was found that some companies prefer ad hoc communication with their software supplier. This does not mean that the cluster doesn't wish to have a relationship, but prefers to communicate only when a specific need arises.

8.3.3.2 Understanding of Customer

This attribute was identified as crucial throughout the study and strongly supports the contention that RM, communication and maintaining a dialogue with the customer is important. The attribute was the third most important factor in the importance rankings and is linked with the Relationship attribute in the model as it is assumed that a comprehensive understanding cannot be achieved without the underlying relationship. The importance of understanding a customer's software needs was also emphasised in the in-depth interviewees, and illustrated in the case research. The text mining results also emphasised its importance as 'understand' was cited 91 times and in nearly all documents. In Company B, there was minimal willingness to compromise or modify the product to suit customer needs which ultimately narrowed down their opportunities for the sake of their own vision. In Company A, understanding of customer requirements drove the organisation as the majority of solutions were tailored to individual customers. Therefore, regular communication was key, and customers often became 'co-producers' of the software product as their ideas and requirements were incorporated into the product. It is concluded that although customers do not always know the exact type of software required, their business problems must be understood by the software supplier. It is also

apparent that customers have a better idea once they work with a prototype, and it is the feedback at this stage which should be taken into account to ensure that a customer-orientated solution is delivered.

8.3.3.3 Relationship

The concept of relationships is visible in both qualitative and quantitative findings. A relationship between a software supplier and customer may take varying forms, depending on the nature of the project, past dealings and preference of the customer. However it is clear that a long term relationship and the future prospect of working together is preferred over a transactional, short term relationship whereby a software solution is merely delivered. Reasons for wanting a relationship includes having a supplier who will understand their business problems and objectives, not having to search for a software supplier each time a need arises, and having a supplier that can be relied upon and trusted.

The in-depth interviews indicated the need for open communication, honesty and trust from both parties, and although the product itself, its quality and value for money were imperative factors, being able to work with the supplier and the opportunity for furthering the relationship were predominant. The customers appreciated that software purchase is complex and costly, and particularly where it was customised, the dialogue within the relationship, opportunity for feedback and involvement from users was considered vital in order to create a successful solution. Supporting the interviews' analysis was text mining analysis, indicating that the most cited word was in fact 'Relationship'.

Although the Relationship attribute was not explicitly stated as the most important attribute in the ACA findings, the fact that Software Quality, Understanding of customer requirements and Professionalism were identified as important attributes indirectly suggests that a relationship is vital. It is contended that it is difficult for a software supplier to achieve a comprehensive understanding of the customer without a dialogue, open and regular

communication, which are facets of RM. In terms of the clustering results, although a long-term relationship was preferred by all clusters, a relationship was found to be much more important for some respondents than others, indicating that certain customers place a higher value on long term relationships and would be more willing to invest into the relationship.

In Company A, an RM strategy resulted in positive and committed supplier-customer relationships. The retention of customers has also resulted in additional software projects and revenue for Company A. Company B did not endeavour to develop relationships to the same extent and concentrated solely on the product development. The RM approach adopted by Company A was being responsive to the customer, being approachable by listening to the customer, not intimidating the customer with technical terms and welcoming feedback. The objective was to develop a solution which fitted their needs as opposed to the software company's vision. Company A had a CRM system which was used to support the RM strategy, but due to limited resources it was not used to its full extent and the real value of Company A's customers could not be calculated. This approach could be developed by Company A in order to identify its highest value and most profitable customers and then to move resources to focus on them (McDougall *et al.*, 1997; Richard, 2007).

Company A's strategy also included developing relationships with other stakeholders as well as customers, supporting Christopher *et al.*, (1991)'s six markets model:

- Internal markets: Employees.
- Influence markets: Government-National Assembly in Wales, local councils, public sector bodies, universities and colleges.
- Referral markets: partners, customers, network memberships.
- Employee markets: employment agencies, universities.
- Supplier markets: capability partners and other suppliers.

In answer to the question whether customers want relationships with their suppliers, the case study, depth interviews, text mining and ACA findings

reveal that customers do want relationships with software SMEs, although it is not always explicitly stated. The benefits that customers and suppliers can gain out of developing relationships are evident from the case research: benefits for customers include a tailored solution that meets their needs and can potentially provide them with a competitive advantage, a supplier that understands their business and software needs, a supplier that they can rely on in terms of after-sales support, and a supplier that they can consult regarding upgrades and further software development. Benefits for suppliers include a strong customer base, potential for positive word of mouth from satisfied customers, and the opportunity for future work with existing customers. Future projects may be easier to win due to the credibility, experience and reputation of the software supplier, but if they are of a high monetary value, price will be an important factor in the tendering process. Finally, an opportunity to develop a standard product from one bespoke solution is an opportunity to innovate further and enter new vertical industries.

The findings suggest that although customers desire the prospect of a relationship, and are willing to commit to a long-term relationship, the ACA findings illustrate that other expectations equally need to be satisfied, including the software product itself. The software product must clearly contain the required functionality, the software must be of high quality including flexibility and ease-of-use, and the price of the product must be affordable and competitive. All of these attributes must be satisfied by the software supplier to be able to market its solution effectively. Even when these requirements have been satisfied, some organisations are still reluctant to enter into a large software development project with an SME due to the perceived risks of working with an SME. Thus the critical factors of software SMEs need to be satisfied to avert the perceived risk (see figure 8.1).

8.3.3.4 Trust

Trust is included in the model and is linked to 'Relationship' as it is contended that trust cannot be established without the underlying relationship. However, the ACA findings reveal that trust may be initiated via references and

recommendations as it is not always possible for a customer to have had dealings with a software company in the past. Openness, honesty and communication arose in the in-depth interviews as important constructs. Moreover, the in-depth interviews inferred that Company A's realism in what they could and couldn't do increased trust as well as the SME's integrity.

8.3.3.5 Service

Service is a significant attribute, as it confirms that software service is equally important as the software product. In fact, the service can enhance the software offering and can include consultation, after-sales service, training and helpdesk. Professional processes and timely delivery of the software were also found to be significant latent variables of the service attribute, and are thus included in the model. The ACA findings revealed that customers place a higher value on after-sales support than software training, and the text mining results of both the qualitative interviews and the open-ended question in ACA indicated that support and service are crucial, furthering the argument that a relationship following the delivery of the software is important to the customer. It was clear that Company A strived in this area either by providing support or conducting relationship management, in order to retain their customers. Considering the trends in the software industry such as 'Software as a Service' and software rental (see section 3.4.4), as well as the research findings, it is evident that SMEs are more likely to survive if they focus on improving service-related aspects in addition to the software product.

8.3.3.6 Professionalism

According to the ACA findings, Professionalism is the second most important attribute considered by customers when deciding on a software supplier. Professionalism was defined as a reliable supplier which follows established and formal processes. The issues of reliability and formal processes were raised in many in-depth interviews as important customer requirements. These were especially pertinent to SMEs in order to reduce perceived risk. The formal processes include working within professional project management guidelines

and following established software development processes. Company A were working towards improving their project management methodologies but some customers were still reluctant to enter into large contracts without a larger partner to diffuse the risk. Company A's partnership strategy thus helped in acquiring such contracts and illustrated their professionalism to prospective customers. As such, processes, delivery and alliances are included as latent variables in the model and are linked to the Professionalism as well as the Service attribute. Other elements contributing towards Company A's professionalism included their customer portfolio, reputation in the marketplace, marketing collateral and business awards. This was linked to their IMC efforts, which attempted to synchronise and send a consistent message, the message being a capable, professional, innovative software SME. The in-depth interviewees remarked that Company A's manner and approach in meetings and formal presentations was professional, but customers still needed a formal approach demonstrated via formal contracts and project management processes. This was required despite the established relationship and commitment from the SME, but can partly be achieved by collaborating with partners in the industry.

8.3.3.7 Expertise of Employees

The Expertise of Employees incorporates the technical skills and competencies of the employees, as well as the human aspects including manner and approachability of employees. Their expertise was supported in both quantitative and qualitative findings as customers emphasised the importance of having confidence in the developer's ability and skills through both liaising with employees and using the actual product. According to ACA, experience was valued more than qualifications, but the clustering of respondents did not result in further differences in terms of the expertise expectation. The in-depth interviews and case research indicated the significance of the relationship between software developers and the customer, which helped in gaining a detailed understanding of the customer's needs. Company B's employees were unable to communicate to the customer due to the owner-manager's preference, resulting in mis-understanding of customer requirements and a

tendency for managers to relay mis-information back to the software development team. In contrast, Company A's owner manager, the project manager and software developers liaised regularly with customers in order to develop a bespoke solution which fitted their requirements. It is concluded that the better the experience of the employees, the more attractive they are as a software supplier, but the better the relationship and communication between employees and the customer, the better are the service offering and understanding of requirements, making the software project potentially more successful.

8.4 Overall Conclusions and Original Contribution to Knowledge

The conclusions of this study can be divided into two sections: the customer perspective and the software SME's efforts. The main model presented in this chapter encapsulates the customer's expectations of a software supplier, with their relevant numerical weightings derived from Adaptive Conjoint Analysis and latent variables derived from case research and qualitative depth-interviews. Software Quality appears to be the most important attribute considered by customers when selecting a software supplier, which automatically presumes the quality of the software product. Although product quality is vital and includes elements such as ease of use, level of testing and the software's flexibility, the weightings placed on other service-related attributes implies that service-quality is equally important to customers. The other service-related attributes that were found to be important were Professionalism, Understanding of Customer Requirement, Trust, Communication and Relationship. It is therefore concluded that the level of Software Quality expected by customers cannot be achieved without the presence of these aforementioned attributes. Although the Communication and Relationship attributes are not generally perceived to be the most important attributes, it is concluded that an understanding of customer requirements and trust cannot be achieved without the development of a relationship and its associated communication, whatever form it takes. The inherent nature of software purchase means that a human element in delivering the service solution is vital in achieving customer satisfaction, supporting the need for RM

within software organisations. This is particularly relevant for customers in the B2B sector requiring often customised solutions. It is important to note that customer expectations are unlikely to remain stagnant as people's preferences and priorities can change following communication within social networks, and with colleagues etc (Vag, 2007). This is especially relevant in the software industry, which is characterised by a rapidly changing environment. However it is argued that the service-element of the model is unlikely to change a great deal and the model can be adapted upon in the future.

The model can arguably be applied to a software organisation of any size, as it focuses on the customer's perceptions. However, the applied methodology and the consequent research findings have identified critical success factors for SMEs in the software industry, based on an SME in the Welsh software sector (see figure 8.1). These factors, along with the main theoretical model, are a guide on how to improve RM and IMC within software SMEs.

IMC is clearly a useful tool which supports the development of RM, and this has been identified in this study through the external and internal elements of IMC. Internal communications are crucial in sharing information, innovating solutions and motivating the workforce. In terms of external communications, it appears that a reputation and a professional-based communication is more efficiently conveyed to the target audience rather than an image-based communication, as it is these service elements with which software customers are concerned. However, the physical aspects of the image such as the brand must be communicated consistently to aid recall and awareness of the organisation.

With regards to specific requirements of software SMEs in Wales, a critical capability was identified in terms of bilingualism; developing software bilingually and delivering the service bilingually. Although it appears to be a niche market, and important to a cluster of customers, it shows a cultural awareness and a degree of social responsibility on the part of Company A. Bilingualism was also linked to Location, supporting the cultural aspect of the expectation in Wales. Certain customers preferred a common point of reference

that customers of innovative solutions often require a relationship and are willing to commit to a supplier, as long as the core product and service requirements are met. It was found that a constructive relationship between both supplier and customer during the software development process can lead to customer-centred innovative solutions, and a win-win relationship for both parties.

- As the study investigated a dyad of the customer and supplier relationship, a contribution is made into how SMEs can improve marketing in the software industry considering their general limitations including lack of resources and lack of specialist knowledge, which have long been identified in the literature. This study presents critical success factors for SMEs developing innovative products and services as well as factors on how to avoid failure in the marketplace. This is considered of vital significance to the future of SMEs and innovation, especially to those within peripheral areas such as Wales, in which high tech, innovative organisations are uncommon in certain areas.
- Finally, the method employed in this research contributes to the use of conjoint analysis in the B2B sector, and deems it a suitable setting within which to employ the method. Thus it widens the use of Conjoint Analysis and contributes to the knowledge into managers' decision-making processes of purchasing software.

8.5 Managerial Implications

This study offers several managerial implications. The qualitative methodology enabled the researcher to spend a large amount of time observing and researching real companies, and the quantitative findings supported the qualitative findings. Therefore the findings have resulted in useful recommendations for SMEs in the software sector. The major outcome of this research is the development of a semi-theoretical model demonstrating customer expectations of software suppliers. Having guidelines to follow is valuable to SMEs who often have technical but less managerial competencies (Scozzi *et al.*, 2005). Therefore it is contended that this model could be beneficial for high tech SMEs as a guide to improving their service offering

in order to be able to communicate more effectively. This type of common interest resulted in a preference for a 'local, Welsh software supplier' and aided the development of trust in Company A.

The SERVQUAL dimensions analysis of the in-depth interviews concurred with the ACA findings as the findings support the need for a whole service solution. All SERVQUAL dimensions were identified as relevant to the software sector, including Understanding of Customer, Reliability and Communication. Responsiveness was strongly supported and Access was perceived as the importance of prompt response as well as prompt delivery. The adapted 7Ps model (see figure 8.2) further supported the need for both product and service quality. Place was included in this model as a local supplier was preferred by Company A's customers, but it was also linked to the bilingual element as many respondents perceived their being located in Wales as synonymous with the company's bilingualism. Price was identified as an important expectation and one which would not diminish with the length of the relationship (Reinartz and Kumar, 2000). The text mining analysis of customer responses supported such findings.

The researcher believes that this study includes several contributions to knowledge. There are four major original contributions to knowledge:

- The model presented as a result of the findings is a contribution to the literature on marketing of software and high tech products and services. It addresses the customer perceptions and expectations of software suppliers, which is deemed important considering the high failure rate of new software companies and to some extent their reluctance to consider customer requirements when developing their innovative solutions. The model can be applied by an organisation of any size within these industries, and it is particularly relevant in the Welsh market.
- The qualitative findings as well as the model contributes to the Services Marketing literature, particularly customer expectations, and sheds some light on an industry which is often overlooked as a service industry. There is also a contribution to the RM literature as it is found

that customers of innovative solutions often require a relationship and are willing to commit to a supplier, as long as the core product and service requirements are met. It was found that a constructive relationship between both supplier and customer during the software development process can lead to customer-centred innovative solutions, and a win-win relationship for both parties.

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and RM. This model is especially useful in light of some SMEs' tendency to focus on innovation which sometimes dominates customers' needs. The finding that Software Quality is the most important attribute has important implications for business. Many organisations realise the importance of quality, but in this sector, software quality constitutes both product and service quality. Product quality includes the tangible aspects and the service quality elements include Professionalism, Relationship and Employee Expertise. Thus software SMEs should not only work towards improving the software product, they need to be concerned with listening to and understanding customer requirements and implementing customer feedback into the software solution. It is vital for software organisations to realise that the majority of customers are willing to enter into a relationship with a reliable and reputable supplier. The benefits they would incur include a supplier that understands their software needs and business objectives, a consistent after-sales service and less time spent on finding a new supplier each time a software requirement arises. Thus a software SME's time would be better invested in learning about their customer's organisation and offering some form of support following the delivery of the software solution. The functionality of the software must meet the customer's needs indicating the need for user-involvement during the production, and the design of a prototype which can be tested by the users. Moreover, the Price of the software still needs to remain competitive, as it is unlikely that price sensitivity will decrease with the length or strength of the relationship.

Both cases illustrate the importance of strong leadership and a motivated workforce, implying that SME managers should take the time to listen to employees' ideas, and organise the team in a way which encourages information sharing and innovation. Moreover, the model shows that internal communication is vital thus regular team meetings and informal interactions between employees are encouraged within software SMEs. 'Expertise of Employees' was highlighted as an important attribute in the customer's decision-making process, suggesting that SMEs should ensure that their employees contain the appropriate skill set to develop software matching the

needs of customers. Experience was preferred more so than qualifications, which SME managers could take into account when hiring employees.

In terms of Location and Bilingual Capability, overall these attributes were identified as desirable rather than essential factors when customers select a software supplier. The majority of Company A's customers required bilingual software but as these customers seem to represent members of a cluster, SMEs in Wales should not rely solely on this capability in the long-term.

In terms of marketing activities, these findings show that marketing planning and forming alliances can contribute to SME success (see figure 8.1) thus SMEs should take the necessary to steps to partner with a reputable company as early as possible, in order to increase their credibility in the marketplace and gain access to additional marketing resources. Another way to increase credibility is to implement project management methods in the development of software solutions, which is particularly vital when entering into high value projects. It is important to remember that customers require regular reporting and touch points through the project.

IMC has been found to support the development of Relationship Marketing, thus SMEs should attempt to synchronise their branding and marketing messages through the various marketing channels as it increases the chance of prospective customers recalling and recognising the company.

The predominant managerial implication evident throughout these findings is the importance of RM and its benefits to both the supplier and its customers. The investment in developing relationships is linked to forming alliances and integrating communications (IMC), and also includes relationships and networking with other stakeholders in order to improve awareness and reputation in the marketplace.

8.6 Future Research Avenues

Future research directions are useful in identifying areas that could be researched further in greater depth. These include research questions which are outside the scope of current research as well as identifying new though related research directions. In terms of furthering this research study, the main question centres around the applicability of the theoretical model in real-life situations. As this research collated responses from various industries, a similar method could be used to test the model in one of those specific industries that buys software, such as the Education Industry. In this instance, a dyadic approach could be taken to explore the buyer's expectations in more detail, and software SMEs specialising in targeting this industry could be researched to see whether it is a useful model for them to improve their RM. Depending on the outcomes of this research, the model could be subsequently applied to other industries, but may need to be adapted to specific industries. The model could also be adapted further in order to be made practically useful to managers of software organisations, and action research could be conducted with small or large organisations to explore whether the model helps in the improvement of marketing software solutions and helps in their responses to customer expectations. It would also be interesting to see whether the model would be useful to SMEs experiencing difficulties in implementing marketing, thus a longitudinal study of software SMEs could be undertaken in order to identify whether the model made a difference to customer relations and even profitability of the SME. Other methods to improve the model could include structural equation modelling for a more quantitative perspective of customer expectations. This could provide a clearer picture of customer expectations in the software industry.

In terms of the case research and in-depth interviews, the exploratory results could be used to develop a quantitative methodology for further investigation of RM issues within software SMEs. A modification of the SERVQUAL instrument could be made specific to this sector as a result of this study's content analysis, and a survey could be administered using random sampling of a large pool of respondents in order to attain reliable and robust responses. This

could further the debate on what constitutes service quality in the software industry and hence decrease the gap in the literature of marketing in the software sector.

Another gap identified during this study was the lack of research into adoption of IMC within SMEs. It was outside the scope of this study to explore this issue in detail, but one possible future study is applying Kitchen *et al.*, (2004)'s model (see figure 2.5) to test the extent to which SMEs integrate their communications, and whether it is done consciously or unconsciously. This could be achieved by interviewing marketing managers of SMEs and using content analysis to establish the extent to which communications are integrated. A review of marketing material could also be conducted in order to identify the consistency and level of synchronisation of marketing messages.

The importance of Software Quality was clear in this study, however what defines software service quality is still unclear. Therefore a further study exploring what defines software quality could be useful, and would benefit from in-depth interviews and focus groups with a range of software customers, consultants and software managers.

This study has concentrated on customer expectations of software suppliers, but further research could be conducted into software organisations' owner-managers and employees in order to explore their perceptions of internal and external relationships. This follows on from the findings of Company A which suggested that internal relationships and leadership style can affect employees' performance and subsequently can affect customer relationships. A further rationale for such research on internal marketing of software SMEs is a clear gap in the literature (Carter and Gray, 2007). Another theoretical concept which arose in the findings of Company A was Knowledge Management as a tool to aid innovation and efficiency within SMEs. In order to explore this further, a comparative case study research methodology could be employed with the aim of developing a Knowledge Management inductive model for high tech SMEs.

8.7 Close

This draws the thesis to a close. The final chapter has presented the conclusions of the study, along with the theoretical model, implications for managers and future research directions. It has demonstrated that there is both academic and practitioner value in the topic: Marketing of Software in SMEs.

Appendix 1: Interview Questions for Company B Employees

What was your position in the company?

How long did you work for the company?

Describe how the information flowed within the company in terms of sources of data, how that data was turned into information, and how that information was turned into knowledge. Could be difficult to answer (give examples on the differences between the two concepts)

Discuss possible problem areas in that flow of information (possible or existing or problems that actually took place?)

Describe the consequences for the company from a performance point of view in relation to these problem areas.

Discuss possible solutions to these problems

Think about a typical week's work. Describe what it involved (Again should we ask only about data-information-knowledge issues? Typical day could be difficult to define especially in relation to decision makers?)

How did you let others know what you were doing?

What knowledge/expertise/experience did you have that was important for the company?

Did anyone else have that knowledge expertise/experience?

Were you aware, that others in the company needed to use your knowledge or the information you had? If yes, how did you communicate this to them?

Did you have any ideas, suggestions or opinions that you think would have helped the company?

Did you make these known to others in the company? And if so, whom?

Did they take these ideas aboard?

Why do you think these ideas, suggestions or opinions were not taken on board?

Suggest ways that your ideas, suggestions or opinions could have been made better known by others.

Describe your perceptions of the company's marketing efforts

What are your thoughts regarding how the company dealt with its customers and other external stakeholders?

Discuss the problems which arose in the client/company relationships

Discuss possible solutions to these problems

Was there a formal registration of complaint/suggestions from customers?

Was feedback collected from clients on a regular basis?

What was the strategy for finding new customers?

Describe ways in which the company strived to keep customers satisfied

Appendix 2: Interview Questions for Company B Customer

How long were you a customer of the company?

How was your relationship formed/How did you become a customer?

Describe your relationship with the company

Discuss the problems which arose in the relationship

Discuss possible solutions to these problems

Did you make these suggestions known to the company?

Did they take them aboard? If not, why do you think these ideas were not taken on board?

How satisfied were you with the product and service? If not, discuss the reasons why.

Did the company ask for your feedback regarding the service offered?

How did you find the behaviour of the staff and their approach to customer service?

Describe your thoughts on the marketing efforts of the company

Describe your overall impressions of the company (if the company was still running, would you recommend them to others, would you have considered buying another product?)

Appendix 3: Company A Questionnaire –National Eisteddfod: To identify the level of awareness of Company A in the Welsh Market

1. Are you aware of Company A? If no go to question 6

2. If Yes, what understanding/perception do you have of what they do?

3. How did you learn/how do you know of Company A?

   - Word of Mouth
   - Advertising
   - Press
   - Business Network/Conference
   - We have a Business Relationship
   - Internet
   - Other

4. Are you a/Would you classify yourself as a;

   - Customer
   - Partner
   - Prospective Customer
   - Competitor
   - Other Stakeholder

5. What are your thoughts regarding Company A's image?

6. What are your thoughts regarding the software industry in Wales?

7. What are your expectations of a software business in Wales?

8. What do you consider to be important factors when buying a business application software product/service?

Holiadur Cwmni A–Eisteddfod Genedlaethol -I adnabod lefel ymwybyddiaeth Cwmni A yn y Farchnad Gymreig.

1. Ydych chi'n ymwybodol o gwmni A? Os na, ewch i gwestiwn 6.

2. Os ydych, pa ddealltwriaeth sydd gennych o beth maent yn eu wneud?

3. Sut wnaethoch chi ddysgu am gwmni A?

   - Ar lafar
   - Hysbysebu
   - Y Wasg
   - Rhwydwaith Fusnes/Cynhadledd
   - Mae gennym berthynas busnes
   - Y Wê
   - Arall

4. Ydych chi yn;

   - Gwsmer Presennol
   - Partner
   - Cwsmer Tebygol
   - Cystadleuydd
   - Hapddalwr arall

5. Beth yw eich barn ynglŷn â delwedd Cwmni A?

6. Beth yw eich barn ynglŷn â diwydiant meddalwedd yng Nghymru?

7. Beth yw eich disgwyliadau o fusnes meddalwedd yng Nghymru?

8. Beth ydych chi'n gysidro I fod yn ffactorau pwysig pan yn prynu cynyrch neu gwasanaeth meddalwedd busnes?

Appendix 4: Interview Schedule for Customers of Company A

My name is Sara, and I am a PhD student from Bangor University. I am carrying out research on the Marketing of Innovation within Small and Medium Enterprises in the Welsh ICT sector. The aim of the research is to investigate the marketing of software products and services using the case study of Company A. As you are a client and a primary contact for Company A, I would like to ask you some questions about your relationship with Company A. All the information you submit will remain strictly confidential. Extracts from the interview may appear in my PhD dissertation, but under no circumstances will your name or any identifying characteristics be included.

Please answer each question in as much detail as possible.

<u>Background to your Relationship</u>

- Discuss the background to your relationship with Company A (How was your relationship formed/How did you become a customer?)

- Why did you choose this company as a supplier?'

<u>Experiences</u>

- Describe your relationship with the company

- Discuss any problems which have arisen in the relationship

- Why did these problems arise?

- Discuss possible solutions to these problems/how you think the company could have behaved differently.

- How does Company A's image feature in your relationship? (How important is it for you to have a company like Company A as a supplier?)

- Who is responsible for software purchase in your company?

<u>Your Opinions of the company</u>

- How satisfied are you with the product, in terms of the quality and features?

- How satisfied are you with the service offered by the company?

- Has the company asked for your feedback regarding the service offered?

- How have you found the behaviour of the staff and their approach to customer service?

- How have you found the after-sales service?
- Describe your thoughts on the marketing efforts of the company.
- What do you think are Company A's strengths?
- What do you think are Company A's weaknesses?
- What do you like about Company A?
- Describe your overall impressions of the company (would you recommend them to others, would you consider buying another product?)
- What do you think are the company's thoughts about you (as a client)?
- How responsive is the company to your needs?
- What other software companies do you deal with? What are your thoughts about them? How do they compare with Company A?

<u>Expectations</u>

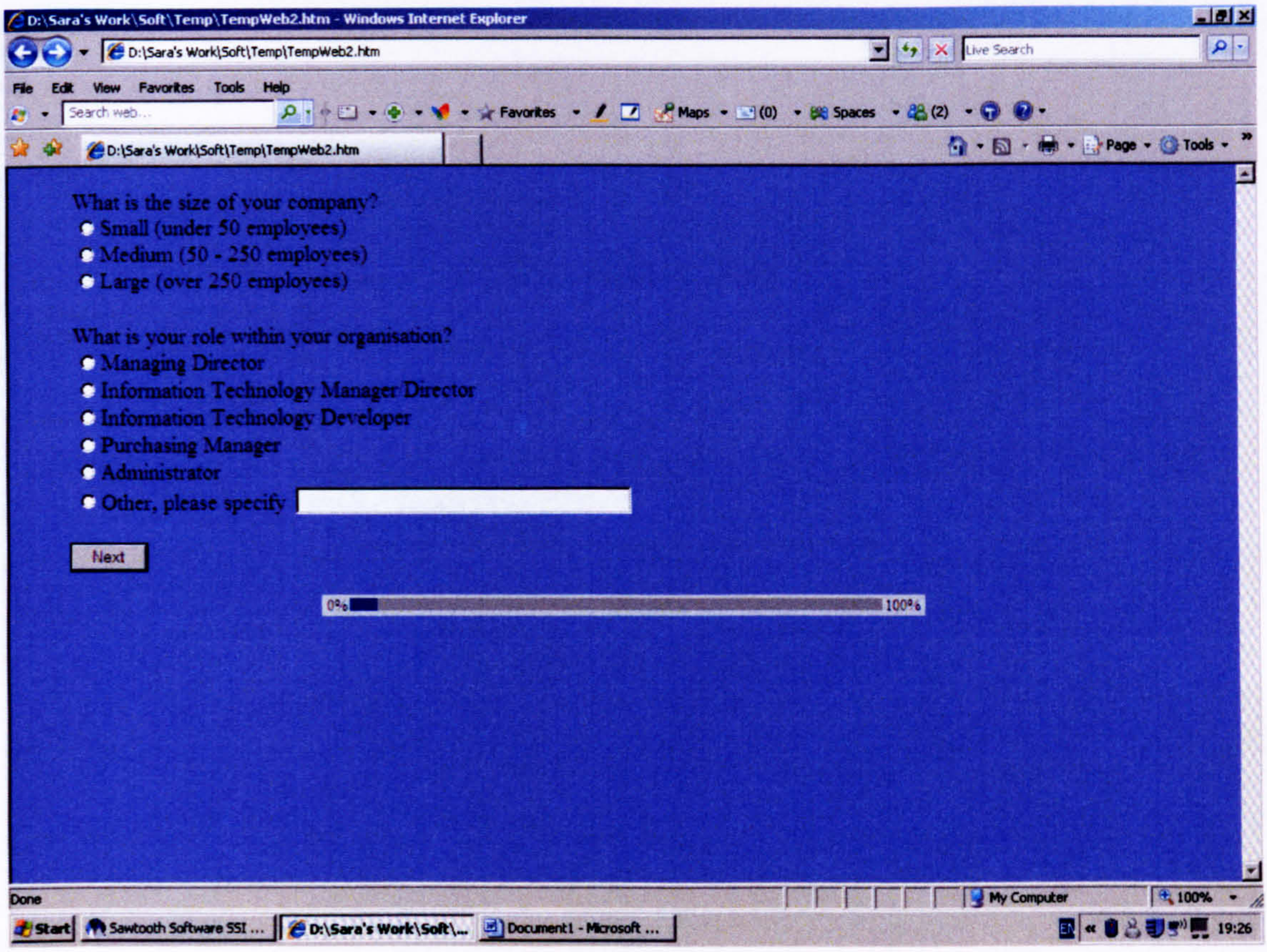
- What is the most important factor that influences your choice when purchasing a software product/service?
- What other attributes are important in your decision making process? Why are they important?
- What degree of importance, as part of your relationship, do you place on the bilingual/Welsh factor (Company A being a bilingual company and communicating to clients bilingually)?
- What do you expect from the software product provided by Company A?
- What do you expect from the company (as a supplier in general)?
- What are your overall expectations of a software company (in Wales)?

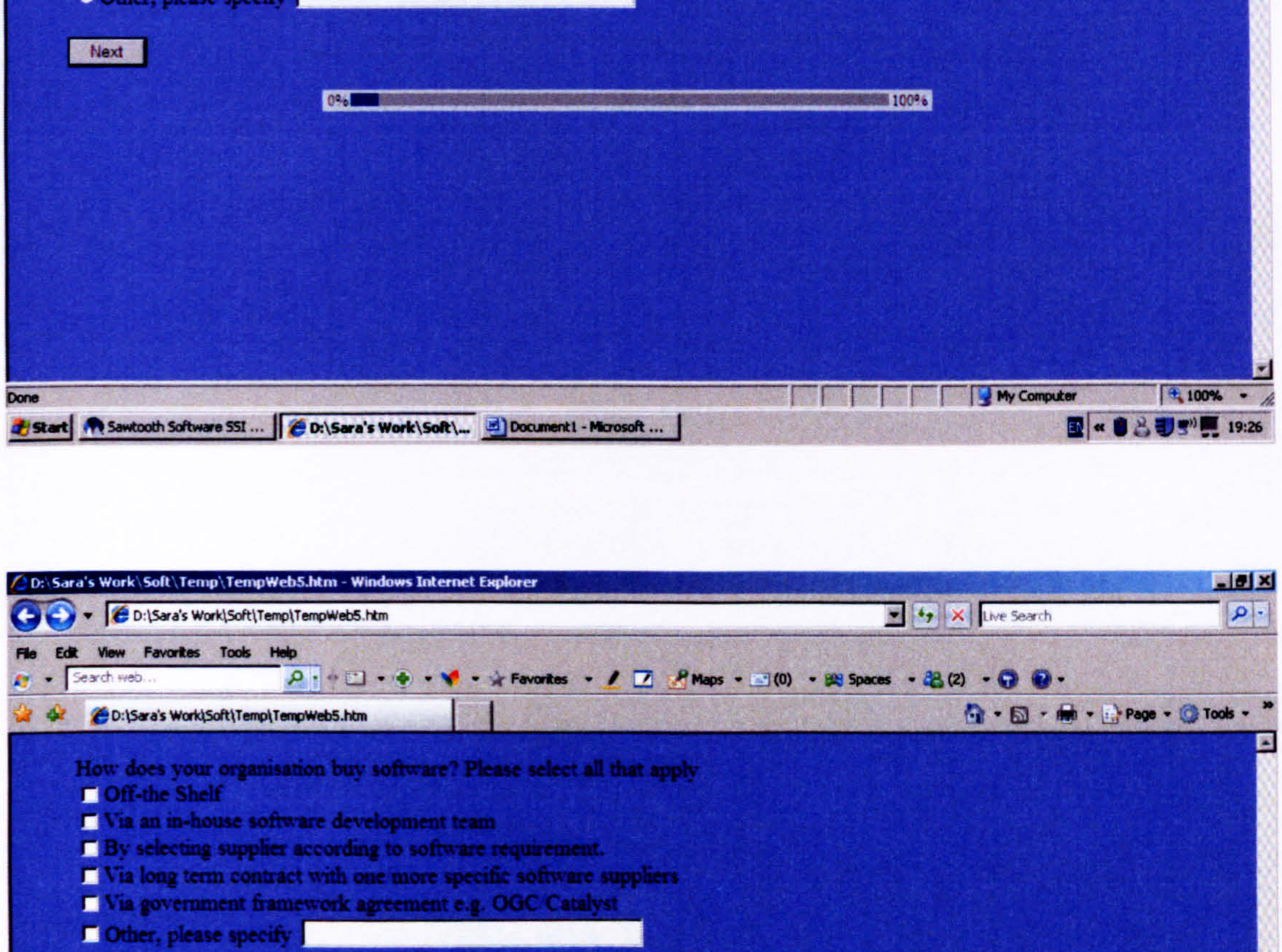
<u>Closure</u>

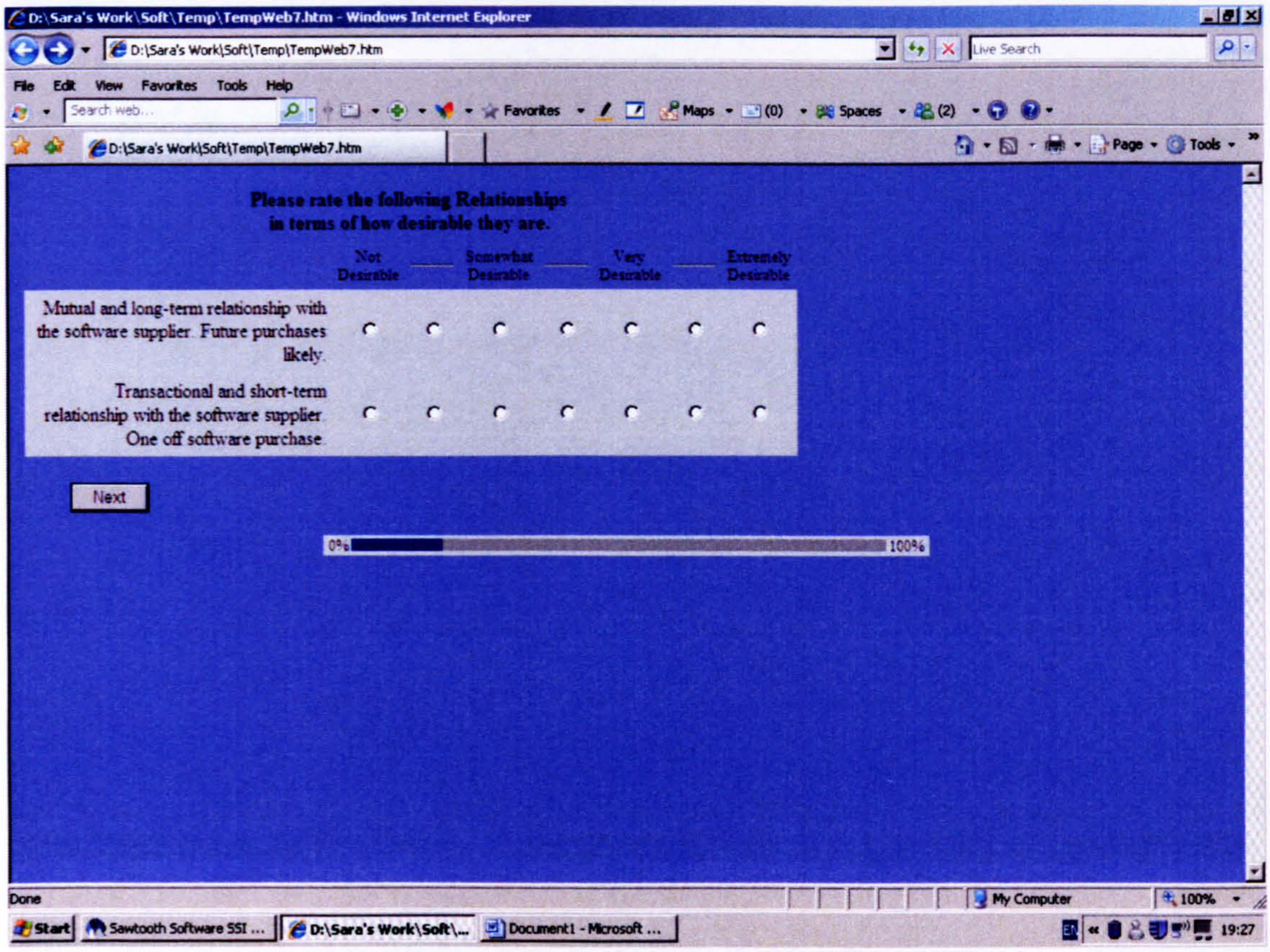
Do you have any other comments – remarks that you consider important when describing your relationship with Company A?

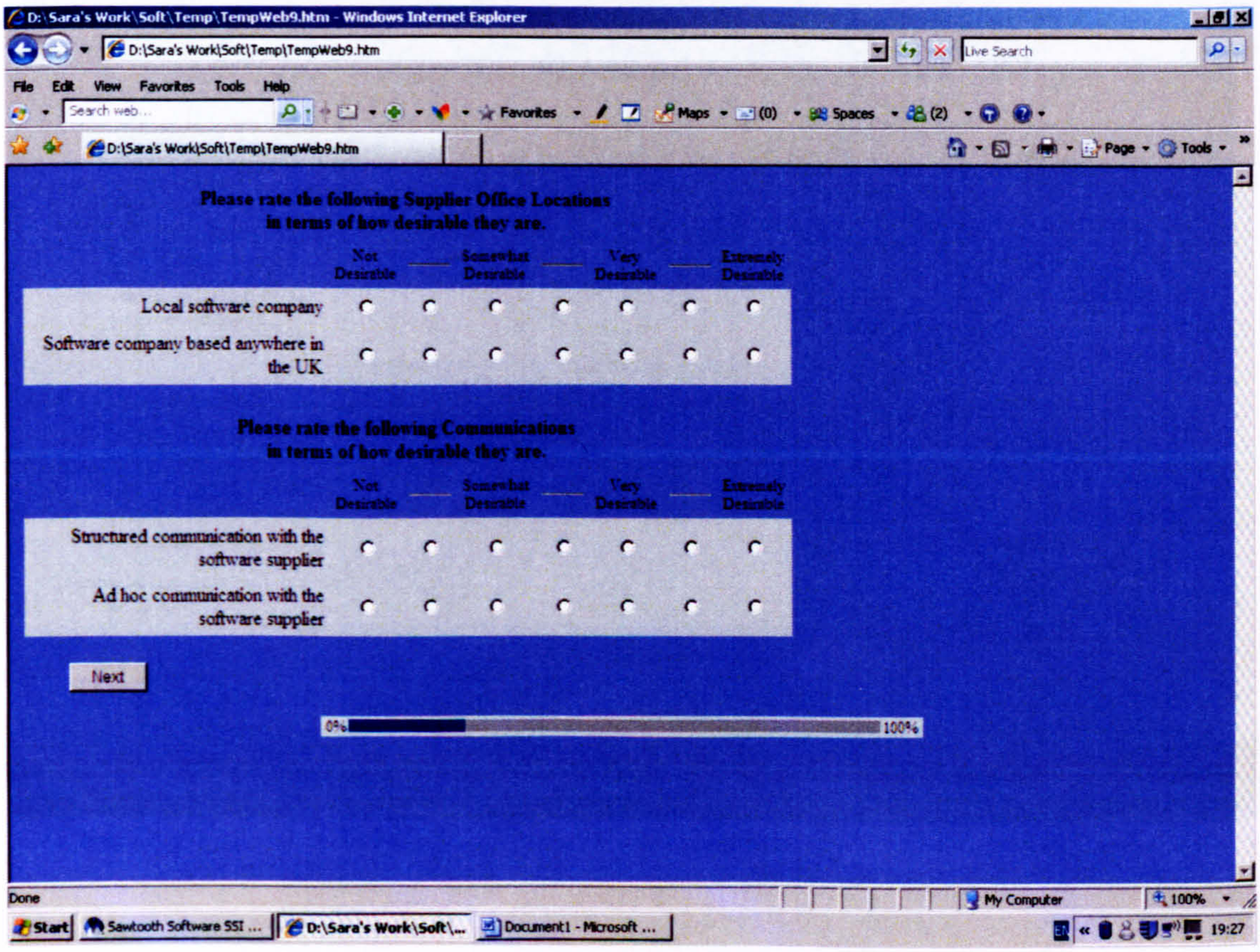
Thank you for your time and valuable contribution to my research.

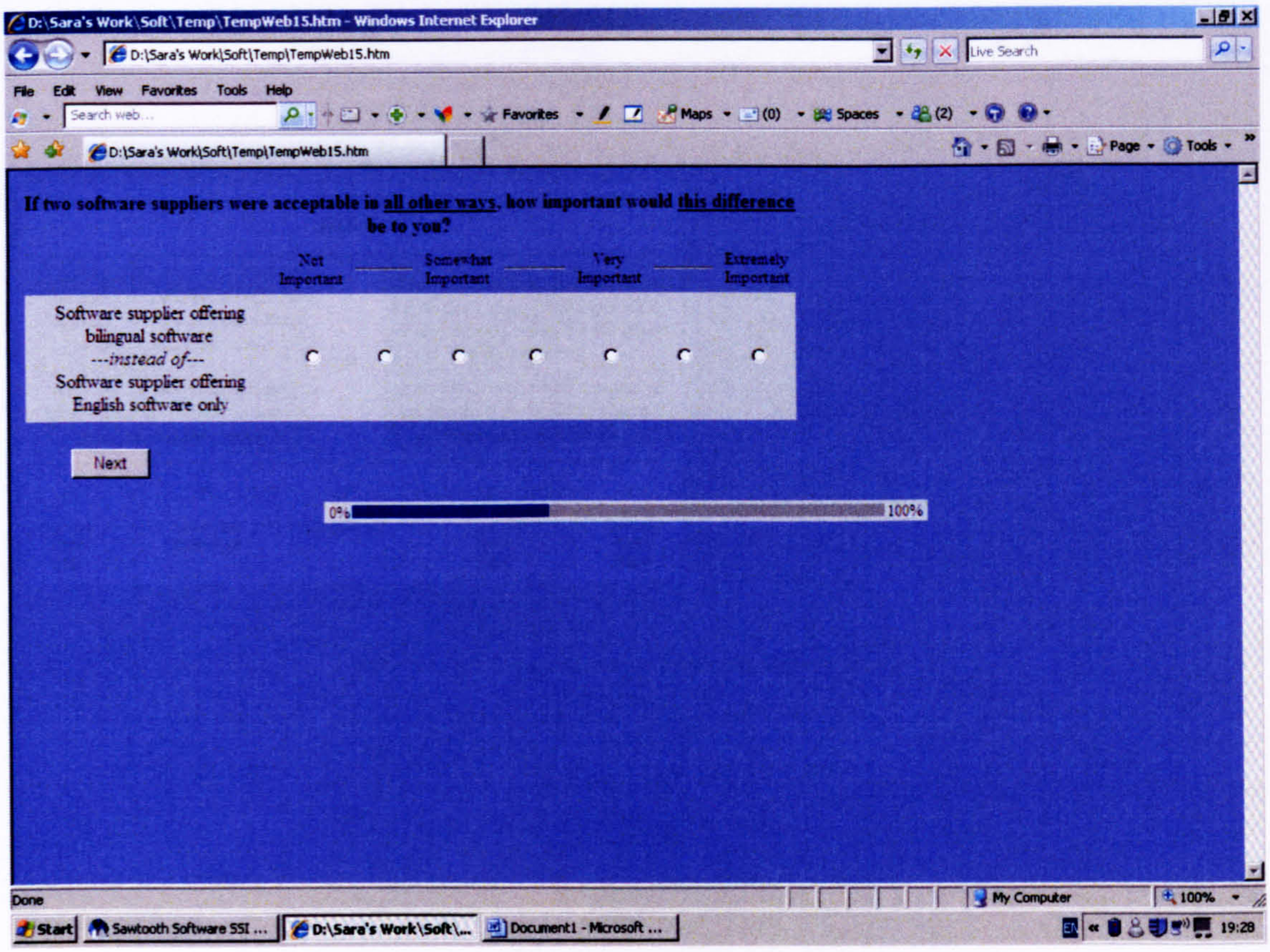
Appendix 5: Samples of Screenshots from ACA Survey



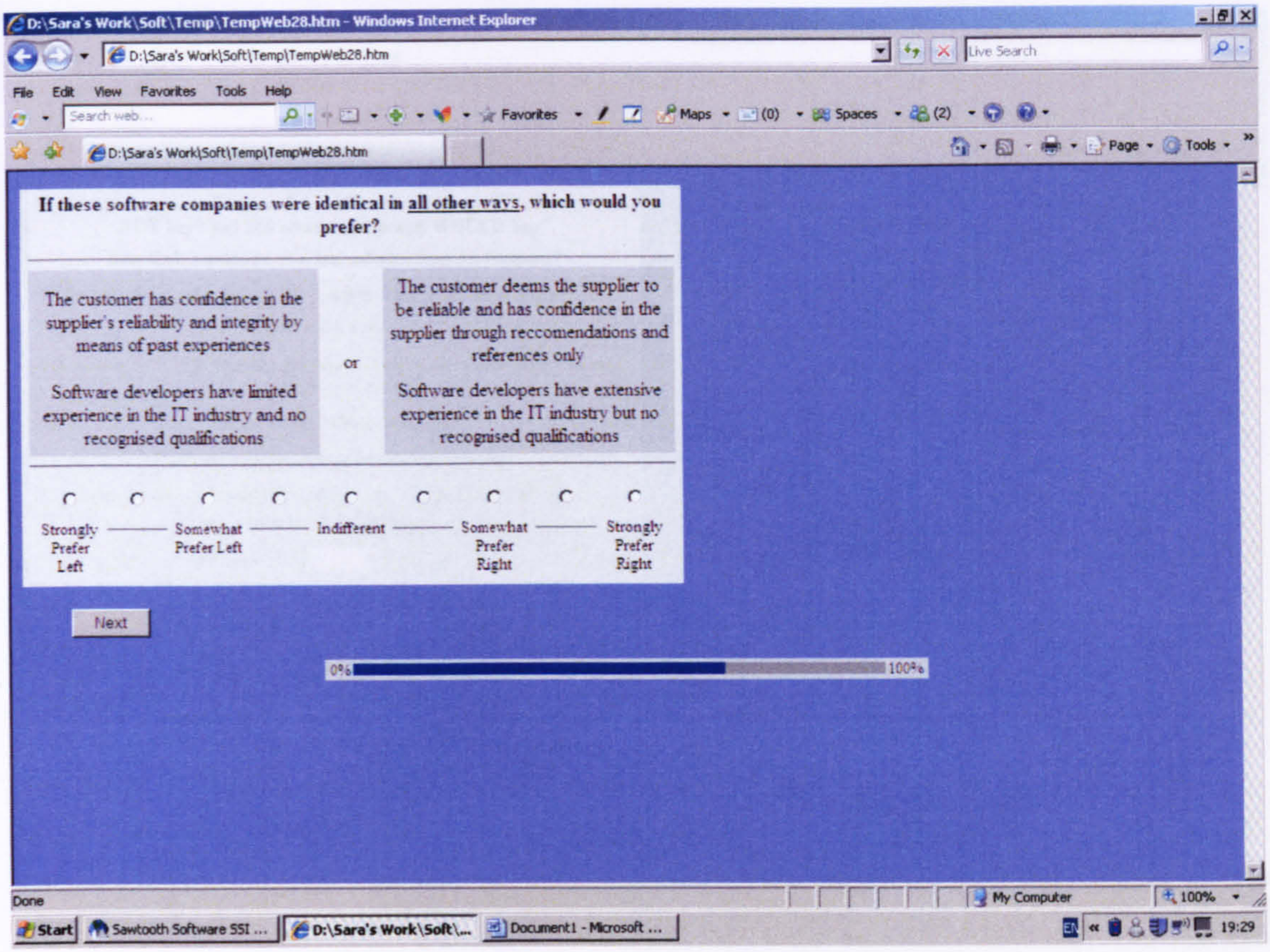



D:\Sara's Work\Soft\Temp\TempWeb7.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb7.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
Page
Tools
Please rate the following Relationships in terms of how desirable they are.
Not Desirable
Somewhat Desirable
Very Desirable
Extremely Desirable
Mutual and long-term relationship with the software supplier. Future purchases likely.
Transactional and short-term relationship with the software supplier. One off software purchase.
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:27

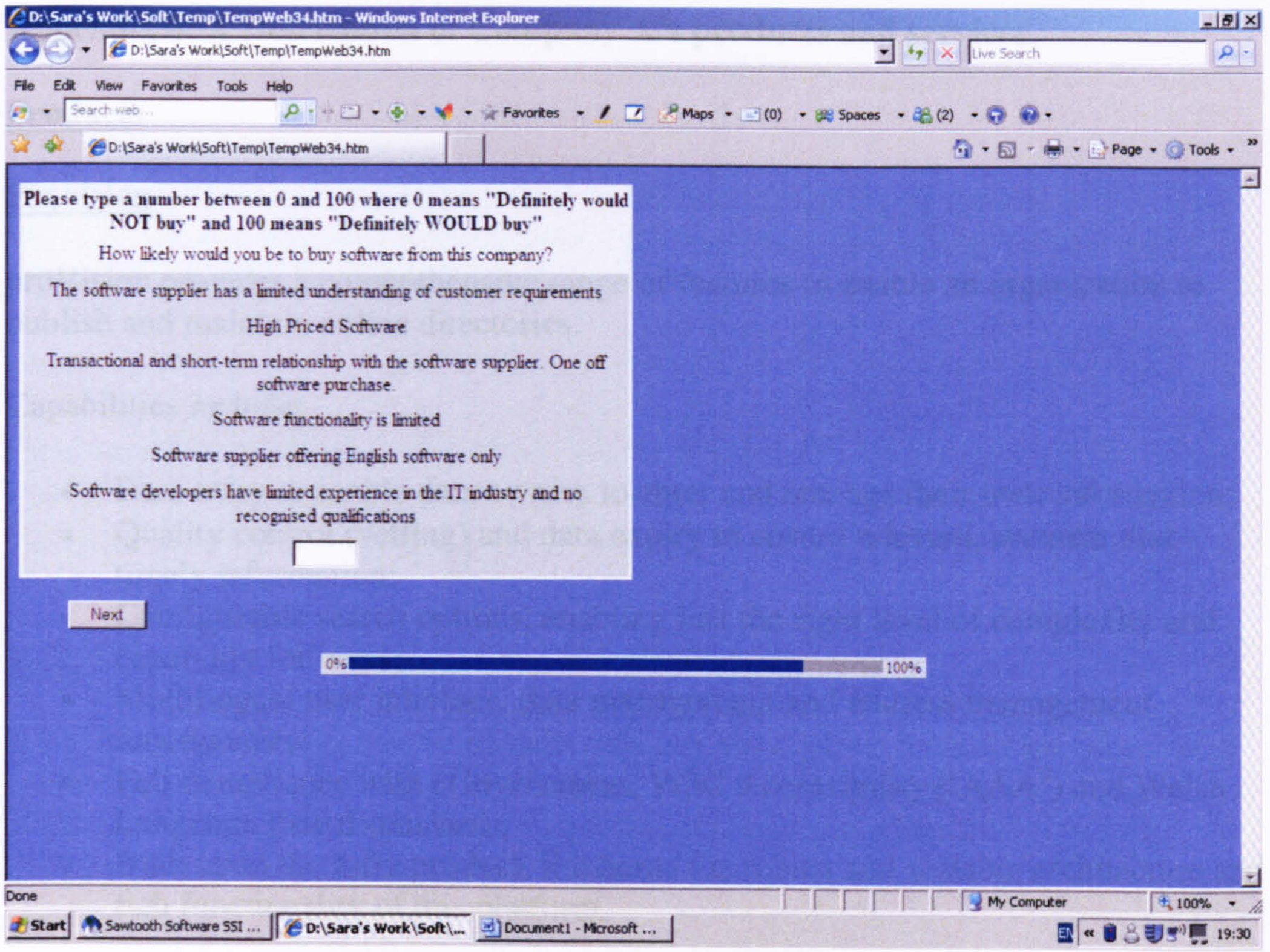

D:\Sara's Work\Soft\Temp\TempWeb9.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb9.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
Page
Tools
Please rate the following Supplier Office Locations in terms of how desirable they are.
Not Desirable
Somewhat Desirable
Very Desirable
Extremely Desirable
Local software company
Software company based anywhere in the UK
Please rate the following Communications in terms of how desirable they are.
Not Desirable
Somewhat Desirable
Very Desirable
Extremely Desirable
Structured communication with the software supplier
Ad hoc communication with the software supplier
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:27

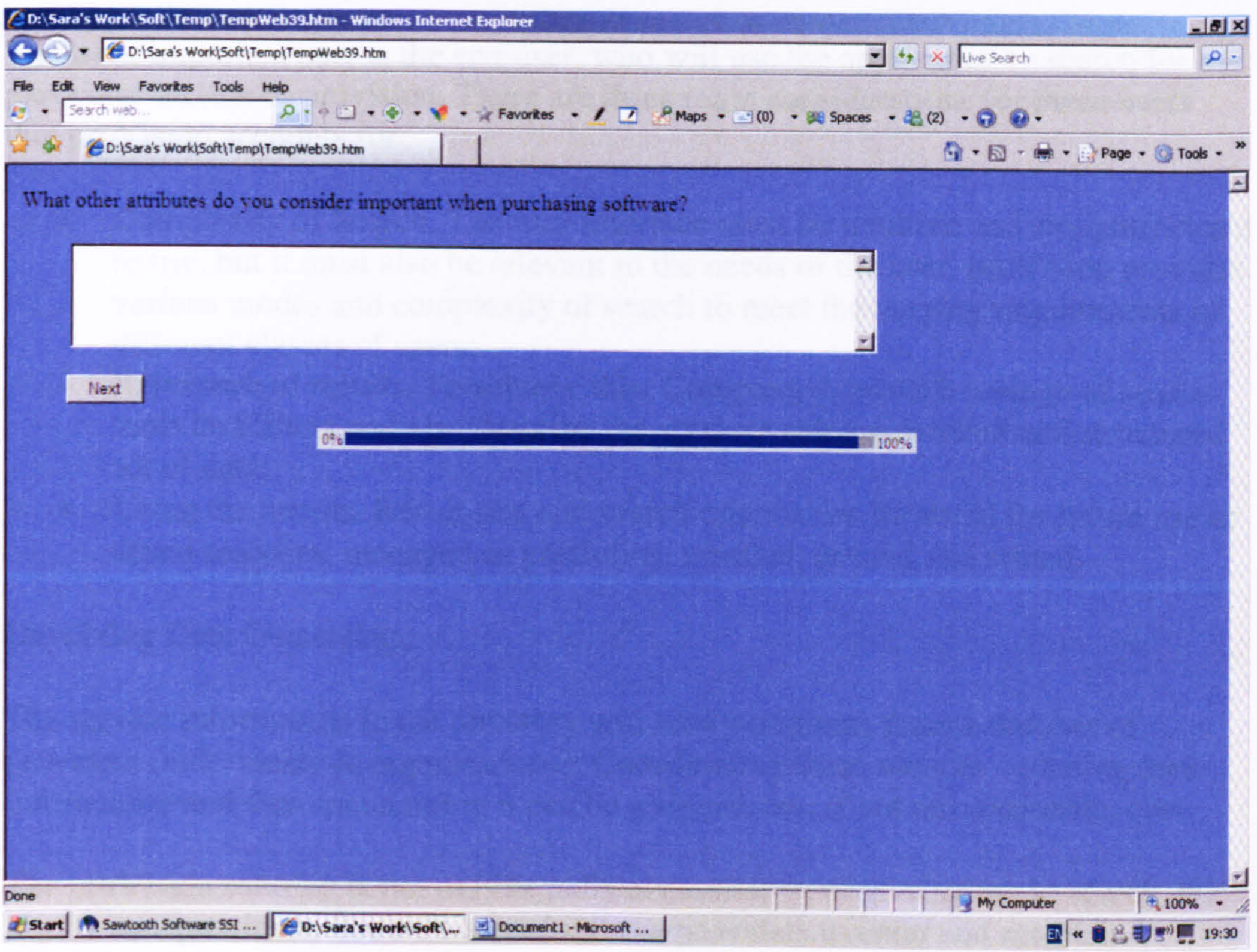

D:\Sara's Work\Soft\Temp\TempWeb15.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb15.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
Page
Tools
If two software suppliers were acceptable in all other ways, how important would this difference be to you?
Not Important
Somewhat Important
Very Important
Extremely Important
Software supplier offering bilingual software
---instead of---
Software supplier offering English software only
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:28

D:\Sara's Work\Soft\Temp\TempWeb17.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb17.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
Page
Tools
If two software suppliers were acceptable in all other ways, how important would this difference be to you?
Not Important
Somewhat Important
Very Important
Extremely Important
The customer has confidence in the supplier's reliability and integrity by means of past experiences
---instead of---
The customer and supplier have no past experiences and trust is yet to be established
If two software suppliers were acceptable in all other ways, how important would this difference be to you?
Not Important
Somewhat Important
Very Important
Extremely Important
Well-tested software providing positive user experience
---instead of---
Un-tested software which is difficult to use
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:28


D:\Sara's Work\Soft\Temp\TempWeb28.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb28.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
Page
Tools
If these software companies were identical in all other ways, which would you prefer?
The customer has confidence in the supplier's reliability and integrity by means of past experiences
Software developers have limited experience in the IT industry and no recognised qualifications
or
The customer deems the supplier to be reliable and has confidence in the supplier through reccomendations and references only
Software developers have extensive experience in the IT industry but no recognised qualifications
Strongly Prefer Left
Somewhat Prefer Left
Indifferent
Somewhat Prefer Right
Strongly Prefer Right
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:29

D:\Sara's Work\Soft\Temp\TempWeb30.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb30.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
Page
Tools
If these software companies were identical in all other ways, which would you prefer?
Well-tested software but difficult for users to use
Supplier has formal processes in place but can be unreliable
or
Well-tested software providing positive user experience
Supplier can be unreliable at times and no formal processes in place
Strongly Prefer Left
Somewhat Prefer Left
Indifferent
Somewhat Prefer Right
Strongly Prefer Right
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:30


D:\Sara's Work\Soft\Temp\TempWeb34.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb34.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
D:\Sara's Work\Soft\Temp\TempWeb34.htm
Page
Tools
Please type a number between 0 and 100 where 0 means "Definitely would NOT buy" and 100 means "Definitely WOULD buy"
How likely would you be to buy software from this company?
The software supplier has a limited understanding of customer requirements
High Priced Software
Transactional and short-term relationship with the software supplier. One off software purchase.
Software functionality is limited
Software supplier offering English software only
Software developers have limited experience in the IT industry and no recognised qualifications
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:30


D:\Sara's Work\Soft\Temp\TempWeb39.htm - Windows Internet Explorer
D:\Sara's Work\Soft\Temp\TempWeb39.htm
Live Search
File Edit View Favorites Tools Help
Search web...
Favorites
Maps
(0)
Spaces
(2)
D:\Sara's Work\Soft\Temp\TempWeb39.htm
Page
Tools
What other attributes do you consider important when purchasing software?
Next
0%
100%
Done
My Computer
100%
Start
Sawtooth Software SSI ...
D:\Sara's Work\Soft\...
Document1 - Microsoft ...
19:30

Appendix 6: A Description of Company A's products and services

Products

Provision

proVision provides a comprehensive range of features to enable an organisation to publish and maintain online directories.

Capabilities include;

- Data entry to enable data owners to enter and manage their own information;
- Quality control (vetting) and data expiry to ensure relevant, accurate and timely information;
- Configurable search options, enabling just the right level of complexity and capability for users;
- Multilingual user interface, data management and address management functionality;
- Full compliance with eGovernment, W3C Accessibility ('AAA') and Welsh Language Board standards;
- Built upon the Infra product, it inherits the robust and scalable architecture and rich functionality of this platform.

Browsing, Searching & Portfolio;

The most important user is the end user, who will use the application to search for a particular service or provision. There are three main considerations for these users that proVision accounts for:

- Complexity of Search. The user interface must be intuitive and straightforward to use, but it must also be relevant to the needs of the user. proVision provides various modes and complexity of search to meet the varying requirements of different classes of users;
- Relevance of results. To achieve this, Company A provide a range of search tools and filters and also describe the services using a detailed and structured set of data;
- Using the results. Result sets and search criteria can be saved for future use as saved searches, managed as portfolios, emailed, printed and edited.

Devolving Data Ownership;

The service information in the directory will likely originate from a number of providers (individuals or organisations). Coordinating these sources, collating their information and then maintaining it can be a significant, if not unsustainable, cost.

The proVision solution is not only broadly accessible to users wanting to search, but also to data providers. Secure access for these providers to enter and maintain information regarding their services is provided, thereby devolving the effort away from the organisation hosting the directory and ensuring improved data quality and relevance (enforced expiry dates for all data also assists with this).

The responsibility for maintaining user details within these data providers is also devolved. The system administrator just needs to approve the organisation for access to the system and define their rights and capabilities.

The important bit is that complete control and oversight over all system activity is retained. Whatever quality control and approval regimes that are appropriate can be implemented, including the vetting of any new or changed services.

Foundations;

This product is based upon the Infra platform (see below), providing a number of key benefits, including a robust, secure, open and scalable architecture and rich functionality ranging from user management, security rights through to multilingual support.

Bilingual CRM

In addition to the comprehensive and sophisticated CRM capabilities already offered by Microsoft's CRM solution, the bilingual CRM solution provides four areas of bilingual support; Language Preference Tracking, Bilingual Data Management, Bilingual Mail Merge and Address Management.

Language Preference Tracking;

The bilingual CRM enables the language preference for each organisation and every contact within that organisation to be identified and managed. This can be exclusively English or Welsh or a preference for English or Welsh, enabling bilingual communications to be sent. This preference will not only assist the bilingual CRM users when communicating verbally with contacts, but is also integrated with the mail merge capability.

Bilingual Data Management;

The information needed to manage for each organisation and contacts are stored bilingually. Common details such as organisation name, department name, job title, email address, salutation, etc, can be stored in both English and Welsh. The easy customisation of the product readily allows any other information to also be managed bilingually.

Its not just about storing the details bilingually, the bilingual CRM also provides automation wherever possible. For instance, salutations are configured to automatically set up the alternate language, thereby maximising the ability for users who aren't fluent in both languages to communicate bilingually.

Validation capabilities ensure that sufficient information is entered to ensure that the contacts preferred language can always be used.

Address Management;

Many addresses in Wales have English and Welsh versions. Though there is a Welsh PAF (Postcode Address File) available, integrating this and using it efficiently presents a major stumbling block in bilingual communications.

This product resolves this by providing integration with both English and Welsh PAFs, as well as parallel address management. This not only ensures that a contact can be addressed in their preferred language, but also that users unfamiliar with both forms of an address can, without difficulty, recognise and manage an address provided by a contact.

Mail Merge;

The bilingual CRM's ability to perform bilingual mail merges delivers significant benefits, including:

- substantial cost and time savings;
- boosting customer satisfaction through effective language personalisation;
- bilingual communications independent of the language ability of the user.

The ability to manage bilingual email and letter templates, to merge these with bilingual information and addresses and to automatically record each resulting communication in the history for the contact further builds upon the Microsoft product.

Letters and emails can be produced bilingually, monolingually or as separate outputs. Where a contact has a language preference, that language is given dominance. The bilingual CRM provides the tools to manage all of these options with ease.

Infra

Infra is a robust, scalable, flexible platform which defines an architecture for web based applications.

• Infra has been developed as a result of expertise in developing web-based applications;
• It reduces deployment and management costs;
• It provides key functional benefits to an organisation;
• It provides a software platform for further development.

Benefits;

• A fast and cost effective start to a project;
• Rapid customisation and installation is possible within weeks;
• Reduced costs as the infrastructure delivers a large portion of functionality;
• High flexibility, both for initial configuration and future changes;
• Compliant with eGovernment, Accessibility and Welsh language standards.

Functionality;

- A Development Framework including session management, error handling and email automation;
- Language Management including multilingual user interface and utilities to support maintenance, integrity and translation;
- Access Rights & Data Scoping;
- Report Management;
- Hierarchical User Management, including user registration, login for approved users and session history;
- User Interface Support including a help and feedback tool.

Interceptor

Interceptor is a tool enabling any software application to work with users in any language. This has resulted in the release of a truly innovative solution for enabling competitive edge and service excellence when and where it is required. Interceptor can help organisations in all sectors and in all regions of the world. Interceptor works by simply transforming, replacing or enhancing elements of the user interface for both functional and appearance purposes. The result is that elements are modified and substituted dynamically producing an immediate effect. No changes are required to the underlying software application, making it ideal for any situation even for third party and white labelled applications or where the source code isn't readily available.

Windows XP and Office 2003 –Localisation Project

The Welsh Language Board and Microsoft® formed a partnership to undertake the project to localise these two sophisticated products for the Welsh language. Company A teamed up with Wales' most innovative translation company. They approached company A needing the help of a leading Welsh software company with a proven track record. Company A provided engineering, technical and project management support, drew on their experience in language support and interpreted technical areas to aid the translation process.

Language Control Centre

A tool enabling interface switching on the Microsoft platform, making the Welsh language on the desktop even more useable and accessible.

Microsoft Bilingual and Multilingual Sharepoint

MOSS07 is a comprehensive information, record and content management platform. It integrates seamlessly with Microsoft Office to provide a highly capable solution for web content management, document management; information and record management; intranets; and web portals. This functionality, combined with Company

A's array of MOSS07 components and configuration templates, allow for extended translation workflow which covers all site content, implicit language sensing and extended Language Interface Packs.

Services

Consultancy

Company A's consultants have proven expertise in project management, business analysis and process improvement. They have helped many clients by delivering these capabilities to assist a range of needs, including:

- Requirements analysis and specification;
- Software application platform strategy;
- Software development methodology training & coaching;
- Tender specification and procurement assistance;
- Software process improvement;
- Application assessment, recovery and renovation planning;
- Third party assessment and expert witness.

Whether delivered as part of a project or independently to address specific needs, this flexible consultancy capability can provide focussed assistance to support a broad range of software related needs.

Support and Maintenance

The implementation of a high quality and reliable software solution is not the end of a successful delivery. Continuing client oriented service seamlessly into ongoing support and maintenance for a system is critical to ensure reliable operation and provide the needed assurance and confidence. Based upon a comprehensive and mutually agreed Service Level Agreement (SLA), Company A's Support and Maintenance services are delivered in a flexible manner to meet the specific requirements of each client.

List of Terms

ACA	Adaptive Conjoint Analysis
ASP	Application Service Provision
B2B	Business to Business
B2C	Business to Consumer
BCS	British Computer Society
CAPI	Computer Administered Personal Interview
CBC	Choice-Based Conjoint
CRM	Customer Relationship Management
DTI	Department of Trade and Industry
ERP	Enterprise Resource Planning
HB	Hierarchical Bayes
IAMCP	International Association of Microsoft Certified Partners
ICT	Information Communication and Technology
IDB	Information Diagnostic & Brokerage
IMC	Integrated Marketing Communications
IT	Information Technology
KM	Knowledge Management
KTP	Knowledge Transfer Partnership
OEM	Original Equipment Manufacturer
PCN	Personal Contact Network
PQQ	Pre-Qualification Questionnaire
R&D	Research & Development
RDA	Regional Development Agency
RFC	Randomized First Choice
RM	Relationship Marketing
ROI	Return on Investment
RSA	Regional Selective Assistance
SaaS	Software as a Service
SERVQUAL	Service Quality model
SMART	R&D Grant
SME	Small to Medium-Sized Enterprise

SMRT	Software Market Research Tools
4Ps	Product, Price, Promotion, Place
7Ps	Product, Price, Promotion, Place, People, Process, Physical Evidence

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