

How indigenous software companies price their product and service offerings: An exploratory investigation

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BSc in Commercial Software Development

2009

Presented to:

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Abstract

The purpose of this study is to investigate how indigenous software companies are pricing and licensing their product and service offerings. Nearly a decade ago, almost all software product companies sold software by offering perpetual licences and the software companies performed local installations on their clients' premises. Today the Software-as-a-Service (SaaS) model is having a profound influence on the way software is currently charged and licensed. In place of an upfront payment in the form of a licence fee the cost of the service, upgrades, backups and support are all included in a specific fee (subscription).

The Ireland-Newfoundland Partnership (INP) fund supported this research project. The research focused on Irish and Newfoundland indigenous software companies and with the help of the INP fund, the researcher collected part of the primary data in Newfoundland, Canada. Conducting the study in two jurisdictions enabled the researcher to identify similarities and differences amongst the indigenous software vendors in the two regions.

Mixed-methods surveys are pursued to achieve the research objectives. The primary data used in this study was gathered through a questionnaire administered to 220 indigenous Irish software companies, with a response rate of 29% and a series of six semi-structured interviews. The interviews were conducted with owners and managers in Ireland and Newfoundland. This mixed-method survey enabled the researcher to establish information as regards the industry sector, gain an in-depth understanding of how software companies are pricing and licensing their software offerings and understand exportation of software.

The findings that emerged from this research show that pricing was dependent on a vendor's software business model. The outcome of this study shows that there appears to be a mixture of software licensing methods used by software vendors surveyed. Some vendors are using the traditional software licensing methods while others are using contemporary methods such as usage-based methods. A second finding that surfaced from this study relates to the pricing methods used by software vendors surveyed. In general, vendors' pricing methods are categorised as cost-based, competition-based or customer-based. It emerged that despite the software owners indicating that they use customer-based methods, a *cost-based* approach dominated both the questionnaire and interview findings. It was also discovered that software vendors were no longer offering pure product or pure services to their customers and that SaaS was increasing in popularity as a pricing model amongst the Irish and Newfoundland software vendors.

The outcome of this study offers a software-pricing template attached as Appendix F, which would help practitioners to learn from their experience and induct staff assuming responsibility in this area.

Declaration

I hereby declare that the material contained within this thesis is entirely my own work and that it has not been previously submitted to this or any other institution. The author has undertaken this work alone except where otherwise stated.

Siobhán O'Connor

Acknowledgements

The author wishes to express her thanks to all those who have assisted in the completion of this thesis. Firstly, I extend my sincerest gratitude to my supervisor, Mr John Maher, for his time, guidance, assistance, support and advice throughout the course of this dissertation.

I would also like to acknowledge all those who participated in the questionnaire, along with the interview participants from Ireland and Newfoundland, Canada. The information and insight they provided has been invaluable to this research.

In addition, I would like to thank the following people: Mr Brendan Lyng Waterford Institute of Technology for his advice and encouragement throughout the years; Mr Barry Downes from Telecommunication Systems Software Group (TSSG); Mr Jim Stack Waterford Institute of Technology for his statistical guidance; Mr Michael Dee (RIP) from Enterprise Ireland and Ms Anna Donegan from the Irish Software Association. Also, I would like to extend my gratitude to Professor Wayne King and the staff in the Centre for International Business at Memorial University in Newfoundland, Canada for facilitating my research.

Advice and help of various kinds were willingly given by my friends Mary, Lucy, Alice, Fiona, Jamie, Jenny, Elaine, Markus and Vasilios. Thanks a lot guys and I wish you all the very best in your future endeavours. Special thanks to Damien Ryan for his encouragement, support and proofreading.

I would like to express my gratitude to my family whose support and encouragement has been invaluable throughout the years.

Lastly, I would like to thank my partner Andrew O'Sullivan who has managed to entertain me with his imagination and encyclopaedic knowledge throughout the past few years. Thank you for everything. I am deeply indebted to you and one day I will return the favour.

Dedication

I would like to take this opportunity to thank both my parents Nora O'Connor and James O'Connor (RIP) for everything that they have done for me throughout the years. Without your support and encouragement, none of this would have been possible.

I dedicate this thesis to my parents
Nora O'Connor and the loving memory of James O'Connor.
Thank you.

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Acronyms

3Cs	Cost Competition Customer
3Is	Ireland India Israel
4Ps	Product Price Place Promotion
7Ps	Product Price Place Promotion People Physical evidence Process
ABC	Activity Based Costing
ASP	Application Server Provider
B2B	Business-to-Business
B2C	Business-to-Customer
BIC	Business Innovation Centre
BRIC	Brazil Russia India China
BSD	Berkley Software Distribution
CELUG	Centralised Electronic Licensing User Group
COCOMO	COConstructive COost MOdel
COS	Commercial Open Source
COTS	Commercial Off-The-Shelf
CPA	Cost per Acquisition
CPC	Cost per Click
CPM	Cost per Mile
CPU	Central Processing Unit
CSFB	Credit Suisse First Boston
CSO	Central Statistic Office
CSSODI	Credit Suisse On-Demand Index
EPP	Enterprise Platform Programs
EVA	Economic Value Added
EVC	Economic Value to the Customer
FDC	Fully Distributed Costs
FDI	Foreign Direct Investment
FLOSS	Free Libre Open Source Software
FOSS	Free Open Source Software
FSF	Free Software Foundation
FUT	Fixed Up-To

GNU	GNU Not Unix (This term is not an acronym in the strictest sense. It is a free operating system developed by the Free Software Foundation)
GPL	General Public License
HR	Human Resource
IBEC	Irish Business and Employers Confederation
ICSA	Irish Computer Service Association
ICT	Information Communication Technology
IDA	Industrial Development Authority
IDC	International Data Corporation
IEA	Irish Exporters Association
INP	Ireland-Newfoundland Partnership
IPR	Intellectual Property Rights
ISA	Irish Software Association
ISME	Irish Small and Medium Enterprises
ISV	Independent Software Vendor
IT	Information Technology
LAMP	Linux, Apache MySQL and PHP/Perl.
MIPS	Millions of Instructions Per Second
MSP	Managed Service Providers
NATI	Newfoundland and Labrador Association of Technology Industries
NEA	National Enterprise Association
NSD	National Software Directorate
NTBF	New Technology Based Firms
NVivo	Qualitative Data Analysis
OECD	Organisation for Economic Co-Operation and Development
OEM	Original Equipment Manufactures
OSI	Open Source Initiative
OSS	Open Source Software
PSM	Price Sensitivity Measurement
PUPM	Per User Per Month
R&D	Research and Development
ROI	Return on Investment
SaaS	Software-as-a-Service
SCE	Software Cost Estimation

SI	System Integration
SIIA	Software and Information Industry Association
SLA	Service Level Agreement
SPSS	Statistical Package for Social Sciences
SRECD	Saskatchewan Regional Economic and Co-operative Development
SVPMA	Silicon Valley Product Management Association
TBSF	Technology Based Small Firms
TCO	Total Cost of Ownership
TSSG	Telecommunication Systems Software Group
VAD	Value Added Distributors
VAR	Value Added Resellers
VC	Venture Capital

Glossary of terms

The glossary contains all terms defined throughout the thesis.

Annual licensing – Licence fees are updated on a yearly basis, in most cases the software stops working unless the fees are paid. The user is granted the right to use the software under the licence terms and conditions.

ASP – A service provider who offers an application as a service.

Bespoke software – Bespoke software is a type of software that is developed for an individual company or user. Bespoke is also known as custom software.

Business model – A business model is a framework for creating economic, social and or other forms of value. The term business model is thus used for a broad range of informal and formal descriptions to represent core aspects of a business including purpose, offerings, strategies, infrastructure, trading practices and operational processes and policies.

CELUG – CELUG facilitate collaboration among companies who administer software licensing at the enterprise level. They enable the sharing of best practice and experiences and partner with software publishers to improve software license management tools and processes.

Closed source software - Closed source software is the term for software whose licence does not that allow for the release or distribution of the source code.

Cloud computing – An IT service provision model by which IT infrastructure is provided based on an architecture that ensures a high level of scalability and reliability and is accessed through the Internet.

Commercial software - Proprietary or free software that supports commerce.

Competition-based - Competition-based is a pricing method in which a seller uses prices of competing products as a benchmark instead of considering own cost or the customer demand.

Concurrent user – Some products are licensed based on how many users access the software simultaneously.

Configuration – Configuration is the process for setting up software in order for it to run on a specific system.

Copyleft – Concept invented by Richard Stallman to describe how copyright applies to GPL

Copyright – Applies to all software whether or not the user has paid money for its usage. The distribution use of the software is subjected to a licence, which specifies the terms of use.

Cost-based - Cost-based pricing is a method in which a fixed sum or percentage of the total cost is added to the cost of the product to arrive at its selling price.

Customised software - Custom software is a type of software that is developed for an individual company or user. Also known as bespoke software.

Enterprise offering - An arrangement of terms and special prices, usually valid for a minimum of a year, which offers a customer special prices and/or terms usually as a function of his/her increased commitment to the vendor's products.

Flat price – Single price regardless of processor capacity, usage or other metric.

Free Software Foundation – An organisation that was set up in 1985 by Richard Stallman to support the free software movement. This movement aims to promote the freedom to modify and distribute computer software.

Freeware – Piece of software that is freely available for use but in which the author still reserves all rights. It is usually issued under a GNU licence which explain the software's terms and conditions. Modifications of the software are permitted as long as they are available for public use.

GNU/Linux –GNU/Linux is term promoted by the free software foundation and its supporters for operating systems that include GNU software and the Linux Kernel.

Intellectual Property Rights - Intellectual property rights are legal property rights over creations of the mind, both artistic and commercial, and the corresponding fields of law.

LAMP - Linux, Apache MySQL and PHP/Perl. A FLOSS stack for web application development

Licence – A document giving official permission to officially do something.

License – To authorise or permit or give permission.

Macrovision – Macrovision provides distribution, commerce and consumption solutions for software, entertainment and information content to the home video, PC games, music consumer software and enterprise software and information publishing industries.

Metric-based licensing – License models that are based on varying business, usage or financial metrics, such as revenue, budgets or cost of goods sold.

MIPS – Throughput of a computer system measured in millions of instructions per second

Multi-tenant - Multi-tenancy architecture enables all users to share the same code, same applications and same infrastructure with applications centrally maintained by the software vendor.

Named user – A system whereby each software license and corresponding usage rights are assigned to a specific user.

Networking licensing – A licence model where two or more users share licences for a software application. Enterprises benefit by not having to buy dedicated licenses for every user. Software vendors' benefit by expanding their market to customers that might otherwise find dedicated licences cost-prohibitive.

Non-copyleft licence – A licence that allows users to convert their IP from the public domain to their own private IP and become the property right owners of the software.

Object code - Object code is machine readable code format that is in binary format.

On-demand – On-Demand computing is an increasingly popular enterprise model in which computing resources are made available to the user as needed. The resources might be maintained within the user's enterprise or made available by a service provider.

On-Premises – On-premises applications refer to software that resides on a customer's premises, also known as in-house applications.

Open source software – Two free software developers Eric Raymond and Christine Peterson proposed that the name open source software be used instead of free software.

Packaged software - Packaged software is also known as shrink-wrapped software.

Per machine/preserver – A system whereby each software licence is assigned to a particular computer or server.

Perpetual licensing – Licences are paid for on a once-off basis, giving the user the right to run the program as long as they choose. It does not imply a right to up-grades, which are typically sold separately as part of a maintenance agreement.

Price - A price is the value attached to a product or service by parties involved in a transaction.

Price bundle - Set of products that are sold as one product with its own price.

Processor core – A multi-core processor is an integrated circuit to which two or more processors have been attached for enhanced performance, reduced power consumption and more efficient simultaneously processing of multiple tasks.

Shareware - Software in this category is generally available initially for a free period also known as free trial. After the trial period is up the user is required to terminate usage or pay a fee.

Shrink-wrapped software – Shrink wrapped software is off the shelf software so named because it is wrapped in plastic.

SIIA – The Software and Information Industry Association is the principal trade association for the software and digital content industry. The SIIA provides global services in Government relations, business development, corporate education and intellectual property protection to the leading companies that are setting the pace for the digital age.

Single-tenant - Single-tenancy refers to one instance (version) of the software for each user/customer.

SoftSummit - SoftSummit is the software industry's premier executive conference that is dedicated to strategies, trends and best practice for software licensing and pricing as well as application packaging and license tracking.

Software product - Product whose primary component is software.

Software-as-a-Service (SaaS) – Business and delivery model that allows customers to use software over the Internet without having to install it on their own computers.

Source code - Source code any collection of statement or declarations written in human readable computer programming language. Generally is protected by a patent while the object code is protected by copyright laws.

Subscription licensing – Generally used to describe an offering, which combines maintenance, support and upgrades. Subscription licences are paid for with a recurring fee to continue using the software. If the fee is not paid, the software stops working. The customer does not own the software license.

Term licence - An entitlement to use the software product over a specific period of time, such a licence is usually offered at a fixed price which often takes the form of annual payments for a fixed number of years, after which the customer must stop using the product, renew its term licence or license the product under other terms.

Usage charging – Charge for software based on some measurable defined matrix for instance peak capacity during a period.

User-based charging - Pricing and payment in advance for a fixed number of users, for instance concurrent (number of simultaneous users), registered users (number of people with an assigned login id).

Utility computing - A service provisioning model in which a service provider makes computing resources and infrastructure management available to the customer as needed and charges them for specific usage rather than a flat rate.

Value-based methods- Value-based is a pricing strategy. It sets selling prices on the perceived value to the customer rather than on the actual cost of the product or the competitors' price.

Virtualisation - Virtualisation supports high numbers of small applications for large businesses to manage, control and secure them.

Chapter 1

Thesis Introduction

Chapter 1 Thesis introduction

1.1 Chapter overview

This study examines the dynamics of software pricing and licensing in Ireland and Newfoundland. The purpose of this study is to identify and understand the pricing practices used by indigenous software managers and decision makers in both regions. The study will therefore describe the following: open source and closed source software licensing methods; software pricing practices adopted by both traditional product based companies and software-as-a-service (SaaS) companies; and finally, review software product and service pricing and licensing methods. In doing so, this study will present an overview of software pricing practices and licensing methods of indigenous software firms.

Firstly, this chapter will provide details on the background of this topic and elaborate on its importance. Secondly, the research question and objectives are presented. Thereafter, an outline of the thesis structure is then given. Finally, the limitations of this study are explained, and it outlines the benefits that this study offers to academics and practitioners.

1.2 Software pricing background

Pricing is an issue of prime importance in a variety of disciplines such as economics, accounting and marketing (Rao, 1993; Fletcher and Russell-Jones, 1997; Carson et al. 1998). Despite the importance, many writers have indicated that pricing has received what they perceived as inadequate levels of attention and they called for further research to be carried out in the literature (Kortge and Okonkwo, 1993; Carson et al. 1998; Raymond et al. 2001; Myers et al. 2002; Paleologo, 2004). For some it may seem as attracting less interest because of the challenge of operating across several domains, while others may see it as a straightforward decision overshadowed by the design imperative of the product or service in a technical sense (Cressman, 2006). Whatever the reason, there is a relative paucity of empirical work in the software literature.

The literature indicated several problems with regard to pricing, including lack of experience amongst managers and heavy reliance on cost-based methods (Carson et al. 1998). Management also tends to rely excessively on their intuition (Fletcher and Russell-Jones, 1997; Noble and Gruca, 1999). Empirical evidence suggests cost-based methods are the most widely adopted in the software industry (Carson et al. 1998; Blythe, 2005; Pasura and Ryals, 2005; Avlonitis and Indounas. 2006). Of the cost-based methods, research has shown that *cost-plus*¹ pricing is not suited to the pricing of high-technology products such as software (Myers et al. 2002; Paleologo, 2004). Certain factors such as uncertain demand, high development costs and a short lifecycle characterise software development and these same factors make cost-plus pricing model unsuited to the pricing of high-technology offerings (Pasura and Ryals, 2005). Consequently, cost-plus pricing has not always been shown to lead to desired performances. Most companies are known to set prices based on covering costs and competition, instead of a *value-based*² pricing approach (Cunningham and Hornby, 1993; Carson et al. 1998; Pasura and Ryals, 2005). However, a review of the literature reveals that some software vendors are increasingly adopting value-based methods (Pasura and Ryals, 2005). The move towards value-based pricing coincides with the move from traditional perpetual licences towards SaaS and open source software. The benefits of value-based pricing models are that the focus is on a customer perception of value, despite the awareness among software vendors of the need to adopt a value-based approach software companies still revert to more traditional and somewhat ill-suited cost-plus pricing models (Hinterhuber, 2004; Pasura and Ryals, 2005). This is perhaps because setting prices based on value to the customer is more difficult than the cost-based and competition-based methods (Pasura and Ryals, 2005).

Software products are often referred to as *new-to-the-world* products and a fundamental concern in developing such products is their pricing (Bergstein and Estelami, 2002). Consequently, many indigenous software companies fail due to factors such as poor management skills and lack of commercial experience and these weaknesses manifest themselves in their approach to pricing. Duke (1994) argued that specific training or education in pricing is not available to managers. Consequently, pricing knowledge

¹ Cost-plus is a method of pricing which has the aim of covering costs with an additional allowance for profit.

² Value-based prices are set on the perceived value to the customer rather than on the actual cost of the product or competitor's prices.

tends to be acquired on the job. According to Davey et al. (2006) business-to-business companies struggle with pricing and find it problematic. One way to overcome this complex problem is to adopt more than one pricing method (Indounas, 2006; Avlonitis and Indounas, 2006).

1.3 Rationale for the study

This study focused on pricing and licensing methods deployed in the indigenous software sector in both Ireland and Newfoundland. This research benefited greatly from the support of the Ireland-Newfoundland Partnership fund. As a result, this enabled the researcher to collect primary data in Newfoundland. This data enriched and added a different dimension to the overall findings. There are several reasons for conducting this study on the Irish and Newfoundland software industry. One such reason being the historic and cultural links between Irish and Newfoundland that dates back to 1800s. From an Irish perspective, the software industry as a whole provides a significant proportion of wealth to the Irish economy and although the indigenous sector is smaller than the multinational sector, its contribution is significant.

The researcher's background in commercial software development had an impact on this study and the software business module was chose at undergraduate level. The issue of software pricing is contentious, especially as the open source industry is gaining in popularity. The researcher had a high level of interest in this field and subsequently became aware of research activity in Waterford Institute of Technology (WIT) in this area. WIT is an applied institution, which engages with problems of a commercial nature faced by business regionally and nationally, thereby seeking to deepen the knowledge base and promote professional practice that is theoretically informed. In addition, the researcher's technical background has helped facilitate the research process, in particular at the questionnaire and interview stage. The researcher's knowledge of the industry and understanding of technical terms enabled her to concentrate on key issues relating to the software pricing during the interviews and thus uncover new areas previously not explored in the literature.

Given the lack of empirical research, the current study endeavoured to contribute to this

neglected field by investigating the pricing practices of software managers in the indigenous sector in both regions. Particular focus was given to the pricing objectives that software managers apply when setting their prices. In addition, attention was given to the impact of the market structure in which they operated.

Recently the issue of software pricing has generated huge interest from practitioners and academics. The software managers that participated in this study acknowledged the importance of such an investigation, along with Irish government agencies such as Enterprise Ireland (EI) and the Irish Software Association (ISA). Moreover, this study recognised the importance of software pricing from academic and practitioners' points of view, especially in the context of current economic crises.

1.4 Research aim and objectives

The aim of this research is to gain a greater understanding of software pricing practices. Specifically, this research will investigate how software decision makers draft their price plans, license their software and develop their software business models for their software companies. The research question is derived from the overall aim. It is necessary to specify the research question precisely as it enables the researcher to focus on the research topic and help choose suitable methods to carry out the study (Bryman and Bell, 2007). Therefore the research question addressed by the present study is:

'How indigenous software companies price their product or service offerings?'

The overall objectives derived from the aim of this research are as follows:

- Objective 1: To establish the variables and relationships underlying current software pricing practices in indigenous software firms
- Objective 2: To explain these practices from a software vendor's perspective
- Objective 3: To identify the reasons that influence software vendor's choice of software licensing method adopted

A template will be provided for new and existing companies who find pricing a complex and uncertain process (attached as Appendix F). In doing so, this study

endeavoured to provide a more holistic understanding of pricing and licensing methods in the software sector.

The research does not deal with the following issues: software pricing in multinational companies, the pricing of the software that is embedded in hardware and sold as a single unit, and legal issues surrounding software licensing.

1.5 Thesis structure

In essence, this study is an examination of the factors that have a significant role in software pricing. As a study, the literature was divided into three chapters. The topic is an interdisciplinary study that requires a review of three disparate topics in the literature. The literature review was therefore, divided into three different chapters. Chapter 2 consists of a review of the literature pertaining to the characteristics and dynamics of the software industry and this chapter introduces open source and closed source software criteria. The second topic reviews the literature on the software business models ranging from traditional licensing models to more contemporary Software-as-a-Service models (Chapter 3). The final literature review chapter addresses general pricing issues along with software product and service pricing methods (Chapter 4). Chapter 5 illustrates the chosen approach to conduct this study and presents a justification for a mixed-methods approach. Chapters 6 and 7 present the results of the questionnaires and interviews respectively. Chapter 8 provides a discussion of the findings generated from Chapters 6 and 7. Chapter 9 concludes the overall thesis, it identifies some limitations of the thesis and provides suggestions for further research relating to this study.

1.6 Limitations of the study

As with all research this study is not without its limitations. Firstly, the research was limited to the indigenous software industry and it did not include the multinational software companies present in Ireland. Had the study included the multinational

companies it is possible that the research would have produced a different set of results as it would have given a complete overview of all sectors of the industry.

A second limitation concerns the time constraint of a master by research project. Had the study been spread over a longer period it is possible that a longitudinal study as opposed to a cross sectional study would have been chosen and this would therefore have yielded a different set of results.

A final limitation to this study relates to the participants. The study focused on software vendors' pricing practices. A more holistic understanding of product value might have been ascertained by researching customers of software vendors. Had the study incorporated software vendors' customers and asked them for their opinions on the value they derive from their software offering with respect to price and licence flexibility, it is possible that this incorporation of both customer and vendor would have produced a different outcome. Despite these limitations, this body of work has particular merits because it helps address a gap in the literature by focusing on the pricing and licensing methods adopted by indigenous software companies.

1.7 Benefits of the study

This research is particularly timely as there is a shift in the global software industry from on-premises (traditional) licensing to on-demand (SaaS) licensing. The study encapsulates the various product and service pricing and licensing methods used in the software industry today. Therefore, this research contributes to the knowledge of software pricing by reviewing software licensing and pricing methods in Ireland and Newfoundland. It is anticipated that this research will lay the foundations for future software pricing and licensing projects as the key areas and themes of the changing dynamics of software pricing in Irish and Newfoundland indigenous companies have been unearthed and presented to the reader. This area is of particular interest to academics, practitioners and government bodies such as the Irish Software Association and Enterprise Ireland. Therefore, a pricing template has been developed to help the decision makers encapsulate and keep track of the knowledge of the sales person during a negotiation process. This is in line with Oxenfeldt (1973) who suggested that to

manage the complex nature of price setting practitioners need an effective, multidimensional model to guide their analysis. Therefore, such a pricing model would encourage systematic thinking among those involved in the process and serve as a learning vehicle.

1.8 Summary

This chapter has presented the topic of software pricing in indigenous software companies in Ireland and Newfoundland. It also explained the reasons for undertaking this research, why it is important and to whom it may be of benefit. The research question and objectives are presented along with an outline of the thesis layout. Finally, this chapter briefly addresses the limitations and benefits of this study.

The next chapter provides an overview of the indigenous software industry. The software industry globally is experiencing a change with respect to how software is delivered to the end user. As a result, this has an impact on software pricing, as traditional methods are no longer applicable to the firms offering SaaS. The following chapter reviews the various types of software licenses agreements and the different licensing models that are used in the software industry.

Chapter 2

The Software

Industry

Chapter 2 The Software Industry

2.1 Introduction

This chapter aims to provide a broad oversight of the Irish software industry. In order to address the research question it is necessary to look at the current software literature. The chapter begins by classifying software and it addresses the difference between software products and services and analyses their modes of delivery. The different methods of software pricing are largely dependent on whether the software code is open or closed. Therefore, an overview of open source software and perpetual licences is presented. Following that, the chapter contrasts the roles of both the multinational companies (MNCs) and the indigenous software firms trading in Ireland. Finally, the chapter concludes with a summary of the literature pertaining to this research.

2.2 Software classification

The term software was first coined in 1958 by John Turkey (Cusumano, 2004a). At the beginning of the computer era (1950's and 1960's), software was coupled with hardware at no additional cost. The value of separating (decoupling) software from hardware became evident and subsequently software was sold as a separate entity. This was seen as the birth of the software industry. According to Youngsik et al. (2008) software can be classified as system software and application software and each of these classifications can be sub-divided. Firstly, there are three main types of system software: system management software (e.g. Windows), system support software (e.g. Norton) and systems development software (e.g. C++). Secondly, there are two main types of application software: general applications software (e.g. MS Office) and specific application software (e.g. SPSS).

Armour (2000) referred to software as a storage medium. Although, he added that software is not treated as a medium, it is treated as a product and that the product is not the software, the product is usually the knowledge that goes into the software. In other words, the value of software is not the code, but what the code does or the knowledge

that the code contains. The software sector is sub-divided into companies that offer products and services. Software is regarded as a product the value of which cannot be easily quantified. The sale of software is different from other products mainly because it is licensed, not sold, to the customer. Another significant difference is that the cost of producing a copy is close to zero. The following section outlines the similarities and differences between offering software products or services.

2.3 Product and service offerings

This section provides an overview of the production of software products and the provision of software services. According to Hietala et al. (2004) the software industry can be roughly divided into three categories: embedded software, customised services and products. Embedded software consists of software that is built into other products such as mobile phones and typically it is not sold as a separate product (Kittlaus and Clough, 2009). Customisation is achieved by changing the code of the software for the needs of a specific customer. In general, software products refer to the software applications and the professional service that is provided by the software vendor. The term software *service* is a relatively new term and it refers to a service orientated architecture, often in the form of web service that is accessed via the Internet (Kittlaus and Clough, 2009). A classification of software products and services is illustrated in table 2.1

Table 2.1 *Classification of software product and service*

Market criteria		Functional areas	Development focus	Conditions
B2C	B2B	Systems software	Customised software	Terms of contract e.g. OSS, freeware, licensing & SaaS
	-Vertical (specific industries)	Middleware	Services	
	- Horizontal (across many industries)	Application software	Standard software (traditional)	Development at a fixed price or price according to effort

Adapted from: (Kittlaus and Clough, 2009:14)

This classification categorises software that can be developed for operating systems, middleware and applications. Market criteria refer to whether the customer is a company (B2B) or a customer (B2C). Typically, software sold to the end user in B2C markets is sold as shrink-wrapped software, this type of software is sold as a CD. If the same software is sold to business customers (B2B), an enterprise licence is purchased to access the software. Thus, there are some differences between B2B and B2C customers. For instance, most business software applications are customised to suit the individual customer's requirements, whereas software developed for the B2C market is generally mass produced.

2.3.1 Product based development

Information goods are commonly defined as products that can be digitalised such as books, software, videos and music (Choudhary, 2006). Software products can be described as being tangible E.g., CDs, DVDs and manuals, although software code is intangible. According to Wiederhold (2006) tangible goods are ones that are produced by a combination of labour, machines and management.

A unique characteristic of software is that it is used for a period without replacement although its value may depreciate over time (Zhang and Seidmann, 2003). This makes it a durable good (Choudhary et al. 1998), yet it has some characteristics that differentiate it from other durable goods. These characteristics include, the difficulty inherent in reselling software because of intellectual property rights (IPR), secondly, as a second-hand market does not exist for software and thirdly, the first copy of it is expensive to create (Zhang and Seidmann, 2003). Consequently, older versions of software become obsolete once newer versions are made available. The costs associated with copying and packaging software are low, and as a result, there is no benefit in continuing to sell the old version of the software, a characteristic particular to intangible property (Wiederhold, 2006).

A software product company can offer bespoke (custom) software. Bespoke software relates to software that is customised for the individual customer. Shrink-wrapped (commercial-off-the-shelf (COTS)) software refers to software that is purchased in a shop. Cusumano (2003) described a product company as one that derives most of its

sales from shrink-wrapped software packages, although, he added that software product companies switch to service companies when their main focus of activity is on customisation. Software product companies can be defined as those that are primarily involved in the development and commercialisation of their own products (Arora and Gambardella, 2005). Similarly, Hogan and Hutson (2005) referred to software products as package software that is generally produced in large volume for mass markets. This can be distinguished from bespoke software which is provided on a client-by-client basis. In general, software product firms earn 60% to 80% of their revenues from software licence sales including maintenance fees (Mitchell, 2005).

2.3.2 Service based development

The general trend in the software industry is moving from product to services (Cusumano, 2008). Traditional product sales and licences have declined and product companies' revenues have shifted to services. As a result, services have become an important part of product revenue companies' overall revenues and can account for up to 60% of total revenues (Cusumano, 2008). IT professional services take the form of one or more of the following: application support, customer support, desktop equipment support, telecommunication support, consultancy, emergency planning, file and print services, technical support, maintenance, implementation, customisation, installation and training (Stamelos and Anglis, 2001; Munnukka, 2005; Arora and Gambardella, 2005; Mitchell, 2005; Saaksjarvi et al. 2005). Unlike products, services are intangible. Information is intangible and it has no direct value as its value is delivered by its application (Alunkal, 2006). Mohr et al. (2005) stated that the pricing of services poses a challenge because the benefits that are incorporated in services are often intangible and inseparable to the customer. This often results in lower profit service than for product companies (Mitchell, 2005).

2.3.3 Hybrid offering

An alternative offering to either of the two mentioned above is that of a hybrid offering. According to Mitchell (2005) hybrid firms develop products and perform some service work. It has been noted in the literature that a hybrid firm is harder to scale up than either of the other two firms (Mitchell, 2005). Arora and Gambardella (2005) noted

that 44% of Irish software firms are hybrid. Some software firms may offer their customers a hybrid software solution. A hybrid firm allows a software application to be customised to suit the individual customer's needs and thus the basic application can be used by all other customers.

2.4 Modes of delivery and sales

This section identifies the most common modes of delivery for software applications. In general, software delivery models can be remote, Internet based or bundled as hardware products (Cusumano, 2008). As a result, software distribution channels can be long and complex or short and straightforward. Typically, small software vendors distribute their software directly to the customer (direct sales). In general, large software companies sell and distribute their products using a third party as opposed to the direct sales technique. Thus, software can be distributed by any of the following: direct sales, business/channel partner distributors, digital download and on-site installation.

2.4.1 Direct sales

The direct sales technique allows software to be sold directly to a potential customer without any third party involvement and this method allows direct sales staff to focus on key personnel. The benefit of this method enables the sales person to address requirements from individual customers.

2.4.2 Business/channel partner distributors

In general, business/channel partners are sub-divided between the reseller model and the agency model (Kittlaus and Clough, 2009). Firstly, the reseller's model allows the reseller to receive a discount for selling the software and in turn, they can resell the software at their own price. Secondly, the agency model requires that the software vendor pays a fee to the agent for selling the software. According to Kittlaus and Clough (2009) there are many different types of business partners, for instance VAD (value added distributors), VAR (value added resellers), ISV (independent software

vendors), OEM (original equipment manufactures) and SI (system integrators). Usually agents do not buy software, they sell it to the customer on behalf of the vendor.

2.4.3 Digital download

Software can be downloaded digitally via the Internet and this appears to be the most cost effective method of delivery for some customers, although it may not be suitable for large software applications. Digitally downloaded software has the potential to reach a large customer base; therefore, this method is very popular especially for mass-market sales.

2.4.4 On-site installation

The vendor on the customer's premise performs on-site installation of software. Some software applications require a lot of configuration while other applications are designed to be installed by simply copying software files from a CD. It is common for many software companies to generate most of their revenues from software installation and configuration, although, this is dependant on the level of difficulty in software installation.

In summary, the direct sales technique has one big advantage over the other distribution methods in that it is in direct contact with the customer. Subsequently, software vendors can tailor the software application to suit their customers' needs and this method is particularly favourable for small companies. Nevertheless, as software companies grow they may need to outsource sales and distribution of software to third parties such as VARs.

2.5 Changing dynamics of the software industry

This section presents an overview of the software industry in terms of open source software and closed source software. The fundamental difference between the open source software and closed source software is that licensing commercially-produced software does not allow the customer access to the source code. Whereby open source

software allows the user to have the freedom to modify and manipulate the source code. There are mainly two types of businesses in the software industry: those that offer proprietary software and those developing open source software. Proprietary software is referred to as closed source software and as a result, this type of software is costly to develop due to the fact that each software application is customised for an individual customer. The costs incurred during the production of proprietary software are generally recouped by protecting the intellectual property by selling the right to use the software as a software licence. By using open source software as opposed to commercial software there is no need to purchase licences, although, open source users are required to comply with OSS licensing restrictions for the sale of products and services developed in an OSS environment.

2.5.1 Freeware software

Freeware is *copyleft* computer software. In other words, its source code must be available for free and for an unlimited period. Copyleft laws (copyright with GPL (general public licences) regulations) and GNU³ licences regulate the right to use the OSS and they are designed to guarantee the freedom to manipulate source code (Wu and Lin, 2001). A copyleft piece of software is free software and every copy of the software, even if it has been modified, must be available for free. As a result, anyone can use or copy the source code. Copyleft uses copyright laws, copyleft is the reverse of copyright in that instead of the code remaining private, it is open and free to use. The idea behind OSS is that anyone is given permission to run the program, copy the code, modify it and redistribute modified versions of it. Free software bears no relation to price, it is concerned with the freedom to run the program and the freedom to make modifications to suit the individual's needs. Therefore, freeware licences are free and no payment is required for its usage (Steele, 2003). An offshoot of copyleft software is *Non-copyleft* software which incorporates some restrictions on usage. In other words, the authors' permission must be sought before modifications are made to the source code as there are some restrictions over modified versions of the software (Gacek et al. 2004).

³ GNU – is an operating system composed entirely of free software to provide a replacement for the UNIX operating system.

Shareware is another type of software but it is not the same as freeware, although, it is obtained for free (Steele, 2003). One condition with shareware is that the user must cease using the software or pay a fee once the trial period is up. The term *free software licensing* is misleading as many free applications are free to download and demand that the developers who modify the free application make the software freely available to other users, thus, free bears no relation to monetary values. However, it should be noted that OSS and free are not the same thing as their members (OSS volunteers) disagree on basic principles e.g. licensing. However, despite their differences, they are very similar and they agree on practical issues such as keeping the code open (FSF, 2009a; Gacek et al. 2004). The Free Software Foundation (FSF) maintains the free software definition.

In 1998, some software developers from the free software movement began using the term OSS instead of free software in a response to an announcement made by Netscape to give away its source code (Gacek et al. 2004). The fundamental difference between free software and OSS is in their values. In other words, the free software movement members view *non-free software* as a social problem. While the OSS members view non-free software as the best possible solution to proprietary software (FSF, 2009b).

2.5.2 Open source software (OSS)

The official open source definition is used by the open source initiative (OSI) to determine whether or not a software licence can be considered open source. The definition is based on the Debian Free Software guidelines written by Bruce Perens. This definition defines OSS

as computer software for which the source code and certain other rights normally reserved for copyright holders are provided under a software licence that meets the OSS definition or that is in the public domain.

(OSI, 2007)

In other words, while the open source definition encapsulates the freedom to manipulate the source code it also includes some proprietary programs and semi-free programs under some of the OSS licences. According to Gacek et al. (2004) the open source definition was composed as a guideline to determine if the software could be called open source or not. OSS also known as FOSS (free and open source software) or

FLOSS (free libre open source software) in general they have the same meaning. However, there are some differences between them and OSS is the term that will be used through this thesis. OSS allows for sharing of the source code - this is referred to as free software. Free software focuses on the philosophical freedom it gives the user. In other words, the user has the right to do as they wish with the source code.

Open source is principally concerned with sharing. Moreover, this culture has been around for six decades; Unix was developed at Bell Laboratories in the 1950s (Cusumano, 2004b). As a result, there are many successful open source companies, for instance, MySQL (database), Apache (web server), and JBoss (application server). Open source allows everyone have access to the source code, so that they can modify it. At the other end of the continuum, proprietary software has restrictions on copying and modifying the code and the developer implements these restrictions.

Most OSS companies have a zero or virtually zero cost structure partly due to the fact that many developers volunteer their services and there is no packaging of OSS products or shelf-space requirements (Watson et al. 2008). From a financial perspective, open source companies can generate revenue in three ways (Ljungberg, 2000). Firstly, by distributing the open source software for free and selling it with books, manuals and training, e.g. Red Hat software generates revenues using this approach. Secondly, by adding value to the open source software by including additional proprietary products and selling it as a bundle. Thirdly, by using open source software in an application and combining it with their other software products that were not developed in the OSS environment. The OSS community has been largely successful and as a result some large proprietary companies have incorporated OSS code into their applications. For instance, Microsoft uses Apaches' web server, which is a significant entry for OSS companies into the traditional closed software market and IBM and Oracle both make profit from this type of venture (Ljungberg, 2000).

2.5.2.1 Open source software licences

Open source licences deviated from commercial or proprietary ones and selecting an appropriate licensing model for OSS depends on having an understanding of how the software will be used. Therefore, understanding OSS means understanding the legal

and commercial forces in the software industry. According to Gacek et al. (2004) OSS licences do not prevent companies from generating profit from software, as long as the source code remains available and can be modified. One common method of commercialising open source is by providing services and distribution packages for software that is developed in an open source environment. It is possible for some software vendors to generate substantial earnings from such an endeavour as OSS is usually difficult to install (Gambardella and Hall, 2006).

There are countless open source licences the more common ones include: GPL, lesser/non-GPL, Berkley Software Distribution (BSD), Artistic Licences and MPL. Each license represents a different stance between commercial interest and proprietary code. The General Public Licence (GPL) is a free software licence that uses the copyleft model and it strictly ensures distribution of any copied work under the same licence model. Once OSS is released under the licence it remains free (Watson et al. 2008). The lesser/non-GPL allows users extend the source with proprietary models (Wu and Lin, 2001). The Artistic license is almost identical to GPL license, although it differs from GPL in that it does not require distributing copied work under the same terms (Wu and Lin, 2001). The BSD model offers free code distribution and allows copied work under different licences (Cusumano, 2004b). BSD is an unrestrictive non-copyleft license and allows the user greater flexibility when changing the source code (Koski, 2007).

2.5.3 Custom software

Custom software is software that is not free but developed for one user only. The user has full rights to the software, which cannot be released under terms and conditions drawn up between the vendor and the customer to anybody else (Mitchell, 2005). Furthermore, the developer can never sell that software to another customer.

2.5.4 Commercial/proprietary software

Proprietary software is software that is not free due to licensing restrictions. A licence that protects the developer prohibits the reuse or modifications of proprietary software. Commercial software also known as commercial-off-the-shelf software (COTS) is

software developed by a business, which aims to make money out of the use of the software. It should be noted that commercial and proprietary software are not the same thing, although most commercial software is propriety - but there is commercial free software on the market. In addition, it should be noted that there is a legal distinction between owning software (custom) and licensing software (COTS).

2.5.4.1 Perpetual software licences

The perpetual model is bound by software licences and the source code is invisible to the user. According to Chavez et al. (1998:48) '*a licence enables an entity that owns property rights in something [the licensor] to grant to a third party [the licensee] the right to use those property rights.*' In the case of software, the software vendor owns the intellectual property and the customer has the right to use the license under the vendor's terms and conditions. Therefore, the software vendor owns the copyright, which protects the vendor and gives the owner exclusive rights to the code.

An overview of the licensing terminology is offered to help clarify ambiguous terms that will be used throughout this thesis. A software licence is an agreement granting rights to use software or components of the software to a licensee (Konary et al. 2004). Subsequently all software needs to be maintained and supported on an ongoing basis. As a result, software maintenance agreements are usually drawn-up between the licensee and the software vendor. Generally, the vendor will continue to improve the software product by repairing errors or upgrading the product. A maintenance fee is usually charged as a percentage of the licence cost in general, maintenance fees are usually 15% to 25% of the original purchase price of the software (Chavez et al. 1998; Konary et al. 2004; Mitchell, 2005). Licences are granted through a signed agreement or through a click-wrap agreement (D'Andrea and Gangadharan, 2006). For click-wrap agreements, the customer indicates his/her acceptance of the licence by clicking a button on-line. A perpetual licence allows the customer to use the licence for as long as they continue to comply with the licence terms and conditions. Furthermore, copyright laws regulate the right to use the software. In addition, the US Sarbanes-Oxley Act of 2002 directly relates to software licensing. The Act requires corporations to provide an accurate account of any intellectual property and helps eliminate software piracy. In general, the source code is usually protected with a patent and the object code is protected by copyright laws.

The licensing model was introduced to counter the limitations in the mainframe computer pricing models. Software licensing is a procedure that allows the user purchase, install and use software on a machine or network in accordance with a software vendor's licensing agreement (Ferrante, 2006). When software is sold it is the right to use the software that is sold as opposed to the selling of the source code (Ma, 2007). In addition, software vendors can choose between two alternatives in delivering their product to the market: selling and renting. Software is sold if the customer obtains the perpetual right to use the version of the product/service (custom) (Choudhary, 2007a). Alternatively, software is rented when the customer obtains the right to use the software for a predefined period (commercial) and if the customer renews the contract, they receive upgrades to the rented software (Postmus et al. 2008).

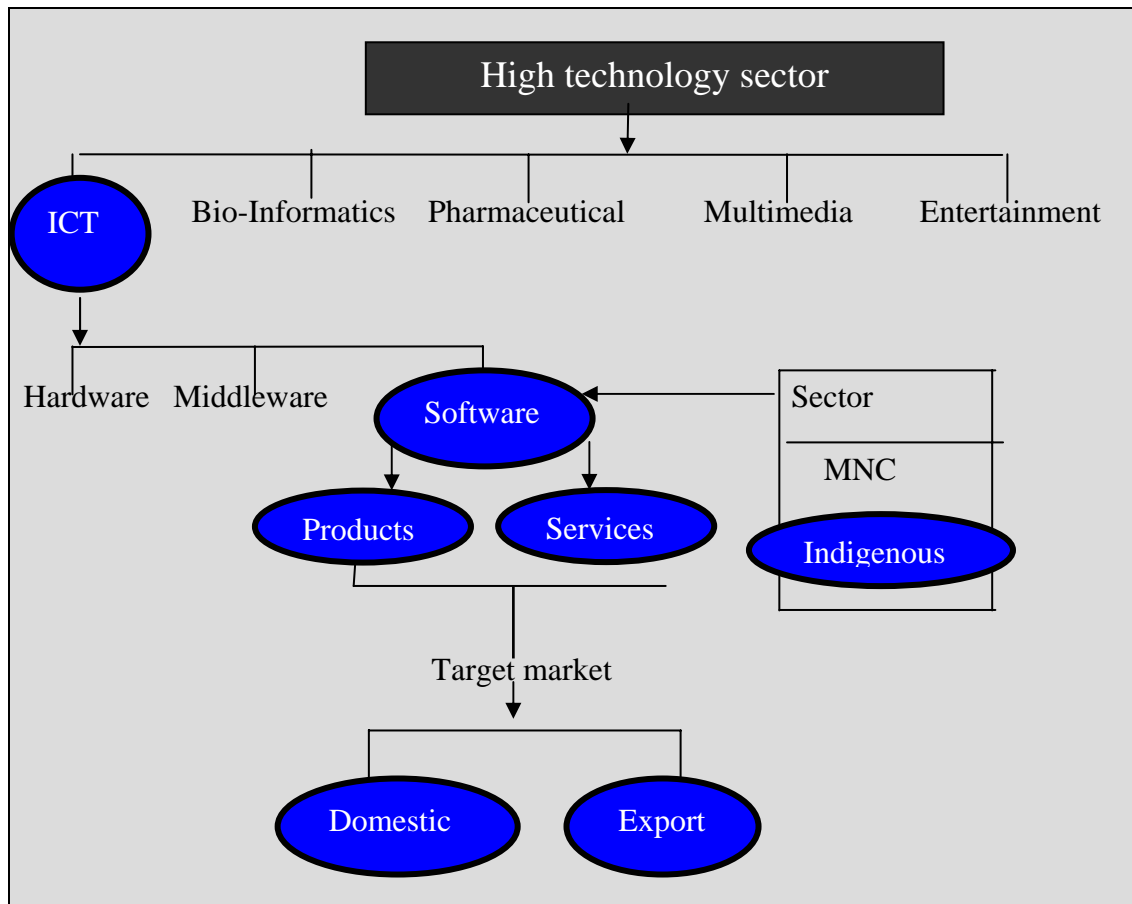
To conclude this section, the literature reveals that perpetual licences allow the customer to install and use the software for an indefinite period. At the other end of the continuum, OSS licences require the users to release their software under the licence that they received it, even though they do not have to purchase licences for personal use.

2.6 Overview of ICT Industry

This section provides an overview of the global Information Communication Technology (ICT) industry. It outlines where the Irish software sector fits into the global high technology sector. The high-technology sector comprises of information communications technology (software, hardware and middleware), bio-informatics, pharmaceutical, multimedia and entertainment goods and/or services (Kapur and McHale, 2005). Some common characteristics of high-technology companies are their success is linked to scientific knowledge and intellectual property, they lack tangible products and they have little or no track records (Brierley et al. 2001). According to the Software Information and Industry Association (SIIA), the ICT sector refers to the broader categorisation of information technology that covers elements such as computers, software, telecommunications, systems design, computer related service activities and distribution and rental of office machinery and equipment (SIIA, 2008). The SIIA is a global association that represents software companies. It protects,

promotes and informs the industry of software activities and trends. Figure 2.1 illustrates an overview of the high technology sector and the areas that this research addresses are highlighted in order to help guide the reader.

Figure 2.1 Overview of the Irish indigenous software sector



2.6.1 Global software market overview

The global market for ICT technology is a very substantial market (SIIA, 2008). The market size for 2008 was expected to reach approximately \$4 trillion (SIIA, 2008). According to Maynard and McGrath (2007), the forecast for on-demand software will be worth \$21 billion in 2011. Green (2000) noted that the ICT sector in Ireland has one of the highest concentrations of ICT activity and employment in the Organisation for Economic Co-Operation and Development (OECD). A report from the Central Statistics Office (CSO) showed the annual turnover from this sector increased from €3.1 billion to €3.3 billion between 2004 and 2005 (CSO, 2008). Thus, it is not

surprising that the Irish software industry accounts for 25% of the ICT sector's contribution to the Irish economy (ISA, 2007a). Therefore, the sector is very important to the Irish economy and is largely driven by foreign direct investment (FDI) (Arora and Gambardella, 2005).

Various definitions of the software industry have been used in the literature. For this study, the researcher is using the definition cited in O'Malley and O'Gorman (2001) that was applied by the National Software Directorate (NSD) in compiling its database of the software industry in Ireland. The NSD was set up in 1989 and it closed in 2004. It provided a link between the software industry, academia and state agencies such as the Industrial Development Authority (IDA). The NSD defined the software sector as:

...companies which develop software products or systems or software development tools for subsequent sale; companies which provide services directly related to the design and/or development of software systems; companies involved in the 'localisation' of either their own products or third-party products; companies involved in developing programmers or systems for incorporation into dedicated hardware devices, e.g. telecommunications equipment; companies providing technical training in systems analysis, design and programming; and companies providing 'hot-site'/disaster recovery facilities.

O'Malley and O'Gorman (2001:4)

This definition encapsulates the variety of sub-sectors that operate in the software industry. It characterises software activities from both a product and service perspective. It helps clarify the type of operations involved in the industry. The reason for choosing to use this definition is because it represents the most clear and succinct encapsulation of the Irish software industry available.

2.6.2 Indigenous and multinational companies

O'Riain (1997) stated that since the late 1980s the Republic of Ireland has attracted a generally disproportionate share of US information technology foreign direct investment in Europe. As a result of this FDI a large number of MNCs operate in Ireland. Figure 2.2 illustrates the main activities of both the indigenous and the multinational companies operating in Ireland and helps to clarify the difference between the two sectors.

However, the overall impact of the MNCs in Ireland is debatable (Giarrantana et al. 2005). One striking aspect of the development of the Irish software industry has been the emergence of a dynamic indigenous software development industry which has coincided with the arrival of the MNCs (O’Riain, 1997; Giarrantana et al. 2005; Heeks and Nicholson 2004). MNCs have a bigger impact in Ireland than most other host countries and they are an important source of demand for some firms in the early stages of their life (Stern, 2004; Giarrantana et al. 2005; Arora and Gambardella, 2005).

Figure 2.2 Overview of indigenous and multinational companies’ activities

Irish software sector				
<i>Indigenous companies</i>		<i>Multinational companies</i>		
Product	Service	Out sourced functions	Mass market products	Service providers
Process industries	Bespoke development	Translation and localisation	Specialised product	Specialised product
Training packages	Technical training	Disk duplication	Involved in software development	Involved in software development
Telecommunications	Consultancy	After sales service		
Software development tools	Systems integration	Assembly package		
Multimedia	Disaster recovery facilities			
Distribution				

Adapted from: (Sands, 2005; O’Malley and O’Gorman; 2001)

Many authors have argued that the indigenous software sector has few direct links with the MNCs (O’Riain, 1997). He added that the indigenous software sector emerged largely from a set of local dynamics and over time has been increasingly incorporated into global innovation and business networks. Arora and Gambardella (2005) contradicted O’Riain’s view. Sands (2005) argued that the MNCs had a big demand for indigenous Irish software products. O’Malley and O’Gorman (2001) supported Arora and Gambardella’s theory. O’Malley and O’Gorman (2001) argued that the impact of the MNC supporting industries resulted in a demand for software provided by

the indigenous companies. O'Malley and O'Gorman (2001) noted that there was a simultaneous rapid development of the indigenous and foreign owned companies in Ireland. O'Hearn (2001) argued that a dynamic indigenous manufacturing sector has grown alongside the foreign sector. Giarrantana et al. (2005) argued that the presence of MNCs in Ireland has been favourable as most firms entered before the formation of an indigenous software industry and have generated a considerable number of spin offs as a result. Either way the software industry is of great importance to the Irish economy and the following section discusses this sector.

2.7 Irish Software Industry Overview

This section provides insight in to the success behind the indigenous software sector. It addresses the following: domestic and export markets; a description of the company characteristics given in terms of employment; number of software firms; domestic and exporting revenues generated; and an overview of the internal and external factors that helped the sector grow. Even though there is a great deal of literature available on the success of the Irish software industry, little attention has been paid in the literature to pricing practices in the indigenous sector.

2.7.1 Domestic and export markets

The Software and Information Industry Association (SIIA) described software exports as those that are composed of the following:

...computer sales and information service; royalties and licence fee for the general use of the software and; sales of pre-package or boxed software.

(SIIA, 2008).

The Irish domestic market is small in comparison to other software markets, such as the BRIC (Brazil, Russia, India and China) domestic markets (Stern, 2004). These BRIC countries have large domestic demand for software and as a result they are not as dependent on the export market as Ireland is. Despite the importance of the Irish export market, few studies have examined software export pricing. In one study conducted by Heeks and Nicholson (2004) they noted that the 3Is (Ireland, India and Israel) are the most successful of exporters of software in the world. At the beginning

of the 21st century Ireland was the second largest exporter of software in the world (O'Malley and O'Gorman, 2001). Simultaneously the indigenous software sector expanded and this sector claims an important share of the international market arena by specialising in service products targeting niche markets (Bell, 1997; Carmel, 2003).

Arora and Gambardella (2005) stated that Irish firms are increasingly export orientated and that this may be due to the small domestic market. They reported that 63% of indigenous software companies are engaged in some form of export. Likewise, Bell (1997) established similar findings, although he noted that some firms did not engage in domestic software sales as they focused their efforts on the export markets.

The software industry differs from other high technology sectors in the sense that the indigenous sector has also grown very rapidly and has become a substantial industry in its own right (O'Malley and O'Gorman, 2001). The Irish Software Association (ISA) is a sector within IBEC (Irish Businesses and Employers Confederation). The ISA represents the high technology industry to the Irish Government. A report issued by the ISA stated that approximately 68% of Irish software companies sell to Europe and 55% of companies export to the US market (Irish Times, 2008). Likewise, Heeks and Nicholson (2004) found that that roughly half of Irish software exports were destined for the UK, although by 2007 this figure had dropped significantly to 21% (Collins, 2007).

2.7.2 Entrepreneur profile

A common characteristic shared by many Irish software entrepreneurs is that they have worked for multinational companies or have gained multinational experience (Sands, 2002). There is evidence to suggest that a very high number of the founders of the indigenous Irish software companies had international experience. According to Kapur and McHales' (2005) study 66% of entrepreneurs worked abroad while 55% had worked for a multinational company at some stage in their career.

2.7.3 Employment

A report published by the ISA, revealed that the indigenous sector employs 15,000 people with the total software industry employing 25,000 in Ireland (ISA, 2007b).

2.7.4 Number of software firms

During 2007, there were roughly 800 firms in the Irish software industry 660 of these were recorded as indigenous software companies (ISA, 2007b). Table 2.2 outlines the number of people employed by both the Irish and MNC software firms. The table shows there was a large number of small Irish firms in operation, each employing relatively small numbers. By contrast, employment in the MNC sector was concentrated in a smaller number of larger companies. Cusumano (2005) noted that figures such as employment and the number of companies for the Irish software sector are unevenly distributed.

Table 2.2 Software figures – employment and the number of companies

Approximate figures	Year	Irish	MNC	Total
#Employment	2007	15,000	10,000	25,000
#Companies	2007	660	140	800

Adapted from: (ISA, 2007b)

Collins (2007) noted that there is a chasm between the two sectors. He revealed that the divide becomes particularly apparent when one examines the revenue and export figures closely. A closer examination reveals that the top 34 firms account for most of the growth in the indigenous sector, although the growth is probably best recognised by 6 firms in particular.

2.7.5 Domestic and export revenue

Software revenue is generally recognised through the sale of licences, subscription fees and maintenance and support. Generating revenue continues to be a major challenge

for most software companies. An ISA survey revealed that 72% of indigenous software companies highlight growth in revenue as their most significant challenge for their business (ISA, 2004b).

A report published by Enterprise Ireland (2006) revealed that growth in revenue in the Irish software industry in 2004–2005 was €24,583 million. A breakdown showed that €1,760 million growth applied to indigenous companies, and €22,823 million applied to overseas companies. These figures have increased dramatically over the past two decades and have had a major impact on the Irish economy. Table 2.3 shows the revenue and export figures that was generated by the indigenous companies and MNCs. It is evident that the MNCs generate more than 90% of revenue in this sector. Therefore, their impact and presence is substantially important to the Irish economy.

Table 2.3 *Software figures – revenue and export*

Approximate figures	Year	Irish	MNC	Total
Revenue	2005	1,760	22,823	24,583
Export	2006	1,333	16,046	17,379

Adapted from: (Arora and Gambardella, 2005; Enterprise Ireland, 2006)

The overall revenue figures are deceptive as a great deal of revenue comes from the MNCs located in Ireland who subsequently repatriated profits (Begley et al. 2005). They stated that the multinational firms export 95% of their output. The MNCs might be encouraged to maximise revenues because of the 12.5% tax incentive in Ireland.

2.7.6 Software industry success factors

There are many reasons why the Irish software sector became a global success story. The Irish government, through the auspices of the IDA, quickly recognised the emerging change in the global economy and tailored its industrial strategy towards sectors associated with the information economy. Many authors have written about the success of the growth of the Irish software industry (O’Riain, 1997; Cochran, 2001; O’Hearn, 2001; Cusumano, 2005; Kapur and McHale, 2005; Collins, 2007). There is

general agreement that the following factors were crucial and helped contribute to the industry's success: low corporate tax rate, English speaking, skilled educated youth, EU membership, adoption of the Euro currency, investment in both education and telecommunications, a deliberate effort to attract high technology companies and finally, global demand. O'Riain, (1997) added that the political environment was particularly hospitable for MNCs operating in Ireland. Likewise, Collins (2007) commented on Ireland's deregulated, hands-off state. Initially the corporate tax in Ireland was 10% (now 12.5%) compared with 30-40% in Europe. Furthermore, historic links with the US enabled Ireland to successfully attract foreign firms (Giarratana et al. 2005; Arora and Gambardella, 2005). O'Hearn (2001) noted that Ireland attracted up to a fifth of US manufacturing investments into Europe, despite having approximately 1% of the European population. According to Kapur and McHale (2005) the diaspora can be a direct source of advantage when its members have desire to trade with, invest in, and outsource to domestic businesses. For Ireland, there is convincing evidence that the returning Irish professionals, with enhanced human capital, propelled the booming technology sector in the latter half of the 1990s (Kapur and McHale, 2005).

2.7.7 Challenges for the indigenous software sector

Like other sectors, the indigenous software sector faces challenges in both the export and domestic markets. These include currency fluctuations, lack of funding and competitive markets. In 2007, Irish exports to the USA fell by 7%, a loss of €1.1 million due to depreciation of the dollar (IEA, 2008a). The Irish Small and Medium Enterprises (ISME) conducted a survey on exporting. The findings from an ISME report showed that 47% of companies export to the UK market (ISME, 2008). The study also revealed that 66% of these companies are paid in sterling and the study found that 16% of respondents export to the US, while 62% of these respondents indicated that they are paid in dollars.

Secondly, the lack of capital is problematic for indigenous firms. According to Stern (2004), banks are unwilling to lend money to software businesses that lack physical assets. As a result, many software firms are self-financed (Arora and Gambardella, 2005). There is a general consensus that venture capital funding would help alleviate

some of the financial burden that software companies face and this would allow them to focus their attention on software development. Consequently, a lack of funding means that software companies rely on other activities for instance, consultancy and support, to finance their growth and this may hamper the development process (Arora and Gambardella, 2005). Thus, a greater focus on core activities such as software development would alleviate financial worry for software managers.

Thirdly, software markets are very competitive and internationalised (Correa, 1995). Bell (1997) reported that finance related problems present exporters with the greatest difficulties. Problems with exporting include currency fluctuation, delays in payments, delays in shipments, lack of finances, government restrictions, ignorance of foreign sales practices, inadequate distribution and the lack of foreign markets, language barriers and marketing costs were the most frequent serious obstacles to exporting (Bell, 1997; Carmel, 2003).

In summary, this section provided an overview of the Irish software sector in terms of size and revenue generated by both the indigenous and MNC software companies and briefly described how it has succeed. There is evidence to suggest that there is a chasm between MNC and indigenous activity in terms of production and export figures. While the indigenous sector is important to the Irish economy, it is relatively small in comparison to the MNC.

2.8 Conclusion

This chapter presented an overview of the indigenous software industry. The purpose of this chapter has been to provide an analysis of the software industry before addressing pricing issues in the subsequent literature chapters. This has been accomplished by firstly, classifying software into its respective categories and secondly, by addressing the distinction between software products and services and their modes of delivery. This was followed by an examination of the software literature focusing briefly on the difference between open source and closed source software and their respective licences. A review of the software literature revealed that there is a clear distinction between open code and closed code in terms of licensing and user

freedom and consequently, the pricing practices of each model differs considerably. The next section of the literature reviewed focused on the global software industry including Ireland's role both at domestic and international levels. This chapter in essence has addressed the questions outlined in table 2.4. Thus, table 2.4 best summarises the key areas that emerged from the literature presented in this chapter. The following chapter analyses three distinct software business models that are of particular relevance to this research.

Table 2.4 *A synopsis of the key areas or situations of software offerings*

What type of software do firms supply?	Products, services or hybrids
How is it distributed?	Direct, channel partners, downloaded or onsite installation
What type of market?	Vertical, horizontal, domestic or export
How is the software provided?	Licences, subscriptions or free
Who sells it?	Indigenous or MNCs

Chapter 3

Software Business

Models

Chapter 3 Software Business Models

3.1 Introduction

This chapter will focus on software business models. It aims to provide an understanding of three software business models that are applicable to this study. They are as follows: traditional/proprietary model (in-house applications), software-as-a-service (SaaS) and open source software (OSS). Each of these models represent a significant share of the market in the global software industry, although the current trend indicates that SaaS will replace the traditional upfront licences in the future. This may not be the case universally as both of these licensing models reach out to different customers needs and expectations. According to Lehmann (2008) there was a need for existing business models to be redesigned, particularly with regard to revenue and pricing models. As a result of this transform, the method in which software is sold is changing rapidly. By modifying software business models vendors will be able to reach new markets and reach a greater number of Small and Medium Enterprises (SME). In general, SMEs have smaller IT budgets and it is understood that SaaS may help eliminate the financial burden of purchasing software applications.

3.2 Software business models

Watson et al. (2008) distinguish five business models of software production. Namely, proprietary, open source, corporation distribution, sponsored OSS and second-generation OSS. According to Saaksjarvi et al. (2005:181) the definition of a business model is

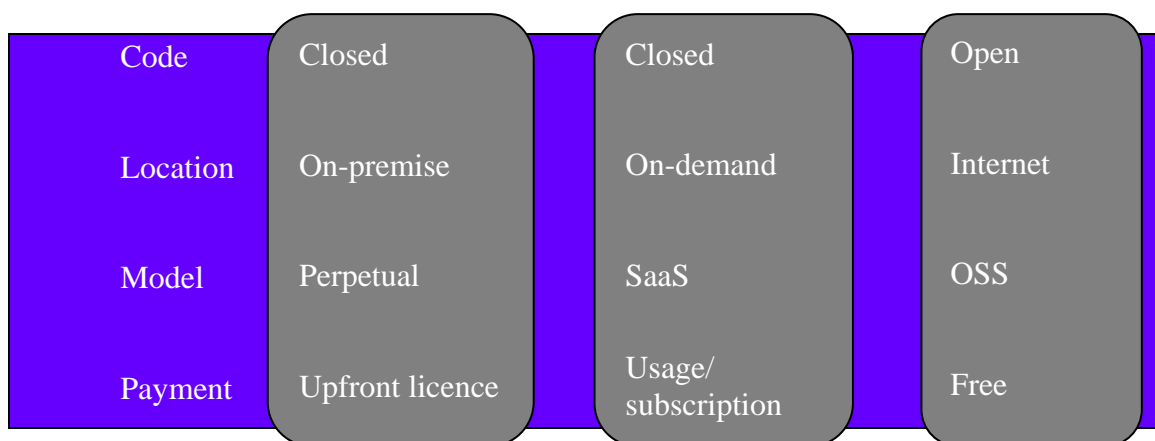
a business model depicts the contents, structure and governance of transactions designed so as to create value through the exploitation of business opportunities.

In other words, in the most basic sense, a business model is the method of doing business by which a company can sustain itself, in other words, continue to generate ongoing revenues. In essence, the revenues generated from sales should cover the costs associated with running a software business.

Shafer et al.'s (2005) review of business models revealed that there is a lack of consensus among a wide range of disciplines with the term *business model*. Therefore, they found that there is no generally accepted definition of a business model. Thus to address the absence of a generally accepted business model they devised a new definition. They define a business model as: *a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network* (Shafer et al. 2005:202). This definition includes four key terms. The first being core logic, suggests that a business model helps managers to articulate and make assumptions about relationships and strategic choices. Strategic choices are the second key term and this term helps to create and capture value that reflect functions that organisations must perform to remain viable. In other words, successful companies create value by doing things in ways that differentiate them from their competitors. The competitive advantage for OSS firms is the availability of the software that is produced with no charge to the end user by software developers volunteering their service in what is referred to as a peer reviewed system.

The proprietary model has dominated the software market for decades and the software code is considered a major intellectual resource and as a result, the code is protected and is sold for licence fees (Cusumano, 2004a). At the other extreme is the OSS model and is supported by volunteers writing code without financial reward for public use (Wu and Lin, 2001). Both of these models differ considerably in terms of ownership, revenue generation and freedom to manipulate software code. SaaS and proprietary are similar in that their code is closed and it cannot be modified. Figure 3.1 provides an overview in terms of location, model, payment type and code status.

Figure 3.1 *Software business models*



3.2.1 OSS business model

Richard Stallman founded the Free Software Foundation (FSF) in 1985 and he subsequently invented the copyleft concept. The open source (OSS) business model is an open model in that it is free to use. Although OSS is available for free, OSS users must be willing to do their own service such as customisation, installation and maintenance, otherwise, they pay a fee for the provision of these services. Therefore, there are a great number of opportunities for IT service firms to generate service revenue from OSS software (Harmon et al. 2009). Despite the fact that OSS is free to use, licences protect it, these licenses describe the privileges and restrictions a developer must follow in order to modify and redistribute the source code.

3.2.2 Traditional/proprietary business model

Proprietary software differs from OSS in that software vendors operate a closed business model (Wu and Lin, 2001). Traditional or packaged software is a significant but declining business model as used by most legacy software firms (SIIA, 2008; Harmon et al. 2009). Software vendors generally agree that traditional licensing models are no longer suitable in today's software environment and this is primarily due to the upfront costs incurred by the customer (Kennedy, 2004). Therefore, there was a need for a novel business model and thus SaaS evolved.

3.2.3 SaaS business model

Firstly, a definition of SaaS is provided with the aim of clarifying the ambiguity that surrounds SaaS. SaaS can be defined as a model of software development where an application is hosted as a service online via the Internet. The SaaS provider may host the software application on their server or use a third party to host the application, as SaaS applications are no longer installed locally on the user's desktop. SaaS is a business model that allows software applications to be managed, metered, licensed, version controlled, updated and supported on demand (Greschler and Mangan, 2002; Dubey and Wagle, 2007). Therefore, SaaS has become an attractive alternative to the traditional model and it is possible that the shift may have arose due to customers

looking for greater flexibility with licensing options (Foley, 2004; Dodge, 2006; Ma, 2007; Kittlaus and Clough, 2009).

Credit Suisse First Boston (CSFB) and On-Demand Index merged to provide an index to capture and measure the transformation of the SaaS industry. This index is known as Credit Suisse On-Demand Index (CSSODI). CSFB experts predicted that by the year 2010, 80% of software companies will have adopted the SaaS business model and it will be worth \$12 billion (The Economist, 2006). The global SaaS market is expected to grow to \$19.3 billion in 2011, tripling in size from \$6.3 billion in 2006 according to a report from Gartner Insight, a market research firm. According to a CSFB report, cited in Choudhary (2007b) '*traditional software is dead*'. Large software companies such as Sun Microsystems, Microsoft and Oracle recognise that the traditional software licence business model will be scaled down although there will always be a need for upfront licences. Carraro and Chong (2006) added that the future of computing is not going to be '*purely on-premise*' (physically on the customers' desktop) or '*purely in-the-cloud*' (cloud computing refers to IT infrastructure that is accessed through the Internet). Instead, traditional software practices and the newer model (SaaS) will exist in symbolic harmony. A discussion of how SaaS evolved lays the foundations for describing the SaaS business models.

3.2.3.1 Evolution of SaaS

The SaaS model is a complete retransformation of the traditional business model. Traditionally software applications were installed in-house on the customer's desktop (Zheng et al, 2006). In the early 1990s, ASPs changed the way software was installed. Applications were no longer solely installed in-house, instead ASPs used client-server models over the Internet (Ma, 2007). The application and the data were stored off site in a central location run by the ASP vendor. The vendor was responsible for tasks such as data backups, software upgrades and security.

During the period 2000 to 2002, the first generation of online software (ASP) failed to meet the reliability and quality standards demanded by software customers (Seidmann and Ma, 2004; Dubey and Wagle, 2007). ASP vendors quickly realised that many businesses were afraid of sharing computer facilities. This fear was mainly due to the security risk of the private data and concerns over mass-market virtualisation (Currie

and Seltsikas, 2001). (Virtualisation supports high numbers of small applications for large businesses to manage, control and secure them. Each virtual portion has its own copy of the operating system which is isolated by hardware from other areas of memory of the operating system). Consequently, SaaS emerged because of ASP failing as a business model at the beginning of the 21st century (Langedijk, 2006). Unlike ASP, SaaS vendors do not require huge investment and software customers find it is easy to use (Currie and Seltsikas, 2001).

The software market is hindered by disagreement over the characteristics of SaaS along with the terminology used to describe application services. There is confusion amongst academics and practitioners alike between ASP and SaaS (Jacobs, 2005; Langedijk, 2006; Ma, 2007). Both ASP and SaaS are also referred to as software-on-demand. According to the SIIA software-as-a-service indicated that SaaS users '*rent*', '*subscribe to*', '*are assigned*' or '*are granted access to*' the applications they require. The main differentiating characteristic with SaaS is that customers are no longer required to pay extremely large upfront fees for the use of software applications (Currie and Seltsikas, 2001). Instead, the software is available for a subscription fee or a transaction fee. These fees are ongoing and software customers and vendors are able to tolerate the costs (Jacobs, 2005). One similarity between SaaS and ASP is that they both offer an all-inclusive package which would require software training, implementation and upgrades. This feature differentiates from the traditional method where maintenance was usually charged as a percentage of the software application.

The terms *single-tenant* (isolation tenancy) and *multi-tenant* refer to on-demand software. ASP offered single-tenancy architecture. Single-tenancy refers to one instance (version) of the software for each user/customer. The ability of single-tenancy architecture to share data with other processes was limited and subsequently it tended to offer few economic benefits over their locally installed counterparts (Carraro and Chong, 2006). Alternatively, multi-tenancy architecture enables all users to share the same code, same applications, same infrastructure with applications centrally maintained by the software vendor. SaaS is a multi-tenant architecture, which is one of the factors why SaaS has been successful (Gates, 2007). SaaS offers one instance of the software for all users. Single-tenancy architecture allowed only one user to use one instance of the code and users were physically separated. This led to updates or

maintenance to the software being problematic, as it needed to be performed on each instance of the software.

A typical SaaS application is offered either directly by the vendor or by an intermediary party (Carraro and Chong, 2006). Saskatchewan Regional Economic and Co-operative Development (SRECD). SRECD (2005:185) proposes a new definition for the SaaS business model. They defined it to be

...times and location independent online access to a remotely managed server application that permits concurrent utilisation of the same application installation by a large number of independent users, offers attractive payment logic compared to the customer value received and makes a continuous flow of new innovative software possible.

A new service model has emerged which delivers application software and services over the Internet on a lease or subscription basis (Elfatry and Layzell, 2002; Zhang and Seidmann, 2003). The leaser guarantees that the lessee will always hold the latest version of the software on their desktop. SaaS is based on the principle of sharing: sharing facilities such as hardware, software resources, knowledge and more importantly the sharing of costs (Langedijk, 2006). As a result, the customer can focus on their core competitiveness without worrying about their software (Kaplan, 2006). In general, the customer is not interested in owning the software, they just want to use it (Boran and Kennedy, 2008). Fortunately for the customer, SaaS shifts the burden of running and maintaining hardware and software to the vendor (Choudhary, 2007b).

According to Carraro and Chong (2006), many customers believe that they would have more control over the relationship with their software vendor by paying monthly fees. If the customer is dissatisfied with their service, it is possible to switch to another vendor without any inconvenience, as there is no significant investment with SaaS (Carraro and Chong, 2006; Boran and Kennedy, 2008). Today's software customers are opting for solutions that will help reduce their costs, especially during economic downturns. It has been noted that SaaS can help lower costs for some smaller businesses. Therefore, SMEs are most enthusiastic about SaaS since it is cheap, quicker and simpler to deploy and maintain than traditional software and they less willing to invest in large, expensive systems requiring maintenance on-premise (Choudhary, 2007a). Dubey and Wagle (2007) asserted that many customers are eager to shift from traditional software application, adding that there are several reasons for

such a shift. These reasons include being frustrated by the traditional cycle of buying the software licence, paying for a maintenance contract, and then having to deal with time consuming expensive upgrades. Maynard and McGrath (2007) supported Dubey and Wagle (2007) by stating that on-demand is becoming the preferred method for licensing software.

The literature available on SaaS gives a coherent picture of the software (SRECD, 2005). With the SaaS model the service is no longer just a professional service, instead the software application comes as an all in one package. Publications on SaaS are optimistic according to an IDC white paper report (IDC is an International Data Corporation). According to Dubey and Wagle (2007), SaaS offer several advantages over the traditional model, most notably a lower total cost of ownership (TCO) and higher level of service. Software vendors ought to become more responsive to their customers needs or risk losing subscription revenue. Some authors believe that the TCO of SaaS is lower over the software's lifecycle (Maynard and McGrath, 2007), although there is not enough evidence to support this claim. A report published by Gartner Insight estimated that the annual cost to own and manage a traditional on-premise software application *'can be up to four times the initial price'* (Choudhary, 2007b). The cost difference may be due to customers' needs to acquire and support a large in-house software development.

Despite the many advantages of SaaS, it is not without its limitations. For instance, the literature indicated that some customers are uncertain as to whether to adopt the SaaS model or not. Users have encountered several problems with the SaaS such as: security threats, system outages, integration of SaaS into legacy environments, risks of data loss and exposure of sensitive information all have been noted in the literature (Carraro and Chong, 2006; Kaplan, 2006). To eliminate future problems software vendors ought to ensure that they are providing high quality services in order to retain their customers (Choudhary, 2007b). Another limitation that needs to be addressed is that not all applications are suitable for adopting the SaaS model. Wong (2006) noted that SaaS providers would not be able to provide personalised services such as customised applications specific to a client's company needs. Gates (2007) added that the problem is that traditional applications were not built to operate effectively via the Internet. Additionally, Carraro and Chong (2006) reported that there were several drawbacks to

software-as-a-service. For instance, the long term cost of ownership, hidden costs and a customer may be using too many SaaS applications for separate business areas. Despite the limitations of SaaS, it has several advantages over the traditional business model.

3.2.4 Traditional (on-premise) versus SaaS (in-the-cloud) models

A review of some of the similarities and differences between traditional and SaaS model is detailed as follows. This review highlights why some software companies will adopt the SaaS model. There are several differentiating factors between the two models. Table 3.1 illustrates the main differences between the traditional and the SaaS models. The main differences are concerned with the licensing method, management and the location of the software.

Table 3.1 *Traditional licences versus SaaS*

	Traditional model	SaaS model
Licensing	1) Perpetual software incurs upfront payment plus extra for maintenance and support. 2) Customised software transfer licences to the customer.	1) Usage-based model. The customer is billed based on the number of service transactions. 2) Subscription-based model. The customer is billed a flat fee per month/term for unlimited usage.
Location	Installed on the customer's site.	Installed at data centres (In-cloud).
Management	IT department or outsourced.	The SaaS host.

Adapted from: (Carraro and Chong, 2006:4)

The main differences between them concerns the billing mechanism. With SaaS the user is billed on an ongoing basis as opposed to the perpetual licence, where one invoice is sent to the customer where payment tends to be upfront and large (Bontis and Chung, 2000). Another difference is the delivery mechanism, for instance SaaS is accessed via the user's Internet browser whereas a perpetual licence is installed on the users desktop or server. The term tenancy also highlights another differentiating factor. New product features are released periodically as part of new versions by traditional

software vendors. On the other hand, SaaS vendors release new features as soon as they are completed (Choudhary, 2007b). As a result, the SaaS customer receives the most up-to-date versions of the application without having to pay extra for new features. Therefore, SaaS is a cost effective solution for software clients (Jacobs, 2005; Wong, 2006). Costs associated with implementing, training, maintaining, hardware, staffing, customisation and integration are no longer a problem for SaaS users.

3.3 Emerging revenue streams

The licensing method describes how the vendor collects and recognises the revenue from the sale of the software (Ferrante, 2006). There are three key components to software revenue recognition namely subscription, transaction and perpetual licences. Firstly, a recurring subscription licence fee is paid by the customer for continued use of the software. If the fee is not paid, the software stops working, as the customer does not own the software (Elfatraty and Layzell, 2002). Secondly, the transaction-based licences are paid by the customer based on the amount used during a specific period. Conversely, a perpetual licence is paid for on a once-off basis, granting the user the rights to run the programme as long as they choose. It does not imply a right to upgrades, which are typically sold separately as part of a maintenance agreement (Konary et al. 2004). Perpetual licences are generally recognised as revenue upfront, while subscription revenues are recognised over time.

Due to the declining traditional model, software vendors are finding it increasingly difficult to sustain business (Kennedy, 2004; SIIA, 2008). Konary et al. (2004) noted that there are several forces that impact on why the software licensing landscape is changing. Firstly, software vendors desire a more predictable revenue stream. Secondly, software customers desire to have predictable software costs. Thirdly, customer perception of the value that they ought to get from software is changing. The combination of these forces allow SaaS to continue to rise in popularity amongst both software vendors and customers. In the past software vendors suffered what is known as '*peak and trough*' cycles (Choudhary, 2007a). Each time they released a new version of software they received revenue (peak). If sales cycles were slow/long it was common that vendors had long periods of small amounts of cash (trough). Therefore it

is in the vendors' best interest to move away from such cycles and have ongoing revenue. Similarly, software customers experienced irregular purchasing patterns. In general, smaller businesses find it difficult to absorb large upfront costs and as a result, they appear to be more satisfied with the subscription model. The licensing model is declining and as a result, traditional companies are no longer receiving fees from maintenance and support. Consequently, their transition to SaaS is making them review other ways of generating revenue. One way to maximise revenues is to get more customers. This is especially important with the SaaS model because additional customers do not cost the vendor anything extra (except the costs associated with extra storage of the hosted data, but this normally passed on to the customer).

It is a widely known and accepted practice that enterprise customers wait until the last week of each quarter and receive enormous discounts on licence fees (Kittlaus and Clough, 2009). Fee reductions are often as much as 80% off the original quoted price, as a result this has a huge impact on licence fees (Cusumano, 2007). Consequently, licensing fees have been declining leading to a shift in software revenues from the product fee to service. According to Cusumano (2007) part of the reason for a shift is that prices have been declining for enterprise software and because the price of software can, and does fall, close to zero because of the marginal cost. This shift will result in many implications for software vendors in terms of revenue recognition, for instance, a vendor's transition from up-front payment to term payment (Tynan, 2007b). Over time, gross margins should return to normal when the term payment breakeven with up-front revenues. Some authors argue that it will take up to five years for the transition to balance (Cusumano, 2007). Consequently, the transition period creates the most risk, and it has been suggested that software vendors transitioning from a perpetual model to a term one should have sufficient reserves to carry them through that transition period. This is partly because service revenues are recognised over a period. Established companies should not find the transition period too difficult as they have the advantage of cash flow from their perpetual licence business to sustain them while the SaaS business model grows (Dodge, 2006).

The general trend is that software product companies start out generating most of their revenues from product licences but overtime they shift to a mixture of products and services and eventually become mostly service orientated (Cusumano, 2008). SaaS

vendors such as Salesforce.com still count SaaS as product revenues and keep them separate from professional services (Cusumano, 2008). The SaaS model has confused the traditional separation of product and service revenues (because of the elimination of the maintenance fee which is now bundled into the SaaS package). Many firms involved in developing, manufacturing and distributing software products have turned to services as a way to augment their revenue streams. In general, services are more difficult to price than products (Docters et al. 2004; Mohr et al. 2005), which presents an extra challenge for software managers that offer a service to their customers.

In a study conducted by Cusumano (2008), data indicated that although software product revenues have dropped they have not fallen to zero, rather they have stabilised at approximately 50%. Cusumano (2008) found that the optimum balance for profitability for product companies is 70% of revenue to be generated from licences and 30% of revenues to be generated from services.

3.4 Software business turnover

Most indigenous software companies obtain a substantial proportion of their sales revenues from software products (O'Malley and O'Gorman, 2001; Michell, 2005). The greater Irish focus on products probably helps to account for the fact that the Irish indigenous software industry is highly export orientated by European standards, since it is generally easier to export products than services. In general, software vendors recognise their revenues in three forms. Traditionally the first form is the upfront licence fee for the perpetual right to use that version of the software. Secondly, software companies sell their customers a maintenance agreement, which usually consists of an annual fee totalling approximately 15% to 25% of the original price of the software. A third source of revenue may come from training, customisation or software integration. According to Cusumano (2007) it is not uncommon for software product companies to have merely one third of its revenues come from product licence fees, another third from maintenance payments and the final third from other services.

Typically, the breakdown of product revenue and service revenue shows that some service and product companies generate 100% of their revenues from services or products. This means that these companies are pure in the sense that they do not

engage in the opposite activity to finance their software operation. Although, Sands' (2005) study revealed that during 2000-2001, 11% of companies earned 100% of their revenues from products, with 64% earning over 50% of their total earnings from products. This compares to 14% who earn 100% of their revenues from services and 34% who earn 50% or more of their revenues from services. Table 3.2 illustrates these findings. In a similar study O'Riain (1997) found that 45% of all exporting Irish firms earn over half of their revenues from product sales while 25% earn over 80% from product sales.

Table 3.2 *Percentage of revenue from product and service*

# Companies	Product revenue%	# Companies	Service revenue%
11%	100	14%	100
31%	>80	34%	>50

Adapted from: (Sands, 2005)

3.4.1 Vendor costs and customer ownership costs

The cost structure for SaaS differs from that of a traditional company. Some authors believe that SaaS vendors have lower R&D and customer support costs than traditional software companies as a result of not requiring to develop and maintain multiple versions of a product to run on different platforms (Dubey and Wagle, 2007; Harmon et al. 2004). Zhang and Seidmann (2009) findings contradict this view, they found that the total cost of ownership of SaaS incurred by the customer was higher than that of traditional companies. They claim that it is misleading to say that subscription models lower the TCO, although, they add that when upgrades were factored in the SaaS model was found to be cheaper. According to Choudhary (2007a) SaaS vendors tend to have higher costs for delivery than their traditional counterparts because of the cost associated with hosting and managing data centres. Dubey and Wagle (2007) outlined two main reasons for such higher costs. Firstly, a subscription model produces lower revenues during the growth phase, since payments are spread over a period as opposed to upfront; Secondly, a higher percentage of SaaS vendors' customers are small and

medium sized businesses, therefore, more effort is required to reach them compared to large enterprises customers. Although, Choudhary (2007a) found that SaaS vendors earn larger profits than traditional vendors earn because the software is of a higher quality and this is possibly due to ongoing upgrades.

In many cases, SaaS may prove cheaper for the customer than owning and maintaining an in-house IT system. For instance, users expect to save money on support and upgrade costs, IT infrastructure, IT personnel and implementation. In addition, the total costs of ownership incurred for the initial cost of acquiring on-demand software applications is normally lower than on-premise applications (Gruman et al. 2007). However the long term cost structure is less certain (Ma, 2007). Factors that can affect TCO of SaaS include the number of licensed users and the amount of custom configuration (Carraro and Chong, 2006). According to Campbell-Kelly (2009) if the customer has a low volume of transactions then the economics favour the service model; on the other hand, if the customer has a high volume of transactions it is cheaper to have the software installed. Although both models incur costs, it is thought that the TCO for SaaS customers is lower than that of the traditional licences and in most cases, incurred costs are less for the software vendor. The biggest problem appears to be for vendors that are in the transition period and who do not have sufficient cash flow to get them through this period.

3.5 Conclusion

This chapter has presented an overview of three software business models. It was generally recognised in the literature that software business models were of significant importance to software pricing and as a result, literature was then presented on these models. They are referred to as the traditional, SaaS and OSS throughout this thesis. The literature revealed that OSS licences are free, and users can manipulate the source code. The other two models are considered to be closed, in that, their code is protected by software licences. Therefore, there is a clear distinction between both open and closed models in terms of software licensing and their revenue models. It was noted that each of the three models were not without their limitations and consequently

neither model will satisfy the needs of all software customers. Therefore a market exists for each of the three models.

However, this chapter revealed that the traditional licence model is declining and this is proving devastating for software product companies, as the industry trend appears to be leaning towards subscription and ultimately free pricing models (e.g. advertising). Upon examination of the literature with respect to the software business models, it is evident that both the traditional and SaaS models will co-exist for sometime in order to satisfy software customer needs. Due to dissatisfaction amongst software customers SaaS is gaining in popularity and SaaS advocates believe that SaaS works well in the current economic climate as it allows the customer to pay for their software as they use it, as opposed to paying large upfront fees for software functionality that they might not use. Large software companies such as Microsoft are aware that they need to shift to the SaaS model in order to satisfy both their customer and business needs (Boran and Kennedy, 2008). Therefore, an understanding of software business models will help software vendors choose an appropriate distribution and licensing methods.

The following chapter presents a general overview of pricing and a focus on software product and service licensing options available to software customers.

Chapter 4

Pricing and Software

Licensing Methods

Chapter 4 Pricing and Licences

4.1 Introduction

This chapter presents a general overview of pricing, particularly with respect to software product and service pricing models. Given the lack of empirical research available on software pricing, the current study endeavours to contribute to this neglected field by investigating the pricing process i.e. pricing objectives, pricing policies, pricing strategy and pricing methods of software firms. One possible reason for the lack of literature on software pricing is due to the fact that prior to the evolution of SaaS software pricing remained unchanged. It was basically the licence fee plus extra for maintenance and support (Kittlaus and Clough, 2009). Particular attention is paid to addressing the pricing objectives that firms follow to set their prices. The decision to focus on the pricing process helps to answer the research question **‘How indigenous software companies price their product or service offerings?’**

This chapter is organised as follows: Section 4.2 provides a general definition of price. Section 4.3 amalgamates pricing from an accounting, economic and marketing perspective as each domain treats pricing from a different viewpoint. Sections 4.4 and 4.5 provide an overview of price theory, pricing objectives, practices, strategies and methods. Section 4.5 also presents an outline of three separate factors known as cost, competition and customer, the 3Cs of pricing and focuses on the need to move from a cost to a customer focus. Section 4.6 concentrates on price setting and the importance of negotiations in software pricing. Sections 4.7 and 4.8 presents software product and service pricing. Section 4.9 merges cost-based and value-based software pricing methods. Section 4.10 presents an overview of emerging trends from the software industry in terms of software pricing. Finally, the chapter concludes with the most salient points.

Pricing is based on experience, which tends to be learned from past successes and failures (Carson and Gilmore, 2000). Traditionally there was a tendency for managers to use their intuition during the pricing decision-making process (Rao, 1993; Monroe, 2003). Bergstein and Estelami (2002) stated that an intuition-based approach to new

product pricing may not accurately represent the product's true price potential. Similarly, Duke (1994) cautioned managers against pricing products by 'gut feel'. Duke (1994:16) stated that

Most professionals for whom pricing is not a primary function or area of interest, do not have the time or energy to devote to this integration.

4.2 Conceptualising a price

A price is the value attached to a product or service by parties involved in a transaction (Kittlaus and Clough, 2009). The act of pricing therefore relates to the attempt by the selling party to attach the optimum price to his or her offering. Price can be expressed in many different forms, such as rent, royalties, interest or taxes.

Price can be defined in number of ways. According to Pasura and Ryals (2005:2) pricing can be

...conceptualised, as the amount of money the customer is willing to pay in order to obtain goods or services they require.

According to Fletcher and Russell-Jones (1997) a price can be defined as the '*amount usually in money for which a thing is sold or offered*'. The thing referred to could be a product, service, or money itself. In addition, Nagle and Holden (2002) noted that pricing represents nothing more than the sum of money the buyer must give the seller as part of their purchase agreement. Nagle and Holden's (2002) assertion of pricing appears somewhat overly simplistic. It implies that the buyer has little or no control over the purchasing price. This claim may hold true for business-to-customer interactions, as prices are normally predefined. In business-to-business it is often customary for negotiations to take place between both parties. Therefore, the buyer may have more control or influence over the purchasing price.

4.2.1 Role of price

According to Atkin (2002) regarding the problems facing a company, pricing represents the most delicate and the most important as a result, relatively small differences in pricing can have a dramatic effect on sales. Greisman (2007) disagreed

with Nagle and Holden's (2002) simplified view of pricing. He asserted that pricing plays many roles and that it can convey meaning to a customer in terms of implicit quality. It can support or undermine a brand. Pricing supports roles such as: supporting company strategy, positioning the company in the market or industry, influencing customer behaviour or perception of value and reinforcing channel strategy. Pricing also affects cash flow and it helps to address competition by comparing competitors' prices. Shipley and Jobber (2001) concurred with Greisman's conclusions. In addition, they added that pricing sets the platform for cash collection. Pricing decisions, made without careful consideration of the impact of price on the whole organisation, can have a disastrous outcome. Price needs to convey value to both the buyer and seller of a product or service. According to Fletcher and Russell-Jones (1997) there are several internal and external factors that impact on pricing. The former includes: costs, profit targets and growth and the latter: legislation, customers, changing markets, competition and technology. Brief overviews of the principal domains that address pricing are presented in the next section.

4.2.2 Price theory

According to Cunningham and Hornby (1993), the possibility of developing a universally applicable theory of pricing is remote, as it is a very individualistic process for organisations and no two companies price in exactly the same way. Noble and Gruca (1999) have noted that the nature of the operating environment in which a firm operates constitutes one of the major influences on its pricing practices. For instance, firms in competitive pricing situations are likely to select low price. Alternatively, there are a variety of pricing structures available for new products, such as: penetration, skimming and experience-curve. The first of these, penetration (low) pricing is used when a firm has cost advantages (Harmon et al. 2004). Conversely, price skimming (high) should be used when a firm is at a cost disadvantage. Finally, experience-curve (low) pricing leads to a reduction in average unit costs due to large sales volumes. Each of these three pricing structures will be discussed in detail in section 4.4. Thus different pricing strategies are used to capture different categories of customers. Customers' perception of price can vary widely from one to another. There is a consensus amongst practitioners and academics that prices reflect quality (Choudhary, 2007a).

4.3 Pricing dynamics

One of the reasons why software pricing may attract little attention is because it operates across several domains (Raymond et al. 2001). This section addresses pricing from three perspectives, namely marketing, economics and accounting. According to Hornby and MacLeod (1996) pricing decisions are drawn from many sources and are vitally important to the success of a firm. The literature indicated that there are important differences in the treatment of pricing from a marketing, an economic and a financial perspective (Smith, 1995; Skouras et al. 2005).

The interdisciplinary nature of pricing can be found at the edge of each discipline. Accountants address pricing from an internal perspective and they tend to be concerned with issues such as covering costs. In general, marketers tend to address pricing from an external perspective and they predominantly focus their efforts on techniques for obtaining reliable information about prospective customers' responses to price changes (Hauser, 1984). The economic perspective on the other hand is primarily concerned with quantitative data and projections (Skouras et al. 2005), and economists view pricing from a holistic perspective incorporating company issues and market concerns. There are important differences between the marketing, economic and accounting literature in regards to their treatment of pricing and each of these perspectives are discussed below.

4.3.1 Marketing

Several marketing considerations are particularly appropriate for pricing software products and services. These include the importance of focusing on customer needs, market segmentation, developing market strategy, the software product life cycle and strategies for positioning a product (Freidman and Freidman, 1987; Cusumano, 2005). Pricing is important because it is one of the key elements of the marketing mix due to its flexible nature. This flexibility allows prices to be changed relatively quickly to react to market changes (Cavusgil, 1986). The other elements of the mix are: product, place, promotion, people, physical evidence and process (referred to as the 7Ps) (Pasura and Ryals, 2005; Blythe, 2005). In practice, the marketing mix is more complex than the 7Ps suggest. The 7Ps address concepts from the seller's point of view. It is

therefore inadvisable for companies to examine the pricing task from the seller's point of view without reference to that of the customer. Fletcher and Russell-Jones (1997) recommend that marketers adopt a more holistic approach to the task of pricing and also attempt to incorporate a certain level of input from customers.

According to Harmon et al. (2009:1) from a marketing perspective the goal of pricing is

...to assign a price that is monetary equivalent of the value the customer perceives in the product while meeting profit and return on investment goals.

While it may not be among the more exciting tasks faced by marketers, pricing remains one of the most crucial issues for them and should not be conducted in isolation of the marketing mix. Although, price is often the last element to be addressed in the mix, it could be argued that pricing is the most important of the marketing mix elements since the price has an impact on an organisation's revenues, profitability and competitiveness (Kotler, 2000; Shipley and Jobber, 2001; Gadde et al. 2002). It is influential in many aspects of the firm's performance including levels of profit generation (Blythe, 2005). It affects revenues, as price multiplied by quantity is the ultimate financial expression of sales (Shipley and Jobber, 2001).

4.3.2 Economics

According to Skouras et al. (2005) the economic literature revealed a large number of models aimed at deriving optimal prices through the adoption of various mathematical methods. In economic theory, profit maximisation was assumed to be the single goal of the firm, which could be achieved by equating marginal cost and marginal revenue. Traditional economic theory has concentrated on the price and output of companies under various market structures, i.e. competitive, monopoly and oligopoly (Skouras et al. 2005). Cunningham and Hornby (1993) cautioned that while traditional economic theory assumes that a manager knows his/her demand and cost, in practice, managers do not have access to such information. In addition, price from an economics' perspective is concerned with supply and demand curves (Gadde et al. 2002).

Almost all economic pricing is based on the measurement of replications (Alunkal, 2006). For instance, we pay for each copy of a book. This method works since the high costs of each replication generally prevent one from avoiding payments. With

information goods, the pricing-by-replication scheme breaks down. This has been a major problem in the software industry (Alunkal, 2006). Once the sunk costs of software development is invested, replication costs are essentially zero (Ojala and Tyrvaïnen, 2006). Since software is easily replicated at a negligible cost, each subsequent instance is sold for much more than its incremental cost (Rajala et al. 2003). There is scarce economic literature on these issues and on pricing and as a result, it will continue to be done on an experimental case-by-case basis in the software industry (Alunkal, 2006).

4.3.3 Accounting

The accounting perspective on pricing is particularly relevant for software managers. Costs associated with developing a product or service need to be recognised. An awareness of such costs will allow decision makers to establish the minimum they can charge (floor). Drury (2000) stated that general management accounting literature recommended that companies should not use a single overhead rate to cost individual products or services. A single overhead rate is suitable only as a method for allocating overheads not calculating costs (Brierley, 2004). There are three main approaches to determining costs. These include full (absorption) costing, contributing costing and activity based costing (ABC) (Hornby and MacLeod, 1996). Full cost pricing covers all costs plus a return on investment and it has the advantage of ensuring a certain margin is obtained (Pasura and Ryals, 2005; Blythe, 2005). In order for software companies to survive, managers need to keep track of their costs. Decisions about price cannot be made effectively without accurate knowledge of product costs (Cooper and Kaplan, 1988). Costing has a significant impact on the day-to-day operations of a software business. As a result, costing will be addressed from a software perspective. Break-even analysis is an economic concept for covering costs and ensuring a return on investments (ROI) (Atkin, 2002). The concept in its simplest form claims to show the minimum quantity of products or services a firm has to sell in order to cover its costs. The concept is of little help to the pricing decision maker because of the unrealistic assumptions the theory assumes about the relationship between price, demand and costs. Cost can be classified as sunk, fixed, or variable. The sunk costs are fixed costs that are incurred at the beginning of an investment (Paleologo, 2004). Fixed costs usually correspond to investment and these costs do not vary in relation to output

(Atkin, 2002). In general, the fixed costs are sunk costs and they cannot be recouped if a software project fails (Kanliang, 2004). Alternatively, variable costs are proportional to demand and they vary in relation to output for example, labour.

4.3.3.1 Costing

According to Drury (2000:23) costing can be defined as ‘the process of determining the cost of doing something’, e.g. cost of manufacturing an article, rendering a service or performing a function. In other words costing is concerned with identifying all the factors that contribute to the development of products and services. There exists voluminous literature on software cost estimations (SCE) for producing software (Heemstra, 1992; Sommerville, 2000; Grimstad and Jorgensen, 2006; Mendes, 2008). Grimstad and Jorgensen (2006) described how software cost estimation is an essential part of most software development projects. They added that, unfortunately, software development costs estimation is difficult and inaccurate. However, Mendes (2008) suggested that software estimation is essential as it helps managers allocate resources, control costs and schedule and improve current practices, which in theory should allow projects to be finished on time and within budget. Therefore, a number of algorithmic models are used for SCE, for instance, estimating the effort, the schedule and the cost of a software project. Table 4.1 illustrates some of the algorithmic models and an explanation is provided of their meaning and use.

Models such as expert judgement, algorithmic, top-down, bottom-up, analogy and price-to-win are among the more common ones used in SCE. These models offer cost predictions on software development time, functionality, quality and the ability to create value for software users (Boehm and Sullivan, 2000). Most SCE models are two-stage models (Heemstra, 1992). The first stage determines project size and the second stage estimates how much time and effort it will cost to develop the project. In general, the number of lines of code in the software determines project size. The second stage model converts time and effort into ‘man months’ (total number of hours available) for software projects. One such model is the constructive cost model (also known as COCOMO II). The COCOMO II model focuses on estimating the cost of development in terms of man months (software size must be available in order estimate man months). The COCOMO II Model is an empirical model that is commonly used today for SCE. Barry Boehm developed it in 1981 and it derived from a large number

of software projects (Boehm and Sullivan, 2000). Other models include DeMarco's bang method and function point analysis. Some of the models are best suited to the different stages of the software project, for instance, COCOMO II is suited to the productivity stage of a software project and function point analysis is most applicable for costs associated with the size of the project. It is a common occurrence that a software project is more expensive to estimate and the completion date is later than agreed (Heemstra, 1992). As a result, estimation of effort and the duration of software development is an essential task for software project managers (Boehm and Sullivan, 2000).

Table 4.1 *Software cost estimation techniques*

Type of SCE	Explanation of software cost estimations
Expert judgement	Depends on the experience and the ability of the expert to convey his experience into a new project.
Top-down	The overall project is estimated and the total estimate is divided among the various components.
Bottom-up	The cost of each individual component is estimated and each individual cost is calculated to get the overall cost.
Analogy	Similar past projects are estimated and analysed to find a similarity.

Adapted from: (Heemstra, 1992: 630)

Normally, the running of software businesses entails the consideration by managers of the following: development costs, maintenance, upgrades, customer support, budget over runs and revenue shortfall (Messerschmitt and Szyperski, 2004). Software development proposes a unique cost structure. This unique cost structure is concerned with the high development costs and the low variable costs (such as reproduction costs which can be almost non-existent) associated with software development (Kanliang, 2004; Sink, 2006; Ojala and Tyrvaïnen, 2006). Costs can therefore be classified as sunk, fixed or variable. This makes pricing strategies of software products quite different from those in other industries (Steele, 2003). Low reproduction costs and the intangible nature of software enables various pricing models for software firms such as effort based pricing, licensing, and revenue sharing (Rajala et al. 2003). Alternatively, if software products and services are available on the Internet through online servers, a

firm can use connect-time-based pricing, searched-based pricing or subscription fee pricing to sell their products to customers (Jain and Kannan, 2002).

It is generally accepted that pricing cannot be done in a vacuum, as it is one of several interrelating variables (Monroe and Della Bitta, 1978). Decision makers need to incorporate marketing, economic and accounting practices when deciding upon a price for their software as each of the three domains view pricing differently. Each field suffers from its strengths and limitations when used in isolation. Software pricing differs considerably from pricing in other industries. Therefore, it should be borne in mind that traditional pricing practices may be unsuitable for software pricing, especially as the software industry is evolving. The following section addresses the pricing process. The focus of this section is on the stages that pricing decision makers may incorporate into their decision-making process when setting prices.

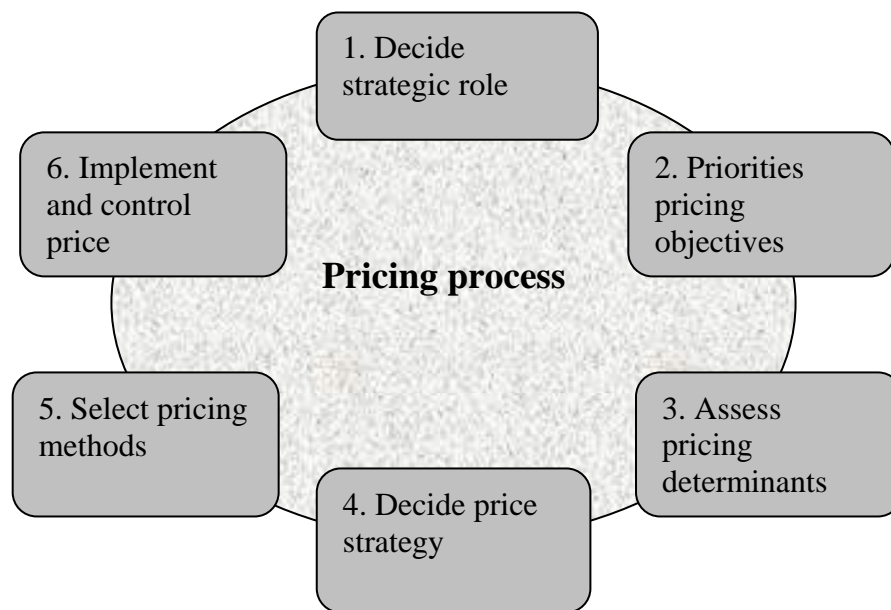
4.4 Pricing process

This section outlines the various phases that are involved in setting prices. When deciding upon prices, managers generally go through an integrated four-stage process. These stages are as follows: pricing objectives, pricing policies, pricing strategies and pricing methods. An understanding of these theoretical perspectives may assist managers with the practical elements of the pricing decision, such as price setting and negotiation. The pricing process can be represented as having several interconnected but distinguishable stages. Nonetheless, in practice managers will rarely go through all of these stages in their entirety as some stages overlap (Wilson, 2006). The literature indicated that there is confusion among practitioners regarding the fundamental aspects of the pricing process (strategies and methods). Some managers and practitioners seem to treat them as the same concept, while others have endeavoured to clarify the difference between them (Indounas, 2006).

Oxenfeldt (1983:23) observed that price processes '*aim to achieve the organization's objectives, implement its strategies, and conform to its policies*' and are generally made by methods approved by top management. Each of these stages match a software company's objective, its customers' characteristics and its competition. Each stage is

dealt with throughout this section and follows a sequential order starting with pricing objectives. This is in line with Diamantopoulos (1991) who stated that pricing objectives should be the starting point of every pricing decision as the objectives help to clarify the overall plan for a company. Furthermore, the pricing policy needs to address these objectives and an appropriate strategy will need to match the overall objectives. Finally, the pricing methods will determine the focus of what the company aims to achieve from its offering, for example, whether managers aim to cover costs or satisfy their customers by providing value to them. The pricing process is iterative as it is an activity that has to be repeated on an ongoing basis throughout a products/service lifecycle (Gadde et al. 2002). Shipley and Jobber (2001) devised a six-stage pricing wheel process for setting prices and it incorporates cost, demand and competitor prices. Figure 4.1 illustrates the six-stage pricing wheel.

Figure 4.1 Pricing wheel process



Adapted from: (Shipley and Jobber, 2001:303)

The elements of the pricing wheel are discussed sequentially in the following six stages to aid comprehension of the pricing process. The pricing process is not a sequential once-off process, it is iterative in nature. The first stage involves deciding the strategic role of price. In other words, how important is price and should it play a minor or a supportive role in the strategy. The second stage is concerned with setting pricing objectives, which includes market share, profit maximisation, sales volume and sales

revenues. The third stage involves assessing pricing determinants which can be grouped into internal and external factors. The internal factors include sales volume and cost reduction goals and external factors include competitive pricing. Implementing a pricing strategy is decided upon in stage four. Noble and Gruca (1999) organised ten strategies into four pricing situations (table 4.3). The fifth stage of the model is to select a pricing method. Pasura and Ryals (2005) categorised the pricing methods into those that are cost-based, competitive-based and customer-based (table 4.4). The final stage of Shipley and Jobber's model is to implement and control price.

The objectives of a pricing process are a direct result of a company's overall strategy (Hinterhuber, 2004). Pricing objectives provide information on what the firm is trying to accomplish and their pricing objectives provide directions for action (Noble and Gruca, 1999; Oxenfeldt, 1983). Pricing policies and pricing methods refer to the explicit steps that managers need to follow in order to set prices. The main function of a pricing objective is to guide these steps. The pricing objectives should be flexible enough to allow for changes in the company's overall objectives (Shipley and Jobber, 2001). Therefore, it is critical for managers to determine a firm's pricing objectives at the outset of the pricing process (Myers et al. 2002).

4.4.1 Pricing objectives

When setting consistent objectives it is imperative that managers ensure that objectives are clearly stated, where there are relationships between objectives that they are clearly shown and that all people involved in the pricing decision process understand the objectives outlined (Monroe, 2003). According to Brassington and Pettitt (2005) there are two basic types of pricing objectives: one is financially based and other is market based. The financially based approaches can be tactical and strategic in nature (Smith, 1995). The tactical approach treats pricing in the short-term and the strategic approach is concerned with the long-term pricing goals. The market approach to pricing objectives relates to sales volume. These includes market share, sales volume, status quo (price stabilisation), profit maximisation, increased growth, obtain price leadership, image enhancement of firm, image enhancement of products, customer respect and company survival (Oxenfeldt, 1973; Duke, 1994; Brassington and Pettitt, 2005). In

general, the pricing objectives of the company are considered in terms of what philosophy the company uses to determine prices (Avlonitis and Indounas, 2004).

4.4.2 Pricing policies/practices

Once the pricing objectives are set, the next logical step according to Shipley and Jobber (2001) is to draw up a plan for achieving pricing objectives. Such a plan is known as a pricing policy. Pricing policies are established to ensure that pricing activities are consistent with a company's long-term strategy and profitability (Smith, 1995; Atkin, 2002; Avlonitis and Indounas, 2004). Oxenfeldt (1983:24) described pricing policies as '*rules to be observed under stated conditions*'. He added that pricing policies have two main purposes. Firstly, their purpose is to improve the validity of pricing decisions. Secondly, they are to help achieve consistency of action among all members of the organization. Pricing policy is therefore an essential element of the financial planning of a company's affairs.

4.4.3 Pricing strategy

According to Hansen and Solgaard (2004) a pricing strategy helps to guide firms' pricing decisions. The purpose of pricing strategy is to achieve the pricing objectives (Oxenfeldt, 1983; Shipley and Jobber, 2001). According to Tellis (1986) a pricing strategy is a reasonable choice from a set of alternative prices that aim at profit maximisation in response to a given scenario. Most pricing strategies are related to costs, competition or customers (Noble and Gruca, 1999).

Managers in the software industry have traditionally developed their pricing strategies by over emphasising cost-related criteria at the expense of focusing on the value of the product to the customer. Pasura and Ryals (2005) noted that most pricing strategies fail to connect value and price. Similarly, Harmon et al. (2004) stated that firms that invest in a strategies pricing could make better pricing decisions throughout the development process by understanding how customers value product alternatives and arrive at prices that they are willing to pay. In theory, pricing strategies precede methods in the pricing process; in practice, it is not easy to separate the two (Duke, 1994; Atkin, 2002).

Tellis (1986) noted that some pricing strategies are not presented adequately in the literature and as a result, there is an overlapping description of strategies. According to Tellis (1986) a pricing strategy can be broadly classified into three situations. Table 4.2 illustrates the three situations and their strategies. Noble and Gruca (1999) organised ten strategies into four pricing situations (table 4.3). From these tables there is evidence to suggest that Noble and Gruca's (1999) strategy differs somewhat from Tellis's (1986) strategy.

4.4.3.1 Strategy type

This study will focus on a select few strategies from both Tellis's (1986) and Noble and Grucas' (1999) strategy that are particularly relevant to the software sector. Some of the strategies in tables 4.2 and 4.3 are not explained in this chapter, as a result a comprehensive explanation of each of these strategies are attached in Appendix A. Duke's (1994:20) matrix is a modification of Tellis' (1986) pricing strategy matrix. Duke's matrix encapsulates all of the strategies and their terms. Harmon et al.'s (2009) matrix provides a comparison of the pricing models used in the IT service industry.

Noble and Gruca (1999) stated that both penetration and experienced curve pricing involve setting low initial prices for a new product. A penetration pricing strategy is used to keep competition out and to attract the maximum number of users (Noble and Gruca, 1999). Harmon et al. (2004) noted that this strategy targets the mass market with lower prices. According to Holden and Nagle (1998) the main ingredient to successful penetration pricing is a large segment of customers for whom price is the primary purchasing motivation. In experienced curve pricing the initial price is set low in order to build volume and help keep out competition (Harmon et al. 2004). The opposite of the experienced curve strategy is price leader strategy. Price leaders tend to have higher prices than their competitors (Kanliang, 2004). Noble and Gruca (1999) stated that a skim pricing strategy seeks to target those who will pay more since they attach higher value to higher prices. As a result, value-based pricing strategies support the customer's perception of the value of the product, not the product costs (Smith, 1995). Bundling is a special form of combining two or more items and selling it as a package (Atkin, 2002; Kanliang, 2004). Bundling is a common strategy used in the software industry (Pugh, 2002). According to Holden and Nagle (1998) in order to understand each strategy, managers should evaluate their current potential cost

structure, their customers' relative price sensitivities and their current and potential competitors. The final stage of the pricing process is the pricing method.

Table 4.2 Pricing strategies

Pricing situation	Pricing strategies			
Differential	Market discounting	Periodic discounting	Random discounting	
Competitive	Penetration	Experience curve	Price signalling	Geographic
Product line	Price bundling	Premium pricing	Image pricing	Complementary pricing

Adapted from: (Tellis, 1986:148)

Table 4.3 Strategy type

Pricing situation	Strategy type		
New product	Skim	Penetrate	Experience curve
Competitive	Leader	Parity	Low price supplier
Product line	Complementary	Bundling	Customer value

Adapted from: (Noble and Gruca, 1999:439)

4.4.4 Pricing methods

Price setting methods represent explicit steps or procedures by which executives arrive at price decisions (Oxenfeldt, 1983). These methods often consist of mathematical formulas but usually have a certain amount of scope for personal discretion. Wilson (2006) reported that pricing methods refer to the methods by which prices are decided for any particular product or service. A variety of pricing methods has been identified

including cost-based pricing, competition-based and customer-based (Monroe, 2003; Indounas, 2006). These three methods are subdivided as shown in table 4.4.

Table 4.4 Pricing methods

Category	Cost-based	Competition-based	Customer-based
Pricing methods	Cost-plus method	Above the competitors	Value pricing
	Target return pricing	Below the competitors	Perceived value pricing
	Break even analysis	Similar to the competitors	According to the customer's needs
	Contribution analysis	According to the dominant price in the market	

Adapted from: (Pasura and Ryals, 2005)

The types of formulas used can be complex ones such as break-even analysis or simpler ones such as pricing according to the market's average price. It is clear from the literature that relying exclusively on cost, customer or competitive based pricing methods is erroneous (Shipley and Jobber, 2001). A combination of each of these pricing methods needs to be taken into consideration and none of these variables should be ignored during the pricing decision process.

This section has analysed the pricing process which was seen to consist of a four-stage process necessary for helping decision makers set prices. The stages addressed include objectives, policies, strategies and methods. The pricing objective is the logical starting point. These objectives are derived from the company's overall objectives (financially-based, market-based or both). In the initial stage, management set out objectives which they wish to achieve through their pricing policy. This was followed by the development of pricing policies to enable a clear plan for the pricing objectives which was then followed by the selection of appropriate pricing strategies. These strategies include cost-based, competition-based or customer-based methods. Finally, the specific pricing methods appropriate to the pricing strategy were outlined. The following section presents the 3Cs and their impact on the pricing process. The literature indicated that there is a shift in software pricing approaches and this moves

predominantly from a cost-based approach to focusing more on providing value to the customer.

4.5 Pricing decision factors

This section addresses the three methods that need to be taken into consideration when pricing software. Each of these methods are considered to be a key element in the pricing decision process. However, the cost-based and value-based approaches tend to be the most commonly used (Paleologo, 2004). Some authors use the terms market-based and customer-based interchangeably. For consistency, the term customer-based will be used throughout this study.

4.5.1 Three Cs of pricing

Pricing has been compared to a tripod, the three legs of which are costs, customer and competition (Mohr et al. 2005; Avlonitis and Indounas, 2006; Gruman et al. 2007). It is therefore agreed that a solid pricing strategy incorporates all of the three 3Cs (Mohr et al. 2005; Avlonitis and Indounas, 2006).

Marn et al. (2003) stated that the cost of developing and delivering the offering is the starting point, or the floor, of the tripod. Similarly, Mohr et al. (2005) asserted that decision makers ought not to price below that price (in order to ensure a company survival). Mohr et al. (2005) also cautioned against managers basing their prices primarily on their cost structure (mark-up, cost-plus or target return). They added that decision makers often fail to recognise the impact that customer factors have on profitability. Overlooking the impact of the customer on pricing and profitability can be a fatal mistake in high-technology markets, in which customer considerations are so important (Mohr et al. 2005; Indounas, 2006). Customers' perception of value provides the ceiling above which the decision makers should not price (Avlonitis and Indounas, 2006). It has been noted that high technology marketers often find it difficult to understand fully the customers' perception of benefits and costs (Mohr et al. 2005). Competitors' characteristics, such as their prices or their expected reactions, occupy the mid position of the tripod (Avlonitis and Indounas, 2006). Mohr et al. (2005) noted

that competition provides a benchmark against which to evaluate prices. A firm might set prices above, below or equal to competitors depending upon its position in the market. For instance, Dell positions itself as a low price leader while Apple positions itself as a premium pricier.

In addition, Mohr et al. (2005) illustrated some common errors that frequently occur during the pricing decision-making process. Firstly, focusing on costs alone can prove problematic. Similarly, focusing on competition can be difficult to implement in a high technology environment. It might be preferable if the decision makers were able to focus on the customers' perspective of pricing. Pricing that is customer orientated can help create awareness among decision makers. For instance, software costs are relatively unimportant from the customer's perspective of the product/service value (Brierley et al. 2001).

4.5.1.1 Cost-based

Harmon et al. (2004) stated that disputes over pricing are perhaps the most contentious 'hot button' issues that arise between software vendors and their customers. Pricing resistance arises from high software prices and perceptions that the vendor puts its own interest ahead of the customer. Sink (2006) emphasised that there are several different costs associated with managing a software company. Such costs that ought to be borne in mind by management and customers alike include the following: development costs, cost of goods, technical support, cost of selling, cost of ownership and overheads. A significant amount of attention will be devoted throughout this section to cost plus pricing due to its frequent use in the software industry and subsequently, the need to move from cost to value-based methods.

Companies operating in many traditional industries adopt a classic approach to the pricing problem called 'cost-plus' (Sink, 2006; Pasura and Ryals, 2005). Arguably, software companies are particularly unsuited to using this method because of factors such as uncertain demand, high development costs and short lifecycle (Pasura and Ryals, 2005). Carson et al. (1998) found that firms that did not follow a cost plus approach, tended to take market considerations into account, looking at what the market was prepared to pay and setting their prices accordingly.

4.5.1.2 Competitor-based

Competitive pricing almost guarantees that customer will pay the asking price because prices are set relative to the competitor (Pasura and Ryals, 2005). A competitive pricing strategy matches either a competitor's prices or prices higher or below the competitor (Noble and Gruca, 1999). Shipley and Jobber (2001) presented several arguments in favour of this competitive approach, such as its simplicity to administer and the fact that it reduces the risk of the competitor becoming isolated after a price change. Despite the simplicity of following a competitive approach, there are several limitations associated with this method. Firstly, it ignores opportunities for using price initiatives; it also ignores the firm's costs; its customers' demands; and a company's objectives (Cordes et al. 1999). Therefore many writers contend with the view that it is advisable for managers to understand their competitors' behaviour and act or react accordingly in order to remain competitive in the market (Kortge and Okonkwo, 1993; El-Ansary, 2006).

Holden and Nagle (1998) stated that instead of competing on price alone, managers could develop solutions to enhance the competitive and profit positions of their firms. These solutions could add value to their offering and a greater understanding of how their customers value different products. Two of the most popular methods of adding value to a product/service are to improve the quality or offer a differential feature that their competitor does not offer (Carson et al. 1998). Neither the cost-based methods nor competitor-based methods take the customer into account (Pasura and Ryals, 2005). To counteract the limitations of relying solely on either of the previous approaches a third approach is presented. This approach attempts to incorporate the customers' perspective and aims to provide them with value for their money.

4.5.1.3 Customer-based

In an ideal world, the price would be different for every customer. By charging each customer a different amount, this would enable sellers to extract the maximum amount that the customer is willing to pay. The most common pricing approach for software applications have multiple-tiers. For instance, multiple-tiers approach offers the following choices to the customer: a low-tier, standard edition, mid-tier, professional edition and top-tier enterprise edition (Sink, 2006). Avlonitis and Indounas (2004) found that the managers were more interested in satisfying their existing clientele's

basic needs and attracting new customers, to ensure their long-term survival in the market, than covering costs. Helgensen (2006) concurred with Avlonitis and Indounas (2004) and stated that satisfied customers tend to be loyal customers. As a result of customer loyalty, companies tend to get repeat business, which results in profitability.

However, Gruman et al. (2007) warned that customers are becoming more demanding and as a result they frequently desire to have increased input into the type of software offering that they will receive. They want software that will meet their individual requirements and help to add value to their company. It has been found that customers are satisfied when products and services meet their needs, desires and requests (Avlonitis and Indounas, 2004). Steele (2003) stated that customers might perceive value in three ways: functional (what can the product do); economic (how it saves time and money); and emotional (how it connects with the user). Of the customer-based methods, value pricing is the most common pricing method.

Value-based pricing usually refers to the setting of a price as a function of the expected value to be derived from the products or services (Nagle and Holden, 2002; Hinterhuber, 2004; Ding, 2007). Alunkal (2006) acknowledged that value pricing implies different things to different people. Reaching a value price point depends on demonstrating the value/benefit of the proposed solution and price to the customer in terms of customers' own business (Pasura and Ryals, 2005; Alunkal, 2006). A product's economic value is the price of the customer's best alternative which is known as the reference value. In other words, value-based pricing can be thought of as the amount of money the customer is prepared to pay for the offering. Docters et al. (2004:16) referred to value-based pricing as '*one of the best pricing methods*'.

Hinterhuber (2004) indicated that theorists interpreted the concept of customer value in two different ways. Firstly, according to some authors, customer value is '*the difference between perceived benefits and sacrifices*'. While others believe customer value is the maximum amount a customer would pay to obtain a given product, that is, the price that would leave the customer indifferent between the purchase and forgoing the purchase. Hinterhuber (2004) acknowledged that the concept of customer value is frequently used in customer practice, but rarely defined and quantified. Hinterhuber (2004:5) believed that it is as

...important to create customer value by innovative products and services, as it is important to quantify and communicate that value of these products to customers through pricing and marketing activities.

He also asserted that *'without knowing a product's value profitable pricing decisions cannot be made'* (Hinterhuber, 2004:5). Similarly, Nagle and Cressman (2002) asserted that value-based pricing will have limited success unless a software company's marketing programme effectively communicates value to their customers. In other words, pricing is about capturing value and it is important to understand how much the customer will pay (Davey et al. 2006). Yet, most pricing mechanisms today focus primarily on information and processes rather than what attributes the customer values. Mohr et al. (2005) added that real value is found in developing long-term relationships with customers. Additionally, Monroe (2003) argued that most companies rarely measure the perceived value the customer obtained by using the firm's products and services. According to Alunkal (2006) managers need to 'tease out' the core values that are important to their customers. They need to understand what it is that customers believe is of value to them. They need to use this knowledge and communicate the value effectively to the customer. Software value-based pricing therefore must be expressed in terms of the business objective that it supports (Alunkal, 2006). Similarly, Hansen and Solgaard, (2004) suggested that value-based pricing combines pricing with the rest of the marketing mix by looking at the customer's perception of the value of the product and service.

Mohr et al. (2005) outlined three steps to customer orientated pricing. Firstly, managers need a greater understanding of how a customer will use its products bearing in mind that each end user may have different needs. Secondly, managers need to focus on the benefits a customer receives from using its products. There are various benefits a customer can obtain from using a product which include, functionality, operational, financial and personal. Mohr et al. (2005) added that high technology firms mistakenly often stress the 'cool technical wizardry' of their inventions and find it difficult to identify the real benefits customers receive. Thirdly, calculate all relevant customer costs such as product purchase, transportation, installation and maintenance and finally, understand how customer trade off costs versus benefits in the purchase decision. Sink (2006) largely concurred with Mohr et al. (2005). These points provided by Mohr et al. (2005) may help managers comprehend that pricing issues

need to be taken into consideration, that they also need to be addressed early in the design phase and not left until after a product is developed. Therefore, there is evidence to suggest that a value-based pricing structure is not by itself sufficient for pricing (Nagle and Cressman, 2002). There is evidence to suggest that a combination of the three methods need to be adopted in software companies (Davey et al. 2006).

4.5.2 Combination of the three methods

It has become apparent recently that none of the 3Cs described above are likely to prove sufficient in meeting a software company's pricing objectives in isolation. Therefore, in order to counteract the limitations of any one approach it may become necessary to use a combination of two or more methods (Indounas, 2006). In other words, instead of pricing being based on a product's costs managers estimating what they think their customers will pay, instead prices ought to be a function of the value the customer attaches to the product. It is imperative that software managers understand how their customers perceive value (Cressman, 2006). Therefore, a more holistic approach is encouraged by incorporating each of the 3Cs (Harmon et al. 2004). The process for setting prices within that structure must be proactive (Nagle and Cressman, 2002). However many companies have no formal process for setting prices, making price changes or granting price exceptions (Davey et al. 2006).

In summary, all three methods (3Cs) need to be addressed throughout the product/services life cycle. If managers address price issues late in the cycle (before launching the product), they run the risk of not taking some, if not all of the factors into consideration. If managers think of pricing as a process of capturing value then the pricing strategy involves managing everything from the customer's willingness to pay to the value that they receive from the offering.

4.5.3 Moving from cost-based to value-based

Mohr et al. (2005) noted that prices must incorporate both the perceived value of the product for the customer and the cost of serving a particular customer. The academic literature provided ample evidence as to the importance of moving from a costs focus to adopting a customer focus (Sink, 2006). According to Harmon et al. (2009) the software industry is maturing and the focus is on the vendors to shift from cost-based

approaches to providing greater value to their customers than they have done in the past. Consequently, a cost-based pricing approach focuses primarily on covering costs incurred in the product development, therefore, less attention is given to their customers' perceptions. Conversely, a customer-based pricing approach devotes relatively more attention to the customers and values their opinions. According to Indounas (2006) managers should apply value-based pricing, which takes into account the value attached to the product rather than reflecting on the cost of a product. Thus, this results in a price reflecting a product's or service's value as opposed to covering costs. The sequence of the cost-based and value-based is illustrated in the figure 4.2. It is clear that each approach in figure 4.2 has a different focus in mind and in general, this is based on a company's overall objectives.

Figure 4.2 Cost and value-based pricing

Cost-based pricing	Product → Cost → Price → Value → Customers
Value-based pricing	Customers → Value → Price → Cost → Product

Adapted from: (Harmon et al. 2009:1)

With the perceived value pricing approach, the vendor assesses the value of the product to each customer and charges a price based on the customers perceived value (Kortge and Okonkwo, 1993). According to Alunkal (2006) there is a need for software development to move towards a value-based approach. This will require working closely with customers to identify their problems so that technologies can be identified to suit the customer's needs (Rosen et al. 1998). Similarly, Harmon et al. (2004) added that software should be designed with the knowledge of how customers value specific attributes and how much they will pay for them. In addition, practitioners have recognised the advantage of the value-based pricing strategy (Ding, 2007). The support of customer value-based pricing strategies among academics and practitioners is based on general recognition that value-based pricing sustains profitability (Hinterhuber, 2008; Rosen et al. 1998).

According to Rosen et al. (1998) the perspective of managers involved in developing innovative products often seems to be at odds with the perspective of the customers and table 4.5 illustrates this point. In general when customers purchase software they tend to focus on the issues such as a product's features, what the consequences are of using those features and how the consumption experience fits into their values. On the other hand, managers are more concerned with design and costs. Therefore, there is a need for managers to have a greater awareness of their customers' needs and expectations.

Table 4.5 *Customer focus versus managerial focus*

Customer focus	Managerial focus
Features	Design
Consequences, values	Cost
Ease of operation	Ease of production
Unique qualities	Unique technologies
Consumption	Production

Source: (Rosen et al. 1998:2)

This section has analysed the pricing decision factors that need to be taken into consideration when setting prices. The three factors that affect pricing decisions were addressed. It is clear that relying exclusively on either cost-based, customer-based or competitive-based pricing approaches is erroneous. The collection of solely cost related information without regard to pricing objectives and changing market opportunities no longer provides the detailed data necessary for critical pricing decisions. Thus, the impetus for software managers to move from cost-based approaches to providing customer value was analysed.

4.6 Price setting

This section briefly describes the procedures that are involved in the price setting process. Negotiations and software pricing will be addressed in this section. Price setting methods represent explicit steps or procedures by which executives arrive at price decisions (Oxenfeldt, 1983). These methods often consist of mathematical formulas but usually have a certain amount of scope for personal discretion.

In general, pricing decisions are difficult to make because of inadequate information, time pressure, corporate demands, unpredictable customer situations and overhead costs (Atkin, 2002). Wilson (1972) cited in Atkin (2002) observed that pricing is an *'exercise that must be undertaken on two dimensions'*. Firstly, it is necessary to think in terms of establishing the right price and secondly using the correct methodology for arriving at it. In other words, the right price generally refers to a firm's strategic objective and goal. On one level, the pricing process takes place within a framework where there is a variety of factors, both internal and external, on another level the pricing process involves applying coherence in determining the final price at which the product will sell.

Additionally, Pasura and Ryals (2005) asserted that there are two approaches to pricing. One is from the company side and the other is from the customer side. From an internal perspective, managers tends to focus on product issues and competition and from an external perspective issues such as instance market size and competition are addressed (Hasted, 2005). The customer approach to pricing addresses value-based pricing. In general setting prices based on value to the customer is more difficult because the customer may perceive the value of the offering to be less or more than the cost of it (Docters et al. 2004). Consequently, managers often place pricing high on the list of priorities and yet rarely dedicate significant resources such as funding and manpower to the pricing process (Myers, 1997). In addition, according to Gadde et al. (2002) price setting requires a negotiation between a buyer and seller. Prices are heavily conditioned by whether they are declared (preset) or negotiated (Atkin, 2002). At one extreme, the decision maker involved in negotiations makes a deal with each customer. At the other extreme, the price setter is responsible for setting prices

(fixed/list) that will remain in place until there is a change instigated. As a result, the negotiation approach is more flexible than the price setters approach.

4.6.1 Negotiation

The negotiation process describes who and what are essentially involved in the interaction. Both parties i.e. buyers and sellers have criteria that they want to be met in order to be satisfied with the outcome. If either party is dissatisfied with the outcome, the negotiation may breakdown and may result in a failure to reach an agreement (Rinehart and Page, 1992). Normally the outcome of the negotiation is determined by bargaining between the buying and selling units (Elfatry and Layzell, 2002; Cavusgil, 1986). Rinehart and Page (1992) stated that interaction during negotiation generally consists of each party attempting to influence the nature of the relationship in order to increase their relative benefit from the negotiation. According to Carson et al. (1998) negotiation often plays a key role in establishing prices and getting business for the small firm.

As the software industry is evolving, there is a shift in the way software companies are negotiating. As a result, the role of the sales person is changing. Traditionally the responsibility of the sales person was to get 'large sale deals'. Now the sales person is required to target customers who will bring in 'ongoing sales' i.e. revenue. Therefore, there is a greater emphasis on software sales personnel to focus their attention on maintaining lasting relationships with their customers. By focusing on the customer, this will provide recurring revenue for the software company. Thus, there is a need for sales staff to be knowledgeable about their products and services unique worth and have the ability to communicate that value to their customers. This it appears is key to successful software negotiations. According to Cressman (2006) it is vital to understand what one can deliver that is most valuable to a customer and how your offering differs from that of the competitor. He also advised that managers should communicate and emphasise their value delivery before they introduce and discuss price with the customer.

Typically, traditional software vendors and their customers negotiate on such things as warranties, maintenance and support, the terms and conditions of the licence,

ownership of the software, payment terms and confidentiality. Usually, warranties guarantee that the software will perform as agreed. Failure to do so ensures that the customer is entitled to fixes. After the warranty period ends, usually the customer will purchase maintenance and support (Kittlaus and Clough, 2009). Maintenance and support are part of most software sales and generally revenues from support are between 15% and 25% of the original price (Chavez et al. 1998; Mitchell, 2005).

4.6.2 Software pricing

Mohr et al. (2005) argued that one of the most significant factors software managers face is the inevitable decline in prices over time. According to Moore's Law, improvements in technology double a product's performance at no increase to price (Mohr et al. 2005). As a result, price setting is a difficult and individualistic process for each software company and it becomes even more difficult for managers who price new products and services as opposed to pricing existing products and services (Monroe and Della Bitta, 1978; Bergstein and Estelami, 2002). As novel software offerings often lack comparable data (such as cost and demand) on competing offerings due to their uniqueness (Wilson, 2006; Kittlaus and Clough, 2009). Setting prices for existing products is relatively straightforward because a market data is often available.

One approach to the pricing of new products in the past has been the intuitive approach, in which the decision maker makes a subjective assessment of the situation and sets a price based more on instinct than on rationality. This approach has been surprisingly popular among managers and is commonly used (Monroe and Della Bitta, 1978; Hinterhuber, 2008). There is evidence to suggest that an intuition-based approach to pricing new products is not effective and as a result, a value-based approach would be more superior (Hinterhuber, 2008). Although, one limitation of a value-based approach is that it has not been adopted widely in practice (Bergstein and Estelami, 2002). Therefore, it remains relatively untested despite its theoretical appeal. According to Alfred (1970) when a new product is introduced a company usually has no guidelines as to what the price ought to be. According to Oh and Lucas (2006) a firm can choose to be a low-cost provider or price leader in its market, striving to keep its prices lower than those of the competitor. An alternative strategy is to post high prices to attract customers who do not want to search for other prices or bother with

price comparisons (Oh and Lucas, 2006). Sometimes a higher price can be attractive to customers who are seeking either exceptional quality or prestige (Choudhary, 2007a). Similarly, Sink (2006) added that if prices are high a message is sent that the product is valuable, consequently this may make the product more desirable. However Marn et al. (2003) noted that where misjudgements were made in terms of prices set they generally related to a price that was too low rather than a price that was too high.

This section focused on the negotiation process and software pricing. The negotiating process described who and what are essentially involved in the interaction, as both parties have criteria that they want/need to be met in order to be satisfied with the outcome. In general, sellers want to maximise their profits and buyers want to minimise their costs. The software pricing segment highlighted some of the difficulties associated with new product pricing, such as the lack of comparable prices in the software market place. The following two sections provide insight into software licensing methods adopted by both software product and software service firms. Both of these sections draw on software licensing material that was introduced in chapter 2 and they provide further explanations of licensing terms.

4.7 Product pricing models in the software industry

The objective of this section is to present the various types of software product licences used to transfer the software product from the vendor to the customer, while protecting the software code from piracy. The role of pricing in any market is to transfer rights of the product to the buyer in exchange for payment (Mohr et al. 2005; Murtojarvi et al. 2007). Traditionally the transfer of the complete rights of software involves transfer of the entire source code to the buyer (Ma, 2007). This transfer is conducted via licensing agreements (D'Andrea and Gangadharan, 2006). There are many different types of software licence agreements and they vary from highly restrictive usage to usage without restrictions. According to Ma (2007) each licensing agreement gives the user the right to use the software under that licensing agreement's terms and conditions. The software licence agreements are typically drawn-up based on factors such as time, usage or volume (Steele, 2003; Ma, 2007). According to Sink (2006) there is no magic recipe that will determine the best pricing formula for software products. Therefore,

software vendors offer many different pricing schemes in order to market the offering (Choudhary, 2006).

Some of the more common software licensing models are as follows: perpetual, trial, server (CPU), packaged, network-based, subscription-based and utility-based, enterprise and site (Steele, 2003; Ferrante, 2006; Manoharan and Wu, 2007). Within these categories, there are further distinctions. Typically, users are classified as single users, multiple users, concurrent users and unlimited number of users (floating). Despite the decline with traditional licences, perpetual licences continue to dominate the software market, while subscription and utility-based methods are rapidly gaining share (Konary et al. 2004). Ferrante (2006) categorised the different licences into the traditional model, the network model and the newer model. Table 4.6 outlines each of the licences under Ferrante’s categories. Section 4.8 will discuss the newer model (service) licences.

Table 4.6 *Traditional model, network model and newer model*

Traditional model	Network-based model	Newer model
Packaged Server (CPU) Perpetual Site licence Free trial	Concurrent (floating/network) Usage-based	Subscription-based Utility-based

Adapted from: (Ferrante, 2006)

4.7.1 Traditional models

Traditional models include packaged, server, perpetual and trial licences. Firstly, a packaged licensing model allows a single licence to be purchased for a single user or computer (Choudhary, 2007a). Generally, this licence is enforced through locking for example, node locking or key expiration (activation code) to protect the software from piracy (Choudhary, 2006). Secondly, a server-based licence is a Central Processing Unit (CPU) licensing model. According to Kittlaus and Clough (2009) there are two approaches to CPU model which are as follows: counting by core which charges

customers as if each core was an individual processor and counting by socket whereby users are charged per connection. A server/CPU licence is determined based on the number of processors running the software. Server licences are popular in large organisations and all users have access to the applications that they need. Thirdly, the perpetual models are permanent licences purchased upfront. The customer owns the rights to these licences (Zhang and Seidmann, 2009). Typically, customers purchase technical support and version updates for some predefined period (in many ways they are subscription-based licences but without the automatic updating) as part of the licence agreement (Steele, 2003; Ma, 2007). Fourthly, a site licence allows the software application to be used across the company network by an unlimited number of users/computers (Steele, 2003). Finally, trial or demo licences allow the user to use the software before they purchase it. Generally, this model does not come with any support and disables within 30-60 days of activation. Trial licences give customers the opportunity to investigate if the software is suitable for their needs (Ferrante, 2006). As a result, most trial software applications are limited in terms of usage or functionality. However a disadvantage of this method is if the functionality of the software is sufficient for the user they may continue to use the software for free and never make a purchase.

4.7.2 Network-based model

The network-based model installs copies of the software onto individual desktops. Network licences are commonly used in large organisations where users are separated physically (Schroeder, 2003). Fixed and concurrent licences that are also known as network named licences or floating licences are two of the more common network licences. Fixed licences give access rights for single users for an identified workstation (Murtojarvi et al. 2007). The software is installed on an individual hard drive. Fixed licences are popular in the case where the software is for specialised tasks performed by a limited number of experts (Cusumano, 2007). On the other hand, concurrent licences (multiple-user) are normally installed on a server that keeps track of the number of active users. A concurrent licence allows the customer to install the software on many computers and many users have access to the software (Steele, 2003). Although, the number of concurrent users is fixed they restrict the number of users that can access the application at a given time (Bontis and Chung, 2000). The price structure for a

concurrent licence has a tendency to charge users based on actual usage. The customer pays for only what they have actually used on a transaction basis on their peak user predictions, not their average user number.

4.7.3 User-based licences

According to Harmon et al. (2009) user-based licences are sub-divided into the following classification: per-user, high-water-mark pricing and per seat and per-user licences allow individual users to access the product or service and usage is unlimited. High-water-mark pricing charges are based on the maximum number of concurrent users over a given period. Per-seat is similar to per user except the licence is assigned to a particular computer.

A survey on pricing and licensing trends conducted by Macrovision, SIIA, SoftSummit Silicon Valley Product Management Association (SVPMA) and Centralised Electronic Licensing User Group (CELUG) indicated that the most prevalent licensing models used in 2006 were as follows; seat (per server, per machine), concurrent user, seat (named user), processor, usage matrix, financial matrices and processor core (SIIA et al. 2007). Per seat pricing model (48% of respondents) and concurrent users (32% of respondents) were indicated as the top two pricing models. They predicted that the usage-based matrix-pricing model would increase popularity as SaaS grows in popularity. Similarly an AMR research report published in 2005 reported the following results: 29% of respondents use the traditional up-front licence fee; this was followed by 26% of the respondents who indicated that they use site licences; 23% of the respondents used on-demand or usage-based licences and only 15% desired term licence (Cusumano, 2007).

The software industry is moving from offering products to services. In order for software managers to understand price issues, they will need literature that addresses pricing from both products' and services' perspectives (Kittlaus and Clough, 2009). The following section outlines software service pricing models. This section incorporates the various different licences that are currently used and licensing agreements that have been used in software licensing.

4.8 Service pricing models in the software industry

Nearly a decade ago almost all software product companies sold software through licences and the vendors performed local installation on their clients' premises. Now the customers have a choice from a few different models among them subscription, advertising-based and transaction-based (Cusumano, 2008). According to Langedijk (2006) the SaaS model is having a significant influence on the way that software is currently charged. In place of an upfront payment in the form of a licence fee, the cost of the service, upgrades, backups and support are all included in a specific fee (subscription). This fee is generally based on the number of users, data traffic, data storage, functionality level or a combination of all these four parameters (Langedijk, 2006). According to Turner et al. (2003) and Foley (2004) the reason for the move towards SaaS is that the pricing method must make sense. In other words, it needs to be fair and ultimately leads to significant cost savings for customers compared to traditional software delivery.

Software vendors can either express their prices as a function of the amount of use (usage-based) of the software or apply a pricing strategy that is independent of the product usage (fixed-based). Fixed fees ensure that all users pay the same price for unlimited usage of the application (Sundararajan, 2004). Fixed fee users generally pay a predetermined monthly fee based on the number of users supported. It has been noted that fixed fee appears to be the dominant pricing scheme in the software service industry (Bala and Carr, 2005; Harmon et al. 2009; D'Andrea and Gangadharan, 2006). A usage-based pricing model depends on the amount that the customer uses during a period. A usage-based pricing scheme is a good indicator of value because it reflects how much users use the product, although pricing based on usage may discourage users who may use the service frequently or use large amounts. For that reason, both methods appeal to certain audiences (Foley, 2004). Lochhead cited in Gilbert (2004) criticises the software industry for pricing models that give software companies little incentive for ensuring customer satisfaction. He said that the problem with the industry is that it is dominated by a few very powerful software companies that dictate terms (perpetual licences) to their customers. He advocated the use of subscription-based pricing as this model keeps vendors focused on keeping customers content.

4.8.1 Subscription-based model

Subscription-based licensing which is also referred to as a term, annual or monthly allows the customer to purchase licences for a fixed fee per term and pay in instalments. Rather than selling products and services individually, the subscription-based model allows software to be sold as one package (Bala and Carr, 2005). The concept of subscription is not new; subscription pricing makes it easier to pay for expensive goods or services because it is paid for as set intervals/term. After the term is over the customer either must renew the contract or cease to use the software product (Harmon et al. 2009). This approach seems to offer more flexibility to customers, because it avoids large upfront fees and allows the customer to pay in smaller payments spread over time. According to Cusumano (2007) a second variation of subscription licence is for a shorter term such as on a monthly basis also known as per-user-per-month (PUPM).

A limitation of the subscription-based method is that it may be unsuitable for both the customer and the SaaS vendor. This means that the vendor may be at a loss if their customers have a higher usage requirement. Alternatively, the customer may be at a loss if they use less of the service at certain intervals. Typically, software vendors that offer fixed payment methods earn more profit with what is known as *fixed up-to* a certain amount (FUT) over usage-based methods (Sundararajan et al. 2004; Choudhary, 2006). This is because fixed costs are constant and marginal costs of production are negligible (Choudhary, 2006). A more appropriate measurement for software vendors would be to understand their customers' usage patterns and devise a matrix based on their business to determine actual usage.

4.8.2 Transaction-based/utility/usage

A third variation of subscription-based licensing is a usage-based licence. Typically, this is a one-year licence, with the fee based on some metric such as the amount of revenue handled by the software or the number of users. IBM has promoted a new way to provide services called utility computing. Utility computing delivers information services when needed, in such a way that customers neither incur the high fixed costs of purchasing hardware or software, nor commit to long-term fixed-price. Instead, they

receive the service they need and pay only for what they use which is referred to as pay-per-use. Utility computing services appeals to customers financially, as the cost to the customer is proportional to the volume of transactions performed (Paleologo, 2004). According to Ferrante (2006) with utility-based licensing the software vendor is responsible for devising simple data reporting processes. The customer is encouraged to keep usage records and submit them to the vendor during the agreed billing period. Usage-based transactions incur costs a seller must monitor and record the usage pattern of each customer and produce an itemised statement accordingly and as a result the customer bears these costs (Sundararajan, 2004). Consequently, there are transaction costs associated with administering and usage-based pricing scheme (Kittlaus and Clough, 2009). This method is gaining in popularity because some customers want to see a link between what they use and what they pay. Although, there are some limitations with per usage some customers may want to know what their costs are in advance and it might limit the usage of software to keep their costs down. To overcome this limitation some software vendors offer a service where utility is prepaid in advance of usage. This method is a good indicator of value as only the required number of users pay for the usage of the software.

4.8.3 Free/advertising

The free model allows the customer to use the software for free and this is not to be confused with free OSS. In other words, there is no direct cost to the customer although they pay indirectly through advertising, for example Google use the free approach to create revenue. Google sells advertising space on web pages and they generate revenue by selling their search service. According to Cusumano (2008) there are several pricing models for online advertising. For instance, the advertising pricing models could be based on cost per mile (CPM), cost per click (CPC) or cost per acquisition (CPA). CPM model charges are based on the number of times a banner add is shown to the Internet user. The CPC model requires payment each time a page is 'clicked'. The CPA model only requests payments that lead to revenues. This means that, the 'clicks' lead to making a transaction (Kittlaus and Clough, 2009).

This section discussed three different software service pricing models namely, subscription, transaction and advertising. These methods account for the way firms

adopting the SaaS model will, subsequently bill customers for the usage of their service. In general, SaaS billing is in proportion to actual use or on demand rather than traditional perpetual licence where the customer was billed on the costs associated with the development of the software application. The per usage method appears to be favoured over the fixed method as customers only pay for what they use as opposed to a set fee. A review of the literature revealed that this section on software service pricing models is not inline with the pricing methods illustrated in Shipley and Jobber's (2001) pricing wheel, which is illustrated in figure 4.1. This however suggests there is a gap in the software pricing literature that warrants attention.

4.9 Cost-based to value-based pricing

This section aims to synthesize software product pricing and software service pricing from cost to value-based methods. The section presents both cost and value-based pricing methods in order to provide a clear overview of the methods used by software vendors. Table 4.7 illustrates the cost-based and value-based pricing methods.

Table 4.7 *Software pricing methods*

Cost-based pricing	Value-based pricing
Flat or subscription-based pricing	Usage-based pricing
Tiered pricing	Free
Performance-based pricing (CPU)	
User-based pricing	

Adapted from: (Harmon et al. 2009:5)

In general, the cost-based methods benefit the vendor as they are drawn up to ensure that all costs are covered. On the other hand, the value-based methods are more customer focused. In other words, they aim to align customer needs and wants with price, in order to satisfy customer expectations.

4.9.1 Cost-based software method

A flat price approach is a cost-based method as it allows the customer unlimited usage (Harmon et al. 2004). The primary drawback of this method is that some customers pay more for the same software while others receive discounts on large purchases. There is no logical reason for a customer to pay for unused software (Schroeder, 2003). Flat pricing simplifies the vendor's pricing model since the price is set to return a dependable but fixed rate return (Munnukka, 2004). Tiered pricing is a cost-based method and it attempts to package software benefits according to user requirements and their willingness to pay (Harmon et al. 2004). In other words, tiered pricing targets customers who have used the application. Adobe does not charge customers for creating a PDF file but charges customers who alter them. Millions of Instructions Per Second (MIPS) pricing (also known as CPU) is another cost-based method, where software prices are based on the theoretical output i.e. amount of material processed on the system on which the software is running. User-based pricing is a cost-based method as the customer is charged based on the number of users that use the software (Munnukka, 2004).

4.9.2 Value-based software pricing

The value-based methods include usage-based and free software. Usage-based pricing charges the customer based on what they have used, in general this method is independent of the vendor costs Cusumano, (2007). Free or demo software are considered value-based methods as they allow the customer to use the software before they purchase it (Ding, 2007). The following section presents the emerging trends in software pricing and the growth of OSS.

4.9.3 Emerging trends in software pricing

The shift from large up-front licence to recurring fees means that software vendors will not have the same level of reserves to fund new product development. As a result, vendors will have to look at other ways to augment their businesses. Term licences can be treated in two ways. Firstly, software vendors can recognise all the revenue at once; secondly, the vendor may agree to provide the software (including updates) over an

agreed period (for example, two years) and the revenue would be recognised ratably over the period.

Consequently, there are many challenges for older software vendors to adapt their existing pricing to the new model (Tarzey, 2006; Zhang and Seidmann, 2009). In addition, many of the vendors that have adapted to the new model have found that they and their customers are satisfied with it. In general, the vendor is satisfied because of the stable cash flows and higher revenues than the traditional model (Cusumano, 2008). In addition, there are several potential scenarios for the future of software licensing and there is no doubt that the future will be challenging for all software vendors. It is possible for most vendors that the future of software licensing will be based on either subscription-based or utility/transaction-based pricing (Konary et al. 2004), while larger organisations, such as Google, will continue to use the advertising model. There is evidence from both the software literature and from practitioners that the subscription method will be the dominant choice for some software vendors (Zhang and Seidmann, 2009). Similarly, Cusumano (2008) advocated that the future of software will be either free or inexpensive SaaS or free advertising-based models. In contrast, Campbell-Kelly (2009) argued that despite SaaS advocates indicating that the future of software will be SaaS, history shows that one cannot be sure that this trend will last indefinitely. This is especially true in the advertising arena as it is possible that it will be affected during an economic downturn when advertising may be cut.

In general, many authors argue that the trend is advancing towards cheaper software than what is available today, combined with less costly ways of delivering software over the Internet. Thus software vendors can reach a larger segments of the market. In order to remain competitive vendors ought to find ways to continuously provide value to customers. One way of providing value is to help keep their customers' costs down and provide the customer with quality software (Choudhary, 2007a). That way a customer will accept a model where they essentially buy into the product every month. It is essential that software vendors do not underestimate the importance of providing continuous value. The key for a software vendor is to determine which is the most appropriate licensing method for their customers, the product and the vendor company. Either way on-demand computing offers tremendous advantages over traditional methods (Campbell-Kelly, 2009).

4.10 Conclusion

This chapter aimed to analyse the dimensions of software pricing. It initially presented an overview of general pricing literature and evolved into a discussion about software pricing and licensing. A review of the literature demonstrated that software pricing is on the periphery of many boundaries, as a result it is addressed from different perspectives. Some of the fundamental issues of pricing are as follows: to understand costs, monitor competitors and respond to customers' needs and wants. Involving many people from different areas to contribute to the pricing process can facilitate pricing and this will help to create a higher awareness of pricing issues throughout the organisation, which in turn, should help ensure that managers accomplish their goals.

It was generally recognised in the literature that software costing was of significant importance and as a result, the literature was then presented on software cost estimation (SCE) models. Secondly, the pricing process framework was described with the aid of Shipley and Jobber's (2001) pricing wheel. This section plays a significant role in addressing the pricing decision process and helps frame four interrelated stages of the process. The literature revealed that pricing objectives need to be clearly understood in order for software managers to make informed pricing decisions based on the overall company objectives. Thirdly, the next section focused on the 3Cs and the ongoing shift in the software industry, which focuses more on providing value to the customer as opposed to covering company costs. Therefore, one of the most important and commanding issues that emerged from this section was the awareness of the need to focus more on the customer as opposed to covering costs.

The second half of the chapter was concerned with products and service licensing models used in the software industry. There is modest research in relation to software pricing. Perhaps this may be because software pricing is notoriously difficult to research because of the commercial sensitivity of the issue (Pasura and Ryals, 2005). The literature showed that there are numerous licences for the customer to choose and this can be a daunting task for software customers. In general, the software industry is maturing and new models have been introduced such as SaaS. SaaS vendors' are putting more emphasis on recurring revenues, and as a result, it is believed that subscription-based and utility-based licensing is the way forward. The SaaS model

highlights the importance of aligning a customer's perception of value with the product and service offering.

This chapter has sought to demonstrate why pricing is perhaps one of the most complex and demanding element of any software company and it is also one of the least clearly understood of all the tasks facing software managers. The following chapter explains and justifies the methodology that will be used to conduct this research. Particular attention will be given to the researcher's philosophical position. This position lays the foundations for the methodology chosen to undertake the research.

Chapter 5

Methodology

Chapter 5 Methodology

5.1 Introduction

This chapter explains and justifies the methodology that was used to conduct research on pricing in the high-technology sector in Ireland and Newfoundland. There is an increasing interest in pricing as the literature indicates that this is a neglected area, especially in the high-technology sector (Carson et al. 1998; Myers et al. 2002). For this reason this piece of research is important now because it will help bridge the existing gap between current trends in pricing in this sector and what decision makers want to know about pricing practices and trends.

The chapter addresses the following: the research problem, the purpose of the study, the research question with its aim and objectives and an outline of the conceptual framework. It draws on the different research philosophies that every researcher needs to be aware of before conducting research. The research process is detailed with the aid of the '*research process onion*' as described by Saunders et al. (2003). The research process onion diagram outlines the ongoing philosophical debate between the social paradigm and scientific paradigm. There is focus on how the methodology chapter was drawn from an ontological, epistemological and a human nature perspective. This chapter combines techniques used to enquire about a specific situation which is the research question. Particular attention was given to the researcher's philosophical position. This position lays the foundations for the methodology chosen. It addresses the qualitative and quantitative divide and outlines the benefits of combining both perspectives to enhance this study. It briefly describes the various data collection methods that could have been chosen to conduct this piece of research by describing their advantages and limitations. It then outlines why this research will be suited to a mixed-methods approach, drawing on questionnaires and interviews as suitable survey methods approach. A discussion of how access to the target population was granted is presented. This is followed by a discussion on the suitability of both the questionnaire and interview candidates for this particular piece of research. The research process is presented in four phases. Phases 1 and 3 are the pilot phases; they preceded both the questionnaire (Phase 2) and the interviews (Phase 4)

before they went live to the target audiences. Ethical considerations are presented along with the key issues of trustworthiness: reliability, credibility and validity. These are important issues and this section details how they were addressed. Finally, the researcher acknowledges that this study had methodological limitations both within and outside the researcher's control, for instance, sample size.

5.2 Research problem

This research examined the pricing practices of indigenous Irish and Newfoundland software technology start-up companies. While there has been some coverage of pricing practices in the marketing literature, this area tends to be neglected and is usually the last element of the marketing mix to be addressed according to Kotler (2000). Technology Products can be categorised as new-to-the-world products according to Bergstein and Estelami (2002) a fundamental concern in developing such products is the appropriate pricing of these products. The specific area of pricing technology products is under researched. Many start-up companies fail due to factors such as poor management skills and lack of commercial experience and these weaknesses manifest themselves in the approach to pricing adopted by them. Bergstein and Estelami (2002) stated that an intuition-based approach to new product pricing may not accurately represent the product's true price potential. It is anticipated that the findings from this research will synthesise the pricing process from the traditional pricing model (perpetual licences) and that of the SaaS model (subscription fee).

Thus, the study investigated the range of pricing practices adopted in this sector and the relative importance and interaction of the variables involved. It examined how judgements were made by commercial software managers. The overall research objective is to investigate the nature of pricing and deepen our understanding of this area. It is anticipated that the findings and conclusions from this research will provide a template for academics, government bodies such as the Irish Software Association (ISA) and for decision makers involved with software pricing. Such a template will be of significant importance to those involved in the technology sector, as it will provide assistance and guidance to those starting to sell/rent their software offering. Such a

template will benefit both businesses and the economy in the long term. Pricing practices employed by the interviewed companies were analysed and the results of such analysis will be of keen interest to start-up companies that seek to have regard to industry practice.

The following section outlines the research question deployed to carry out the current research. It is necessary to specify the research question precisely as it enabled the researcher to focus on the research topic and help choose suitable methods to carry out the study (Bryman and Bell, 2007). If the research question is not clearly articulated, there is a danger of collecting unsuitable and meaningless data (Creswell, 2003).

5.3 The Research question

Initially a broad research focus allowed the researcher to narrow down and refine the research question to a more specific question. The question investigates the mechanism used by software managers, owners and/or decision makers into how start-up technology companies price their software. The following question allowed the researcher to take a holistic look at current practices in the industry. The research question was addressed using two survey approaches. Initially questionnaires were administered to a large sample to gain a broad understanding of the activities deployed by managers, owners and decision makers. Derived from the questionnaire findings, a set of interview questions were drawn up to gain an in-depth understanding of current practices in the area. The research question was answered through the aim and a set of objectives drawn up at the outset of this research. **‘How indigenous software companies price their product or service offerings?’**

5.4 Aim and objectives

The aim of this research was to develop and communicate a robust understanding of the pricing practices in Irish and Newfoundland technology firms by examining practices and behaviours deployed to manage pricing.

5.4.1 Aim

The aim seeks an understanding of how decision makers draft price plans suitable for their companies and provide a template for new and existing companies, which find pricing a complex and uncertain process. In doing so, this study endeavours to provide a more holistic understanding of pricing in the target sector. This research aims to build a refined model rather than test existing ones.

5.4.2 Objectives

The main objectives to be derived from the overall aim were to:

- To establish the variables and relationships underlying current software pricing practices indigenous software firms
- To explain these practices from a software vendor's perspective
- To identify the reasons that influence software vendor's choice of software licensing method adopted.

The overall research objective was to investigate the nature of software pricing practices in Ireland and Newfoundland. The research problem is that pricing is difficult to manage yet it is critical for a company's survival and these research objectives appear to address this problem and narrow the existing gap in the literature. These objectives were achieved by interviewing key decision makers with respect to their approach to the pricing practices implemented in their companies. It is anticipated that these objectives will be reached by answering key questions outlined in this research. These questions will be addressed through the questionnaire and interviews. See

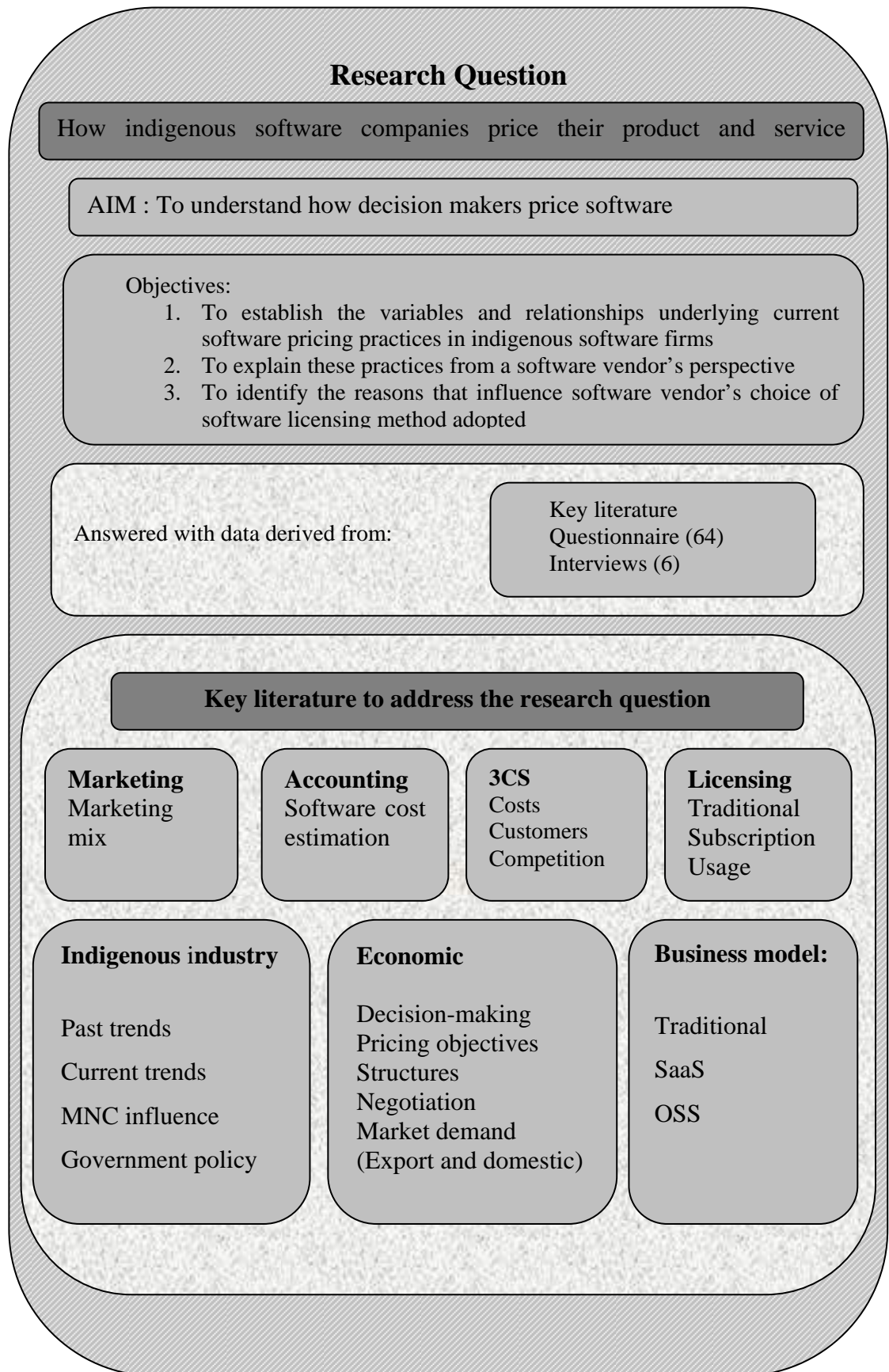
Appendix C and Appendix D for questionnaire and interview questions used to address the current research problem.

5.5 The conceptual framework

A framework was drawn up to underpin the key areas in the literature that needed to be addressed to achieve the aim of this research. This framework (figure 5.1) provided guidance for the researcher when addressing the literature, examining the different factors taken into consideration when constructing the questions for the questionnaire and interview. On completion of the literature review the key themes that emerged were as follows: marketing, accounting, economics, negotiating, the domestic and export market, software costing, licensing methods and finally the literature with respect to the Irish software industry was examined.

There are three main software business models. The literature available for these three models was evaluated, both software-as-a-service (SaaS) and perpetual licensing models are similar in that they both keep their code closed. The third model open source (OSS) does not charge their customers to use the software code as they offer an open policy, in other words their users can develop OSS software for free. Most software companies that make financial gains from OSS are in the commercial open source (COS) market and they tend to operate business on a larger scale than the start-ups that were selected for this study.

Figure 5.1 The conceptual framework



5.6 The research process

The research process is viewed by a number of writers as a series of steps designed to lend itself to an overall goal at the outset of the research. Saunders et al. (2003) described their model of a research process as being similar to that of an onion (figure 5.2). As an onion has many layers so too does the research process. They emphasised the importance of focusing on the research philosophy at the outset of the research and based on that decide upon whether the data collection method represents a good fit for the research question.

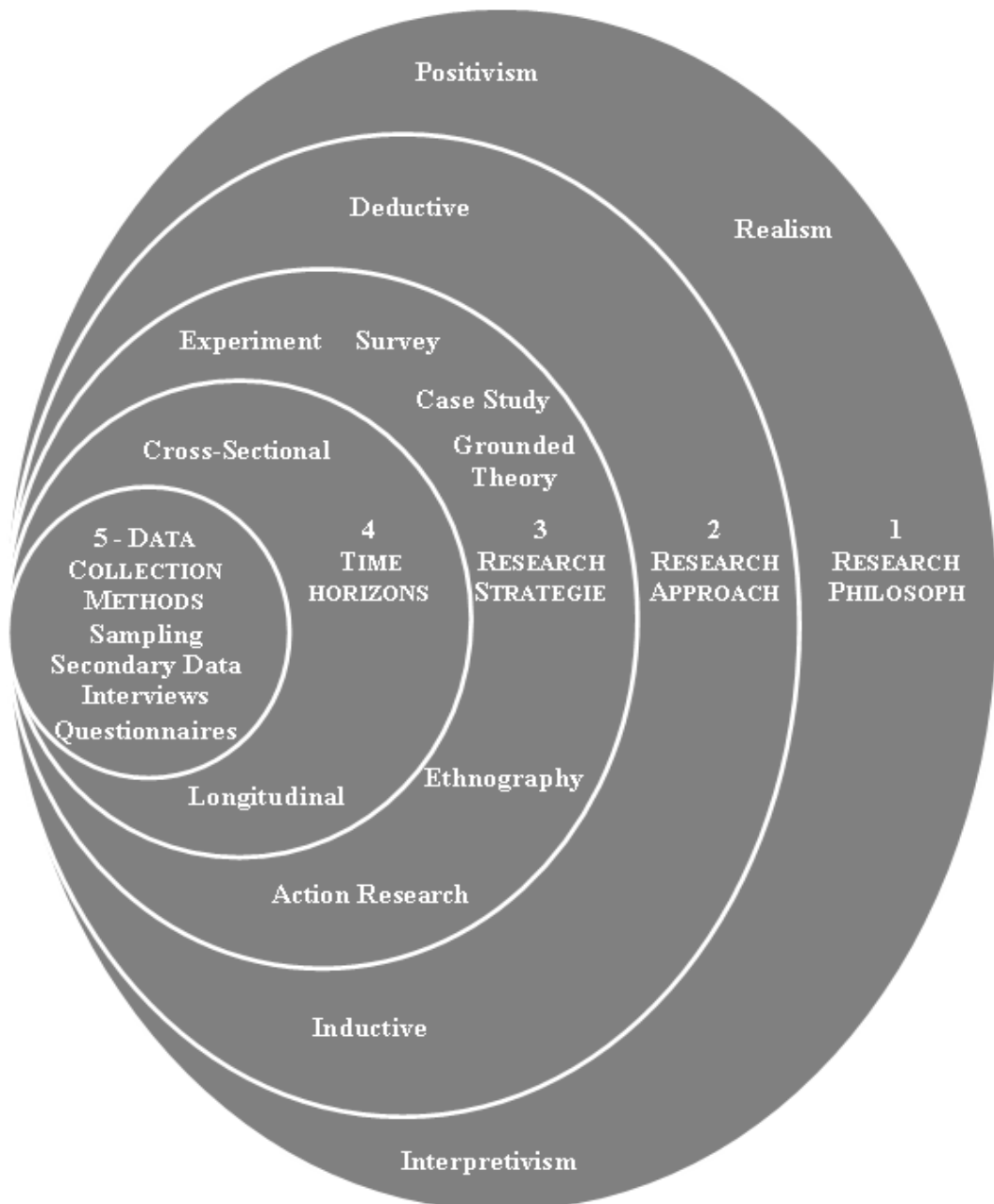
There were various steps undertaken when conducting the current study. Initially major themes emerged from a critical review of the literature. A conceptual framework was developed and from the initial investigation of the pricing literature, a conference paper based on the framework was presented at the Irish Accounting and Finance Association Conference in May 2007 at Tralee Institute of Technology, Co. Kerry. Subsequently, the research design, methodology and ethical considerations were investigated. At this stage of the research, a second paper was presented to the Irish Academy of Management in September 2007 at Queens University, Belfast. Following this, the researcher developed and piloted the questionnaire before it was administered to the target audience. The questionnaire results were analysed using SPSS (statistical software package). From these results, semi-structured interview questions were generated from the emerging themes that arose from the questionnaire. Once again, the interview was piloted and six interviews in total took place, three in Ireland and three in Newfoundland to gain a broader and deeper understanding of current practices deployed by managers in the software sector. The results were analysed using the software package NVivo and the write-up stage of the thesis began.

Having defined the research question and developed the conceptual framework for this study, the next step was to focus on the research design. According to Saunders et al. (2003) the research design comprises of the following: identity of various approaches, strategies and data collection methods that complete the research process. They call this process '*the research process onion*'. The onion allows researchers to choose which data collection methods are most appropriate to answer their research question. The different layers of the onion raise different research questions to be addressed.

5.6.1 Research process onion

The first layer addresses the area surrounding which philosophy should be adopted, such as positivism, realism or subjectivism. This determines the approach taken to conduct the research. This approach can be either a deductive approach or an inductive approach. The inductive approach tends to be more commonly used in the social sciences. It lends itself to the researcher collecting data and developing a theory as a result of the analysis. While the deductive approach has two streams, one in which this theory is developed and expressed as a hypothesis and the second in which a hypothesis is tested. Once an approach has been decided upon, the various research strategies need to be investigated and understood in order to adopt the most suitable strategy to conduct the research. Surveys are common strategies deployed by researchers in social sciences (Punch, 2003). The fourth layer of the onion is concerned with the different methods that available. Whether the study deploys a single strategy or a combination of two or more strategies, this decision depends on various constraints such as time, money or the desired outcomes of the research. The fifth layer looks at the time horizons, whether the study is cross-sectional or longitudinal. For this type of masters' degree, longitudinal studies tend not to be used due to the time constraint of the completion timeframe. Therefore, cross-sectional studies are deemed most suitable.

Figure 5.2 *The research process onion*



Source: (Saunders, Lewis and Thornhill, 2003: 83)

Finally, the data collection methods need to be given careful consideration in order to collect appropriate data. According to Saunders et al. (2003) researchers have a tendency to choose a research method because of their familiarity with it or because they do not want to use another method. If this occurs the outcome can be disastrous and lead to a failure in collecting appropriate data suitable for that particular piece of research.

5.7 Research philosophies

Saunders et al. (2003: 83) described the research philosophy as '*depending on the way you think about the development of knowledge*'. Consequently, the way we think about knowledge affects the way we conduct research. This is why grounding in philosophy helps the researcher identify and put forward their philosophical views.

It is important that all researchers are aware of the ongoing philosophical debate between the natural sciences and social sciences (Robson, 1993). A good knowledge and understanding of the various philosophies will enable the researcher to recognise a suitable design for their research. According to Easterby-Smith et al. (2002) this will help to identify and create designs that may be outside the researcher's experience and clarify research design. Philosophers and methodologists have been engaged in a long-standing epistemological debate about how to conduct social research (Amaratunga et al. 2002). Easterby-Smith et al. (2002) described at least three reasons why understanding philosophy is important. Firstly, it can help clarify research designs. Secondly, a philosophical knowledge will help the researcher identify which designs are appropriate and which are not for a particular study. Thirdly, this knowledge will help the researcher identify or create new designs. The researcher's ontological views will affect their epistemological perspective, which in turn affects their view on human nature. As a result, the methodology will be affected by the assumptions that the researcher has already made.

Saunders et al. (2003) outlined the practical use of understanding one's philosophical position. Such an understanding helps the researcher to examine these philosophical assumptions, question and challenge them if deemed necessary and behave in an appropriate way. The following section aims to outline the ongoing philosophical debate and identify the researcher's philosophical position for this current study.

5.8 Philosophical debate

Before addressing the methodology, an understanding of ontology and epistemology is relevant in order for the researcher to understand their philosophical stance. Ontology refers to the assumptions that we make about the nature of reality and epistemology refers to a general set of assumptions about appropriate ways of enquiring into the nature of the world. A third term that needs to be understood is human nature. This refers to whether you believe that man is free to make his/her own choices or not. The relationship between humans and their environment is an underlying principle that needs to be addressed, whether or not the researcher sees man as the controller or the controlled. The link to ontology is essentially an experience that teaches us to acknowledge what is real. Once a researcher has an understanding of these terms and reflects upon their implications, they can then set about designing a methodology that is based on the insights from research philosophy. In simple terms, a methodology is a combination of techniques used to enquire into a specific situation.

Table 5.1 outlines the subjectivist-objectivist approach to social science, based upon ontological, epistemological, human nature and methodological assumptions. It is essential to note that not all researchers adopt either position, but that a number of researchers describe themselves as adopting an intermediate position, as their beliefs lie somewhere between the two extremes. Table 5.1 identifies the major philosophies and their respective assumptions regarding their conceptual foundations.

Table 5.1 The subjectivist-objective dimension

Subjectivist approach	Assumptions	Objectivist approach
Nominalism	Ontology	Realism
Social constructivism	Epistemology	Positivism
Voluntarism	Human nature	Determinism
Ideographic	Methodology	Nomothetic

Adapted from: (Burrell and Morgan, 1979: 3)

This diagram provides a useful way of thinking about the kind of assumptions that underlie the ongoing debate within the social sciences. It highlights the broad differences in methodological approaches. It outlines the four different assumptions and their extreme approaches to each of the following assumptions: ontology, epistemological, human nature and methodological. Extreme objectivists advocate ideas about the social world as if it were a concrete process evolving through time and they contend that the world predates individuals (Gill and Johnson, 2002). This epistemological position advocates the significance of monitoring ‘process reality’. The other extreme presented by Morgan and Smircich (1980) maintains that reality does not exist outside oneself, that one’s mind is one’s world, hence, reality is all imagined.

Burrell and Morgan (1979) presented an outline of the philosophical views from the extreme objectivist to the extreme subjectivists. The viewpoint of the objectivists in terms of the way they view the world consequently dictates the approach taken to conduct research and therefore the results tend to be statistical and focus on the analysis of results between relationships. Likewise, the subjectivist viewpoint determines the approach taken to carry out research and the results qualitative in nature and tend to be expressed using words as opposed to numbers.

5.8.1 Positivism and social constructivists

Positivism and social constructivism are the terms used throughout this thesis to describe the different paradigms. On one side of the continuum there are the positivists and on the other the social constructivist. According to Saunders et al. (2003) social constructivists view reality as being ‘socially constructed’, whereby people may place many different interpretations on the situation in which they find themselves. Many writers and philosophers have described positivism/objectivism and constructivism/subjectivism as continuum polar opposites with different philosophical stances. Positivism, interpretivism and realism dominate the social science literature. All three have important roles in management research. Easterby-Smith et al. (2002) summarised two of the philosophies in social science research to be positivism and social constructivism. Saunders et al. (2003) presented a third philosophy somewhere in between the other two, known as realism. The extremists of both positivism and

social constructivism have different philosophical stances with regard to the following four assumptions: ontology (nature of reality), epistemology (nature of knowledge), human nature (choices pre-determined or not) and methodology (researcher's point of view).

There is a long-standing debate about the appropriateness of the natural science model for the study of social science (Bryman and Bell, 2007). It is important that researchers do not ignore other views, as knowledge of both is imperative and awareness that individual positions or combinations of both are suitable for certain types of research. Silverman (1998) suggested that there is a need to end the ongoing paradigm war to allow researchers greater flexibility in selecting the most appropriate methodology or indeed to employ a mixed-methods approach. There are arguments in the literature in favour of the adoption of mixed-methods. According to Easterby-Smith et al. (2002:41) a mixed-methods approach provides '*more perspectives on the phenomena being investigated*'. They noted that one of the biggest difficulties against adopting the mixed-methods approach is '*what to do when different kinds of data say contradictory things about the same phenomena*' (Easterby-Smith et al. 2002:41). A researcher must consider the implications of this occurring during the data analysis stage and in the event of self conflicting data the researcher should have pre-considered actions.

A researcher should exercise caution when adopting a mixed-methods approach as it may lead to contradictions and confusion when analysing the data. One may be tempted to take on a relativism position as a compromise to counteract the strengths and weaknesses of both a positivistic and social constructivist position. If the researchers research philosophy reflects the underlining principles of positivism then the role as a researcher will be more objective using a highly structured methodology. Positivists advocate the application of methods of the natural sciences to the study of social reality and beyond. Positivists take on a quantitative approach that is statistically analysed, whereas constructivists take on a qualitative approach that is thematically analysed. With a positivism view, the key idea is that the social world exists externally and properties should be measured objectively (Jankowicz, 2000). One of the primary strengths of the positivistic perspective is that it permits the study of a wide range of situations. These studies tend to be fast and efficient. Conversely, the weaknesses of this approach tend to include inherent inflexibility. In addition, they have not proven

particularly helpful in generating theoretical concepts (Easterby-Smith et al. 2002). As a result, this makes it difficult for policy makers to infer what changes should take place in the future. Another limitation is that large samples are required if results are to be credible.

On the other side of the continuum, the social constructivists believe that people are the key data source and that the researcher must interact with them in order to gain access to such data (Easterby-Smith et al. 2002). Social constructivists focus on the way people make sense of the world, especially through the sharing of experiences with others via external factors, such as language (Morgan and Smircich, 1980). The consensus amongst social constructivists is that people, rather than objects, determine reality. The strengths of social constructivism include its potential to contribute to the evolution of new theories. This perspective readily lends itself to longitudinal studies and attempts to take the meaning that respondents attribute to their experiences into account. This attribution of meaning is something that positivistic studies do not claim to be able to achieve. Conversely, the weaknesses inherent in this perspective include the fact that it is potentially very demanding in terms of both time and resources. The analysis and interpretation of data may be very difficult. Generalisability is not deemed important from an interpretivist point of view. Saunders et al. (2003) noted that they tend to dismiss the suitability of generalisability in studies relating to the business world as it is constantly changing. The non-positivistic perspective in the past has been given low credibility, however in relatively recent years there has been an increasing recognition of the role of non-positivistic techniques in the research process (Robson, 1993; Bryman and Bell, 2007). The methods of social constructivist research can be contrasted directly to at least eight features of classic positivist research.

These eight features outlined in table 5.2 overleaf illustrate how positivists' and social constructivists' opinions differ with respect to knowledge and how it should be gathered, interpreted and presented. An example of this would be the positivist's belief is that the observer must remain independent of the research and human interest should be irrelevant (Easterby-Smith et al. 2002). Social constructivists challenge this view, believing that the observer is part of the research and human interest is the key. Another such example occurs where they differ concerning the generalisability of studies. Positivists believe that sampling requires larger numbers in order to be

generalisable while social constructivists are not interested in studies being generalisable, they are interested in theory generation. Somewhere in-between the positivism and social constructivism stance lies a position known as realism. It is important to note that realists share some philosophical aspects with positivism. According to Saunders et al. (2003) realism is based on the belief that reality really exists, that it is independent of human thoughts and beliefs. It recognises that people are likely to share their stories, resulting in their view of reality being described. One of the major differences between it and positivism is that positivists view people as objects, whereas realists understand the importance of peoples' interpretations and the benefits of including people in a study as opposed to them remaining on the outside. The philosophical stance has an important impact on the research design, the chosen data collection methods and the data analysis. The following four sections outline the ontological, epistemological and human nature perspectives and how they form the foundations for the methodology adopted for the present study.

Table 5.2 Contrasting implications of positivism and social constructivism

	Positivism	Social Constructivism
The Observer	Must be independent	Is part of what is being observed
Human interests	Should be irrelevant	Are the main drivers of science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research Process Through	Hypothesis and deduction	Gathering rich data from which ideas are induced
Concept	Needs to be operationalised so they can be measured	Should incorporate stakeholder perspectives
Unit of Analysis	Should be reduced to simplest terms	May include the complexity of whole situations
Generalisation Through	Statistical probability	Theoretical abstraction
Sampling Requires	Large numbers selected randomly	Small numbers of cases chosen

Source: (Easterby-Smith et al. 2002: 30)

5.8.2 Ontology

Ontology is the starting point for most debates. According to Gill and Johnson (2002:228) it is '*the study of the essence of phenomena and that nature of their existence*'. The debate is between the objectivist's and subjectivist's view with respect to the nature of reality. Objectivists debate between realism and relativism. Realism can be further divided between traditional realism and internal realism. Traditional realists believe that the world is concrete and external. Internal realists concentrate more on the process of observation (epistemology) and they accept that scientific laws, once discovered, are absolute and independent of further observation. Relativists believe that scientific laws may be reversible. A subjectivist's view of ontology is through one of the following: representational, relativism and nominalism. Relativism is viewed the same way as objectivists view ontology and representationalism is viewed the same way as internal realism. The nominalism view that the labels and names we attach to experiences is essential. Table 5.3 illustrates an overlap in certain areas. Easterby-Smith et al. (2002) pointed out that some positions are blank because they represent positions that are not generally seen as significant within each of the two domains.

Table 5.3 *Ontology and epistemology in science and social science*

Ontology of Science	Traditional realism	Internal realism	Relativism	
Ontology of Social Science		Representationalism	Relativism	Nominalism
Truth	Is established by correspondence between observation and phenomena.	Is determined through verification of predictions	Requires censuses between different viewpoints	Depends on who established it
Facts	Are concrete	Are concrete but can not be assessed directly	Depends on viewpoint of observer	Are all human creators
Epistemology of science	Positivism		Relativism	
Epistemology of science		Positivism	Relativism	Social constructivism

Source: (Easterby-Smith et al. 2002: 33)

5.8.3 Epistemology

Epistemology is concerned with a general set of assumptions about the best way of enquiring into the nature of the world. Both objectivists and subjectivists view epistemology in terms of positivism and realism and the latter includes social constructivism (Easterby-Smith et al. 2002). The methodological implications of different epistemologies within social science, from a subjectivist's point of view positivism is about discovery, using hypothesis by experiments, etc. Relativism is concerned with exposure, surveys, correlations, etc, while reality exists independently of the observer. The social constructivism deals with the following: inventing, meaning, decision making, understanding and conversations where one's reality depends on the observer to convey the message. One might ask how does each of these concepts link back with ontological position? Figure 5.3 outlines the link between ontology and epistemology in the sciences and social sciences. They both adopt a slightly different approach to how to obtain data. Positivists are more likely to measure and test hypothesis. Realists according to Easterby-Smith et al. (2002) '*assume difficulty of gaining access to reality*' they will triangulate to ensure accuracy. On the other side of the continuum, the social constructivists' perspective has a completely different view of reality. They believe that reality exists in one's mind. Language and conversation are paramount in gaining access to the subjectivists' view of their reality.

An understanding of both ontology and epistemology will lend the researcher to a clearer perspective on how they view human nature and where they fit into the social world whether reality is created in their imagination or whether they believe that reality is independent of the observer.

5.8.4 Human nature

The human nature perspective concerns the relationship between the individual and their social environment. Burrell and Morgan (1979) noted that the debate between objectivity and subjectivity involves whether they see man as being controlled or the controller. Morgan and Smircich (1980) discussed the extreme approaches (which is really a projection of the human imagination). The extreme subjective approach views humans as being directed by their 'psychic energy' to reflect their view of the world.

To a lesser extent social constructionists believe that humans create their reality and that they are not actors and they believe that individuals may work together to create a shared reality. The extreme objectivist views reality as 'concrete', they see humans as the product of external forces born into their environment. To a lesser extent, there are those who view reality as a concrete process. They see humans exist in an interactive relationship with the world, as their view of reality is that the social world is an evolving process concrete in nature.

Burrell and Morgan (1979) outlined two major positions: determinism and voluntarism. Determinism being the objective position where man is born into a world in which there are casual laws that explain the patterns of our social behaviour. On the other side, voluntarisms hold that '*mankind has free will and is autonomous*' (Morgan and Smircich, 1980). Morgan and Smircich (1980) and Holden and Lynch (2004) discussed an intermediate philosophy position which lies somewhere in between voluntarism and determinism. This position incorporates insights from both philosophical positions (subjective and objective). According to Holden and Lynch (2004) a researcher holding this position believes that reality is tangible yet humans have an input into forming its concreteness. Morgan and Smircich (1980) described an intermediate stance as one that views humans as both deterministic and voluntaristic; one where humans are born into a structured society and input from interactive societal structures can change and evolve. An intermediate view on epistemology is that knowledge can be accumulated, tested and either retained or discarded. An intermediate perspective with regard to human nature is seen as both deterministic and voluntaristic, that is, humans are born into an already structured society yet societal structures evolve and change through human interactions.

Based on this researcher's epistemological stance, the methods adopted to conduct the study are usually in line with an intermediate viewpoint. Easterby-Smith et al. (2002) noted in a study that where ranges of methods are adopted it is possible to infer that the researcher holds an implicit epistemological viewpoint.

5.8.5 Methodology

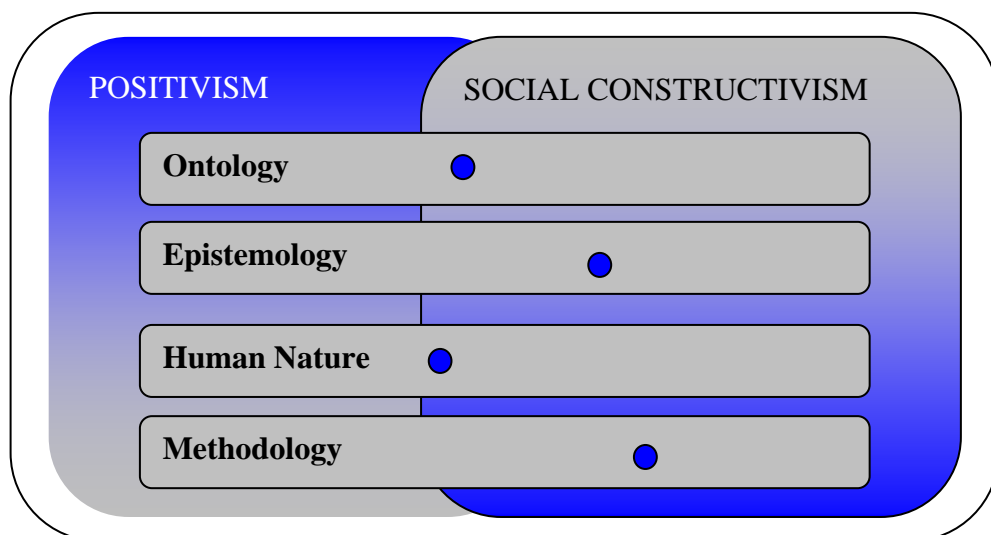
The ontological, epistemological and human nature views contribute to the methodology position that is adopted. Easterby-Smith et al. (2002:31) defined the methodology '*as a combination of techniques used to enquire into a specific situation*'. Burrell and Morgan (1979) discussed two approaches to the research methodology referred to as the ideographic and the nomothetic. Gill and Johnson (2002) described ideographic methods as being inductive (theory generating), using a qualitative approach to generate data via language and understanding. A nomothetic methods approach is by deduction (theory testing), using quantitative data obtained by testing or hypothesis and explanations described through casual relationships. Both methods use various different approaches to obtain data to accomplish a study. Ideographic methods are generally obtained using inductive approaches, for instance, using action research or ethnography. This method lends itself to an interpretive study while nomothetic methods gather data using experiments or surveys. According to Gill and Johnson (2002) an interpretive study can involve the adoption of both methods. This research incorporates a mixture of ideographic and nomothetic methods in the form of questionnaires and interview questions. Studies can also be from either a nomothetic or an ideographic perspective. These are termed quantitative or qualitative studies. In this section, this researcher summarises the various different strategies and defends why the survey method was deemed suitable for this current study.

It is anticipated that the researcher will have a clear understanding of the methodology once they have knowledge of ontological, epistemological and human nature perspectives. At this stage, one may ask if there is a right philosophy perspective. To answer this question there is no wrong or right answer to this philosophical stance. Objectivism has been heavily criticised as an inappropriate approach to social science research (Holden and Lynch 2004). Critics believe that a subjective approach is more appropriate for this type of research as human interaction is paramount to understanding human behaviour and actions.

5.8.6 Philosophical position adopted

Morgan and Smircich's (1980) description of the philosophical and epistemological stances helped clarify this researcher's own position regarding her philosophical position. The debate in the social sciences is linked directly to the assumptions about epistemology, ontology and human nature. As a researcher, one must ask 'does the research question fit the research philosophical viewpoint?'. This researcher has adopted a philosophical viewpoint that recognises the value and potential, particularly in terms of generalisability of positivistic studies. The usefulness of positivistic studies in gauging behavioural patterns amongst a large population has also been noted previously. However, studies conducted entirely from a positivistic perspective are not entirely suitable for deriving meaning from a study. Therefore, this researcher has elected to supplement an initial positivistic survey with a series of qualitative interviews. This mixed-method approach is in line with this researcher's own philosophical stance. Figure 5.3 indicates this researcher's ontological, epistemological, human nature and methodological views. Each line is named and a circle demonstrates whether this researcher takes an objective, subjective or intermediate perspective.

Figure 5.3 The philosophical stance of this researcher



The researcher's view on human nature is largely deterministic, believing that the actions of human beings are constrained by external forces. The researcher's

epistemological view is that the acquisition of knowledge is a relatively subjective process. This is in contrast to the extreme positivistic view whereby the gathering of knowledge can be an objective process. As a result, this researcher holds an intermediate ontological perspective believing that while external phenomena may exist, objective measurement of them is somewhat problematic. As a result, the researcher's methodological standpoint is largely subjectivist with a positivistic awareness.

5.9 Research methodologies

The following section briefly outlines the various research methodologies that could have been selected to conduct this current study. According to Yin (1994:1) each strategy has its advantages and disadvantages depending on three conditions: firstly, the type of research question; secondly the control the investigator has over actual behavioural events; and thirdly the focus on contemporary as opposed to historical phenomena. Each strategy is presented in this section and the reasons for not adopting a particular strategy are put forward. The researcher considered a number of strategies before finally deciding on the survey method and is aware of this particular method's strengths and weaknesses. Green et al. (2005) and Saunders et al. (2003) provide an account of the various different strategies. These strategies include: experiments, surveys, case studies, action research, grounded theory, ethnography and archival research. Each strategy has a different way of collecting and analysing results. As surveys were the method chosen to conduct the current study, a brief description of the two survey methods are outlined below.

5.9.1 Surveys

Robson (1993:40) described surveys as a '*collection of information in standardised form from groups of people*'. Surveys are generally related to questionnaires and the two terms can often be confused. Questionnaires are a method of conducting surveys to collect data, along with interviews, observations and documents. Questionnaires are suitable to descriptive studies, which ask questions such as: how many companies in a given population use cost-plus method when pricing? Alternatively, questionnaires are

used to explore aspects of a situation or to seek an explanation to questions such as: why do managers use cost plus when making pricing decisions?

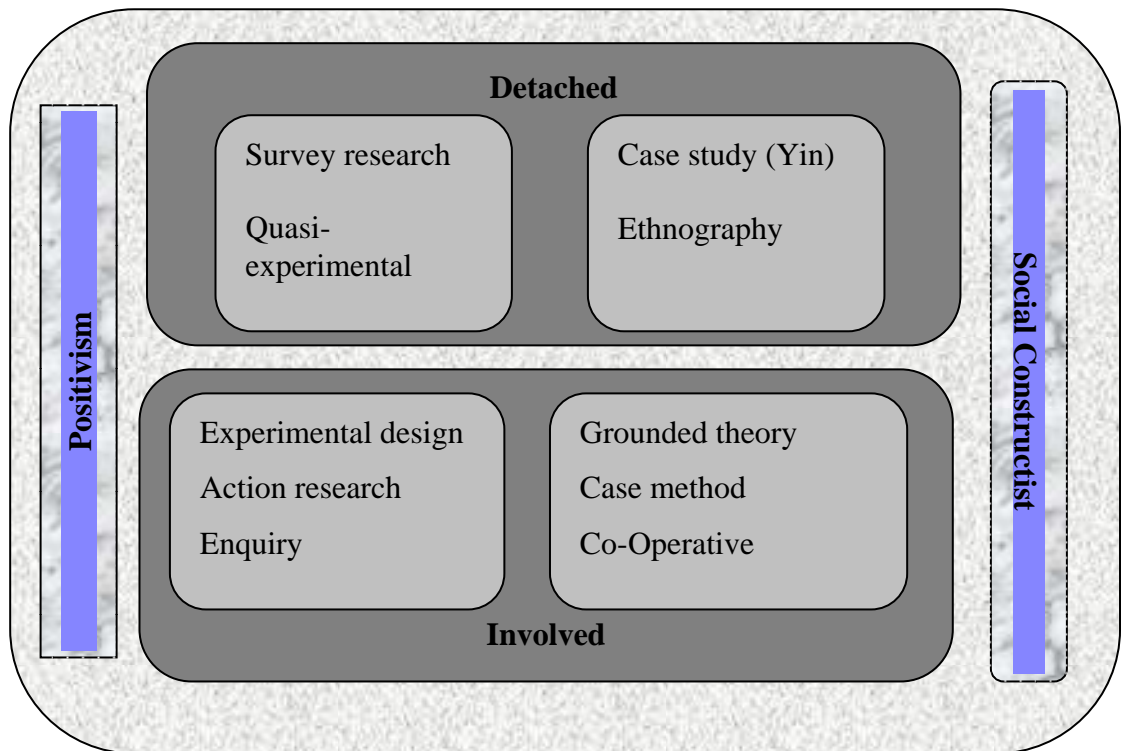
Robson (1993: 49) indicated that surveys are often used for:

...cross-sectional studies and the focus is on the makeup of the sample and the state of affair in the population at just one point in time.

The value of the '*snap shot*' approach depends on choosing a representative non-biased sample. Therefore, the sample is usually large enough to ensure confidence in the results. The literature indicated that interviews and questionnaires are based on asking people questions. A case study might involve formal interviews or questionnaires utilising fixed questions, open-ended questions or both. A case study is a flexible and adaptable way of finding out information (Easterby-Smith et al. 2002). It is more concerned with understanding a particular case (Robson, 1993:125). Traditionally case studies have been viewed as soft research, as a result, this type of research is being underdeveloped. Yin (1994) cautioned against ignoring the difficulties in carrying out case studies, in particular multiple case studies, as they are time consuming and beyond the resources of a single researcher. Figure 5.4 adopted from Easterby-Smith et al. (2002) outlines the researcher's current position for this study.

Although questionnaires were used to form the foundations of this research, interviews were used to build on these foundations. Results generated from analysis of the questionnaire allowed the interview questions to be drawn up. By using questionnaires, the researcher gained an awareness of the positivistic element of this research, as seen in the upper left quadrant of the matrix figure 5.4. This position has a positivistic approach, as the researcher is detached from the study. The interview allowed a balanced approach to be taken. The researcher's view is largely subjective and found in the upper left quadrant. This position is a social constructionist approach and the researcher is again detached from the study, although she had more involvement in the interviews than with the questionnaire. The researcher's position is outlined in figure 5.4 with both positivistic and subjectivist awareness, adopting an intermediate position. The following section outlines the methodology debate between qualitative and quantitative research. It also addresses the mixed-methods approach to overcome the limitations of each method.

Figure 5.4 Matrix of research design



Adapted from: (Easterby-Smith et al. 2002: 57)

5.10 The research methodology debate

There is an ongoing methodological debate between the two research method approaches. This section addresses this debate and outlines the difference between qualitative, quantitative and mixed-methods. This section outlines the advantages and limitations of using each of the approaches. Finally, the researcher outlines the reasons why a mixed-methods approach was chosen to conduct this research. According to Holden and Lynch (2004) inappropriate matching of a methodology to a research question may result in an inadequate study. For this reason the research adopted both qualitative and quantitative approaches to strengthen the findings of the research question.

5.10.1 Quantitative and qualitative research

Quantitative and qualitative methods describe approaches to research. Although there are many differences between them, they do overlap and it is inaccurate to assume that they are both polar opposites. When writing a methodology it is important to bear in mind that neither strategy is superior to the other, they both have their strengths and weaknesses. The main strength of quantitative is that it allows for flexibility in the treatment of data in terms of comparative analysis and statistical analysis. Its main weakness is that it fails to ascertain deeper underlining meanings and explanations. On the other hand, the strength of qualitative research is that it focuses on naturally occurring events in natural settings in order to obtain ‘*real life*’ occurrences. The main weakness is that the results are not generalisable. According to Amaratunga et al. (2002) the use of a mixed-method approach is suggested to counteract these weaknesses and to enhance the research. A mixed-methods approach is one that combines qualitative and quantitative research. Table 5.4 illustrates common contrasts between quantitative and qualitative research. There are certain words to describe one strategy while others best describe the other strategy. The distinction between the two methods is not as clear as it may seem (Silverman, 1998; Bryman and Bell, 2007). Some techniques such as interviews can be used to collect either quantitative or qualitative data, or the data transcripts can be analysed by either method.

Table 5.4 *Quantitative and qualitative contrasts*

Quantitative	Qualitative
Numbers	Words
Researcher’s point of view	Participants’ point of view
Researcher distant	Researcher close
Theory testing	Theory emergent
Structured	Unstructured
Generalization	Contextual understanding
Hard, reliable data	Rich, deep data
Macro	Micro
Artificial setting	Natural setting

Source: (Bryman and Bell, 2007:426)

5.10.2 Quantitative

According to Creswell (2003:18) quantitative methods approach can be described as:

...one in which the investigator primarily uses post-positivist claim for developing knowledge, employs strategies of enquiry such as experiments and surveys, and collects data on pre-determined instruments that yield statistical data.

Quantitative research is concerned with measurement to gauge differences between two or more variables. Measurement has a number of advantages although issues between reliability and validity are of concern. Although these terms seem synonymous, they have different meanings in relation to the evaluation of measurement (Bryman and Bell, 2007). A second term that concerns quantitative researchers surrounds causality. Quantitative researchers are rarely concerned with '*how things are*', they want to explain why things are the way they are (Bryman and Bell, 2007). Another important term is generalization. Quantitative researchers want to be able to say that their research can be generalisable. Finally, replication also concerns quantitative researchers. Their interests lie in the ability to replicate studies and failure to do so would have serious repercussions on the validity of research in general. While qualitative researchers feel strongly about their reasons for conducting longstanding valid research, quantitative researchers have their doubts about the quality of qualitative research. The process of quantitative research is described as a set of sequential steps that are all interlinked to produce the final document. Most social researchers are aware that research is rarely linear or straightforward and as a result, this approach may be unsuitable for some research questions in the social sciences.

Quantitative data collection methods such as questionnaires can be aimed at gathering either subjective or objective data or both. The questionnaire administered to the participants of this study required a collection of both subjective and objective data. The subjective questions tended to be more open and less structured in nature as they allowed the participants to add comments at the end of each section and Likert scales were used for some questions. The scope was therefore for the respondent to express their opinions on the topic. This is frequently a difficult and time-consuming process for both the researcher and participant. According to Baker (2003) it takes time, effort and money to select an unbiased sample, but meaningful data from questionnaires make

it worthwhile. The objectivist questions were more structured as respondents were asked for factual responses to enable statistical analysis.

5.10.3 Qualitative

Morgan and Smircich (1980) described qualitative research as an approach rather than a particular set of techniques. They asserted that it deserves to be explored from the nature of the social phenomena. Morgan and Smircich (1980) acknowledged that there are many problems that the current debate has failed to explore, for instance, the relationship between theory and methods. They argued in favour of use of different methods. Morgan and Smircich (1980) stated that qualitative and quantitative methods enable the researcher to gather a variety of assumptions regarding the nature of knowledge and the methods through which that knowledge can be obtained. Burrell and Morgan (1979) suggested that all approaches to methodology are based on interrelated sets of assumptions regarding ontology, epistemology and human nature.

Creswell (2003:18) offered the following description of qualitative methods:

The enquirer often makes knowledge claims based primarily on constructivist perspectives or advocacy/participatory perspectives or both. It uses strategies of enquiry such as narratives, phenomenology, ethnographies, grounded theory studies or case studies. The researcher collects open-ended, emerging data with the primary intent of developing themes from the data.

Qualitative data is less codified than quantitative, as there are fewer guidelines in gathering and analysing data. These methods require different skills than quantitative methods when gathering data. According to Easterby-Smith et al. (2002) qualitative findings rely on quotations, illustrations or vignettes and need to be accurately collected at the time of study in order to be reproduced later. Techniques associated with qualitative analysis include: interviews, observations and diary methods. According to Bryman and Bell (2007) questionnaires and interviews are very common and are used extensively in qualitative research.

The fundamental difference between the two strategies is that qualitative research is interpretive in nature while quantitative research is grounded in positivism. Quantitative researchers tend to be objective using a deductive approach when addressing the relationship between theory and research, and theory testing is

significant as reliability is important in quantitative studies. By contrast, qualitative researchers tend to use an inductive approach when making a relationship between theory and research. Generating meaningful theory that is rich in detail is significant in qualitative studies. Their outlook on reality differs as quantitative researchers view reality objectively, whereas qualitative researchers view of reality belongs to the individual. Researchers' adopting either approach have concerns about the reliability and validity of the others approach to carry out research. For instance, measurement is not a major preoccupation among qualitative researchers, while questions surrounding the significance of validity are not major concerns to those from a quantitative position. As a result, qualitative research is more concerned with credibility or transferability. Credibility is concerned with how trustworthy the findings in the research are and how others accept the findings that are presented. Transferability is concerned with being able to apply ones findings from one study to a similar scenario where conditions are similar.

5.10.3.1 Theory and research

In qualitative research, there is a relationship between theory and research and how theory can be generated from research (grounded theory). The main idea of qualitative research is the ability to see through the eyes of the people being studied, descriptive detail is important, as is flexibility. This approach is not as structured as quantitative research. The structuring of qualitative data involves picking certain things out and categorising them under specific headings (in NVivo these headings are referred to as nodes). The researcher is allowed to focus on insights that emerge from the data so that connections can be made at different levels. It is important to bear in mind that both methodologies are not polar opposite, rather they focus on different dimensions of the same phenomena. The present study used a combination of both data types as it was anticipated that this would strengthen the findings.

5.10.4 Mixed-methods

Although, there are many differences between the two research strategies, mixed-methods allowed for the combination of both strategies to strengthen this study. Although it is important to bear in mind that not all writers on research methods agree that mixed-method approach is desirable or feasible and like other methods it has its

limitations. Table 5.5 outlines the philosophical assumptions, methods and strategies applied in the three approaches for conducting research.

Table 5.5 *Qualitative, quantitative and mixed-methods approaches*

Typical approach	Qualitative approach	Quantitative approach	Mixed-methods approach
Use these philosophical assumptions	Constructivist/advocacy / participatory knowledge claims.	Post positivist knowledge claims.	Pragmatic knowledge claims.
Employ these strategies	Phenomenology, grounded theory, ethnography, case study and narrative.	Surveys and experiments.	Sequential, concurrent and transformative.
Employ these methods	Open-ended questions, emerging approaches, text or image data.	Closed-ended questions, predetermined approaches, numeric data.	Both open and closed ended questions, both emerging and predetermined approaches and both qualitative and quantitative analysis.
Use these practices of research as the researcher	Collects participant's meanings. Focus on a single concept or phenomenon. Brings personal values into the study. Studies the context or settings of participants. Validates the accuracy of findings. Makes interpretations of the data. Creates an agenda for change or reform. Collaborates with the participants.	Tests or verifies theories or explanations. Identifies variables to study. Relates variables in questions or hypotheses. Uses standards of validity and reliability. Observes and measures information numerically. Uses unbiased approaches. Employs statistical procedures.	Collects both qualitative and quantitative data. Develops a rationale for mixing. Integrates the data at different stages of inquiry. Presents visual pictures of the procedure in the study. Employs the practices of both qualitative and quantitative research.

Source: (Creswell, 2003:19)

According to Saunders et al. (2003) business and management research is often a mixture of positivism and interpretivism, perhaps reflecting the stance of realism.

According to Creswell (2003), mixed-methods have been added to the qualitative quantitative approach as an alternative approach. All methods have their limitations and as a result, some researchers believe that the biases inherent in any single method could neutralise or cancel the biases of other methods (Creswell, 2003). There are numerous terms found in the literature to describe the use of mixed-methods such as multi-methods, convergence, integrated, or combined strategies. For the purpose of this study mixed-methods is the term that will be used as the data collection involves both numeric information (from the survey) and textual information (from the in-depth interviews) and results of the findings represent both qualitative and quantitative data.

This researcher based the inquiry of the current study on Creswell (2003) assumption that collecting diverse types of data best provides an understanding of a research problem. The rationale for adopting a mixed-methods approach is that it is to better understand the research problem by conveying broad numeric trends from quantitative analysis and the detail of the qualitative by exploring the participants' views.

According to Creswell (2003: 18) a mixed-methods can be described as:

One in which the researcher tends to base knowledge claims on pragmatic grounds (e.g. problem-centred). It employs strategies of enquiry that involve collecting data either simultaneously or sequentially to best understand the research problem.

There is an increasing interest in using mixed-methods because it provides more perspective on the phenomena under investigation. Jick (1979) advocated the use of both quantitative and qualitative methods in social science research. Many writers believe that a mixed-method is not necessarily superior to either qualitative or quantitative methods in isolation, it is best thought of as a complementary method and enhances the research (Amaratunga et al. 2002; Hurmerinta-Peltomata and Nummela, 2006; Bryman and Bell, 2007).

It should be noted that mixed-methods are not without their limitations. Problems can arise when different kinds of data say contradictory things about the same phenomena. There could be a discrepancy caused by methods used. It should always be borne in mind that the reality being investigated maybe more 'complex' than the data collection methods are capable of demonstrating. According to Creswell (2003) this form of research poses many challenges for the researcher, such as the need for extensive data

collection. It is also time-consuming in terms of analysing the data and requires the researcher to be familiar with both qualitative and quantitative research methods along with analysing techniques. The basic argument against adopting a mixed-methods approach tends to be based on the idea that quantitative and qualitative are separate paradigms, which are mutually incompatible (Bryman and Bell, 2007). This argument has led some writers to argue that mixed-methods are not always favourable or desirable and should only be used when this method is appropriate for the research question.

However, there are many researchers, especially in management research, who adopt a pragmatic view by deliberately combining methods drawn from both traditions (Amaratunga et al. 2002). Rocco et al. (2003) stated that mixed-methods research that emerges from discourse has the potential to be more useful to people making policy decisions in areas such as business and technology. A mixed-methodology is the preferred method for this research as its advantages outweigh its limitations (Holden and Lynch 2004). Easterby-Smith et al. (2002) stated that taking a triangulated approach to data collection prevents the research from becoming method bound. Triangulation is a technique of physical measurement (Burns, 2000). It can take various forms throughout the research such as: data triangulation (concerned with data that is collected over a period of time), triangulation by investigators (where different people collect data for the same study), theoretical triangulation (involves borrowing models from one discipline and using them for another) or methodology triangulation (which is concerned with the use of qualitative and quantitative methods to collect data). Methodology triangulation is the term that will be referred to in this chapter.

Saunders et al. (2003) stated that the qualitative and quantitative methods do not exist in isolation and therefore a mixed-method is often deemed most suitable. It is quite common for a single study to combine qualitative and quantitative methods. There are many advantages of employing mixed-methods in the same study. One such example is to use interviews to get a feel for the topic before embarking on a detailed questionnaire or vice versa, giving the researcher more confidence in the questions to be asked in the predominant phase of the research. Alternatively, mixed-methods may be used to enable triangulation to take place. As indicated below this research is not trying to prove triangulation but facilitation.

According to Bryman and Bell (2007) there are two contrasting perspectives on the use of mixed-methods that have been adopted by researchers. In the first, the epistemological version, the nature of mixed-methods research is not possible because qualitative and quantitative research is incompatible. This is due to ongoing paradigm arguments. According to Silverman (1998) multi-methods is not feasible or desirable. In the second, the technical version, which is more widely adopted by researchers, the two research strategies are viewed as compatible and their use in combination is, indeed, desirable. This version claimed to achieve greater strength of data collection and analysis when both methods were fused.

Bryman developed a classification of ways in which mixed-methods research could be undertaken. This classification has been modified and other authors such as Hammersley and Morgan have added to this classification (Bryman and Bell, 2007). There are many approaches to mixed-method research, for example quantitative research facilitating qualitative research and vice versa or filling in the gaps approach. The approach that this research undertook was facilitation. This approach was classified by Bryman and has subsequently been refined by Hammersley (1996) and Morgan (1998) cited in Bryman and Bell, (2007). Hammersley talks about triangulation, facilitation and complementarity, while Morgan proposes four approaches to mixed-method research. This classification is based on two criteria, the priority decision and the sequence decision.

5.10.5 Justification for the adoption of a mixed-methods approach

Holden and Lynch (2004) argued that only an intermediate philosophical approach allows the researcher to match philosophy, methodology and research problems. Knowledge of the research philosophy helped to strengthen the researcher's understanding of the differences and similarities between quantitative and qualitative strategies. The current study shows how a mixed-method approach was able to reveal much more than could have been gleaned through one approach alone by collecting evidence on both current and past pricing practices employed by managers.

The researcher has chosen to conduct a mixed-method approach to gather different types of evidence in order to secure significant conceptual development in this pricing context. The data garnered from the empirical survey helped facilitate the creation of interview questions as it allowed the researcher to probe deeper into this under-researched area. The reason why this study utilised facilitation is that this approach allows for one research strategy (questionnaires in this case) to aid the research using another (interviews). Triangulation or complementary approaches would not suit this study because triangulation uses one research strategy to support the other and this study is not seeking to achieve that, instead one strategy will be used to aid the other. According to Amaratunga et al (2002) the effectiveness of triangulation rests on the premise that the weakness in each single method will be compensated by the counterbalancing strengths of another and replication is extremely difficult in triangulated studies. When triangulation is applied, it implies that the results of one research strategy are crosschecked with the results of another (Bryman and Bell, 2007). In this research, the results from one strategy facilitated the other. The complementary approach was deemed unsuitable because this approach required that the two strategies be employed in order that the different aspects of the investigation fit together neatly. For the purpose of this study, priority was given to the qualitative elements that were conducted in phase four of this research. In essence, the questionnaire was used as a funnel in the research design to develop more appropriate and searching questions for the semi-structured interviews. The quantitative results helped facilitate the qualitative results. Story et al. (2002) used a similar research strategy to the one applied in this research. They used a postal questionnaire and this provided the foundation for eight case studies where each case was interviewed using semi-structured interviews for their research. This researcher's understanding of the methodological debate and the paradigm debate allowed the researcher to discuss the research design. The next section presents the research design and the factors taken into consideration when drawing up this design.

5.11 Design phase

This is an important part of enquiry and deserved a substantial amount of attention to illustrate the layout of the research project. Robson (1993: 38) described the design phase as ‘*turning research questions into projects*’. Kumar (2005: 84) cited Kerlinger’s (1986) definition of a research design as:

...a plan structure and strategy of investigation so conceived as to obtain answers to research questions or problems. The plan is the complete scheme or program of the research. It includes an outline of what the investigator will do from writing the hypothesis and their operational implications to the final analysis of data.

Many authors have commented on the relationship between data and theory. According to Easterby-Smith et al. (2002) this relationship has been debated by philosophers for centuries. As philosophers are central to the research design, failure to give them the attention they that they deserve could hamper the quality of the research. Saunders et al. (2003) commented on this debate pointing out that there is an inevitable relationship between the data collection method used and the results obtained. Lincoln and Guba (1986) described research as a type of discipline where an enquiry is undertaken to resolve some problem in order to achieve understanding or to facilitate action.

The research question strongly influences the choice of design and chosen method (Robson, 1993). Questions such as ‘how many’ and ‘how much’ are suitable for a quantitative design such as questionnaires. ‘What’ questions are suitable for qualitative designs such as semi-structured interviews, which consist of both open and closed questions. It was anticipated that the interview design would retain an element of flexibility allowing the researcher to make modifications as is deemed necessary as the research progressed. There are four basic evidence generation techniques, namely, the study of documents, interviews, observation and questionnaires.

Initially a pilot test was conducted to assess the suitability of the questionnaire. Following the pilot test the questionnaire was administered. Once the cut off point was reached, the quantitative data was collected and analysed using SPSS. As a result of the analysis major themes emerged and were used to generate qualitative data

questions. Once these questions were developed, the qualitative interviews took place and the data was collected and analysed using NVivo. Nvivo is a specialist computer package designed for the analysis of qualitative data. This software program helps assist the researcher in managing the large quantities of data that are generated in qualitative research. Sanuders et al. (2003) have recommended the use of such packages as they alleviate the need for the researcher to handle vast amounts of data. According to Richards (2005) the researcher is therefore freed to concentrate on key tasks within the study such as discerning patterns and understanding their meaning. In the present study the researcher considered the options available and decided to use the software tool as opposed a manual approach as she anticipated generating large amounts of data.

Thereafter, the researcher developed a pricing template outlining steps that software managers ought to have in place to encapsulate the pricing process. It is anticipated that such a template might facilitate software managers and sales people in recording and reflecting upon the procedures that must be carried out during negotiations with customers. The following four sub-sections outline the four phases that the current study went through to arrive at the findings stage of the research. Table 5.6 illustrates the steps taken to conduct this research.

5.11.1 Phase 1

According to Punch (2003:34) the entire questionnaire needs to be tested for length, time and level of difficulty to complete. Secondly, questions needed to be tested for comprehension, clarity, ambiguity and difficulty for the respondents' comprehension. Finally, the proposed data collection process itself of which the questions are the main feature needed testing. For this study, the questionnaires were pilot tested by five candidates (a mixture of academics and software industry managers). Both the results and the comments from the participants were taken note of and the researcher made changes that were deemed necessary. However, this did not prevent the occurrence of problems. The pilot questionnaire was administered by paper and when it went live, there was a small problem with some of the 'required fields' questions set by the researcher. It was not possible for the pilot sample to have foreseen this problem. It was a minor problem and did not take long to correct.

Table 5.6 *The mixed-method design used for this research*

Stage	PHASE 1	PHASE 2	PHASE 3	PHASE 4
1	Design questionnaire	Administer the questionnaire	Design interview questions	Conduct the interviews
2	Pilot test the questionnaire	Data collection	Pilot the interview	Transcribe the interviews
3	Review the piloted questionnaire	Data analysis (SPSS)	Review the interview questions	Data analysis (NVivo)
4		Interpretation		Interpretation

5.11.2 Phase 2

Initially, a cover letter (Appendix C) directly addressing (where possible) the manager/owner of each company was emailed. The cover letter explained the following: the objectives of the study, an appreciation for participation and a confidentiality assurance. Next, the redesigned questionnaire was uploaded using Survey Monkey. Survey Monkey is an online software application that sends out a link to questionnaire participants either directly to the participants email address or via the researcher's email address. Returned questionnaire answers were saved by Survey Monkey and imported into an excel spreadsheet which was then uploaded into SPSS for analysis. The researcher forwarded the link to the questionnaire to the participating companies by email. There are two main benefits of using online surveys as apposed to traditional methods: there is an immediate reduction in data collection costs; and there is a drastic improvement in data collection speeds (Bergstein and Estelami, 2002). The researcher found that the vast majority of responses to the questionnaire were received within 1-2 days of emailing the participants.

Once comments from the piloted questionnaire were analysed the questionnaire went live to 300 software companies in Ireland. Of the 300 companies, 220 received the link, the researcher received 80 'mail delivery failure messages'. These 80 companies either had changed their contact email address, ceased trading/developing software or were acquired by another company. The next stage for the researcher was to track down these 80 companies. Of the 80 companies, 23 were successfully tracked down and a postal address was obtained. The researcher posted the paper version of the questionnaire including a stamped self-address envelope. None of the participants replied. Three weeks after the questionnaire link was emailed, the researcher sent an email reminding the participants about the importance of the survey and thanking those who had completed the survey for their time and participation. The researcher noted that the day of contact and two days following contact being made by the researcher the responses were high. The survey was open for two months but a further problem became evident, the last four weeks coincided with the Christmas and the New Year period. Some participants indicated that they were very busy with end of year sales and targets and updating their financial accounts. The researcher speculates that response rate may have been higher if the questionnaire was administered at a different time of the year. As part of the questionnaire design the researcher asked two questions with respect to further contact on behalf of the researcher. One question enquired if the participants would be interested in a copy of the results and the second question asked for permission to be contacted in the future (within a few weeks) with respect to being interviewed. Twenty-two of the respondents requested a copy of the results and they agreed to further participation.

5.11.3 Phase 3

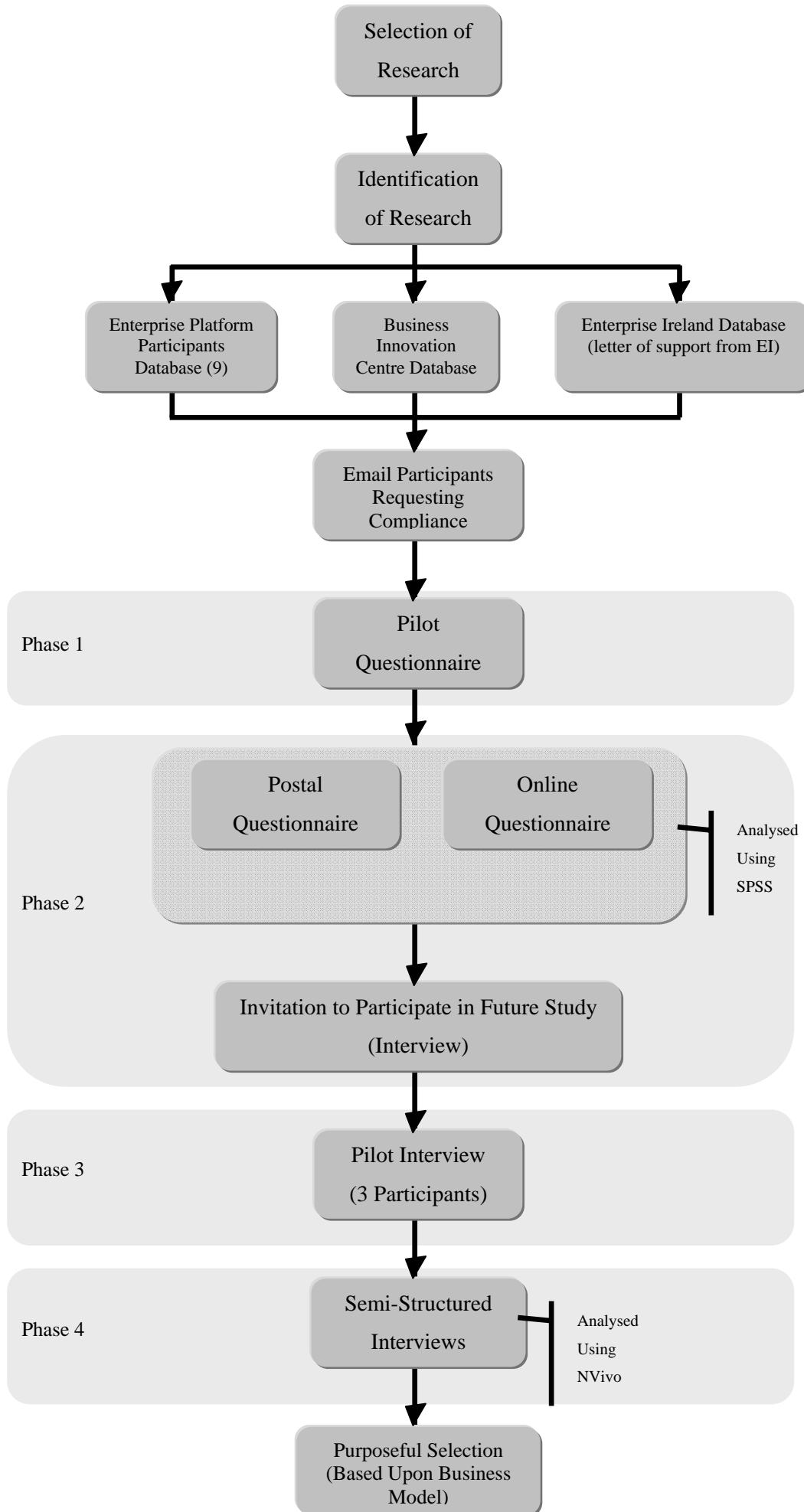
Arksey and Knight (1999) stressed the importance of piloting the interview. This is an important stage because it is only when pilots are used in the trial run that the researcher becomes aware of some shortcomings. The shortcomings were rectified before the interview went live to the interview participants. Three people (academics) piloted the interview and again their comments and feedback was greatly appreciated and were taken into consideration before the interviews went live. Time was a factor, indicated by one of the participants, as they felt that the researcher was not giving them

enough time to think about the questions and formulate a suitable answer. The researcher remained cognisant of this point throughout the six interviews.

5.11.4 Phase 4

This phase was divided into two sections. Firstly, the Irish companies were interviewed in Ireland and secondly, the companies from Newfoundland were interviewed in Newfoundland. The process of gaining access to the Irish companies was relatively easy as the researcher selected the candidates from those in phase 2 who expressed willingness to participate in further study by the researcher. Access to the companies in Newfoundland was obtained through the Genesis program in Memorial University in Newfoundland and the NATI (Newfoundland and Labrador Association of Technology Industries). Five out of the six interviewees allowed the interviews to be recorded and the researcher took handwritten notes for the interview that was not recorded. The researcher transcribed the interviews as soon after the interviews as possible. During the design phase the pros and cons of qualitative and quantitative methods were considered and the option of conducting either one in isolation was considered and rejected by the researcher. The mixed-method approach was adopted as an alternative. The results from the questionnaire provided the numeric figures to provide a broad picture of pricing in the software sector. The interviews on the other hand provided rich and detailed verbal data from key management sources in the software sector. The following section outlines the survey approach chosen to conduct this study.

Figure 5.5 *The research method*



5.12 Survey sample and population

Initially a questionnaire was distributed to start-up software companies in Ireland. This quantitative approach allowed the researcher to measure the target population with specific broad-ended questions to gain an overall understanding of the area (Hair et al. 2003). From this questionnaire, a sample of respondents participated in a one off interview to gain a broader in-depth insight into pricing techniques within the chosen company. This qualitative approach involved asking open-ended questions from people involved in this area (Blake, 2000). A positivist approach was taken when conducting the questionnaire because the researcher was searching for facts and causes of pricing practices and dilemmas in the software sector. A phenomenological approach was taken to conduct interviews. The researcher chose to conduct a mixed-method approach to gather different types of evidence in order to secure significant conceptual development in this pricing context.

5.13 Data collection methods

This section deals with the primary data and secondary data collection methods used in this piece of research. Primary literature available on the subject of software pricing is sparse. The primary research was conducted in two stages. Stage one facilitated stage two and this enabled the researcher to gain a broader understanding of the research topic. The following sections describe why questionnaires and interviews were the chosen methods for the current study and how they relate to this researcher's philosophical position.

5.13.1 Secondary data

According to Saunders et al. (2003) secondary research involves reanalysing data that has already been collected for some other purpose. They present various different types of secondary data that is available to researchers and each one is further subdivided. These types of data are as follows: documentation (written material and non-written material), multiple source (area based and time series based) and survey (censuses, continuous and regular surveys and ad hoc surveys). The researcher gained

access to the pricing literature through books, journals and web sites. Reports and documents were mainly obtained from websites such as: OECD, Irish Software Association, Software and Information Industry Association, Enterprise Ireland, IBEC to name just a few. The researcher trawled through the following databases that were available from Waterford IT library: Emerald, Business Source Premier, ProQuest, IEEE and Science Direct. Numerous books that were available both in the library and through inter library loans were referenced and key authors were identified and subsequently their areas of expertise was considered during this data collection stage of the research.

5.13.2 Primary data

Primary data collection methods in business research are normally made through observation, questions and interviews (Saunders et al. 2003). The researcher collected the primary data for this study through surveys in the form of questionnaires and interviews. Gill and Johnson (2002) suggested that surveys have the advantage of being used for experiment purposes or experimental research. The design of the surveys will depend largely on the researcher's philosophical stance (Gill and Johnson, 2002). Whether they take on a positivistic approach or an interpretivistic approach will depend on whether the researcher is interested in generating numeric or textual data.

5.14 Survey research

Surveys are generally related to questionnaires and the two terms are often confused (Robson, 1993). Questionnaires are a method of conducting surveys to collect data, along with interviews, observations and documents (DeVaus, 2002). Questionnaires are suitable to descriptive studies such as how many companies in a given population use cost-plus method when pricing.

Bryman (1989) cited in Robson (1993: 124) described a survey as a:

...collection of data on a number of units and usually at single juncture in time, with a view to collecting systematically a body of quantifiable data in respect of a number of variables which are then examined to discuss patterns of association.

Robson (1993: 49) described surveys as often being:

...cross-sectional studies and the focus is on the makeup of the sample and the state of affairs in the population at just one point in time.

The value of the 'snap shot' approach depends on choosing a representative non-biased sample. Therefore, the sample should be large enough to ensure confidence in the results.

5.14.1 Advantages and limitations of surveys

There are many advantages and disadvantages to using surveys in research. The main advantage of surveys in general is that they are quick and inexpensive to use. On the other hand the main disadvantages of surveys is that the response rate is typically low, resulting in studies not being generalisable. With respect to questionnaire type surveys there are a few disadvantages according to Robson (1993) such as respondents not necessarily reporting their beliefs and attitudes accurately or that the data is affected by the individual characteristics of the respondent. Postal surveys typically have a low response rate. Factors such as ambiguity or misinterpretation of the questions need to be taken into consideration, as the researcher is not present when the postal surveys are administered. Often the respondent is alone and they may be confused with some questions. According to Robson (1993) the researcher needs to consider the following factors when conducting interview surveys. Firstly, the respondent may be less forthcoming as they may feel that their answers are not anonymous and secondly, the data may be affected by individual characteristics of the interviewer such as their personality or experience. The advantages of surveys outweigh the disadvantages and as a result they are a very popular form of data collection in business research. Some advantages include how straightforward they are to use and that they are can be highly structured. This structure tends to suit the novice researchers as it helps guide them through the process (DeVaus, 2002).

5.14.2 Types of surveys

The following are three types of surveys: personal interviews, telephone interviews and questionnaires. This study combined questionnaires and interview questions to help

answer the research question. Outlined below are details of questionnaires and interviews and why they were chosen for the current research.

5.14.2.1 Questionnaires and interviews

The defined function of a questionnaire is to obtain a relatively small amount of information from subjects. The strength of the questionnaire approach, however lies in its ability to encompass a large number of subjects. This large population should more than compensate for the small amount of data gathered from the individual subject. This research was restricted to a relatively small number of subjects to survey (220 software companies), as a larger sample would allow for generalisability. Interviews were selected because they best suited the task of offsetting the limitations of using the questionnaire. Time constraints were also a consideration in this decision. The interview questions were qualitative in nature and this qualitative approach allowed for more interaction between the researcher and the participant. This allowed the researcher to probe deeply to uncover new clues, open up new dimensions of problems and secure a vivid account of pricing decisions. The interviews took a semi-structured approach that simultaneously allowed scope for the respondent to express subjective ideas and to relate their experiences, permitting the interviewer to guide the exchange to ensure that relevant information is disclosed.

5.14.2.2 Questionnaire

When conducting a questionnaire, data is generated from a representative sample and may be gathered in a variety of ways such as mail, email and telephone. Questionnaires tend to be structured and this rigour allows the researcher to identify patterns and make generalisations about the data obtained from them. Usually they are self-administrated and the advantage of this is that the respondent does not have to be present at the time of completion but they can usually be contacted if needed.

The logical reason for choosing to use a questionnaire for this research was to gain a broader understanding of how decision makers and managers are currently pricing their software offering. The researcher needed to know methods used, the licences type, their business model, their level of experience in this area and so forth. The foundation of current practices was needed to be laid before exploring the meaning associated with the empirical pricing practices. The interview helped provide the current study with the

depth of information that was required and a small number of companies were chosen to be the focus of attention. Six face-to-face interviews were considered sufficient to strengthen this study.

5.14.2.3 Interview

Interviews can be structured, semi-structured or unstructured. A semi-structured interview was deemed an appropriate approach, as this would allow the participants to convey a significant amount of data. This approach was chosen due to the fact that although the questions were fixed there was some degree of flexibility to the order thus allowing the participants to speak freely about the topic. This enabled the researcher to keep track of the interview so that the required questions were addressed and other important information was revealed to the researcher. The major concern that the researcher had with the other two interview structures were firstly, one was too rigid and may not have allowed the respondents to speak freely about the topic and secondly, the other was too unstructured for an inexperienced researcher to maintain control and still receive the suitable data.

Hurmerinta-Peltomata and Nummela (2006) asserted that face-to-face collection between the researcher and informant is considered essential in collecting reliable data. Face-to-face interviews offer the possibility of modifying one's line of enquiry. Questionnaires or other methods do not allow for this flexibility. Unfortunately bias on the part of the researcher or respondent, whether intentional or otherwise, remains difficult to detect or eliminate. The combination of interviews and questionnaires enhance a piece of research. The following section deals with validity and reliability.

5.14.2.4 Validity and reliability of surveys

According to Gill and Johnson (2002) validity and reliability factors indicate the strength of a research survey. Surveys should be large enough in order for the outcome to be generalisable. Questionnaires are generally considered a reliable source of data as they can be replicated. Replication is possible if it is carried out under the exact same conditions and should yield the same results. On the other hand, surveys are not considered to be very valid (Robson, 1993). Easterby-Smith et al. (2002) stated that a major problem with qualitative data is that it will require a clear explanation of how the analysis was done, how conclusions were reached and a demonstration of how the raw

data was transformed into meaningful conclusions. As the research findings are analysed, carefully documenting the distillation of meaning will assist subsequent communication of the results and support their robustness.

5.14.3 Suitability of questionnaire candidates

A random sample of technology companies were selected from the following databases: Enterprise Ireland's database of technology companies in Ireland, The Business Innovation Centres (BIC) and the Enterprise Platform Programs (EPP). The researcher identified 300 indigenous technology companies which were deemed suitable, based on their software product or service offering. The companies selected from the individual databases were selected primarily by the number of years trading. The researcher choose to go back as far as 2001 for participants as this was a logical cut-off point. Two hundred and twenty indigenous technology companies were surveyed and the results from the questionnaire generated appropriate questions to ask managers about their processes or problems they face when making pricing decisions.

5.14.4 Suitability of interview candidates

Based on the questionnaire results three suitable companies were identified in Ireland. They were selected from 22 participants who had indicated a willingness to participate at the interview stage of this research. The selection participation was based on status in the company, such as owner, manager or key decision makers who had knowledge of the pricing process within their company and possible knowledge from working in another company prior to setting up their own company. A further three companies were identified and selected in Newfoundland with the aid of NATI and the Genesis Centre databases. Using the same criterion the selections of these candidates was based on: the number of years the company was trading (this is significant as the study is interested in start-ups); level of expertise in the decision-making process before setting up their own company; and type of software business model that the company used, for instance, the SaaS model or traditional licence model.

5.15 Research criteria

This section will outline *whom, where* and *why* samples and candidates were chosen for this study. It is important that the researcher explains how access was granted to a particular software company, what processes lead to the selection of informants, how data was recorded and stored, what process was used to summarise or collate it and how that data will be transformed into ideas and explanations (Easterby-Smith et al. 2002).

The types of companies surveyed were indigenous start-up technology companies and were located in Ireland and Newfoundland. One reason why both locations were selected was due to funding received from the Irish Newfoundland Partnership Fund. It is anticipated that this research will build upon existing links with Newfoundland. Questionnaires were administered to Irish companies and interviews were conducted afterwards in both countries. Company access was secured through nine Enterprise Platform Programs (EPP), five Business Innovation Centres, Enterprise Ireland, and the Centre for International Business Studies in Memorial University Newfoundland. The data was stored in Waterford IT and was accessible only to the researcher and supervisor. Quantitative data was analysed using SPSS and qualitative data was analysed using NVivo tools.

5.16 Validity, reliability, generalisability and credibility

Validity, reliability and generalisability are technical terms for examining how valid research is. The meaning of each of these terms varies with the philosophical viewpoint adopted. It is worth noting that there is a different perspective on validity depending on whether it is viewed from a quantitative or qualitative viewpoint. Quantitative research allows for flexibility in the treatment of data, in terms of comparative and statistical analysis and repeatability of data collection in order to verify reliability. On the other hand, qualitative data is useful when one needs to support validity, explain, illuminate or interpret quantitative data gathered from the same setting. According to Mason's (2002) findings qualitative research lacks validity,

reliability and generalisability. This may be because these terms are derived from positivistic tradition, and for this reason the researcher was mindful of the credentials.

5.16.1 Validity

Validity is one of the concepts used to determine '*how good is an answer*' to support the research question (Creswell, 2003). Some researchers use mixed-methods to improve validity (Creswell, 2003; Hurmerinta-Peltomata and Nummela, 2006) and thereby acquire a deeper understanding of the subject being researched. Yin (1994) observed that case studies may contain the same degree of validity as a more positivist study and therefore his exposition of the method contains both rigour and the application of careful logic about comparisons. For a study to be valid, the researcher must be sure that a test or instrument measures the attributes that it is supposed to measure. There are four types of validity and it can be measured by one of the following methods: internal validity, external validity, construct validity or statistical conclusion validity.

Internal validity refers to whether or not the identifiable causes, actually produce what has been interpreted as the effect and checks whether the right cause-and-effect relationship has been established. The researcher questions whether a study '*can demonstrate a causal relationship between treatment and outcome*'. External validity refers to the extent to which any research findings can be generalised and this can be achieved from theoretical relationships. With construct validity the researcher asks '*does it measure what you think?*'. Does it fit the theory for which the test was designed? Statistical conclusion refers to the ability to draw conclusions based on statistical evidence of covariation and prediction. For this current mixed-method study, validity involved a series of steps that needed to be checked. For instance, steps such as: checking the validity of the quantitative data and checking the accuracy of the qualitative data (Creswell, 2003).

5.16.2 Reliability

If a study is reliable, it will yield the same results if conducted again under the same conditions. Different reliability coefficients are acceptable within different research

fields. According to Robson (1993) unless a measure is reliable it cannot be valid. The goal of reliability is to minimise the errors and bias in a study. The main objective of reliability is that if the same study is conducted following the same procedures the same results will be obtained.

Easterby-Smith et al. (2002) proposed that in order for a study to be reliable it can be assessed by posing the following two possibilities. Firstly, will the measure yield the same results on another occasion? Secondly, will similar observations be reached by other observers?

5.16.3 Generalisability

Creswell (2003) cautioned that the more cases involved in a study, the less depth can be achieved, although generalisability is more likely to be obtained. The literature indicated that surveys maximise population generalisability. According to Scandura and Williams (2000) the use of both quantitative data (questionnaires) and qualitative data (interviews) improves the generalisability of the latter. It is anticipated that this study will be somewhat generalisable to Irish start-up software companies.

5.16.4 Credibility

The credibility of the research findings is concerned with reducing the possibility of one getting inaccurate answers. That means that attention has to be paid to two particular emphases on research design, validity and reliability.

Verification and falsification are two important concepts when conducting research (Jankowicz, 2000). He says verification addresses the question '*how do we know what is valid?*'. In addition, if the concept of falsification is to be applied more fully to the constructionist's reach, one should look for evidence that might confirm or contradict what one currently believes to be true.

Having addressed validity, reliability, credibility and generalisability the next issue that was addressed was the ethical implications of the research. According to DeVaus (2002: 58) surveys are shaped by three considerations: technical, practical and ethical.

He stated that *'ideally a survey must be technically correct, practically efficient and ethically stable'*. Firstly, technical considerations are concerned with ensuring that the questionnaire construction and the sample design are as rigorous as possible. Secondly, practical considerations are concerned with issues such as the budget for the research, timeframe and the purpose of the research. Finally, the next section will look at the ethical considerations that the researcher adhered to when carrying out this research.

5.17 Ethical considerations

DeVaus (2002: 58) suggested that the ethical considerations must shape the final design of the survey. He outlined two broad approaches that a researcher must adhere to when making ethical considerations. Firstly, establish *'a set of rules'* and follow them regardless. For instance, one might adopt a rule that one will tell the truth regardless of the consequences. The second rule applies to *'following ethical guidance'*. This way the researcher is ensuring that all codes of practice are adhered to and should something go wrong during the research the researcher will be aware of the consequences before they occur. This researcher obtained ethical clearance from the Ethics Committee at Waterford IT for the current study. The researcher is aware and has an understanding of the ethical issues that were developed by the Ethics Committee at Waterford IT with respect to conducting research under their name. Privacy and confidentiality were key considerations when administering the questionnaire and conducting the interviews for this study. The researcher was dealing with sensitive data relating to companies' financial activities and this data needed to be protected and stored in a secure location. Some of the interview participants were happy for their company to be identified by name while others wished to remain anonymous. The researcher has respected the views of each individual and no names will be mentioned in the findings chapter.

5.18 Limitations

It is inevitable that a study of this size will have limitations and this study is no exception. Mixed-methods are not without their limitations and problems can arise when different kinds of data say contradictory things about the same phenomena.

There could be a discrepancy caused by the methods used. One limitation to be considered is that the formulation of interviews is reliant upon the results of the questionnaire and problems are likely to occur in the formulation of the interviews if response rates are disappointing. Problems may also occur if the participant misinterprets the questionnaire questions or the researcher misinterprets the transcription of the interview questions. Another limitation occurs because this research focuses exclusively on start-up companies. Therefore, the pricing practices of the majority of companies in the technology sector are outside the scope of this research.

5.19 Conclusion

This chapter explains and justifies the methodology that was used to conduct research on pricing in the software sector in Ireland and Newfoundland. Initially the research problem was presented along with the aim and objectives of this project. The researchers conceptual framework was presented as it helped map the direction of the research process along with Saunders et al. (2003) '*research process onion*'. The research philosophies were addressed and an outline of the ongoing philosophical debate between the social paradigm and scientific paradigm was presented. The researcher presented her own philosophical stance with respect to ontology, epistemology and human nature in order to identify and defend the methodology chosen for this study. It analysed the reasons for choosing a mixed-method approach as opposed to a single method approach and addressed why questionnaires and interviews were suitable survey data collection methods for this study. The process of identifying the advantages and limitations of this type of approach was then explained. A discussion of how access was obtained and the suitability of the survey and interview candidates for this particular piece of research was then presented. Reliability and validity are important measures and this section details how these measures were addressed. Finally, the researcher acknowledged that this study had limitations both within and outside the researcher's control.

Chapter 6

Questionnaire

Findings

Chapter 6 Questionnaire findings

6.1 Introduction

The purpose of this chapter is to present the primary research findings from phase 2 of the data collection in this study. This involved conducting a questionnaire and the sample chosen was start-up software companies operating in the Irish software industry.

This chapter presents the empirical evidence from the questionnaire a copy of which is attached in Appendix C. A sample of 300 indigenous Irish technology companies were chosen from the Enterprise Ireland Database, Enterprise Platform Programs and the Business Innovation Centres nationwide. Two hundred and twenty software companies received the online questionnaire. The remaining 80 companies' email addresses had expired or were no longer in use as the researcher received an error report from these online questionnaire candidates. Sixty-four respondents out of 220 participants responded to this questionnaire and that is a 29% response rate. The aims of the questionnaire were as follows: firstly, to gain an overall understanding of how software companies price their software offering; secondly, to determine the features that they have in place to help facilitate decision makers in the pricing decision process, such as advice available or training courses; and thirdly, to establish if the candidates are successful in achieving the desired price that fits with respondents' overall aim and objectives. The questionnaire is sub-divided into the following sections: general information about the company and the respondents' personal details, pricing guidelines, product or service details and finally the pricing process.

The sections presented in this chapter are an introduction to phase 2 of the research findings, the sector profile, company profile, the individual respondents' personal details, a section on the pricing process, pricing objectives, revenue findings, export revenue findings, export markets, availability of pricing guidelines and pricing training. Finally, a summary of the findings of phase 2 is presented.

6.2 Sector profile

This section presents the findings of the areas that the respondents' companies operate. This sector is broken down into 11 sub-sectors and a twelfth section to capture other sectors. These sectors are as follows: education, health, industrial, commercial, services, transport, environmental, games, design/development, multi-media, communications/Internet and an other section. The respondents were asked to indicate the sector that they trade in and could chose from one or more of the sectors. Table 6.1 presents the results from this question. The findings show that 40.6% of the respondents indicated that they operate in communications and Internet; 29.7% of the respondents indicated that they operate in design and development areas; 28.1% of the respondents offer a service; 39.1% of the respondents indicated that they operated in areas not specified in the questionnaire. For the respondents that trade in other sectors their answers were captured in the other option of this question. They were asked to specify the sectors that they operated. The response included the following areas: security, e-learning, aviation and telecommunications. All percentages given are valid percentages. A valid percentage is the percentage taken from the number of respondents that answered the question and not all 64 respondents.

Table 6.1 *Software sector profile*

Sector (N=64)	Percentage
Communications/Internet	40.6
Design/Development	29.7
Services	28.1
Commercial	18.8
Multi-Media	17.2
Industrial	15.6
Education	9.1
Health	9.4
Environmental	4.7
Transport	3.1
Games	0.0
Other	39.1

(Note: The respondents could select more than one answer)

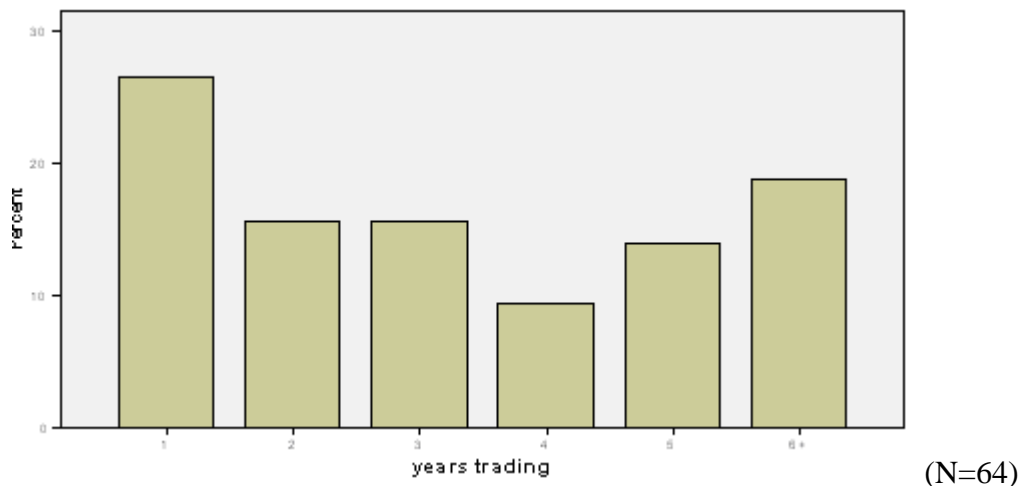
6.3 Company profile

This section summarises the findings from 64 participants with respect to their company profile. The areas presented are the number of years the company has been trading, the annual turnover, the number of customers, the number of employees for each company, software offering type and the number of companies that export.

6.3.1 Years trading

The mean number of years trading is 3.25 years. The findings show that 26.6% of respondents indicated that they have been trading for less than one year; 15.6% of the respondents reported that they have been trading one to two years; 15.6% of the respondents stated that they have been trading two to three years; 9.4% of the respondents specified that they have been trading three to four years; 14.1% of the respondents reported that they have been trading four to five years; and 18.8% of the respondents indicated that they are trading six or more years. Figure 6.1 illustrates the findings for the number of years trading as reported by the questionnaire participants’.

Figure 6.1 Years trading

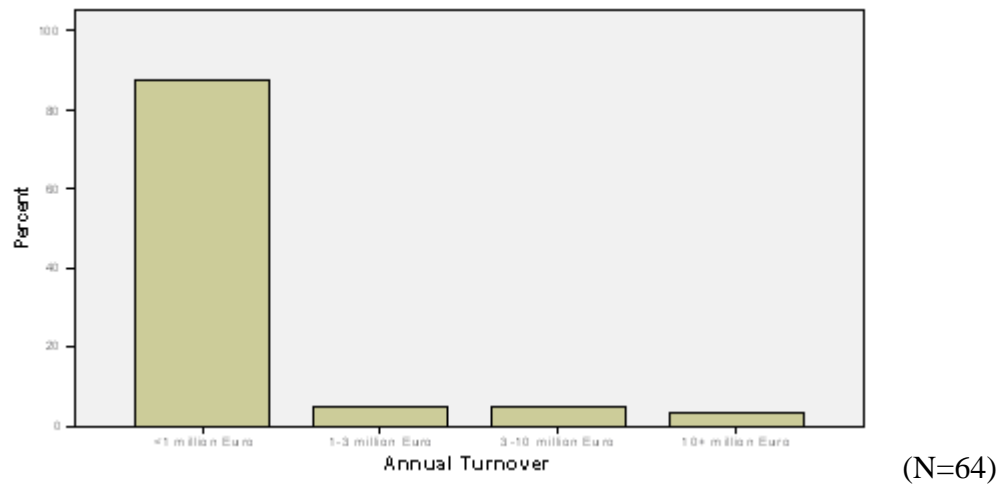


6.3.2 Annual turnover

The findings show that the mean annual turnover from the chosen population was €1.23 million. Firstly, 87.5% of the respondents had an annual turnover of less than €1 million. Secondly, 4.7% of the respondents’ indicated that their annual turnover was

between €1 and €3 million. Thirdly, 4.7% of the respondents' annual turnover is between €3 and €10 million. Fourthly, 3.1% of the respondents' annual turnover is more than €10 million. Figure 6.2 illustrates the annual turnover figures derived from this study.

Figure 6.2 Respondents' annual turnover



6.3.3 Number of customers

The findings show that the average size (in terms of customers) of a company in this sector was small. There was a mean of 2.8 customers per respondent. The findings show that 9.4% of the respondents indicated having less than 2 customers; 34.4% of the respondents reported that they had less than 10 customers; 23.4% of the respondents indicated having less than 30 customers; and 23.8% of the respondents indicated that they had more than 30 customers.

6.3.4 Number of employees

According to the results of the present study, the average size (in terms of employees) of a company in this sector was small with a mean of 1.86 employees per respondent. The findings show that 29.7% of the respondents reported having only one employee; 57.8% of the respondents indicated having between two and nine employees; 9.4% of the respondents indicated having between 10 and 49 employees; and 3.1% of the respondents reported that they had more than 50 employees.

6.3.5 Product and/or service offering

The respondents were asked whether they supplied a product, a service offering or a hybrid offering. The study shows that 52.5% of the respondents reported that they offered both products and services (hybrid) to their customers, 27.8% offered services only, while 19.7% offered products only.

On being asked if they operated in the open source market 21.9% of respondents answered affirmatively. The respondents outlined that the following were the main open source middleware/platforms: OSS platforms, OSS licences (e.g. GPL and LGPL), Apache License (2.0 and LAMP (Linux, Apache MySQL and PHP/Perl) stack), GNU public licence and Red Hat Linux were the most commonly cited. Two respondents added that they charge for their software product in their organisation for instance, for development purposes and not in the product itself. One respondent said that they do not charge for the product when OSS is embedded in the product, but they charge for additional services such as customer support and consultancy.

According to the results of this study, the findings from this section show the defining characteristic of a typical Irish start-up software company (table 6.2). Typically, the companies were trading for less than a year. They employ less than 10 employees. On average, they have less than ten customers. They predominantly offer a hybrid solution to their customers. Generally, most firms have an annual turnover of less than €1 million. Three quarters of the companies export their product or service offering. A quarter of the companies surveyed use open source software.

Table 6.2 *Indigenous Irish software sector company profile*

Descriptor	Criteria	Percentage (N=64)
Number of years trading	<1	26.6
	1-2	15.6
	2-3	15.6
	3-4	9.4
	4-5	14.0
	6+	18.8
		(100.0)
Annual turnover (millions of Euro)	<1	87.5
	1 – 3	4.7
	3 – 10	4.7
	10+	3.1
		(100.0)
Number of employees	1	29.7
	2-9	57.8
	10-49	9.4
	50+	3.1
		(100.0)
Number of customers	1	9.4
	2-9	34.4
	10-29	23.4
	30+	32.8
		(100.0)
Offering	Product based	19.7
	Service based	27.9
	Both Product and Service	52.5
		(100.0)
% of companies Exporting		75.4
% of companies using FLOSS		21.9

6.4 Respondent profile

This section presents the findings from 64 respondents. The following categories are addressed: position in the firm, age category, number of years' experience with pricing and the level of ease or difficulty they have with pricing and finally professional training.

6.4.1 Position in the firm

According to the findings of the present study 87.5% of the respondents that completed the questionnaire described themselves as owners/entrepreneurs, 3.1% of the respondents described themselves as sales/marketing managers and commercial managers, 6.1% selected the other option and they described themselves as technical director, operations director, co-founder and CEO.

6.4.2 Age category

The study found that 7.8% of the respondents indicated that they were less than 29 years old; 50% of the respondents reported that they were between 30 and 39 years old; 31.3% of the respondents informed that they were between 40 and 49 years of age; and 10.9% of the respondents stated that they were over 50 years old.

6.4.3 Pricing experience

The findings show that 21.9% of the respondents indicated that they have between less than two years pricing experience; 29.7% reported that they have between three and five years experience with pricing; 15.6% stated that they have between six and eight years pricing knowledge; 10.9% detailed that they have between nine and eleven years pricing practice; and 21.9% informed that they have eleven or more years pricing.

6.4.4 Attitude to pricing

The respondents were asked to indicate the level of difficulty that they associated with software pricing decisions. Sixty-two out of 64 participants answered this question.

The questionnaire results revealed that 59.7% of the respondents found pricing difficult despite the fact that 63.5% of them are using current guidelines to assist them with the pricing decision. Of the respondents 29.0% found the pricing decisions process straightforward, while 11.3%. Table 6.3 illustrates the level of difficulty that the respondents reported they had with pricing decisions.

Table 6.3 *Level of difficulty with the pricing decision*

Level of difficulty	Frequency	Percentage (N=62)
Straightforward	18	29.0
Easy	7	11.3
Difficult	37	59.7

This study found that there is no relationship between age and the respondents' feelings with pricing for instance, whether they found pricing straightforward, easy or difficult. The findings also indicated that there is no relationship between the number of people involved in the pricing process and how easy the respondents find the process. Interestingly, 68.8% of respondents had between two and four people involved in the pricing decision process while 29.7% said that they were the only ones involved in the pricing decision process. The study found that 63.5% of respondents have current guidelines but there is no indication of a significant relationship between those who have current guidelines and those who find the pricing decision process easy or straightforward.

6.4.5 Professional training in pricing

It was calculated that 51.6% of the respondents indicated that they received professional training, that is 33 out of 64 participants, with 57% of the 33 participants indicating that training is obtained on the job. Of the 33, 52% reported that training takes place on external courses and 28.4% of the thirty-three respondents stated that training is conducted at seminars provided by the IDA or Enterprise Ireland.

Table 6.4 Individual respondents' profile

Descriptor	Categories	Percentage
Position in firm (N=64)	Owner/Entrepreneur	87.5
	Commercial manager	3.1
	Sales/Marketing manager	3.1
	Other	6.3
		(100.0)
Age (N=64)	<29 yrs	7.8
	30-39 yrs	50.0
	40-49 yrs	31.3
	50+ yrs	10.9
		(100.0)
Number of years experience (N=64)	0-2 yr	21.9
	3-5 yrs	29.7
	6-8 yrs	15.6
	9-11 yrs	10.9
	12+ yrs	21.9
		(100.0)
% of companies that find pricing difficult (N=62)	Straightforward	29.0
	Easy	11.3
	Difficult	59.7
		(100.0)
% of companies with professional training (N=64)		68.8
% of companies with foreign market experience (N=64)		68.8
% of companies using guidelines for assistance (N=64)		63.5

This section of the study found that the typical indigenous software respondent described him/herself as an entrepreneur or owner of the company (table 6.4). The majority of them are between 30 and 39 years old. Many of the respondents have less than five years pricing experience either in the export market or in the domestic market. More than half of the respondents find pricing difficult despite having either professional pricing training or have pricing guidelines that assist the decision makers during the pricing process.

6.5 The pricing process

The following section outlines the findings from the pricing process section of the questionnaire. Fifty-nine of the 64 individual respondents who took part in the questionnaire answered this section. Five participants did not answer this segment of the questionnaire. The analyses of the results for this section are therefore from 59 participants (N=59). The five main topics addressed in this part of the questionnaire are as follows: forces that impinge on high technology pricing decisions; software pricing dynamics - areas that are of significant importance during the pricing decision-making process; methods and strategies that are taken into consideration when pricing software; the most commonly used licensing methods for selling software; and pricing and the marketing mix. Some questions in this section of the questionnaire required the respondents to rank the outcome of the pricing decision in order of importance. Other questions involved the respondents selecting the most appropriate choice from a variety of options.

According to the results from the present study, it emerged that the customer is the most important factor in the software decision-making process. Firstly, negotiation with the customer appears to be a significant factor in the decision-making process. Secondly, the respondents stated that by having an awareness of the customers' perceptions (including factors such as the costs and benefits of new technology) before implementing a pricing strategy, is relatively important. Thirdly, issues relating to attracting customers emerged as an influential factor during the decision-making process, for instance, issues such as offering free trial product or services.

6.5.1 Forces that impinge on high technology pricing decisions

Mohr et al. (2005:288) stated that many high technology firms price at high levels in order to recoup investment cost in research and development. They outlined 10 forces that conspire to push prices down. Specific questions put to the respondents identified their opinions of the main forces that impinge on their software pricing decisions. They were asked to indicate the factor that they considered the most influential when making a pricing decision. Table 6.5 outlines the results of the forces that determine the way software pricing decisions are made.

Table 6.5 *Forces that impinge on pricing decisions*

Forces (N=59)	Frequency	Percentage
Perception of costs/benefits	43	72.9
Competition	35	59.3
Produce/service nature	34	57.6
Market	26	44.1
Investment costs	24	40.7
Adoption	24	40.7
Quality	24	40.7
Life-cycles	12	20.5
Internet	9	15.3
Price-performance ratio	9	15.3

(Note: The respondents could select more than one answer)

According to the results of this study, the three most common occurring forces were customers' perception (72.9%), competition (59.3%) and the nature of the product or service (57.6%). The results showed that the two least important forces as indicated by the respondents were the Internet (15.3%) and price-performance ratio (15.3%). Price-performance is concerned with Moore's Law – where every 18 months improvements in technology doubles product performance at no increase to price (Mohr et al. 2005).

6.5.2 Pricing dynamics - Important pricing decision areas

For this question the respondents were asked to rank from one to seven the factors that they considered the most important when making pricing decisions (one being the most important and seven being the least important). There was no occurrence of cost ranked at number seven (minimum). This indicated that there was a consensus among the respondents as they considered covering cost relatively important throughout the pricing decision-making process. The customer recorded the highest number of ones (maximum). Nineteen out of 59 respondents ranked it as their number one choice. This indicated that the customer is the most important factor of the pricing decision for decision makers in the technology sector. Table 6.6 illustrates the findings from this question.

Table 6.6 *Important pricing decision areas*

Impact on pricing	Frequency (first choice)	Percentage (N=59)
Customer	19	32.2
Market	12	20.3
Costs	11	18.6
Competitor	9	15.3
Profit targets	8	13.6
Legislation	5	8.5
Substitute product or service	3	5.1

(Note: The respondents had the choice of selecting one-seven)

The three most common responses indicated by the participants were the customer, the market and costs. The results showed that 32.2% of the respondents reported that the customer was the most important factor when making pricing decisions. Secondly, 20.3% of the respondents indicated that the market is the most important. Thirdly, 18.6% stated that costs were the most important factor. The least important factors as

indicated by the respondents were competition, profit, legislation and substitute product or service, each with means of 15.3%, 13.6%, 8.5% and 5.1% respectively.

6.5.3 Methods used for pricing software

The respondents were asked to rank the frequency with which they utilised particular pricing methods. The categories ranged from always, frequently, sometimes, rarely, or never using the 12 pricing methods outlined in table 6.7. The results from these findings are taken from the 'always' category. The results showed that 30.5% of respondents (always) considered negotiation with the customer to be the most important pricing procedure. This finding was closely followed by cost plus at 27.1%; value pricing at 25.4%; target return at 20.3%; and break even analysis 16.9%. The findings report that the least common methods and strategy used by the respondents were similar to competitor 11.9%; according to the demand 8.5%; average market price 8.5%; penetration 6.8%; below competitor 3.4%; above competitor 1.7% and skimming 0.0%.

According to the results of the present study negotiation, cost-plus, value pricing and target return, were the four most common pricing methods. Each of the twelve pricing methods were categorised in the questionnaire under the following headings: cost-based, competition-based, customer-based and negotiation price. The findings of this study showed that negotiations with the customer were considered the most important method. Eighteen respondents indicated that they always negotiate with the customer. The findings also found that cost plus was considered the most important of the cost-base methods. Sixteen respondents reported that they always use the cost-plus approach. Pricing similar to the competitor was considered the most important of the competition-base method. Seven respondents indicated that they always price similarly to the competitor. Value pricing was considered the most important of the customer-base method. Fifteen respondents stated that they always price based on value to the customer.

Table 6.7 *Commonly used pricing methods and strategies*

Pricing methods (N=59)	Always %	Frequently %	Sometime %	Rarely %	Never %
Negotiation	30.5%	37.3%	22.0%	6.8%	3.4%
Cost plus	27.1%	39.0%	8.5%	8.5%	16.9%
Value pricing	25.4%	27.1%	22.0%	11.9%	13.6%
Target return	20.3%	45.8%	16.9%	6.8%	10.2%
Break even analysis	16.9%	20.3%	32.2%	11.9%	18.6%
Similar to competitor	11.9%	32.2%	33.9%	13.6%	8.5%
According to the demand	8.5%	42.4%	25.4%	10.2%	13.6%
Average market price	8.5%	28.8%	28.8%	23.7%	10.2%
Penetration	6.8%	22.0%	28.8%	20.3%	22.0%
Below competitor	3.4%	23.7%	32.2%	22.0%	18.6%
Above competitor	1.7%	15.3%	28.8%	27.1%	27.1%
Skimming	0.0%	5.1%	18.6%	28.8%	47.5%

(Note: The respondents could choice from selecting one of the following: always, sometimes, frequently, rarely or never)

6.5.4 Software licensing methods

There are a variety ways to licence software products or services. Table 6.8 illustrates the findings from the questionnaire with respect to the licensing methods that the participants use. The results of this study indicated that the most commonly used licences were offering free trial, multiple-user licences, pay-per-usage and subscription. These findings show that the least likely licensing method is leasing the product or service. It was also found that 50.8% of the respondents indicated that they used the free trial method; 44.0% reported that they used multiple-user licence; 39.0% informed that they used pay-per-usage; 37.3% indicated that they used subscription. Other methods used were single-user licence (27.6%), transfer rights (25.4%), price bundling (23.7%), open source licence (21.9%) and leasing (10.2%).

Table 6.8 *Software licensing methods*

Licence	Frequency	Percentage (N=59)
Free trial	30	50.8
Multiple-user licence	26	44.0
Pay-per-usage	23	39.0
Subscription	22	37.3
Single-user licence	16	27.6
Transfer rights	15	25.4
Price bundling	14	23.7
Open source licence	13	21.9
Leasing	6	10.2

(Note: The respondents could select more than one answer)

A breakdown of this question in the questionnaire separates the software companies into products and services companies. The breakdown highlights that most of the respondents use free trial and multiple-user licences for selling software. The most popular licensing methods for product companies are free trial (39.7%) and multiple-user licensing (32.8%). Similarly, free trial and multiple-user licences (12.0%) are also the most popular licensing methods for service companies. The software companies that offer services appear to use the same licensing methods as those who offer products. There are not many differences to report between any of the approaches above by service only companies. The most common approach is free trial, as 12% of respondents offer this approach.

6.5.5 Pricing and the marketing mix

According to Kotler (2000), pricing is an integral part of the marketing mix. The marketing mix is concerned with product, price, place and promotion, people, process and physical evidence, together the mix is known as the 7Ps. This question investigated if any of the other six elements had an impact on price. Table 6.9 presents the six elements and shows their impact on the price element of the mix.

Table 6.9 Pricing and the marketing mix

6 of the 7 P's	Frequency	Percentage (N=59)
Product/Service	46	78.0
People	34	57.6
Promotion	21	35.6
Place	18	30.5
Process	17	28.8
Physical evidence	15	25.4

(Note: The respondents could select more than one answer)

The findings showed that 78.0% of respondents indicated that the product/service element had the strongest impact on pricing during the pricing decision process. The finding reported that the other element were important but not as important as the product/service element. Of the respondents 57.6% of them indicated the people element to have an impact, 35.6% of them indicated promotion to have an impact; 30.5% of them indicated the place element; 28.8% of the respondents indicated the process element and 25.4% of them indicated physical evidence element had the least impact on price.

This section of the study found that the typical indigenous software respondents account of the pricing process is summarised in table 6.10. The majority of them reported that the customers perception of costs/benefits had the greatest impact on software pricing. The study found that cost plus is the most common method used. It was also noted that free trial was the most common licensing approach. Many of the respondents indicated that the product/service element of the marketing mix had the greatest impact on software pricing.

Table 6.10 Summary of software pricing process findings

Descriptor	Categories	Percentage
Most common force that impinges on software pricing	Customers perception of costs/benefits	72.9
The greatest impact on software pricing	Customers	32.2
Most common method of the 3Cs 'always' used	Cost-plus	30.5
Most common software licensing method	Free trial	50.8
The greatest element of the marketing mix to impact on software pricing	Product/service	78.0

6.6 Pricing objectives

This section addresses the results from the questionnaire with respect to the participants' pricing objectives. The respondents were asked to indicate whether their companies' pricing objectives were primarily financial targets, market targets, both or neither. This section also addresses the number of people involved in the pricing decision process and the pricing procedure set out for customers. All 64 respondents answered this section of the questionnaire. Table 6.11 illustrates the breakdown of the respondents' pricing objectives both market and financial.

6.6.1 Financial and market objectives

For this question the respondents had a choice of the following market activities to determine the way prices are set: volume orientated, desire to achieve a particular market share, desire to achieve a position within a particular market or other.

Table 6.11 Questionnaire respondents' pricing objectives

Objective	Most common target	Percentage (N=64)	
Market (15.6%)	1. Desire to achieve a particular market share	15.6	54.7
	2. Volume orientated		32.8
	3. Market share		18.8
	4. Other		12.5
Financial	1. Profit orientated	7.8	56.0
	2. Sales and sales with margins		25.0
	3. Costs recovery		12.2
	4. Other		7.8
Both	1. Profit orientated	70.3	56.0
	2. Sales driven		56.0
	3. Desire to achieve a position within a particular market		54.0
	4. Volume oriented		32.8

(Note: The respondents could select more than one answer)

If the respondent selected the financial target as a reason for their company's pricing objectives, they had the choice of one of the following targets: sales driven, sales margin driven, profit orientated, cost recovery or other. The respondents surveyed had a variety of objectives for adopting their pricing methods. According to the results of the present study, 70.3% of respondents have both financial and market objectives when setting prices; 15.6% companies tend to set prices that reflect only market activities; 7.8% reflect only financial; and 6.3% had other reasons for setting prices.

6.6.2 Number of people involved in the pricing decision process

The participants were asked to indicate the number of people involved in the pricing decision process. Sixty-four respondents answered this question. The findings showed that 29.7% of the respondents replied that there was one person involved in the pricing process; 68.8% of the respondents stated that there were two to four people involved in the process; and 1.6% of the respondents noted that there were more than five people involved in the process.

6.6.3 Pricing procedure for all customers

The participants were asked if they use the same pricing procedure for all of their customers. Sixty-four respondents answered this question and 45.9% of the respondents stated that they did use the same pricing procedure for all of their customers, while 54.1% indicated that they did not use the same pricing procedure.

6.6.4 Circumstances for lowering the price

The participants were asked if there were circumstances where they would lower prices or offer free products or service. They were given the following options to choose from: enter a market, launching a new product/service, discontinue a product/service and make contact. Sixty-one respondents answered this question (N=61). A valid percentage was used for the 61 respondents. The results showed that 93.4% of the respondents said that they would lower the price or give the offering for free, while 6.6% said they would not lower the price. The respondents indicated several conditions in which they would lower their prices; 30% of the respondents stated that they would lower their price to enter a market; 30% of the respondents indicated that they would

lower their prices when launching a new product/service; and 15% of the respondents reported that they would lower their prices to make contact in the market.

6.7 Revenue findings

This section of the findings is concerned with revenues generated from product and/or service sales in both the domestic and export markets. The respondents were asked to provide an estimate of the percentage of their revenue which was derived from sales in either the last twelve months, two to three years or greater than four years. Most of the respondents have only been trading for the previous 12 month period or less at the time of data gathering. As a result, the amount of data obtained which related to the other 2 periods was limited. Therefore, it was decided to report the findings from the previous 12 month period as the overwhelming share of the data was concentrated in this period.

6.7.1 Product revenue – Domestic market results

Forty-eight out of 64 respondents answered this question. The product findings for the previous 12 months were as follows: 20.8% of the respondents indicated that they received no revenue for the previous 12 months; 32.4% of the respondents had received less than 50% for revenue in the previous month; 45.9% of the respondents received more than 50% and 29% of the respondents declared that they received 100% in revenues for the previous 12 months. The findings show that the average domestic product revenues are as follows: Year 1 was 43.3%, years 2-3 was 29.7% and years 4+ were 17.3%. See Appendix G for all of the statistical product revenue findings for each period.

6.7.2 Service revenue – Domestic market results

Fifty-three respondents out of 64 answered this question. The service findings for the previous 12 months were as follows: 21.2% of the respondents indicated that they received no revenue for the previous 12 months. 26.9% of the respondents stated that they had received less than 50% in revenue for the previous 12 months; 51.8% of the respondents received more than 50 for the previous 12 months; 30.8% of the 22 the respondents declare that they received 100% in revenues in the last year. The findings

show that the average domestic service revenue were as follows: Year 1 was 48.9%, years 2-3 was 27.5% and years 4+ was 13.8%. See Appendix H for the statistical service revenue findings.

6.7.3 Export product revenues

The findings from this study show the revenues that were generated from software exports during the previous year. In the findings 47% of the respondents indicated that they received between 50% and 100% in revenues from export products in the last twelve months; 12.5% of these respondents declared that they received 100% in revenues during this period; 43.6% stated that they received less than 50% in revenues in the last twelve months; 9.4% reported that they received no revenue during this period. The findings show that the average export product revenues are as follows: Year 1 was 46.7%, years 2-3 was 22.5% and years 4+ was 10.6%. See Appendix I for the statistical export product revenue findings.

6.7.4 Export service revenues

According to the results of the current study, the findings for the service export revenue for less than a year were as follows: 44.5% of the respondents stated that they received between 50% and 100% in revenues from export services in the last 12 months; 11.1% of the respondents indicated that they received 100% in revenues during this period; 44.5% of the respondents stated that they received less than 50% in revenues during this period; and 13.9% declared that they received no revenue in the last twelve months. The findings show that the average export service revenues are as follows: Year 1 was 40.6%, years 2-3 was 16.9% and years 4+ was 9.3%. See Appendix J for the statistical service export revenue findings. Table 6.12 synthesis the average findings from each of the three periods for domestic and export product and services. Table 6.2 shows that in year 1 a greater number of services respondents (30.8%) received 100% of their domestic revenue from services as opposed to products (22.9%). The findings for software exports showed that revenues generated from product and services are similar.

Table 6.12 Revenue from domestic and export product and services

Respondents that obtained 100% in revenues						
Revenue	Year 1		Year 2-3		Year 4+	
	100%	Average	100%	Average	100%	Average
Domestic product	22.9%	(43.3%)	6.3%	(29.7%)	4.2%	(17.3%)
Domestic service	30.8%	(48.9%)	11.3%	(27.5%)	9.4%	(13.8%)
Export product	12.5%	(46.7%)	3.1%	(22.5%)	3.1%	(10.6)
Export service	11.2%	(40.6%)	0.0%	(16.9%)	8.3%	(9.3%)

% - Percentage of firms that generated 100% in revenue

The following section presents the findings of the respondents' foreign market experience.

6.8 Foreign market

This section addresses the following sections: exporting markets, exporting currency, export pricing procedure that are used by the pricing decision makers and the reasons for difference in export price. The respondents were asked if they had foreign market experience and if they worked or sold overseas. Sixty-four respondents answered this part of the questionnaire. According to the findings 68.8% of respondents indicated that they had foreign market experience; 24% of the 64 respondents stated that they had worked overseas; 50% of the 64 respondents declared that they sold overseas; 7.8% of the 64 respondents noted that they had experience with other areas. For instance, some of these respondents indicated that most of their customers are abroad, all of their products are exported or currently trying to sell into the UK and US markets.

6.8.1 Exporting markets

Sixty-one respondents answered this part of the questionnaire (N=61). All percentages used in this section are valid percentages. Valid percentages were taken from the 61 respondents as opposed to the 64. Of the sixty-one respondents 75% indicated that they currently export. Table 6.13 illustrates the regional breakdown of exporting regions. T

Table 6.13 Export market regions

Country	Percentage (N=61)	Frequency
United Kingdom incl Northern Ireland	60.7%	37
United States	32.8%	20
Canada	18.0%	11
Rest of Europe	18.0%	11
Rest of the world	14.8%	9
Asia	13.1%	8

(Note: The respondents could select more than one answer)

The largest market was the United Kingdom including Northern Ireland with 60.7% of the respondents indicating exporting to this market. The second largest market was the United States and 32.8% of the respondents indicated that they exported to this market. Of the respondents 18.0% indicated exporting to the rest of Europe (excluding United Kingdom and Northern Ireland) and Canada respectively. Of the respondents 14.8% indicated exporting to the rest of the world. Asia was reported to be the smallest market with 13.1% of the respondents indicating that they exported to this market.

6.8.2 Exporting currency

Sixty out of 64 respondents answered this question. The valid percentage used was therefore taken from 60 participants. The findings show that 55% of the respondents priced in Euros; 36.7% of the respondents stated that they priced in Sterling; 33.3% of the respondents reported that they priced in US Dollars; and 8.3% of the respondents indicated that they exported in the customer's local currency.

6.8.3 Export pricing procedure

The participants were asked if they used the same pricing procedure for pricing products for the export market as they do for the local market. Sixty-one respondents answered this question (N=61); 65.6% of the respondents indicated that they use the same pricing procedure for pricing their offering in the export market as they use in the home market; 34.4% of the respondents indicated that they use a different pricing procedure. The participants were asked to explain reasons why they did not use the same pricing procedure. The following are some of the common replies: no sales in Ireland, price varies between different countries, tailor prices, case-by-case basis, different agreements with different customers and discount.

6.8.4 Factors why there is a difference in the export price

The participants who stated that they do apply a different export pricing strategy were asked if this difference in price was due to any of the following factors: exchange rates, different market opportunities, transport costs, localisation costs, tax/stamp duty regulations, insurance, lost/stolen goods, returns or other reasons. The valid percentage was taken from 14 respondents (N=14). Fourteen out of 19 participants that answered yes to the previous question furnished the following replies. According to the results 28.3% of the respondents reported different market opportunities as the reason for a difference in export and domestic price; 26.4% of the respondents indicated exchange rates as the reason for a difference in export and domestic price; 9.4% of respondents noted transport costs as a reason for a difference in price; and 5.7% of the respondents stated tax/stamp duty regulations as the reason for the difference in the prices. The following section presents the questions pertaining to pricing guidelines.

6.9 Pricing guidelines

The following areas are addressed in this section: written or non written guidelines, how the guidelines were devised and by whom, what the guidelines cover, how old they are, how often they are updated, how appropriate they are and finally, if there is much flexibility with the guidelines when deciding upon a price. This section presents the findings from 63 participants. All percentages will be given as a valid percentage of the 63 participants.

6.9.1 Guideline description

It was found that 63.5% of respondents indicated that they have pricing guidelines. Forty respondents answered the following question (N=40). They were asked if their pricing guidelines were written down or if they were non-written (oral/word of mouth): 22.2% of the respondents answered that they has both written and non-written guidelines; 19% of the respondents indicated that they had formal guidelines; 12.7% respondents stated that they had informal or oral guidelines. Finally, 9.5% of the respondents reported that they did not have any such guidelines.

6.9.2 Responsibility for drawing up the guidelines

The respondents were asked to indicate who devised the guidelines. They were asked to select from the following list: owner, manager, team of managers, all staff or government body. Forty-nine respondents answered this question (N=49). The valid percentage will be out of 49 respondents. According to the results 45.7% of the respondents detailed that the owner was responsible; 22.2% stated that teams of managers were responsible; 4.6% reported that the manager was responsible; no respondent indicated that either all staff or a government body were involved; 5.1% of the respondents indicated that other people were involved in devising the pricing guidelines. Other people engaged with the guideline layout include the director, production manager and CEO.

6.9.3 Guideline information

The respondents were asked what their guidelines covered. They were given the following list to choose from: responsibility for signing off a deal, composing the price, allocation of discounts or payment terms and conditions. Sixty-two respondents answered this question (N=62). The valid percentage is 62 participants. According to the findings 50% of the participants indicated that composing the price is covered in the guidelines; 25.8% of the participants reported that allocation of discounts is covered in the guidelines; 35.5% of the participants indicated that allocation of payment terms and conditions are covered in the guidelines; 21% of the participants informed that responsibility for signing off a deal is covered in the guidelines; 4.8% participants declared that other details were covered in the guidelines. The type of details covered in the guidelines include quotation template and value of benefit deliverable.

6.9.4 Age of the guidelines

Thirty-five respondents answered this question (N=35). The valid percentage is therefore out of 35. The results showed that 42.9% of the respondents reported that the guidelines were less than one year old; 40% of the respondents informed that the guidelines were one year old; 14.2% of the respondents detailed that the guidelines were two year old; and 2.8% of the respondents indicated that the guidelines were three or more year old.

6.9.5 Guideline updates

Thirty-five respondents answered this question (N=35). The valid percentage is therefore out of 35: 2.8% of the respondents indicated that they never update the guidelines; the findings indicated 5.7% of the respondents noted that they update the guidelines on a monthly basis; 37% of the respondents said that they update the guidelines on a quarterly basis; 54.3% of the respondents indicated that they update the guidelines on an annual basis.

6.9.6 Appropriateness of guidelines

Thirty-six respondents answered this question (N=36). The valid percentage is therefore out of 36: 47.2% of the respondents considered their guidelines very appropriate; according to the findings, 25% of the respondents regard their guidelines as appropriate; 19.4% of the respondents considered their guidelines to be average; and 8.3% of the respondents believe that their guidelines are inappropriate.

6.9.7 Flexibility with the guidelines when pricing

Thirty-six respondents answered this question. The valid percentage is therefore out of 36: 5.5% of the respondents considered their guidelines to be very inflexible; 11.1% of the respondents regard their guidelines to be inflexible; 19.4% of the respondents believe that their guidelines are very flexible; 27.7% of the respondents deem their guidelines flexible; while 36.1% of the respondents considered their guidelines 'ok'. Table 6.14 illustrates a summary of the main results from this section.

Table 6.14 Typical software pricing guideline from the questionnaire respondents

Software pricing guideline	Percentage
Participants that have guidelines	63.5%
Responsibility of devising the guideline	45.7%
Price is addressed in the guideline	50.0%
Guideline is less than two years old	82.9%
Guideline is updated on an annual basis	54.3%
Guideline is very appropriate	47.2%

6.10 Further comments

The final question on the questionnaire asked the respondents if they had any further comments with respect to pricing. Twenty-one respondents replied. The following is a sample of some of the comments made by the participants. A transcript of the comments is attached in Appendix K. The analysis of this question revealed that most of the respondents indicated the importance of having an understanding of the customer and knowing what they want from the software application.

One respondent noted that pricing is

...based on value and benefits to customers is critical. If you can prove and sell real benefit to customers.

Another respondent replied stating that

...pricing is an external thing, particularly for software. Customers' perception of value is key. The market is the best place to get a guideline on price.

6.11 Conclusion

This chapter has presented the statistical primary research findings from the current study. A total of 59 respondents completed the questionnaire and five respondents exited before completing the questionnaire. The analysis of the results were carried out under the following headings; the sector profile, company profile, the respondents' personal details, a section on the pricing process, pricing objectives, domestic revenue findings, export revenue findings, foreign markets, and finally availability of pricing guidelines.

The objective of this chapter has been to gain a broader understanding of how software companies are pricing and licensing their software. From the current study, it is evident that the respondents consider the customer to be of paramount importance in the pricing process in the software sector. They therefore considered that conducting negotiations (62.5%) with the customer was also an extremely important endeavour.

The researcher found that the most common trading sectors that the participants traded in was communications/Internet. Most (26.6%) of the companies were either trading for less than a year. More than half (57.8%) of the company's employ less than 10 employees. Over three quarters (87.5%) of the respondents indicated that their annual turnover was less than €1 million. Three quarters (75.4%) of the company's engage in exporting. Over half (52.5%) of the companies provide a hybrid offering.

Many participants reported encountering a level of pricing difficulty with pricing. It was found that 59.7% of the participants stated that they found the pricing process difficult, although findings show that 21.9% of the participants had 11 or more years pricing experience and 29.7% of the respondents, have three to five years pricing experience. Professional training is available and 51.6% of the participants indicated that they have received professional training. Pricing guidelines are used to assist the decision makers and 63.5% of the respondents reported that they use guidelines. Half of the respondents reported that the owner is responsible for devising the guidelines. Almost all of the respondents (90%) stated that their current guidelines are less than two years old.

The participants of this study utilise a variety of methods for selling their offering. These methods depend on whether they offer a product, service or hybrid offering. The results show that most of the respondents offer free trial (50.8%), multiple-user licences (44.0%), pay-per-usage (39.0%) and subscription fee (37.3%). The findings signify that providing a free trial of the software offering to potential customers is an important step in making the sale or getting a customer on-board.

The findings demonstrate that there is not much of a difference between the revenues generated from products and those generated from services. Similarly the results from the export revenues show that exports are lower than those for the domestic revenue.

The following chapter presents the findings of phase 4 of the research. This chapter will present rich data from the interviews that were conducted in both Ireland and Newfoundland.

Chapter 7

Interview Findings

Chapter 7 Interview findings

7.1 Introduction

The purpose of this chapter is to present the primary research findings of phase 4 of the current study. The findings presented in this chapter are qualitative in nature and they are derived from six semi-structured interviews. The interview questions are attached in Appendix D.

Six software managers or pricing decision makers agreed to participate in this study. Three of the participants were from Ireland and three from Newfoundland. These participants were selected for interviewing based on their software offering. Some of the participants offer pure products, while others offer pure services and others offer a mixture of both. A hybrid model will be referred to throughout this chapter for those companies who offer both methods simultaneously. Respondents IRL B and IRL C offer pure services and their customers access the service via the Internet. Their customers do not receive anything tangible, as software-as-a-service (SaaS) is not physical. Respondents IRL A and NFL E currently offer products and both of these respondents were developing web-based models at the time of being interviewed. Respondent IRL A's service offering is currently being developed for his second company while respondent NFL E's service offering is for the next market that his company plans to enter. Respondents NFL D and NFL F both offer a mixture of product and service elements to their customers and thus may be classified as a hybrid offering. Table 7.1 outlines the breakdown of the individual interviewees' company profiles.

The following areas were addressed during the interview process to obtain a deeper understanding of the pricing process: company details, personal details, costs, the pricing process, competition, customer, market, export and negotiating. The following section presents the personal details of the respondents in question. This section aims to illustrate background information that characterise the participants. The Irish participants were chosen as candidates as they had previously indicated their

willingness to participate in further study. The Canadian candidates were selected from a database compiled by the Genesis Centre in Memorial University, Newfoundland.

7.2 Personal details

This section addresses the respondents' roles in the organisation, past education, work experience and investigates whether their past experience has contributed to their current pricing model. All of the participants indicated that they had third level education before entering the software industry. Five respondents IRL A, IRL B, IRL C, NFL D and NFL E are the company founders or co-founders. Table 7.1 outlines each of the interviewee profiles. The following information was obtained from the candidates during the interviews: interviewee's status, education qualifications, their past pricing experience and whether advice on pricing issues is available either internally or externally.

Table 7.1 Interviewee profile

Respondent	Interviewee status	Qualification	Past pricing experience	Advice available
IRL A	Founder & VP of business development	BSc, MBA	Familiar	Yes (internally)
IRL B	Founder & CEO	BSc	Familiar	Yes
IRL C	Founder & Tech director	BSc	No previous experience	Yes
NFL D	Founder & CTO	BSc, MSc	No previous experience	Yes (CEO)
NFL E	Founder & CEO	2 years third level	Familiar	Yes (other software companies)
NFL F	VP of Marketing	BSc, MBA	Familiar	Yes (other software companies)

7.2.1 Role in the organisation

Respondent NFL F was the only candidate that was not a founder or co-founder of the organisation. He described himself as Vice President of Marketing and had recently joined the company. All other respondents referred to themselves as the founders and either CEO or CTO of the organisation.

7.2.2 Education

Respondents IRL A, IRL B, IRL C, NFL D and NFL F indicated that they received their primary degrees in one of the following areas: Computer Science, Engineering or Electronics. Respondents IRL A and NFL F hold MBAs and respondent NFL D holds an MSc. Respondent NFL E studied programming for two years.

7.2.3 Work experience

The participants were asked to talk about their past working experiences. The main areas that the participants worked in are development and design, sales and marketing with some consultancy. Respondent NFL D indicated that he has been an entrepreneur for 10 years and that this is his second entrepreneurial enterprise. He added that his experience in pricing is limited because he was mainly involved in development in his previous business.

7.2.4 Past experience

When asked about their past experience with pricing most of the respondents indicated that they had not been directly involved in the pricing decision-making process before setting up their entrepreneurial enterprise. Respondents IRL A, IRL C and NFL F said that they were familiar with the process in their past endeavours. Respondent IRL A indicated that had been engaged in costing as opposed to pricing in the past. Upon reflection on his past experience respondent IRL C indicated that he was '*very familiar with it [pricing]*'. He elaborated on this saying '*I was involved in pricing for about eight years*'. When probed about his past experience he elaborated and talked about the last day of each quarter where sales are '*generally large*'. He explained that the main

reason for this is that *'everyone is trying to get as much money as possible so they will sell for any price'*. Respondent IRL B outlined a similar tactic deployed in his previous company indicating that *'typically every negotiator in large organisations knows that companies are quarterly based. They know that if they wait until the end of the quarter they will get a 50% discount or more.'* The participants were asked about the number of years experience they were engaged with pricing. In general, respondents indicated various differing levels of experience. The following accounts provide examples of these varying degrees of prior pricing experience. Respondent IRL A indicated that he had 30 years experience with pricing although he added that he was not directly involved in the process. While respondent NFL D indicated that he had little experience as his current company began trading in July 2007. Although respondent NFL D said that he had no pricing experience, he added that his CEO has pricing experience. Respondent IRL C expressed that he was *'involved in pricing for about eight years'*. Similarly, respondent NFL F indicated his involvement with pricing decisions was approximately six or seven years.

7.2.5 Past involvement in the pricing decision-making process

The respondents that indicated that they were somewhat involved in the pricing decision-making process in the past were probed to see if their past experience contributed to the approach currently being deployed in their company. Respondent IRL C said that his current approach was different. He said *'no, it is completely different. SaaS is online it is a pure service there is no charging for the software itself.'* In his previous company, they sold shrink-wrapped software but his current company has a service offering. He indicated that it is a different model, and that the customer is *'not paying to own the software they are paying to use it'*.

Bearing in mind that respondent NFL D had no past experience with pricing, the interviewer probed the respondent to gauge the respondent's pricing ability. He said that *'it is a pretty easy job'* and elaborated further by indicating that the *'market was already there for us'*. Respondent IRL C shadowed this sentiment by confirming his satisfaction with his pricing ability. He stated that *'so far I have got it right'*. Contrary to the above opinions, respondent NFL F stated that they find pricing difficult *'right now we are struggling with it [pricing] as a company'*. Respondent NFL F suggested

that the difficulty was probably due to the lack of information on issues such as competitors' pricing.

All respondents indicated that they are directly involved in their company's current pricing decision-making process along with other members of staff or personnel involved in the company such as co-founders or advisers. This direct involvement enabled them to convey an in-depth account of the pricing decision-making process in their respective companies. The following section describes the individual company profiles. The delivery mechanism of the offering is significant as it distinguishes between those offering pure services, products or a hybrid offering.

7.3 Company details

The following section portrays the company details and presents relevant details on the company, such as, the nature of the business, offering type, length of time trading and the number of people employed. Table 7.2 summarises the participants' profile showing the companies that export and if they are venture capital or angel funded. The individual companies are coded from 1 to 6. IRL A, IRL B IRL C, NFL D, NFL E and NFL F correspond with individual participants and their company.

Table 7.2 Company profile

Company	1	2	3	4	5	6
Respondent	IRL A	IRL B	IRL C	NFL D	NFL E	NFL F
Began trading	2003	2004	2007	2007	2004	1997
Business model	Licence	SaaS	SaaS	Hybrid	Licence	Hybrid
# employed	50	14	2	11	12	10
Export	Yes	Yes	No	Yes	Yes	Yes
Funded	Yes	N/A ⁴	No	Yes	No	No

⁴ N/A – This question was not applicable to the respondent because his company was in the process of being acquired.

7.3.1 Offering

Both respondents IRL A and NFL E offer software products to their customers. Respondent IRL A currently operates two software companies. For the purpose of this research, the researcher focuses on one of these companies as it has been trading for five years. This company offers a product while respondent IRL A's other company is still at development stage and will provide a service offering. The participant indicated that his company offers a '*once off licence plus support*' to his customers.

7.3.2 Time trading

Most of the respondents indicated that they had been trading for the last six years except for respondent NFL F who has been trading for 11 years.

7.3.3 Employees

Five out of the six respondents reported that there are between 2 and 14 employees in their respective companies. The company with the largest number of employees was respondent IRL A, this company employs 50 employees.

7.3.4 Export Market

Five out of the six respondents stated that they currently export. When asked about their export market respondents IRL A, IRL B, NFL D, NFL E and NFL F indicated that the USA was the main export market. The only respondent that does not export software is IRL C, although he added it is possible that they might export in the future.

7.3.5 Funding

Two out of the six respondents indicated that they received external funding. Respondent IRL A stated that his company is a recipient of venture capital funding. He elaborated by saying that Ireland '*is a hard market for venture capitals companies*' because it is difficult '*to get a company big enough to make a big enough return*'. Respondent NFL D declared that his company receives angel funding. He added that

for technology companies it *'is difficult to find many angel investors'* in Canada. Respondent IRL B did not indicate if his company received funding. Although he did state however, that *'you will not find a venture capitalist that will give money to anyone who is not a SaaS company'*. Respondents IRL C, NFL E and NFL F indicated that they were in the process of seeking funding. The following section presents the pricing structure adopted in each company. Some companies offer a flat⁵ rate to their customer, while others charge various rates, for instance, a percentage of revenue to their customers or an upfront licence fee.

7.4 Pricing structure

This section presents the pricing structure findings adopted by the participants. The respondents who offer the SaaS model charge a percentage of revenue. The respondents who offer a pure product charge an upfront licence plus extra for support and their perpetual licences can be either fixed or negotiated upon. Table 7.3 illustrates the pricing structure offered by each respondent.

Respondent NFL E offers a *'fixed'* pricing structure for their product offering. At the time that this interview was conducted, they were developing a web-based model. For the web-based model the pricing decision makers had not finalised the pricing structure. They were considering adopting a *'flat rate per store plus 25% for maintenance and support'* for use of the service.

Both respondent IRL B's and IRL C's offerings are considered pure services. The customer pays a percentage if they avail of the service. Respondent IRL B offers his service to a B2B market while respondent IRL C offers his in a B2C environment. Respondent IRL B's customers subscribe for the use of the service. The subscription covers a base fee plus a percentage of revenue. This percentage can be negotiated upon and it depends on the volume being used by the individual customer. He indicated that the *'larger the volume the greater the discount'* the customer receives.

⁵ The terms flat and fixed fee will be used interchangeably throughout this chapter.

Table 7.3 Pricing structure

Respondent	Business model	Approach	Licences
IRL A	Traditional B2B	Cost-based	Traditional licence - usage-based
IRL B	SaaS B2B	Value-based	Usage-based - % of revenue
IRL C	SaaS B2C	Value-based	Usage-based - % of refund
NFL D	Hybrid B2B	Cost-based	Subscription - fixed
NFL E	Traditional B2B	Cost-based	Traditional licence- fixed
NFL F	Hybrid B2B	Cost-based	1. Traditional licence - per user 2. Subscription - per user

Respondent IRL C’s offering is slightly different to IRL B’s offering, in that their customers only use the service once per year. If their customers decide to avail of the service they pay between 10% and 15% of the refund due to them for using the service. Respondent IRL C outlined that although there is no negotiation on the price structure they can negotiate on the percentage of refund available to the customer.

Finally, both respondents NFL D and NFL F offer, as a mixture, a product and/or service element to their customers. Respondent NFL D described his offering as a hybrid because the software is installed on a USB key [product]. The customer is ultimately charged based on a ‘*flat rate and they get charged [billed] a monthly rate*’.

Respondent NFL F and respondent IRL A both offer a similar pricing structure to some of their customers. Depending on the customer’s requirements respondent NFL F’s hybrid offering allows his company to offer both ‘*upfront licence fee plus maintenance*’ and a ‘*web service*’ model. The web-based service allows them to offer their customers a choice of purchasing the service on a ‘*per user basis plus a base fee*’ for the use of the service. When probed further as to whether he has a product offering or a service offering the interviewee responded stating that ‘*we have a service offering*’. He elaborated further by saying ‘*there is a product but the product is really providing a service*’. He also indicated that ‘*some clients have a policy that they must have*

everything internally hosted' and for that reason *'we would install it on their system'*. He added that when this occurs they offer a once off licence fee. The following section addresses the pricing process deployed by the individual companies.

7.5 The pricing process

This section addresses the pricing process. It allowed the interviewee candidates to reflect on issues such as their pricing ability, licensing methods, rationale for using their current methods, the length of time using the current pricing model, the availability of price lists, business profitability, maintenance and support, comments from the companies who offer SaaS and finally, their comments on the resistance to SaaS.

7.5.1 Pricing ability

The following are the responses from the candidates regarding their pricing ability. Four respondents, IRL A, IRL B, IRL C and NFL D, indicated that they were reasonably confident while respondents NFL E and NFL F indicated that the pricing process was difficult for the new market that they were entering.

Respondent IRL A (traditional model) indicated that *'we are reasonably confident'*. He elaborated on this by saying *'I shouldn't do that job [pricing decision maker] if I wasn't [confident]'*.

Respondent IRL B (SaaS) appeared reasonably confident about his pricing ability. He indicated that the company had used previous methods before they settled on the one that they are currently using. He emphasised the importance of that method by stating that it is *'acknowledged as the way forward'*.

When asked about his pricing ability, respondent IRL C (SaaS) replied *'there is not much to it with [his company]'*. Respondent NFL D (Hybrid model) expressed a similar opinion to respondent IRL C by saying *'it is a pretty easy job'*.

Respondent NFL E (traditional model) said that *'we are happy with the pricing model that we have'* for the licensed model. He indicated that to get to that model they experimented with different ones. He continued to say that now that they are expanding into the web-based service model *'it [pricing] is really tough for us because there is not much competition'* in new market. The lack of competition makes it difficult for the decision makers to set prices. To overcome the obstacle he stated that they *'talk to people operating in similar industries'* to get advice on pricing.

Finally, respondent NFL F (hybrid model) said that *'it is probably one of the toughest things that we deal with'*. He stated that his current pricing model is *'six years old'* and that the *'market has changed'* since that model was developed. He added that now there is more competition and they *'need to change the current pricing model'* to suit the market, otherwise they will be left behind.

7.5.2 Licensing methods

Respondents IRL A, NFL E and NFL F all offer similar licensing methods to their customers: upfront licence plus extra for maintenance and support. Maintenance and support is charged at approximately 20% to 25% of the price of the software. Respondent NFL F also offers some of their customers the option of paying per-user plus an additional base fee for the service. Finally, respondent NFL F adopts a flat rate for the use of their service. Respondent's IRL B and IRL C offer a pure service to their customers and charge a percentage of revenue plus a base fee.

Respondent IRL A made some comments on the pricing methods used in his second business and said that the method he uses to charge his customer is *'messages per second that flow through the customers system'*. He stated that for this company *'the more money a customer makes the higher we can charge'*. Another method respondent IRL A mentioned involves one in which a customer requires a change request. This involves direct engineering of the software and for this they *'price up the direct engineering costs and add both overheads and margin'* and then they can *'negotiate with the customer to arrive at the final price'*. A final method respondent IRL A mentioned is pricing that involves *'calculating how much your customer will make out of the system'*. This can be done by *'estimating the numbers that they give you'*. He

summarised by saying that you ultimately *'price to the value to the customer'*. Similarly, respondent IRL B indicated that their service allows customers to obtain pricing discounts and the more customers that use the service the greater the discount they receive. He added that *'successful pricing is the more they [customer] sold the more they paid us'*.

7.5.3 Rationale for using their current models

When asked why they use the methods outlined above the respondents replied with various different reasons such as simply a rough idea of what is acceptable to charge, to mirroring how the customers price, competitors' fees, customers' needs and recurring revenue.

Respondent IRL A (traditional model) indicated that he has been in the business a long time and he has a *'rough idea of acceptable prices'* to the customer. Respondent IRL B (SaaS) tried other approaches, for instance, *'per user pricing and that didn't work'*. He continued to say *'we attempted to come up with a price that would replicate that [the old licence model]'*. He stated that *'we found that there is such a variance in what you can charge a user'*. He outlined three reasons for their current pricing method (a percentage of revenue). The first reason *'because we deal with start-ups all the time who have no revenues'*. He elaborated on this by stating that the traditional licensing method is too costly for start-up companies and they find it difficult to absorb the upfront cost. The second reason was to *'mirror the way our customers are pricing'*. The third reason was that *'our customers have such a variety of different ways of charging'*. He added that the value to the customer depended on the volume they bought *'the more volume they bought they would get discounts'*.

Respondent IRL C (SaaS) stated that in order to continue in business they must keep their prices *'below what the competitor is charging'*. The competitor is therefore a contributing factor as to why the company currently prices the way they do. Respondent NFL D (hybrid model) outlined that *'in terms of [the product offering] the way the world is going is that you pay flat rate for service'*. He also stated that the reason that method suits his company is because *'most customers will use less than that threshold for their entire life'* and that the customer has a *'regular bill for using their*

service'. This implies that his company will obtain ongoing revenue.

Respondent NFL E (traditional model) added that *'to get to that pricing model we went through so many different ones'*. He noted that the company is currently moving to the SaaS model because of the recurring revenue. He added that they are *'going after Salesforce.com's model'* which is a fixed amount per month. He outlined the main reason for moving to SaaS, is because their software customers does not like any hidden costs associated with software. Respondent NFL E acknowledged that if this method does not work for them they have considered an alternative pricing approach based on *'the number of patients they [customer] have on their system'*. This is referred to as a various rate method approach.

According to respondent NFL F they use a hybrid model. He provided reasons for adopting a hybrid model, for instance they want to give their customers a choice of software delivery. A second reason is that they want to suit their customers' needs and give the customers what they want because *'you really have to sell the match to the companies' needs'*. Respondent NFL F also stated that *'to service the model properly you can't stick to one licensing type of model'*. Within the perpetual model, *'there are different types of users so they are charged depending on the level of access required'*. He summarised by saying that if you want new customers and retain the existing ones *'you can't say [to a customer] oh we are going to do perpetual sales and that is how we sell'*. He added that as a company they prefer the web-based model due to the *'ongoing recurring revenues'* associated with SaaS. He described their pricing scheme as a *'staggered pricing scheme'* and outlined that the company is currently looking at *'different models of pricing'*. One of the models under consideration is *'penetration pricing'* as they want to penetrate the market and become market leaders.

7.5.4 Length of time using the current pricing model

The participants were asked to detail the duration that they were using their current pricing model and if they used the same model since they began trading. Four of the respondents, IRL A, IRL C and NFL D indicated their current pricing model has not changed since they began trading. According to respondent NFL F, his company has been using the current model for six years and they were looking at changing it because

their market is evolving. Two of the respondents, IRL B and NFL E indicated that they have tried a few different models before they settled with the model that they currently use.

Respondent IRL B indicated that they have been using the current model for approximately 12 months. Upon reflection, he stated that their first pricing attempt was unsuitable and he added that '*we quickly realised that we had to move to a percentage of revenue*'. Similarly, Respondent NFL E said that '*we went through so many different ones [pricing models] to get to where we are*'. According to respondent NFL D, their company is using the same model that they started out with. He asserted that they looked at an indirect competitor and adopted a similar approach. He added that they had a '*good model to compare against*'. Respondent NFL F acknowledged that the company's current model is six years old and at the time of conducting this research, their pricing model was under review.

7.5.5 Price list

The researcher asked the interview candidates if there was a price list available for their customers to view. The candidates gave the following replies: four of the respondents, IRL A, IRL B, IRL C and NFL F indicated that they have price lists available on their website; respondent IRL A has a non-written list; respondent NFL D has a card with the price list on it for the sales staff to show their customers upon request; and respondents NFL E did not indicate if there was a list, although he did add that their customers have access to this information online and at trade shows.

7.5.6 Business profitability

The participants were asked whether their business was in profit or not. Five out of the six respondents answered this question. Respondent IRL A and NFL F indicated that both their companies were in profit. Respondents NFL D said that the company was not yet in profit. He indicated that it might be profitable in a year. Respondent IRL B described profitability as an aggregate pointing out that '*the more customers you have the more profitable it [SaaS] will be*'. Respondent IRL C said that his company has not been trading long enough to be in profit.

7.5.7 Maintenance and support

When asked about offering maintenance and support the three product based companies, managed by respondents IRL A, NFL E and NFL F, outlined that they offer between 15% and 25% of the price of the software for maintenance and support based on the price of the upfront licence. Respondent IRL B has a service offering so maintenance and support is included in the ongoing subscription fee. He added that the company that does their hosting for them looks after maintenance and support for a fee. The two pure service-based companies do not charge their customers extra for maintenance and support. Maintenance and support is included in the service offering and their systems are supported and upgraded on an ongoing basis.

Respondent IRL A (traditional model) stated that the customer typically pays between *'15% and 20% per annum for the software price for that support'*. The interviewer probed the participants on ways of increasing that revenue by offering customers different levels of support such as platinum or gold level. Respondent IRL A replied saying *'we looked at that, we tried selling gold, silver platinum level of support but they [the customer] were not really interested'*. He communicated that this was possibly because of service level agreement (SLA). He elaborated on this by saying that:

We haven't seen in the industry where they [the customer] want to pay for more service. They want to pay to have their systems maintained. That's what they are interested in.

Respondent IRL A's company offers training, for instance *'training to configure and manage the product'*; this is priced at a fixed amount per session. Respondent NFL E has a similar pricing structure to respondent IRL A. They currently provide a licence fee plus 25% annual fee for support and upgrades. Respondent NFL E reported that if the customer is using existing software they charge the customer a fee for data conversion. This allows his company to generate extra revenue.

Respondent NFL D (hybrid model) indicated that, as the sales person is the primary support for their customers, the company can charge a *'premium for our service'*. The company also uses a call centre for customer support enquiries that are out of office hours. This enables the customer to receive 24/7 support.

Respondent NFL F (hybrid model) indicated that training is offered through online demos and that is *'covered in the base fee'*. If the customer requires assistance they will *'pay us to fly down and give them one-to-one training'*. Respondent NFL F mentioned that they have used call centres in the past but now their developers do the support and they want to continue with that approach, as it is a differentiating feature. Respondent IRL B (SaaS) contrasted this approach as they get their hosting company to look after their customer support and the *'fourteen people employed by the company just write software'*. Respondent IRL B added that with SaaS in B2B environments *'there is no maintenance and support you [the customer] just pay a fee'*. Respondent IRL C (SaaS) reported a similar practice to respondent IRL A. He stated that they *'don't offer any maintenance and support'* as their service is a B2C and in general those environments do not tend to require much maintenance and support. He outlined that from the customer's perspective *'it [the service] is a once off thing'*. He expressed that if the customer has a problem with the service they can *'phone up for assistance'*. Respondent IRL C pointed out that in his previous job *'maintenance and support was a key source of income'* and it was charged at approximately 18% of the cost of the software. This corresponds with what respondents IRL A, NFL E and NFL F are currently charging. He went on to say that in that particular company the customer had the option of paying for different levels of support as it was critical that the systems were always up and running. This contrasts with what respondent IRL A said with respect to the customers requiring different levels of support.

7.5.8 Comments from the service companies on the SaaS pricing model

The participants were asked to share their views and comment on any concerns that they had about software-as-a-service, the future of SaaS and the benefits of it for the whole community.

Respondent IRL B pointed out that one of the *'joys of SaaS is that it is typically priced based on how the software vendor provides value to the customer'* such as, if the valuable thing is the sales person then you *'charge per sales guy'*. He points out that *'the key is to price based on how your customer perceives value'*. In his opinion in *'fifteen years the traditional pricing model will just not be available'*. He also reported that it is difficult to move from one model [traditional] to another [SaaS]. Conversely,

respondent NFL E contrasted this point and he outlined that most desktop packages can be moved easily using a technology called Ajax. Respondent IRL B was probed further on what he could foresee for the future of SaaS. He indicated that software will be free to the end user particularly in the B2C environment. He predicted that SaaS B2C environments will be financed through advertising but in a B2B environment, he added that it will get cheaper but it will not be free to the customer.

Respondent NFL D noted that in the past most purchasing departments had *'problems swallowing big purchases'*. He added that most companies have moved to software-as-a-service where one can avail of the *'pay-as-you-go'* pricing facility. He stated that one of the advantages of this method is that *'sales can be closed more quickly'*.

When referring to his second company (SaaS), respondent IRL A pointed out the SaaS *'pricing model is cumulative'* and the benefit of a cumulative model is that with additional customers the SaaS customers' revenue increases. He noted that the big advantage with the SaaS model is that once the customer is locked-in there is ongoing revenue' for the company. This comment was echoed in statements made by respondent IRL B, NFL D, NFL E and NFL F.

Respondent NFL F indicated that if a *'huge industry leading client wants something you have to give that client what they need'*. Respondent IRL B contradicted this idea by stating that with SaaS you do not modify your software for individual customers. He elaborated on this point and said that if the customer wants something *'you roll it so that it is available to everyone'*. Both respondent IRL A and IRL C echoed this point and described SaaS as being pure. However, respondent NFL F acknowledged that SaaS is *'not a physical thing'*. His company offers a hybrid model allowing one type of customer to own the software if they want to own it (custom) and the other type to subscribe (SaaS). He summarised by saying that it depends on what the customer wants.

7.5.9 Resistance to SaaS

One of the biggest sources of resistance to the SaaS model is the issues that customers have surrounding data security. Three of the respondents, IRL B, NFL D, and NFL E

put forward their opinions on dealing with customers who want to keep their data on their premises.

Respondent NFL E indicated that his customers are not concerned with security issues because there are *'a lot of industry standards around the world with regulation'*. He acknowledged that they conform to industry standards in order to deal with their customers' data online. Similarly respondent NFL F stated that, on the security side *'we are pretty confident'* that nobody can break into the system because they employ hacker specialists to try to break the system. Respondent NFL F outlined that some of their American customers like to know that *'their data is local and in their own country'*. Respondent IRL B reacted to questions relating to SaaS and security issues stating *'I think those questions [security questions] are basically understood'*. Respondent NFL D confidently confirmed that what they are currently doing with their customers' data is *'a bit more secure than what is being done now'* by their competitors.

Both respondent IRL A and NFL D referred to the Patriot Act (2001) in America where the American government is permitted to look at anyone's data that is stored on US soil and indicated that the solution is to move the servers outside the US.

7.6 Export

This section on exporting deals with two main areas, export locations and the export pricing strategy adopted by the interview candidates. Five of the respondents, IRL A, IRL B, NFL D, NFL E and NFL F indicated that they exported. They said that the USA was the main market mainly due to factors such as the its size, shorter sales cycles and the growth of SaaS.

7.6.1 Export focus

Respondent IRL A (traditional model) indicated that he had no sales in the domestic market stating that they exported 100% of their product. Respondent IRL C (SaaS), on the other hand, indicated that they do not export but will look at doing a *'different*

version of the same thing in another country'. Respondent IRL C's (SaaS) current offering is intended for use in the Irish market only, although he outlined that some changes to the service offering would enable it to be used in other countries.

Respondent NFL F (hybrid) indicated that they have always exported. Respondent NFL D (hybrid) expressed that while they were not preventing sales in the domestic market they were *'not encouraging sales'* primarily due to the size of the market in the United States. Respondent NFL E (traditional model) provided a similar response stating that *'our sales people right now are going to spend 80% of their time focusing on the US and 20% on Canada'*, mainly because *'US is just a lot bigger'*. Respondent IRL B echoed NFL E by stating that his company *'almost exclusively sold in the US, we didn't try to sell anywhere else.'* He outlined that the main reason for concentrating on the US is that this is *'where the growth of SaaS is'*. Respondents IRL B, NFL D, NFL E indicated that the US was the only foreign country that they exported to. While respondents NFL D and NFL F indicated that they were looking to expand and branch into other export markets in the future.

Respondent IRL A said that they exported to Europe, the USA, the Middle East and Asia and gave the following advice for exporting: *'you never sell to a customer without giving them a visit'*. Company NFL F reported that his company exports to Africa and Asia.

7.6.2 Export pricing strategy

Most of the respondents said that they use a similar pricing strategy for their domestic and export markets. Only respondent NFL E (traditional model) stated that they use a different strategy for export and domestic markets. He commented that the reason was

...mainly because we made a lot more trips to the US. It is a lot more hand holding for us to sell to them and it is a lot more expensive for us.

Outlined below are the responses from respondents IRL B, NFL D, NFL F who export and do not charge differently to the domestic market.

Respondent IRL B (SaaS) uses the same pricing strategy for domestic and export customers. He stated that *'the model doesn't change very much'*. It is simply a

percentage of revenue. Respondent NFL D (hybrid) reported that they charge a flat rate regardless and they do not charge differently as the US dollar is almost at parity with the Canadian dollar. Respondent NFL F (hybrid) commented that as their service is accessed via the Internet they do not have to charge different prices in different markets. He outlined that the main reason for not charging different prices is because training is done through the Internet and there are no costs involved in providing this service as it is built into the company's marketing campaign. He added that if a customer requires them for personal training they would charge them extra for that service.

The question of adopting a different pricing strategy was of no concern to respondents IRL A and IRL C, at the time of conducting this research. Respondent IRL A (traditional model) does not supply the domestic market. Respondent IRL C (SaaS) supplies the domestic market only. Although he added that if they move into foreign markets, in the future they '*will adopt a different pricing strategy*'. The reason he gave for using a different strategy is that their competitors '*could be charging differently to the way they charge here*'.

7.7 Costs

Typically, the cost of running a software company is lower than that of other businesses. This is primarily due to the lack of assets that are needed to start a software business. This section discusses the costs associated with running a software company. The following sections were addressed during the interview phase: firstly, the company's costs structure was investigated, including costs such as wages, overheads, facility expenses, marketing and travel; secondly, the participants were asked to indicate whether margins were built in or not; and finally, strategies such as maximise revenue were explored.

7.7.1 Costs structure

Five of the respondents, IRL A, IRL C, NFL D, NFL E and NFL F indicated that the biggest costs associated with a software company are the costs associated with software

development. These costs include wages and most respondents stated that they allocated between 50% and 95% of their company's overall expenditure on development costs. Most respondents indicated that marketing and sales were the second biggest cost. The final but less significant cost indicated by some participants was costs associated with rent and travel.

Respondent IRL A (traditional model) summarised the breakdown of costs in software companies by saying that *'typically it has large fixed costs but the variable cost is quite low'*. Respondent IRL B (SaaS) echoed a similar sentiment.

Respondent IRL C (SaaS) operates in a B2C environment. He described his company as a low cost model and indicated that there are no marketing costs, no training expenses, no hardware purchases or servers, associated with running the company. He pointed out that the biggest cost for his company is the cost of time. He added that they have not broken down their costs on an individual basis yet.

Respondent IRL A stated that the main costs in software are the costs associated with software development costs, followed by marketing and sales. He noted that *'equipment isn't huge... capital costs isn't significant'* for his company. He advised that the big advantage of software is that *'your direct cost per sale are quite low'*. Similar respondent IRL B stated that *'an advantage of having a variable cost structure'* is that you can keep your *'costs down'*. Software companies typically have a variable cost structure.

Respondent IRL B (SaaS) outlined the advantages of SaaS stating that *'because the licences are shared and the hardware is shared there is not an incremental cost for every single sale so it means it [the service] can be delivered efficiently'*. He added that the reason ASP failed was because the *'cost base was too high, it was too expensive to offer hosting'*.

Respondent NFL D (hybrid) stated that salaries and marketing are their two biggest costs followed by travel, rent and the leasing of servers. He commented that there is not a lot of inventory in this software business. The company has been in development for four years and part of the way they have financed themselves is through a

development grant. He added that this grant has paid for the costs associated with development. He indicated that the development costs are low due to the grant as the grant covers 80% of the wages.

According to respondent NFL E (traditional model), salaries account for approximately 50% to 70% of their costs, followed by marketing and travel expenses. He remarked that travel is costly due to where they are located (Canada) with respect to the US market.

Respondent NFL F (hybrid) stated that in the past, 95% of the company expenditure was allocated to enhance product development and the remaining *'5% was spent on marketing and sales'*. Previously the company had seen some sales but the company was relatively *'stagnant'* at the time of interviewing. He added that they are about to change that approach and spend approximately *'50% on development ... 50% on marketing and sales'*.

7.7.2 Built in margins

When asked if the participants build in margins respondents IRL A and NFL E indicated that they do build them in while respondents IRL C, NFL D and NFL F indicated that they do not build them in.

With respect to profit respondent IRL A made a point by indicating that *'until you cover your overall fixed costs you are not in profit'* and advised that the *'trick in software companies is if you can get above your fixed costs and get into a healthy margin'*. He elaborated on this by saying that *'we do have a requirement that we make 80% margins for our individual sales'*. Similarly, respondent NFL E stated that they do build in margins. He elaborated by indicating that their *'margins are good'*, that they are currently *'30% to 40%'*. He added that *'development costs or expenses I would say may be 40% of overall'* and that that is going to increase. He reported that this increase will be due to supporting ongoing development.

Respondent IRL C indicated that they do not build in margins yet but that they plan to build them in in the future. Similarly, respondent NFL F said that decision makers in

his company do not build in margins and he reported that they are unaware of what the margins should be. He clarified this by saying that this is typical for a small company. He elaborated by explaining that *'not many IT companies understand their margins, they guess what the prices are and play around with what the market can bear'*. Respondent NFL F explained that they plan to *'develop a standard financial model'*. This model will enable them to *'understand what price you could sell at, so that you require the minimum threshold for your margins'*. He indicated that the benefit of having such a model would allow them to *'get an affordable price'* and *'see what the market can bear'*. Respondent NFL F suggested that once the standard financial model is developed they are *'hoping for 40% margins'* as this will be in line with industry standards. Finally, he indicated that with a knowledge of such margins *'we could determine if it was profitable to do business or not'*.

7.7.3 Maximise revenue

The participants were asked how they anticipated maximising their revenue in the future. One of the common themes that emerged amongst the respondents was to increase market share, for instance, respondent IRL B said *'the more customers a company has the more revenue will be generated from them'*.

Respondent IRL A (traditional model) discussed the following tactic which he uses to maximise their revenues: firstly, *'get more customers'* and secondly *'sell what you already have'* because it is already developed and thirdly *'sell what you don't have'*, which means developing a customised application. He indicated that sometimes the latter might be a *'good approach'* because *'it can take you to new markets'* and he added that the company gets 15% of their revenue from customisation. Respondent NFL F (hybrid) contradicted respondent IRL A by stating that *'we never charge for most of our customisation because we want to resell it [the product]'*. He outlined that the main reason for not charging their customers for customisation is because if the customer gets the intellectual property rights to the software *'there is no profit with it'* and as a result *'we can't resell it'* to another customer. Respondent NFL E (traditional model) indicated that they ask their customers *'what needs to go into the software?'* but he does not consider this as customisation. Respondent NFL E mentioned that for their next market they *'will be forced to get into customisation'*. He added that they will

'charge 25%' for customisation. This figure is in line with the percentage that software product companies charge for customisation.

Respondent IRL B (SaaS) shared the same opinion as respondent IRL A. He stated that one should *'get more customers'* and he outlined that the more volume that a customer pushes through the system the greater the discount they receive. He stated that *'getting your customers to use more, as the more revenue you push through the system the less we charge you percentage-wise'*.

Respondent IRL C (SaaS) confided that they are planning on how to best maximise their revenues and he stated that *'we are trying to figure that out ourselves'*. He said *'we are trying different things if they work they work'* and he acknowledged that you always get *'higher revenues if the quality is higher'* than that of the competitor. Respondent NFL E confirmed that they intended to increase revenue from the US market. He outlined that the *'biggest reason is mainly because the US is just a lot bigger'*.

Respondent NFL F stated that in order to create revenues *'you need to spend 80% of your effort managing your profitable business'*. He outlined measures that they are currently looking at and indicated that they are looking at predictive technology as this will enable them to maximise their revenues. Respondent IRL A, NFL D and NFL E also stated that they conducted market research either in-house or contracted it out to a third party. The following section presents the findings from the market perspective on software pricing.

7.8 Market

This section addresses the software market and queries the influence that the market has on the pricing decision-making process. The following areas were addressed: the distribution channel, the market conditions and how quickly management react to changes in the market place.

7.8.1 Distribution channel

Respondents IRL B and IRL C offer pure services, they both distribute their services via the Internet. Respondents IRL A, NFL D, NFL E and NFL F use direct sales techniques to distribute their offering. Table 7.4 shows the breakdown of the individual companies distribution channel.

Respondent IRL C stated that the web is the main distribution channel. Respondent IRL B echoed this and stated that his service is delivered by the Internet and that the *'main application is in cloud'* [on-demand].

Table 7.4 **Distribution channel**

Company	IRL A	IRL B	IRL C	NFL D	NFL E	NFL F
Distribution channel	Direct sales Channel partners	Internet	Internet	Direct sales via VAR Internet	Direct sales Mail Trade shows	Direct sales Mail Trade shows
Business Models	Traditional licence	SaaS	SaaS	Hybrid	Traditional licence	Hybrid

Respondent IRL A distributes his product either *'directly or through channels'*. He indicated that 80% of what they sell is sold directly and 20% is through channel partners. Similarly, respondent NFL D uses a direct sales technique by *'directly selling*

to the customer' and they also have a second method via the Internet '*customer entry point through the web*'. He added that it is more profitable to use a direct sales technique. Likewise, respondent NFL E reported that they use a direct sales technique. He stated that sales are in-house as they build awareness through on-line marketing or direct mail and followed up by a call. He added that they are looking at using a distributor in the near future.

7.8.2 Market conditions

The respondents were asked to indicate the type of market that they operate in. Some respondents reported that they operate in niche markets, others stated that there were many competitors in the market and that these competitors were pushing prices down. Some respondents however, added that the way they set prices depends on what the market can bear.

Respondent IRL A expressed that

We are reasonably confident that we know that market better than anyone else because we are in this market a long time.

He described the market that he is currently in as a '*self-referencing market*' and indicated that it is a lot easier to sell into that kind of a market. A self-referencing market occurs when one customer tells another customer about a company that they have done business with and refers that customer to the business provider. Respondent IRL A outlined the different levels of maturity in their market. He described the market for his second company and he stated that '*the proposition* [the offering] *is fairly unique*' and an advantage is that it is a '*niche market*'. He said that '*in new markets there isn't a pricing* [point] *that has become established*' and that it is '*priced to the opportunity*'. He reported that pricing can be made easy by knowing what the market will bear and what the customer is willing to pay.

Respondent IRL B described how the software-as-a-service market is changing and he indicated that it is '*interesting the way the market is moving*'. He pointed out that it is '*not moving horizontal, it is not like everybody is moving at the same time*'. He said typically, what happens is that

Everyone tries to wait it out...until someone makes the leap they all just sit and wait because it's very, very hard to do and inevitably who ever does it wins.

The winner becomes the market leader in their respective sectors and everyone follows. Respondent IRL B described the cycle that markets go through stating that when a market matures, what generally happens with pricing is that

Pricing develops and through competition it evolves. It gets to a point it gets mature and someone comes in and introduces a flat rate.

When a flat rate is introduced '*pricing is simple*'. He indicated that if this happens when a business is in the '*small or in the growth phase its good because they can bear their costs*'.

Respondent IRL C confirmed that '*we are spot on with our 10% to 15%*' as he believed that it is what the market can bear for their service. Respondent NFL D indicated that their primary market is the US because of its size and he indicated that they are currently looking at other markets such as Europe. He stated that '*obviously if you want the maximum take-off you have to go to a market that is not saturated*'.

Respondent NFL E stated that the market they are currently in is a tough market as there is a lot of competition. As a result, his company had to discover a niche market for their product. They found this market and they sell their software as a '*business growth tool rather than a tool that saves them [the customer] time*'. The respondent conveyed that they are currently moving into a new market and stated that '*I think that is an open market for us right now*'. They are also looking at the European market because it presents greater opportunities for their company as the European market has a lot more chain stores in the industry than are available in the Canadian market. When probed about his pricing strategy for the European market respondent NFL E replied that '*it will depend on what the market can handle over there*'. Finally, respondent NFL E added that the service offering for the next market will be a web based model. He expressed that this market '*is going to be really tough for us because there is not much competition for us in the next market*'. The lack of competition will make it difficult for them to gauge prices using the SaaS business model.

Respondent NFL F described their market as *'heading into maturity'* and he further elaborated to say that *'I don't think the market is willing to pay [sum of money] per user per year to infinity on the SaaS model'*. He indicated that the company has acknowledged that they need to modify their pricing strategy to suit the new market. He also stated that *'we can't be skimming the market or we will never become market leaders'*. Respondent NFL F offered the following advice for anyone trying to determine what market they operate in, by saying that one has to

...have enough market to go after and to feed in and to generate the revenues that you need to generate. At the same time it needs to be small enough that it needs to be specialised, properly specialised so that you can stand out from the crowd.

7.8.3 Reaction to changes in the market

The participants were asked to indicate how quickly they react to a change in the market and the impact that such a change might have on their pricing decisions. Respondent NFL F indicated that they react *'pretty quickly'* to changes in the market. He outlined that they would address the matter within a *'three-month'* timeframe. Respondent IRL A pointed out that they *'don't know at face value what our competitors are charging'*. He stated that there is *'economic pressure to keep prices above a certain level'*. He indicated that if it is feasible to respond they will. Respondent NFL D pointed out that if a change occurred in the market place *'we would have to change markets because we can't get much cheaper'*. He indicated that such a change would have a huge impact on their pricing.

7.9 Customers

In this section the following areas were addressed to gain a deeper understanding of the impact that the customer had on the decision makers' pricing process: customer type, the negotiation process, customers' interaction with pricing, and issues such as whether closing the deal or getting the customer were considered more important to the sales person. Giving value to the customer was described as being of prime importance and also maintaining and satisfying customers, in order to maintain revenues.

7.9.1 Types of customers

This sub-section addresses the different types of customers that the participants cater for. Respondents IRL B and IRL C offer pure services. With software-as-a-service their customers simply log-on via the Internet and access the service. SaaS requires that there is normally an ongoing relationship between the software vendor and the customer as the customer is billed at regular intervals. All of the participants operate in diverse industries and their customers range from government agencies to chain stores to online shoppers. Each customer will have different needs and wants and will expect certain functionality from the software vendor. Each customer has different levels of control over how prices are set. Some customers have very little control while others have a lot of control.

Respondent IRL A's (traditional model) customers are all overseas customers in a variety of countries. The level of maturity in these markets vary from Europe which is a mature market with price sensitive customers to the Middle East where customers are generally smaller and the *'price point would not be as good as the price point in Europe'*. Respondent IRL B's (SaaS) customers are businesses that require a human resource service to be provided for them. Respondent IRL C's (SaaS) customers are working people and online shoppers. Respondent NFL D's (hybrid) customers are small businesses that require their data to be protected (customers that want security). Respondent NFL E's (traditional model) customers are currently individual stores but they are looking to move towards large chain stores in the medical field. Respondent NFL F's (hybrid) customers are in the aviation industry and are characterised as early innovators and are moving to early adopters stage. These customers have different expectations from the software application.

7.9.2 Customer negotiations

In describing his past experience respondent IRL A (traditional model) said that building customer relationships were always important, *'keeping the relationship going and keeping the communication going'* are essential when dealing with customers. Respondent IRL A expressed that *'basically you are dealing with professional negotiators'* and described them as tough when negotiating. He elaborated by saying it

depends on the market and if the market is quite competitive and if the product is commoditised you are the price taker. He pointed out that in one of his companies, he is the price maker and the other one he is the price taker. In the market where he is the price maker, he indicated that they *'go with a price that the market can support'*. He outlined when negotiating in this type of a market he *'always goes in with a price that is a bit higher because professional buyers have to show he is getting discounts'*. He expressed the importance of giving the customer a good deal.

Respondent IRL B (SaaS) asserted that there is no trick to negotiation. He elaborated on this point by stating that as there is an *'ongoing relationship [with the customer] there is no such thing as someone having unfair advantage or rather not for long because eventually you get dumped or thrown out'*. He continued by saying that even with perpetual licence deals *'you were always going back to the customer and trying to sell them more and more'*. He stated that people have a *'vaunted sense of how important negotiation is'* and he elaborated by indicating that you *'have to leave something on the table for the other guy'*. He described the negotiation process as being one that is concerned with the negotiator knowing what they are worth *'negotiation is about knowing what you are worth more than anything else'*. He elaborated on this by saying that when negotiating with the service model there is an ongoing relationship and that *'SaaS can't be adversarial, there is an ongoing continuous relationship with your customers ... you just can negotiate that way'*. He summarised by expressing the importance of keeping the customer by providing value to them.

Respondent NFL D (hybrid) stated that with his offering, *'there is no sales resistance to the amount'* and there is no negotiation. Likewise, Respondent IRL C (SaaS) outlined that they currently *'do not negotiate'* with their customers as they have set a percentage that they require from the customer for the use of the service. He indicated that that percentage can be negotiated on depending on the *'refund amount'* due to the customer. In that instance, they negotiate between 10% and 15% of the refund. Respondent IRL C reflected on his past experiences and indicated that *'building up relationships with the person that you need'* is paramount. He outlined that that is

...difficult in large organisations as they tend to have large purchasing departments who are professional negotiators. It is their job to get the best deal for their company. So both negotiators are looking for the best deal for their respective companies.

Respondent NFL E (traditional model) expressed similar ideas as respondent IRL A by indicating that they do not negotiate on price, although, he mentioned that they charge customers a fee if they require them to convert data to run with their software. He stated that this negotiation is dependant upon the type of customer, for example if the customer is a key customer, or if they think that there is going to be additional benefit from having that customer, they *'will negotiate'*. He explained that *'we typically won't do that unless they own multiple stores'* and if there is future benefit from retaining that customer.

Respondent NFL F (hybrid) said that *'typically there is always give and take'* with negotiations. Respondent NFL F described negotiation as being

...about finding a win-win situation for both parties and having mutual respect to be able to deal with each other and come to a neutral conclusion.

He elaborated and said that if there is any imbalance then it is never a good deal.

7.9.3 Closing the deal

The participants were asked to indicate if closing a deal or getting the right price were more important. Three of the respondents, IRL A, IRL B, and NFL F indicated that getting the customer is more important as you can up-sell to them at a later stage.

Respondent IRL A (traditional model) stated that closing the deal is more important and elaborated by saying that if *'you sell to a customer it is much easier to sell to them again'*. He indicated that the main reason was because there is also other revenue to be obtained, revenues such as support revenue, maintenance revenue and change request. He referred to them as being chargeable features and he added that getting the customer is more important in the long term. Similarly, respondent NFL F (hybrid) stated that getting the customer is the most important thing. He elaborated by stating that

...I would rather have 10 customers at \$1,000 than one customer at \$10,000 mainly because you see the ongoing revenue afterwards and you get money off 10 customers. Also just their general referrals and stuff like that, you would be getting off the 10 customers rather than just one. And it looks better when you go to other customers to and try get sales. That greater number of sales always look better.

Respondent IRL B (SaaS) reflected on his past negotiation experience and said that in the beginning it was more important for that start-up company to get customers and references and he declared frankly, *'we didn't care about the money'*. He elaborated by saying that *'customer five was always the hardest to get'* because you *'gave away your first four customers for free'*. He said they did this with a view to obtaining references and referrals.

7.9.4 Undercutting

The participants were asked about undercutting the competitor in order to close a deal. Three of the respondents, IRL A, NFL D, and NFL E indicated that they would definitely undercut to get the deal. Similarly, respondent NFL E stated *'if competitors are knocking on the same doors they will definitely [undercut] and lose money on some deals'*. Respondent IRL C outlined that they *'didn't want to undercut themselves because price isn't an issue'*. Respondent NFL F indicated that they are still trying *'to play the model of you get what you pay for'*. He said they do because there is *'value attributed to the price'*. Respondent NFL D conveyed that our *'company always likes to chase larger deals'* in order to get the customer. Undercutting is not an issue for respondent IRL B's company.

7.9.5 Customer's interaction with pricing

The participants were asked to indicate the level of influence that the customer has over the end pricing point. Respondents IRL A and IRL B believed that the key to successful pricing is to give value to, and maintain ongoing healthy relationships with, their customers.

Respondent IRL A (traditional model) indicated that *'you price to the value to the customer'*. He elaborated by saying *'you need to understand your customer's needs and making the two of them come together'*. Similarly, respondent IRL A commented

We know if they [the customers] are bluffing about the price. Sometimes the customer will say that they can't get it cheaper but we know the market better than anyone else.

He elaborated by saying that there *'are many times you will give a good price to get a new customer on board'*. He stated that there is *'pressure to keep prices at a certain*

level otherwise it is not a real feasible business to you'. The overall advice that respondent IRL A gave was that *'you have to think about where the customer is for pricing'*. He noted that if the customer cannot afford your product at the time of negotiating, then a deal could be reached to suit the customer's budget.

Respondent IRL B (SaaS) added that they attempted to come up with a price that would replicate the traditional licence. He elaborated by saying *'we kind of mirrored the way our customers are pricing'*. He outlined that part of the reason why they have a minimum fee was that they deal with start-ups who have *'no revenue and yet want to use our service'*. The participant was probed further and asked if he would treat each customer differently. The respondent said that there was no negotiation with individual customers. He stated that the volume can be negotiated on, as in they might argue over *'the percentage but the model stays the same'*. He pointed out that the key thing is to *'price on how your customer perceives value'*. He stated that:

...the better you understand your customers' business and the better you can articulate your impact on their business – that is what selling is all about.

Respondent IRL C (SaaS) said that the customer could intervene if they thought that the percentage of the refund was excessive. He elaborated by saying that the amount (price) can be negotiated on depending on the refund amount due to the customer.

Respondent NFL D (hybrid) stated that the customer just wants a simple product. He said that what he has learned is that their customer is not sensitive to price. He reported that they have observed that the customer *'doesn't like surprises'*; surprises such as price increases or a functionality needs to be added to the software.

Respondent NFL E (traditional model) stated that they ask the customer what they want and he added that the customer has a huge impact on price by stating that by *'asking the customer what needs to go into the software... checking to see if other customers agree with such features'*. He pointed out that they are changing their customer, as they are moving into a bigger market. He expressed that their web-based model will enable the customer to *'choose what they want in the software'*.

Respondent NFL F (hybrid) noted that their customers look at what the competitors have on offer and they suggest additional features that they think should be in the software application. He said:

Customers tell us what they have looked at and tell us here is what we like about the others and here is what we like about yours [offering].

He stated that by keeping customers happy they will stay using the software.

7.9.6 Customer's influence in pricing

When asked how their customers influence pricing, respondent IRL B (SaaS) stated that *'they are core obviously'*. He elaborated on this by saying that the key is to understand *'your customer's problems and understand what their business is'*. He expressed that with SaaS there needs to be an ongoing relationship with your customer, otherwise, you will lose all the revenue if that relationship is not nourished and maintained.

Respondent IRL C (SaaS) acknowledged that the customer is the business. He said that the customer *'either pays for the software or refuses to pay for it'*. He noted that if the customer refuses to pay for the service he would negotiate a deal with them and charge them a smaller percentage for the use of the service. Respondent NFL E (traditional model) commented that *'key customers with high referrals are given extra benefits such as additional support or upgrades'*. He added *'we would work twenty hours a day to make them happy'*.

According to respondent NFL F (hybrid) to service the model properly *'you can't stick to one licence type of model. Different companies are orientated differently'*. He elaborated by indicating that *'the customer tells me upfront "I would rather rent this over a long period of time" as it would suit their budget better'*. He further stated that *'the first thing I do is I understand how you are structured'*. He continued to say *'I see if the perpetual model or pay over time [subscription] ... would suit your budget better'*. He summarised by saying that *'we look at the model [perpetual V SaaS] and pick a period of time ... we compare the two'*. By using this tactic respondent NFL F's company provides software products or services that are in line with their customers' needs and budgets.

7.9.7 Customer value

The participants were asked how decision makers provide value to the customer. Maintaining strong relationships with the customer is a common theme that has emerged from the interview respondents.

Respondent IRL A (traditional model) outlined that they *'price to the value to the customer'*. He gave an example of a situation with which he dealt. One company was small and the other was large, both customers received the exact same piece of software. He charged them both differently and indicated that he *'priced to the opportunity'*. He commented that *'the trick is to understand value in the customers' eyes'*.

IRL respondent B (SaaS) stated one of the joys of SaaS is that *'it is generally priced based on how the software vendor provides value to the customer'*. He indicated that *'if the valuable thing is the sales guy then charge per sales guy'*. He summarised with a key point *'price based on how your customer perceives value'*. He emphasised this point by stating that *'anyone who tells you they price on value is lying. What they are really doing is pricing on their articulation of value. It is how can I articulate my value to you is more important you know'*.

Respondent IRL C (SaaS) outlined that the value they give their customer is a cheaper model than what the competitor is offering for the same service. He commented that *'the customers are not willing to pay more than they would pay'* the competitor. He expressed that the value to the customer is cost-saving to them for using the service. Respondent NFL E (traditional model) added that the value they give to the customer *'is telling them that with this software we can help you grow your business'*. He stated that what they are looking for is to get a customer to show how their software is making them more money.

Respondent NFL F (hybrid) indicated that *'you constantly have to look at the value you are providing the customer'*. He said that one could increase value by giving them discounts because of their loyal service. He elaborated *'if you do the right thing for the customer then the customer will always be your customer'*. He summarised by saying

'we focus a lot on the customers that we have now and I think our relationships are getting stronger and stronger'.

7.9.8 Beta testing

The literature suggested that software companies generate higher revenues when software is beta tested. Software that is beta tested leads to higher quality software and in return generates more faith in the customers and leads to a greater number of sales. The participants were asked if they beta tested their software. The following were their replies. Five of the respondents, IRL B, IRL C, NFL D, NFL E and NFL F indicated that they do beta test, while respondent IRL B said beta testing is not for start-ups.

Respondent IRL B (SaaS) acknowledged the importance of beta testing but he commented that it is not necessary for start-ups. He added that it is more important to get the software to the customer and let them beta test the application. Similarly respondent IRL C (SaaS) said that *'you would say that the software is constantly being beta tested as it is being used all of the time'*. He elaborated on this by saying *'that you will always get higher revenue when the quality is higher'*. He reflected on his past experience and indicated that *'that company beta tested'* and said that they *'ended up with a very good product'*. Respondent NFL D (hybrid) expressed that *'beta tests aren't as great as you would like'*. He elaborated and he suggested that it is better to sell the software to the customer, as that *'is where it is put through its paces'*. Respondent NFL E (traditional model) said that they do their beta testing in-house and he added that their new Internet version of the software is going to be tested by a large customer. Respondent NFL F (hybrid) agreed that beta testing is important. He elaborated by saying that *'it ensures that its [the software] functionally works as was intended and that major bugs are sorted out and corrected'*.

7.9.9 Certification

When asked about certification respondents IRL C, NFL D and NFL E outlined that they do not have certification and that their customers are not interested in any certification. Respondent IRL C outlined that he *'has never worked anywhere that has been certified'*. By contrast, respondent NFL F has certification. He stated that by

having certification *'it builds a lot of credibility'*. He outlined that *'credibility is important, especially in large organisations'*.

7.10 Competition

This section addresses competition in the market place and how it affects software pricing. The following areas are addressed: direct competition, sources of information about the competitor and finally knowledge of competitors' prices.

7.10.1 Direct competition

The interview participants were asked about direct competition to their software offering. Four of the respondents, IRL A, NFL D, NFL E and NFL F indicated that there are direct competitors in the market.

Respondent IRL A (traditional model) stated that *'there are a few companies out there'* that are competing with one of his companies directly. Similarly, respondent NFL D (hybrid) outlined that there is an online company offering a similar service. He also added that there is another company that offered a *'competing offering'* and that they install the software on the customer's premises. He indicated that there are many software companies operating in his domain. Respondent NFL F (hybrid) described that six years ago there were no competitors but now the *'market is changing and it has matured'* and there are many competitors. He added that these competitors are adapting to that (the market) and that they are changing their pricing strategies to suit the market needs. Respondent NFL E (traditional model) expressed that most of their competitors are focusing on the smaller stores. They are currently moving into a different market and looking at larger stores. He outlined that in their next market there is *'not much competition in this market yet'*. Respondents IRL C (SaaS) acknowledged that there are competitors in the market but they are not competing directly with them in the online environment. Respondent IRL C stated that there is no direct online competition, although, there is another online company targeting a similar audience and their competitor company is well established and operates in 20 countries.

7.10.2 Sources of information

The interview respondents were asked about their sources of information with respect to their competitors. Respondents IRL A, NFL E and NFL F indicated that their customers are their main source of information about the competitors.

Respondent IRL A indicated that *'we don't know at face value what our competitors are charging'*. He outlined that he is only aware of what they charge through his customers. He conveyed that he is aware of a *'competitor who dropped their price significantly, but had to bring them back up because they can't survive'*. Respondent NFL E outlined that their main sources of information are their *'customers and competitors' websites, tradeshows and industry associations'*. Respondent NFL F said that they find out competitive information through their advisors and customers. He added that *'we are looking at strategies of having somebody look at somebody else's data'*. Respondent IRL C indicated that they use Google and other people in the software industry as their sources of information. Respondent NFL D said they are aware of what their competitors are doing by looking at the online market to see what market trends are there.

7.10.3 Competitor's prices

The interviewees were asked to indicate how they compare their pricing point to that of their competitors. The responses ranged from lower than the competitor to higher. Respondent IRL C described his offering as a low-price. Respondents IRL A and NFL E described their offering as mid-price. Respondents NFL D and NFL E describe theirs as high-price.

Respondent IRL A (traditional model) said that because he knows the market and that he is in the industry a long time he can tell if a customer is telling the truth about his competitor software pricing. He expressed that *'he knows what is feasible for a company to deliver on and survive'*. He noted that it depends, if it is feasible he will *'match the proposition'* that the customer has made with him. He added that he does set prices in accordance to that of competitors.

Likewise, respondent IRL C (SaaS) echoed respondent IRL A. He stated that he also sets prices in relation to competitors. He says that he *'sets prices lower than what the competitor has set'* that he has to set them lower in order to survive. He outlined that *'the reason we priced the way we did was down to our competitors'*.

Respondent NFL D (hybrid) noted that they are aware of what the competitor is pricing. He said their service is premium priced. He indicated that they bench-marked themselves against their competitors and they decided to *'increase their price'* from what the competitor was charging. He outlined that they could afford to go higher than the competitor does because his company was *'providing a service added model'* to the customer.

Respondent NFL E (traditional model) indicated that they look at the competitors pricing. He added that they *'regularly compete with the competitors that are around the same price or lower'*. He indicated that he does not compete with the competitors at the higher end of the scale.

Respondent NFL F (hybrid) indicated that *'before we were on par or slightly lower than some of the competitors'*. He said that *'now they [competitors] are coming down in price to adapt to that [the changing market]'*. He described situations where they recently put in a bid and they were told that their price was double that of the nearest offer. He added that they learned a lesson from that experience. He advised that *'you can put your price slightly higher [than that of your competitors] as long as you have got key differential features that the client will value'*.

7.11 Conclusion

This chapter has presented the interview findings from six software interviewees based on how they price their software offerings. The analysis of the interview findings were carried out under the following headings: personal details, company details, pricing structure, the pricing process, export, costs, market, customers, and finally competition.

Most of the interviewees have a Bachelors of Science or a Masters in Science or Business. At the time of conducting this research most of the companies were trading five years or less. One theme that emerged concerns the interview participants' choice of software business model. Some of the participants offer pure products, while others offer pure services and others offer a mixture of both. Therefore it can be concluded that there is range a of business models that are in use in both the Irish and Newfoundland software industries. The type of licence is somewhat dependent on the licensing method adopted by the software firm. For instance, this study found that companies that use the traditional model utilise traditional licences, and companies that use SaaS adopt a usage-based model and hybrid companies implement a combination of traditional licences and subscription-based licences.

Another theme that emerged from the interview findings concerns whether the participants in question offer cost-based methods or value based methods. There is evidence in this chapter to suggest that more than half of the interview candidate use cost-based licensing methods despite a recurring theme from the respondents indicating that they use value-based licensing methods. It is possible that the candidates in question aspire to pricing to the value of the customer even though currently using a predominantly cost-based approach. It was interesting to find that the two pure SaaS companies offer value-based methods. A third theme that emerged from this study relates to the export markets. The study found that most of the participants considered it the US market the main market to launch their software offering. This is possibly due to the relative size of the participants domestic markets.

It was surprising that free trial emerged as the most common used method by the questionnaire respondents. However, only one of the interview candidates offered free trial to their customers. In the opinion of this researcher, new businesses need to use free trial in order to get their offering into the market. The study found that most of the interview candidates were uninterested in certification. The study also found that some of the candidates beta test the application before launching it. The following chapter presents the discussion of the findings that arose from both chapters six and seven.

Chapter 8

Discussion of Findings

Chapter 8 Discussion of findings

8.1 Chapter overview

This chapter examines the principle matters arising from the primary data and evidence presented in the previous two chapters. This research has investigated the pricing practices adopted by software managers in the Irish software industry and the Newfoundland software industry. The aim of this study was to identify and analyse software pricing practices in these jurisdictions. This chapter discusses the key findings that have arisen from this research. It outlines whether these findings are supported in the literature and identifies the authors who found similar findings. The aim was achieved through the following three objectives: Firstly, to establish the variables and relationships underlying current software pricing practices in indigenous software firms. Secondly, to explain software pricing practices from a software vendor's perspective. Thirdly, to identify the reasons that influence a decision maker's choice of licensing method adopted. Therefore, these objectives will be discussed under the following five main headings.

The first point of discussion relates to type of licences used by the software vendors surveyed. This finding will be addressed as **licence type**. It discusses how software companies licence their software products and services. These findings highlight a number of differences between vendors offering their software by traditional licences or contemporary SaaS licences.

The second point of discussion in this chapter presents an overview of the most common software pricing methods. This finding will be discussed under the heading of **common pricing methods**. Results from this finding reveal that cost-based methods are the most common ones used by questionnaire participants.

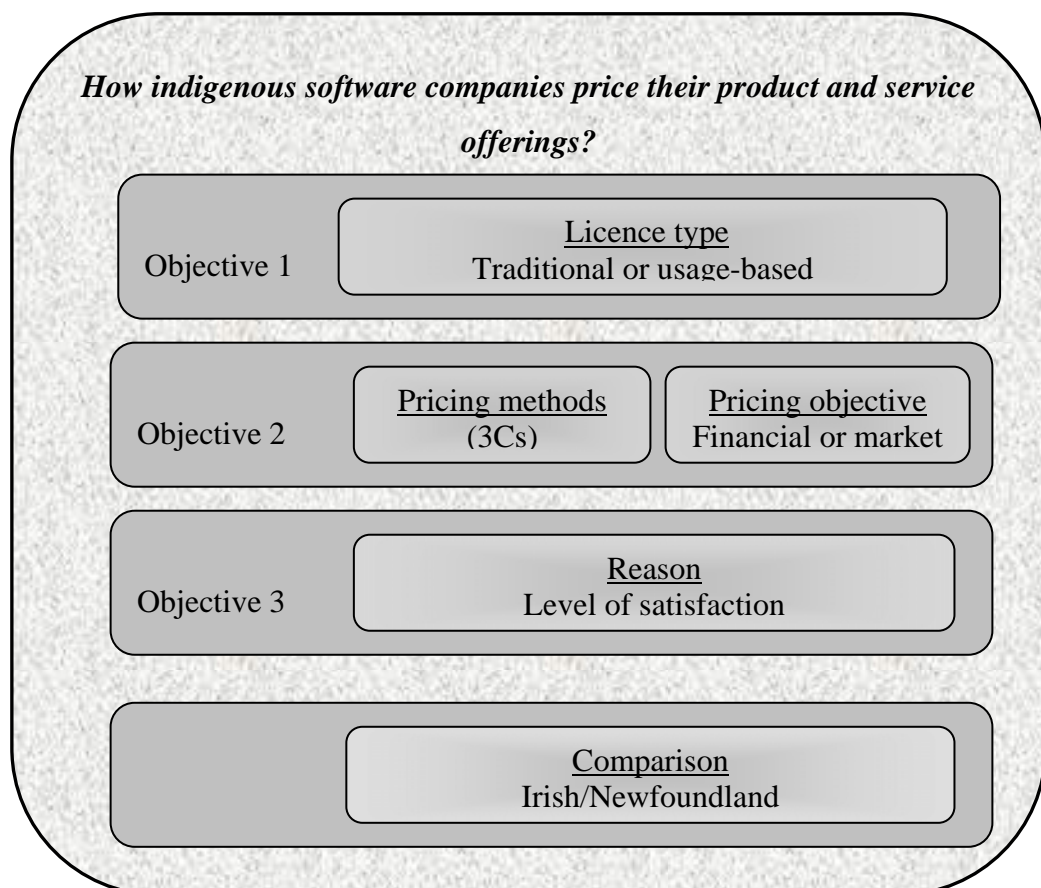
The third point of discussion focuses on the pricing objectives of the questionnaire participants. This finding is discussed as **pricing objectives**. This discussion will focus on the findings that emerged from both the market and financial objectives.

The fourth point of the discussion concentrates on the respondents’ opinions and their reasons for adopting their current pricing practices. This finding is discussed as the **reason for current pricing practice**. In particular this section focuses on the rationale for the decision-making process and it also provides a discussion of the participants’ level of satisfaction with the current pricing practices is presented, focusing on the varying degrees of confidence expressed by managers in their pricing ability.

The final point assesses whether there was any similarities or differences among the Irish and Newfoundland software companies. This point of discussion is presented as **Irish/Newfoundland comparison**. This point assesses reasons for current pricing practices in terms of their licensing methods and software pricing practices.

Figure 8.1 provides an overview of each of the findings that will be subsequently discussed in this chapter with respect to the research objectives.

Figure 8.1 Discussion of key software pricing findings



8.2 Licence type

This section presents a discussion of the following licensing methods: traditional, open source, subscription-based and usage-based that were used by both the questionnaire and the interview respondents of this study. The primary research made a number of general findings regarding the licensing methods of software firms and these will be discussed further below. The literature identifies traditional, open source and SaaS as three main software business models. Therefore there are a variety of ways that software vendors licence their software and this study shows that it is common practice for some vendors to use more than one licence type.

The first part of this section presents a discussion of software licensing methods used by the questionnaire respondents. Secondly, a discussion of the findings that relate to the software licensing methods derived from the interview participants is offered. This study found that software licensing methods are determined by the software vendors' business model.

8.2.1 Questionnaire respondents' licensing methods

According to the findings of phase 2 most of the questionnaire respondents indicated that they use one or more of the following licensing methods in their company. The most popular were free trial (50.8%), multiple-user licences (44.0%), usage-based licences (39.0%) and subscription-based licences (37.3%). Other licensing methods used by the respondents were single user licence (27.6%), transfer rights (custom) (25.4%), bundling (23.7%), open source (21.9%) and leasing (10.2%) although the latter five are not as commonly used as the previous four licensing methods. Table 8.1 outlines the most common software licensing methods taken from the questionnaire findings.

These findings are inconsistent with Cusumano (2008) who evaluated pricing models of 108 Internet based software companies. According to Cusumano's (2008) findings subscription fees (89%) are the most popular licensing method. He also found that traditional licensing (30%), free trial (29%), professional services (16%), advertising (7%), open source licensing (6%), and per-user licence (2%) are also used by the

participants of his study. However, a study conducted in 2006 by Macrovision, SIIA, SoftSummit, SVPMA and CELUG on pricing and licensing trends in the software industry yielded a different set of results. They found that the most prevalent licensing methods used were seat (per server) (48%), concurrent user (38%), seat (named user) (37%), processor (18%), usage-based (14%) and finance (8%) (SIIA et al. 2007).

Table 8.1 Questionnaire respondents' licensing methods

Licence	Approach	Percentage (N=58)
Free trial	Value-based	50.8
Multiple-user	Cost-based	44.0
Usage-based	Value-based	39.0
Subscription	Cost-based	37.3
Single-user	Cost-based	27.6
Transfer rights	Cost-based	25.4
Price bundling	Cost-based	23.7
Open Source	Value-based	21.9
Leasing	Cost-based	10.2

(Note: The respondents could select more than one answer)

The questionnaire findings were surprising, as the researcher did not expect free trial (50.8%) to be as popular amongst questionnaire participants. This proportion appears to be very high and is not in line with other studies. Cusumano (2008) found that less than a third (29%) of software vendors offer free trial software. In addition, free trial did not emerge at all in the SIIA et al. (2007) study. Despite the advantages of free trial there are many drawbacks associated with giving away software for free. One such drawback is that may lower the customers' perception of value (Mohr et al. 2005). While another drawback may result in the customer continuing to use the software for free without ever making a purchase (Ferrante, 2006). In other words, if software

vendors offer free trial they may reduce their chances of potential higher revenues. It is possible that free trial is popular because software vendors offer demos to their potential customers to try the software before they make a purchase. In addition, 93.4% of the respondents indicated that they would give away a software offering for free under certain circumstances. For instance, when entering a new market, launching a product or service or when discontinuing an offering.

The findings from the study show that pay-per-usage and subscription licenses were used by 39% and 37.3% of respondent respectively. A closer examination reveals that 8.6% and 6.9% of service (only) respondents indicated that they offer these approaches respectively. These figures are very low and surprising as SaaS advocates predicted that by 2010 SaaS will be the dominant licensing method in the software industry. Therefore, it was surprising that a high level of respondents use more than one of the traditional licensing methods in comparison with SaaS licensing given the rising popularity of SaaS that certain writers indicated (The Economist, 2006). However it is unclear if 28.1% of the service (only) respondents are pure SaaS vendors or if they offer a professional service as the researcher did not make a clear distinction between SaaS vendors and traditional vendors at the outset of this research.

The questionnaire findings show that 21.9% of the respondents outlined that they either develop OSS products or use OSS in-house. This is inconsistent with Cusumano (2008) who found that only 6% of his respondents used OSS licences. This finding is interesting because it confirms that some software vendors are developing software in OSS environments.

The finding shows that 19% of respondents offered customised software (transfer rights). Such findings confirm that some software customers want their software to reside on their premises. This is consistent with Carraro and Chong (2006) who stated that the future of computing is not going to be '*purely on-premise*' or '*purely in-the-cloud*'. Instead, traditional software licensing and contemporary SaaS will exist in symbiotic harmony. This finding shows that there is still a demand for on-premise applications despite the growth of on-demand applications. As a result, it is evident from the questionnaire that not all software companies will make the transition to SaaS

despite the predicted growth of SaaS. Therefore, the findings confirm the need for a greater understanding for both traditional and contemporary licensing methods.

Overall, the questionnaire findings show that some of the questionnaire respondents offer one license method while others offer a variety of licenses. This is consistent with Choudhary (2006) and Cusumano (2008) who found that many vendors offer a variety of licensing methods. Choudhary (2006) found that subscription and per-usage were the most common licensing methods and some offer only one type of licence. While Cusumano (2008) found that subscription, traditional licences and free trial were the most likely to be used in conjunction with each other. One possible explanation for offering a choice of licensing methods is that certain pricing schemes will suit certain software customers' usage patterns. For instance some customers have a relatively high utility requirement and they will use more of the application than others will. This was underpinned by Choudhary (2006) who found that some customers prefer subscription licences (unlimited usage) while others prefer usage-based licences (limited usage). In other words, the customer choice of licence is largely dependent on how much of the software they use.

8.2.2 Interview participants' licensing methods

Phase 4 of this research uncovered the various licenses that are used by both the Irish and Newfoundland software companies that participated in this study. The interview participants indicated that traditional licences, usage-based and subscription-based were the most commonly used licences. The results from the interviews show that two of the respondents who offer pure SaaS both sell their service on a per-usage basis. By contrast the respondents who offer a pure product charge traditional upfront licence fees and each of these traditional licences were charged differently. Respondent NFL E's licence was fixed, while respondent IRL A's licence was negotiated based per usage. The respondents that provided a hybrid offering also differed in that respondent NFL D charged a subscription fee, while respondent NFL F offered two approaches depending on their individual customer's needs. One of the options that respondent NFL F offers is a subscription fee, while the other option is a traditional licence

charged on a pay-per-user basis. Table 8.2 shows the results of the interview licensing findings. This table also shows whether the licence used is cost-based or value-based.

Table 8.2 Licences offered by the interview participants

Respondent	Business model	Approach	Licences
IRL A	Traditional B2B	Cost-based	Traditional licence - usage-based
IRL B	SaaS B2B	Value-based	Usage-based - % of revenue
IRL C	SaaS B2C	Value-based	Usage-based - % of refund
NFL D	Hybrid B2B	Cost-based	Subscription - fixed
NFL E	Traditional B2B	Cost-based	Traditional licence - fixed
NFL F	Hybrid B2B	Cost-based	1. Traditional licence - per-user 2. Subscription - per-user

The interview findings show that respondent NFL F offers a hybrid approach and by doing so incorporates what their customers want or need in their software. This is in line with Ferrante (2006) who suggested that in order to satisfy customers' needs, software vendors should offer a hybrid model. Despite issues concerning managing more than one instance of the software (mixture of on-premise and on-demand software) Ferrante (2006:29) added that *'it is possible to fit both traditional and new models'* into a software vendor's business model. This view was not shared by respondent IRL B who insisted that there can be only one instance of the software and that all customers should share the same instance also known as multi-tenancy. Respondent IRL B's view is supported in the literature by Wong (2006) who stated that SaaS vendors cannot and should not customise software applications to suit individual customers' needs. This finding suggests that there is a disparity between both the vendors and the software literature as to whether single-tenancy or multi-tenancy is suitable for software vendors and their customers.

The findings show that none of the interview participants indicated that they used a combination of subscription fee and usage-based methods. This was inconsistent with

Saaksjarvi et al. (2005) who found that a combination of subscription fee and usage-based methods are commonly used. One possible reason for a combination of subscription fee and usage-based methods is because this would help alleviate costs (TCO) associated with the usage-based method for the customers. Saaksjarvi et al. (2005) suggest that not all customers are interested in a usage-based package and therefore some customers prefer the subscription-based method as there are less costs associated with this method such as transaction costs. However Saaksjarvi et al. (2005) asserted that some customers are interested in a subscription-based package because some customers will use more of the application than others customers. This is supported by Choudhary (2006) who found that some customers with high usage requirements prefer the subscription method, while a customer with a small usage requirements will more likely choose a usage-based package. Bala and Carr (2005) caution vendors against offering a usage-based method in some circumstances, for instance, if the competitor is offering a subscription-based fee. One of the main reasons for not offering a usage-based method is because the total cost of ownership for a usage-based method can be greater than the subscription-based method (Bala and Carr, 2005). Therefore, to overcome the limitations of deploying either a subscription fee or usage-based methods in isolation, there is evidence to suggest that some software vendors are offering a mixture of both (Bala and Carr, 2005; Saaksjarvi et al. 2005). In conjunction with the literature, it can be concluded that by giving the customer the choice between a usage-based method and a subscription-based method this choice popular amongst many software vendors and customers. Interestingly this combination did not surface amongst the interview candidates but some of the questionnaire participants who offer subscription-based methods do so in conjunction with usage-based methods.

The findings from the interview participants suggest that the usage-based model is more popular with pure SaaS companies. This finding confirms what was outlined in the literature by some authors (Turner et al. 2003; Choudhary, 2007a; Kittlaus and Clough, 2009). These authors reported that the usage-based was more commonly adopted than the subscription-based model with SaaS vendors. This finding is in line with the SIIA who predicted that the usage-based model would gain in popularity as the demand for SaaS grows (SIIA et al. 2007). As SaaS evolves in practice there appears to be a switch from subscription to usage-based methods. However, Bala and Carr

(2005) found that subscription-based models were the dominant pricing scheme in 2005. Therefore, it can be concluded that some software vendors are listening to their customers by providing a value-based pricing scheme (usage-based).

The finding from this section shows that there are a variety of licences used by both the questionnaire and interview participants. It is possible that one of the reasons for such a variety is because most of the software companies offer a mixture of pure product, pure service and a combination of both (hybrid offering) to their customers. The reason for this conclusion is that 52.5% of the questionnaire respondents indicated that they offered both products and services to their customers. Several aspects of the questionnaire findings were surprising. Firstly, the researcher did not expect free trial to be as popular as the research results showed. Secondly, it had also been expected that subscription-based and usage-based methods would be more popular than they turned out to be. The following section presents the findings that were derived from the questionnaire with respect to the most commonly used software pricing strategies and methods.

8.3 Common pricing methods

This section of the chapter presents a discussion of the most common pricing methods derived from the empirical evidence of this study. These pricing methods are categorised in the literature as cost-based, competition-based and customer-based (Monroe, 2003; Steele, 2003; Indounas, 2006). This section presents a discussion of the most popular methods used by the questionnaire respondents and it uncovers that what they say conflicts with the methods they use in practice.

The questionnaire findings show that cost-based methods are the most popular of the three methods. Of the respondents, 64.3% of them indicated that they ‘always’ use this method. The results for competition-based methods and customer-based methods are nearly half of that of the cost-based methods. Interestingly only 34% of the respondents specified that they use competitive-based methods, while 32.2% of the respondents use customer-based methods. This finding largely concurs with Carson et al. (1998), Steele (2003) and Pasura and Ryals (2005) who found that the most

dominant pricing method used in the software industry was cost-based. The findings of this research are more in line with Steele (2003) who found competition-based methods are the second most commonly used surpassing customer-based methods.

According to Hinterhuber (2008) a review of the software literature showed that customer-based pricing methods are in the minority. Therefore, the findings from this study are in line with the literature, as cost-based pricing is twice as popular as customer-based pricing. Similarly Pasura and Ryals (2005) found that customer-based methods is largely lacking in the ICT sector. However Hinterhuber (2008) conducted a survey on pricing methods in a range of industries including IT. Interestingly he found that competition-based methods (45%) were the most dominant method of the 3Cs, followed by cost-based (38%) and customer-based (17%). The findings from the current study are somewhat similar to Hinterhuber (2008) who found that cost-based methods were more than twice as popular as customer-based methods. One possible reason why cost-based methods appear to be the most popular amongst the questionnaire participants is that it has evolved from a financial perspective and it has been considered essential that software vendors cover their costs. Despite many authors and software practitioners arguing against the use of cost-based methods deeming them unsuitable for the software industry especially as the industry is moving from a product to a services based focus (Harmon et al. 2009). Interestingly a review of the literature revealed that part of the reason for this move towards services is because product licences (cost-based) ignore customers and their perception of value (Harmon et al. 2009).

8.3.1 Shift from cost-based to customer-based methods

The study found that most of the software managers said that they were customer focused, however the findings showed most of them to be predominantly cost focused. Pasura and Ryals (2005) found in their study that 95% of their respondents claimed to take what their customers valued into account when setting prices. However, Pasura, and Ryals (2005) found that only 14% of their respondents regarded the customer as the most important factor when pricing software. Interestingly, they found that more than half (52%) of their respondents disregarded customer value or thought that it was a

minor factor in the pricing decision process. This is in line with the findings from this research, which show that a customer-based approach (32.2%) is the least popular of the 3Cs. This is perhaps because there are many obstacles to this approach. For instance, software sales personnel find it difficult to communicate product features and customer benefits (Hinterhuber, 2008).

A review of the literature suggests that a greater understanding of customers is vital in the software industry and therefore value-based pricing is essential as it can help increase a company's profitability in terms of ongoing revenue (Harmon et al. 2009). While software managers say that they not cost-based the findings of this study show that only two of the interview participants are providing a value-based offering to their customers and less than half of the questionnaire participants are value-based. Tables 8.1 and 8.2 illustrate these findings as each of these tables show the licences findings and Harmon et al's (2009) categorisation of cost-based or value-based. There is a consensus amongst the interview participants that it is very important for software vendors to understand their customers' business and price accordingly. This can be highlighted with the following insight from respondent IRL B who stated that the key is to understand '*your customers problems and understand what their business is*'. This is in line with Harmon et al. (2004) who said the key to value-based pricing is recognising the price the customer is willing to pay. Similarly, a recurring theme emerged from the questionnaire participants regarding the importance of understanding customers. The following response was common among many of the questionnaire participants '*understand customer wants and costs before you price*'. In addition to understanding the customer, it emerged that customers' perception of value is vital to software vendors. The following response perhaps sums this up best '*pricing based on value and benefits to the customers is critical*'.

However, the findings of this study show that of each of the nine licensing choices, only two of them are considered value-based approaches. According to Harmon et al. (2004) both free trial and usage-based are value-based methods as they provide value to the customers in other words the other methods are not customer focused as they are more concerned with covering development costs. According to Harmon et al's. (2004) categorisation of software licences of the other methods used by the questionnaire and interview participants are cost-based methods and therefore they

benefit the vendor as opposed to the customer. Therefore, the study reveals that most of the questionnaire and interview participants are cost-based as opposed to value-based despite stating that they are more customer-based. Despite a review of the software literature portraying that software managers recognise that they must provide value to their customers. There is evidence to suggest that they are heavily dependent on cost-based licensing methods.

Although many SaaS vendors offer subscription-based methods, it is considered a cost-based approach because the software vendor is guaranteed a return on investment (Cusumano, 2007). However, this is more customer focused than the traditional licensing methods. Similarly some SaaS vendors who offer the subscription-based method, price on a per-user basis. User-based licences are also considered to be cost-based as this licence benefits the vendor by maximising the licence fee revenues by making customers pay for software that may not be used by all users but because of the benefits of having an unlimited approach the customer incurs this cost (Harmon et al. 2004).

To conclude, the findings derived from the interviews reveal that two out of six of the interview participants provide a value-based approach. Interesting the two companies that provide a value-based approach are two of the Irish software companies that offer pure a SaaS application. Upon a closer examination of the questionnaire findings, the study reveals that most software managers are combining the 3Cs.

8.3.2 Combining the 3Cs

The breakdown of the 3Cs reveal that the following software pricing methods are 'always' used by the questionnaire respondents. These results show that 27.1% of respondents (always) considered cost plus the most important pricing method. This finding was closely followed by value pricing (25.4%); target return (20.3%); and break even analysis (16.9%). The findings report that the least common methods used by the questionnaire respondents were similar to the competitors (11.9%); according to the demand (8.5%); average market price (8.5%); penetration (6.8%); below the competitor s(3.4%); above the competitors (1.7%) and skimming (0.0%).

This finding shows that while customer-based methods appear to be the least common of the 3Cs, value-based pricing (25.4%) represents a significant proportion of the results as it is the second most common method 'always' used by the questionnaire participants. In addition, the breakdown of the 3Cs shows that there is a mixture of cost, competition and customer-based methods that are 'always' used by the respondents. This in line with the literature as there is some evidence to suggest that a combination of the 3Cs is a good fit (Shipley and Jobber, 2001; Indounas, 2006). It is thought that combining the 3Cs could introduce a balance in the pricing decision-making process between cost-based methods, competition-based methods and the customer-based methods. Thus, this combination will result in a more holistic and integrated approach satisfying both the customer and the software vendor. This is best conveyed with the following statement by Carson et al. (1998:75) who stated that *'managers should endeavour to establish customers' perceptions of the product, they should be aware of competitors' actions and know how much the product costs'*.

The core themes that emerged from the questionnaire and the interview respondents with respect to the 3Cs were that software managers were more concerned with covering their costs than providing value to their customers. Therefore, it can be concluded that software vendors have to cover their costs in order to stay in business. However, a review of the literature suggests that the software industry is moving away from cost-based to value-based methods and the empirical evidence from this study confirms this move, despite the high number of questionnaire and interview participants using cost-based methods.

8.4 Pricing Objectives

This section of the discussion uncovers whether the questionnaire respondents set their prices based on financial or market objectives. The study found that 70.3% of the respondents said that they use both objectives to set their prices. The findings show that main objectives for setting prices were as follows: profit (56%), sales (56%) and desire to achieve a position within a particular market (54.7%). A review of the literature confirmed that both profit and desire to achieve a position in the market to be

significant factors for decision makers however they are cost-base approaches (Duke, 1994; Brassington and Pettitt, 2005).

The findings from this section are somewhat different from previous studies in that some of the pricing objectives have a higher priority than the ones found in this study. For instance, Hornby and MacLeod (1996) found in their study that the following objectives had an impact on software pricing: profit maximisation (82%), maximise revenues (62%), a price that is fair to a firm and its customers (59.3%), market share (51.9%), sale margin (59%) and similar to the competitor (44.4%). Similarly, Carson et al. (1998) found their study that the following objectives were commonly used to set prices: desire to achieve a certain margin, market share and competitive pricing.

Overall, these findings from Hornby and MacLeod (1996) and Carson et al. (1998) differed from the findings that were derived from this research, in that Hornby and MacLeod (1996) findings appears to be more concerned with achieving financial objectives. However, the findings of this study are somewhat similar to Pasura and Ryals (2005) in that they revealed that their participants use a combination of both financial and market objectives to set their prices. Although Pasura and Ryals (2005) found that their participants were more interested in achieving short-term company objectives such as gaining market share and meeting quarterly targets as opposed to long-term objectives such as providing customer value. Therefore, it can be concluded that a consequence of such a short-term focus inhibits managers from providing value to their customers. Managers can not neglect short-term objectives there is a shift towards value-based pricing (long-term approach) and therefore some software managers need to recognise this shift and act accordingly. Interestingly there is evidence to suggest that a customer-based approach yields more profit (Harmon et al. 2009; Hornby and MacLeod, 1996). They found that firms that focused their efforts predominantly based on a market-based perspective tend to be more profitable than those who consider financial objectives to be more important.

Overall the findings from this section of the study are somewhat similar to findings from other research as this study shows that the respondents to the questionnaire (70.3%) view pricing from a holistic perspective and incorporate a mixture of both financial and market objectives when setting prices. The following section identifies

the possible reasons that software managers currently set prices for their software offering using the approaches that they currently utilise.

8.5 Reason for current pricing practices

Initially this section will present a discussion of the main reasons conveyed by the interview respondents as to why they use their current pricing practises. The second part of this section provides an overview of the level of satisfaction felt by the interview and questionnaire participants with respect to their pricing capabilities.

The interview findings suggest that there are a variety of reasons why software managers use the approaches that they currently deploy to license their software. Some of the managers have indicated that they had previously tried a number of different licensing methods and they are now content with their current method. While others have indicated that, they are still perplexed with their existing licensing approach and they were, at the time of conducting this research, attempting to modify their software business model from the traditional licensing model to the SaaS model.

The interview findings show that some vendors have transitioned to the SaaS model. There is evidence to suggest that they have moved to SaaS because of the ongoing revenues generated from the SaaS model. For instance, respondent NFL Ds (hybrid model) uses a subscription-based pricing method and he indicated that his company adopted this method because of the *'recurring revenue stream generated from this service'*.

Secondly, it emerged that the licence type adopted by some of the respondents was dependent on their customers' requirements. For instance respondent NFL F's hybrid offering gives their customer the choice between traditional licences and subscription based licences. The reason that he gave for using a combination of traditional and contemporary licensing methods was to meet their customers' needs. This is perhaps best shown in the following statement by respondent NFL F *'you can't say [to a customer] we are going to do perpetual sales and that is how we sell'*. In other words, if the customer wants their software on-premise they will develop it for them and if they want to avail of the on-demand option they can subscribe to use it.

There is nothing in the literature to suggest the reasons why software managers use one licence as opposed to another. However, it has been noted in the literature that some software vendors are offering SaaS due to pressures from their customers. In other words, some software managers are forced to offer the SaaS model because it is a cost effective solution for some customers. For instance, some authors have commented that many customers are opting for solutions that reduce their costs and are eager to shift from traditional software applications to the SaaS model (Wong, 2006; Dubey and Wagle, 2007; Harmon et al. 2009).

According to Respondent NFL F, in order to satisfy the customer software vendors need to give their customers the choice of traditional licences or SaaS. His view was best expressed in the following statement '*you can't stick to one licence type of model*'. It is evident that respondent NFL F's company wish to provide a product or service to suit their customers' needs and budgets, while continuing to generate large upfront payments for their company. Therefore, there is evidence to suggest that respondent NFL F customers have a large influence in the pricing process. This is perhaps best shown in this statement made by respondent NFL F '*we look at the model [perpetual V SaaS] and pick a period of time*' and '*compare the two*'. Respondent NFL F's combination of traditional licences and SaaS is in line with Zhang and Seidmann (2009:9). They suggested that a software vendor is better off choosing a hybrid model rather than a pure subscription-based model because subscription-based models prevent customers who do not want new features or upgrades. In other words, some customers are content to make once-off purchases and such customers may never want upgrades, consequently, the SaaS model may be more costly than the traditional model for this type of customer. Therefore, software vendors ought to consider offering a hybrid model to suit their individual customers' needs.

8.5.1 Level of satisfaction

This sub-section outlines the level of satisfaction among the questionnaire and interview respondents of this study with respect to their pricing ability. This study has established that 59.7% of the respondents found it difficult and 40.3% of the questionnaire respondents are satisfied/happy with their pricing ability. While some of

the interview candidates specified that they were happy with their pricing ability, a review of the literature indicated that most software managers are dissatisfied with their pricing ability. However, there are few studies to confirm this assertion. One possible reason why pricing is difficult is because software pricing is an under researched area, as a result, there may not be established models or best practices for software managers to follow.

In a study conducted by Macrovision, SIIA, SoftSummit, SVPMA and CELUG they found that 55% of software vendors are happy with their existing pricing and licensing strategy (SIIA et al. 2007). However, in the same study they found that 27% of the software customers are happy with their vendors pricing and licensing. There is evidence to suggest from that study that software vendors are not listening to their customers as the vendors are twice as satisfied as their customers are with their pricing and licensing methods.

The findings from phase 4 show that most of the interview respondents have limited pricing experience as they informed that they were not previously directly involved in the pricing decision. However, respondents IRL A, IRL B, IRL C and NFL D indicated that they are reasonably confident with their pricing ability. While, NFL E and NFL F stated that they find pricing difficult and they are looking for pricing assistance. Despite the dissatisfaction amongst the questionnaire participants 40.3% are satisfied/happy with their pricing ability. In the opinion of the researcher, the level of satisfaction may be due to one or more of the following reasons: Firstly, most (68.8%) of the candidates had 2-4 people involved in the pricing decision. Perhaps a second reason may be down to the number of years pricing experience that some of the software owners have as 43.9% have more than 6 years pricing experience. A third possible reason may be that some candidates (63.5%) indicated that they have guidelines to assist them with their pricing and most (41.9%) of these respondents found their guidelines to be appropriate or very appropriate. However, of the participants that have guidelines, some of them indicated that they would like to receive pricing advice from government bodies such as Enterprise Ireland. For instance, the following statement was made by one questionnaire respondent '*industry specific training on pricing strategies from Enterprise Ireland, or industry bodies, would be very useful*'. To the best of the researcher's knowledge the use of guidelines to assist

software pricing decision makers is not mentioned in the literature. Similarly, no interviewee indicated having devised such guidelines for their company.

It can be concluded that despite having little experience most of the vendors are satisfied with their pricing ability and it is possible that this level of satisfaction is because they are using their intuition to set prices. There is evidence in the literature to suggest that pricing decisions are made intuitively and due to the lack of external pricing assistance software managers tend to rely excessively on this approach (Carson et al. 1998; Bergstein and Estelami, 2002). Carson et al. (1998:74) found from their study of SMEs that many managers were setting their prices in a *haphazard* and *chaotic* way as opposed to following textbooks. However this intuitive approach may enhance software managers pricing skills over time through awareness, knowledge, learning and practice (Monroe, 2003).

In conclusion, the findings from this section show that some of the software managers appear satisfied with their pricing abilities, however most of them would embrace external assistance. The researcher was surprised that less than half of the questionnaire respondents (40.3%) indicated that they are happy with their pricing ability. Interestingly, both interview and questionnaire candidates indicated that they would like help with their pricing, despite most of them indicating that they are reasonably satisfied with their current pricing ability. This finding is in line with Hornby and McLeod (1995) who found that the majority of computer firms had some level of control over their pricing decisions. Although the findings from this research show that most of the questionnaire participants (78.1%) have pricing experience, while most of the interview participants have limited pricing experience.

8.6 Irish/Newfoundland comparison

The final finding of this chapter relates to the whether there were any similarities or differences between the Irish software companies and Newfoundland software companies. The interview finding suggests that there are no major differences between the two regions. Each of the six interview participants operate in different markets and the only significant differences between them relates to business models adopted by

each company. The findings show that none of the three Newfoundland Company offers a pure SaaS model, as two of them offer a hybrid model and one of them offer the traditional model. This is in contrast with two of the Irish companies who offer a pure SaaS model and one of them offers the traditional model. Therefore, the participants' licensing approaches differ, in that the pure SaaS companies charge their customers based on their usage and this is regarded as a value-based method. The two hybrid companies differ in that one offers a subscription and the other offers their customers the choice of on-demand or on-premise software. One of the hybrid approaches is value-based method in that it incorporates the needs and wants of the customer. The other hybrid approach is cost-based method in that vendor is always guaranteed revenue from the subscription despite the amount that is used by the customer. To conclude the main difference between the Irish companies and the Newfoundland companies is that two of the Irish companies are value-based and all of the Newfoundland companies use cost-based methods.

Another interview finding revealed that most of the participants were considering adopting the SaaS business model. Two of the participants are currently deploying the pure SaaS model. Another participant offers SaaS to some of their customers and two other participants were considering moving to the SaaS business model in the near future. This is in line with the literature as it indicated that software vendors are moving from traditional licensing to on-demand business models (Wong, 2006; Dubey and Waggle, 2007; Harmon et al. 2009). It is not surprising that they want to offer SaaS as, it was found that all of the interview participants were optimistic about the future of SaaS and they were of the opinion that it benefits both the vendor and the customer.

Another finding suggests that there is one noteworthy similarity amongst five of the six interview candidates. That is their desire to supply to the US market, the reason for this is partly due to the small domestic markets and the huge advantages associated with the US market. Interestingly some of the participants indicated that they focus more on the US market and this is best summed up by the following statement from responded NFL E *'our sales people right now are going to spend 80% of their time focusing on the US and 20% on Canada'*. Some of the principal reasons given by the interview

participants for focusing on the US market is due to its size, short sales cycles and the US is where the growth of SaaS is.

The interview findings showed that all of the Newfoundland participants and two of the Irish participants indicated that they beta tested their software. Most of them were of the opinion that it was important to beta test and by doing so their software would be almost 'bug free' as this results in a high quality software application, thus high quality software yields higher revenues. This is perhaps best shown in the following statement by respondent IRL C *'that you will always get higher revenue when the quality is higher'*. This finding is in line with what was discussed in the literature by Choudhary (2007b). He found that in order to retain customers, software vendors ought to ensure that they are providing high quality software. Interestingly, Choudhary (2007a) found that in general, SaaS vendors earn larger profits than traditional vendors earn because the software is of a higher quality (due to ongoing upgrades). However, one participant indicated that he does not beta test and his reason for not doing it was because he believed that it is more important to launch the software as soon as it is developed and let the customers report the bugs. This is best expressed with the following quote from respondent IRL B *'it is more important to get the software to the customer and let them beta test the application'*.

To conclude this section of the study found that there were no major differences to report between the two regions. It was not surprising that some of the participants offer different business models, as each business model has its strengths and limitations and therefore some models will best suited to a certain type of customer or market. Thus, it can be concluded that the software industry is large enough to sustain a few business model and each model will have different software license.

8.7 Conclusion

This chapter addressed the discussion of the findings that were presented in chapters six and seven. The key findings that have emerged from this research were explored, examined, interpreted, integrated and contrasted with the software pricing literature and with specific reference to the research question. A number of key conclusions and considerations have been identified both of which will be presented in the following chapter.

The study revealed some interesting findings most notably the concept of the SaaS business model which emerged from the questionnaire findings. The focus of the questionnaire was more towards software products as opposed to on-demand service offerings. During the analysis stage of phase 2 it emerged that some of the questionnaire respondents were offering SaaS. Until that point the researcher was of the opinion that SaaS was a type of professional service as opposed to a new software business model. Phase 4 of this study allowed the researcher uncover the licences that SaaS vendors are using. Thus, the in-depth interviews provided evidence of the licences that were used in the traditional and SaaS business models which the questionnaire did not uncover.

Furthermore, a review of the literature revealed that there is an ongoing paradigm shift in the software industry. The findings from this study confirm that some vendors are moving to SaaS while others are remaining with the traditional licences. The results show that software vendors offer a variety of licences. Many software companies still operate under the traditional licensing model and some of these are slowly trying to convert to the SaaS model. A review of the literature revealed that software licences are declining and subscription-based and utility-based methods are increasing (Harmon et al. 2009). The findings from this study show that there is a large number of respondents using traditional licences (multiple-user (44.0%), single-user (27.6%) and transfer rights (25.4%)) and when combined it is by far the most popular licensing method (97%) used by the indigenous respondents. However, this study confirms that software companies are adopting the software-as-a-service model.

The surveys also reveal that managers are acknowledging the importance of involving the customer and providing value to the customer but overall most of the vendors are still using cost-based methods. It emerged from the interviews that only the two pure SaaS companies offer a value-based approach, while the other four software vendors are cost-based. Therefore, the study has found that what software managers say diverges from what they do in practice. In other words, they say that they price based on value-based methods while in practice most of them are using cost-based methods. Software pricing needs to be done with the customer in mind and for the good of the customer in order to maintain a long, loyal and trustworthy relationship. Such a relationship will provide the software vendor with ongoing revenue and help sustain profitability (Hinterhuber, 2008).

Overall, the most interesting finding was the free trial finding. It emerged as the most popular licensing method used in conjunction with other methods among the questionnaire participants. This was interesting because there was a tendency in the literature to overlook this method and mainly focus direct on revenue generating licences such as subscription or multiple user licences. There are a variety of reasons as to why the software vendors are using different licensing methods. Firstly, the type of licensing that software companies choose is largely dependant upon their company's software business model. Secondly, it maybe dependent upon what is financially feasible for the software vendor, for instance would the software vendor prefer ongoing revenue or a large upfront payment? Thirdly, it is possible that it is dependent on the customers needs, for instance if your customer wants to rent or own the software. Finally, it may be dependent on factors such as whether the company wants to penetrate the market or look for long-term growth.

The relevance of the discussion chapter is especially important to start-up software company's managers/owners. The following chapter presents the overall research conclusion and implications, an over view of the limitations of this research are presented and an outline of interesting areas on this topic for further research is presented.

Chapter 9

Conclusions,
Implications,
Limitations and
Future Research

Chapter 9 Research conclusion, implications, limitations and further research

9.1 Introduction

This chapter presents conclusions based on the findings discussed in the previous chapter. General conclusions are drawn about the current pricing practices adopted by software managers, their choice of business model and the licensing types they offer are discussed in this chapter. The remainder of the chapter focuses on the implications and limitations of the study. A number of opportunities for further research are identified by explaining the gaps that were identified throughout the literature chapters. The thesis will conclude with a discussion of the potential impact of new approaches to software pricing.

Evidence from the literature suggests that there is a lack of understanding of how software managers evaluate software pricing. There is a need for decision makers to focus on the most commonly cited neglected area of the marketing mix (pricing). Pricing remains on the periphery of many fields, such as accounting, economics and marketing. However, this does not excuse the lack of attention awarded to this issue in the literature or in practice.

A review of the literature showed that little focus has been given to the pricing practices within the software industry. This may be due to the commercial sensitivity of the topic or the multi-method demand of the topic. However, the level of interest in software pricing is increasing amongst practitioners and academics and the current paradigm shift in the software industry is generating a lot of attention for this area. The current study found that some software vendors want assistance with their pricing and it has been recognised in the literature that such help is required (Youngsik et al. 2008). As a result, the researcher developed an introductory template to help close this gap. It is anticipated that the pricing template attached as Appendix F will help software managers record their pricing activities and thus reflect on their mechanisms for reporting, learning and refining their current practices.

9.2 Summary of conclusions

This section presents a conclusion of the main findings that emerged from this study. A review of the literature revealed that software pricing has traditionally focused on the vendors' internal costs. This study confirms such findings, despite software managers saying that they are value-based. It is possible that the shift in pricing is more about determining value to the customer rather than providing value in terms of pricing.

9.2.1 Licence type

The primary research made a number of findings regarding the pricing practices of software firms. There are different ways that software products or services can be priced and licensed. Different categories of software vendors tended to use different software business models. For instance, the study found that the pure SaaS companies offer a utility-based licence and these licences are value-based. The study also found that pure product based companies offer user licences and these licences are cost-based licences. Furthermore, the study found that OSS companies offer a mixture of OSS licences.

It appears from this study that software vendors are aware of what their customers require and therefore their business model reflects the type of licences that they offer. Thus, this is reflected in the fluidity regarding licenses in the software industry. It also emerged from this study that the software vendors are cognisant that their customers' want a pricing model that makes sense. Such a pricing model should tie in with how customers realise value and it ought to be easy to understand. The general assumption appears to be that customers are satisfied if they have easy access to valuable software and payments are not directly related to the costs of development (Saaksjarvi et al. 2005). It can be concluded that some software vendors offer free trail (50.8%) software because of their customers' awareness. By offering free trail software customers can use the software for a specific period and if it fails to satisfy their requirements, they will not purchase the software after the trial period is up. This finding is in line with Cusumano (2008) who found that free trial enabled potential customers to make informed decisions before purchasing software.

Overall, the research findings suggest that indigenous software companies are moving away from traditional licensing methods to software-as-a-service. This move will have a profound impact on how software vendors recognise their revenues in the future. SaaS vendors' revenues will be spread over a long period and an implication of this results in smaller but stable cash flows.

9.2.2 Common pricing methods

Phase I of this study found that the cost-based methods are the most popular of the three methods. Of the respondents, 64.3% of them indicated that they 'always' use this method. The results for competition-based methods and customer-based methods are nearly half of that of the cost-based methods. A closer examination of these results found that cost-plus and value-based pricing featured high amongst the participants as 27.1% and 25.4% of them said that they 'always' use these methods. However, a closer examination into the type of licences used uncovered that software managers predominantly used cost-based methods. This study found that only two of the interview candidates use value-based methods and those two vendors provide software-as-a-service. Therefore, it can be concluded that SaaS vendors are more inclined to adopt a value-based approach and this corresponds with the industry shift from a product focus to a service focus. There needs to be a greater link to customer centric approaches.

9.2.3 Pricing factors

Throughout this research the importance of the 3Cs remains a focal point as a great deal of attention has been devoted to it in the literature and both the questionnaire and interview participants outlined its importance during the decision-making process. The core themes that emerged from this research with respect to the 3Cs were as follows: understanding the customers and customer perception of value is key. It emerged that software vendors need to focus more on their customer and have a greater understanding what they consider valuable. Once they have mastered their understanding then need the skill set to convey that value back to each customer. However, the benefits identified by this research suggest that having an awareness of how a software vendor can provide value to their customer and articulate that value to

the customer may help maintain an ongoing healthy relationship between the two parties. Such a relationship is vital with the SaaS model, as vendors need ongoing revenue to sustain and support their software business.

9.2.4 Reasons for adoption of current pricing practices

There are many reasons why software managers and decision makers adopt the pricing approaches that they have. Some of the interview candidates indicated that they had previously tried a number of methods before settling on the approach that they currently use. However, others indicated that, they are still perplexed with their existing approach and they were attempting to modify their software business model to SaaS.

9.2.4.1 Level of satisfaction

Most of the interview candidates specified that they were happy with their pricing ability. This finding is not in line with the literature with respect to software pricing. However, this study has established that 59.7% of the respondents are dissatisfied with their pricing ability and this finding is in line with the literature. As the literature indicated that most software managers are dissatisfied with their pricing ability. Although the literature says that pricing is difficult and it is an under researched area, the empirical findings from this research do not reveal a significantly high level of dissatisfaction amongst the participants and both interview and questionnaire candidates indicated that they would like help with their pricing.

It can be concluded that the participants who indicated that they are happy with their pricing ability they may not be aware that they lack the skills necessary for software pricing. As a result, they may be content with the approaches they are using. It also appears that they have an internal focus, which may demonstrate a lack of market awareness.

To overcome the weakness of the over reliance of the cost-based software vendors ought to involve more people outside the technical domain in the process. They could suggest to government bodies such as Enterprise Ireland and FAS to assist them with the process by providing training and support. Third level courses on engineering

could also incorporate a model on software pricing. This would reinforce the importance of a market and customer focus for software development activity and complement the technical and scientific skills being acquired by graduates.

9.3 Implications

The study shows the necessity of having good data on costs, on customers, and on competition. Software firms then need tools or routines that will convert this data into meaningful information that will help shape decisions. Where decision makers are inexperienced, it is helpful if more than one perspective and one person contribute to framing and taking commercial decisions. Over a period of time, as software firms gain a deeper understanding of the pricing issues, they can move to develop pricing policies that will help provide parameters for the decision process. Figure 9.1 illustrates some of the factors that have impact on software pricing.

Decision makers may improve their decisions by having some training on the issues involved and also having reflective mechanisms built into the management process so that over time their skill and ability in this domain improves. For existing managers such training might be delivered by FAS or enterprise boards or through special purpose modules offered by third level institutions. This is also a service that third party consultants could in theory deliver directly to start up firms but in practice this option is likely to be beyond the financial capacity of individual firms.

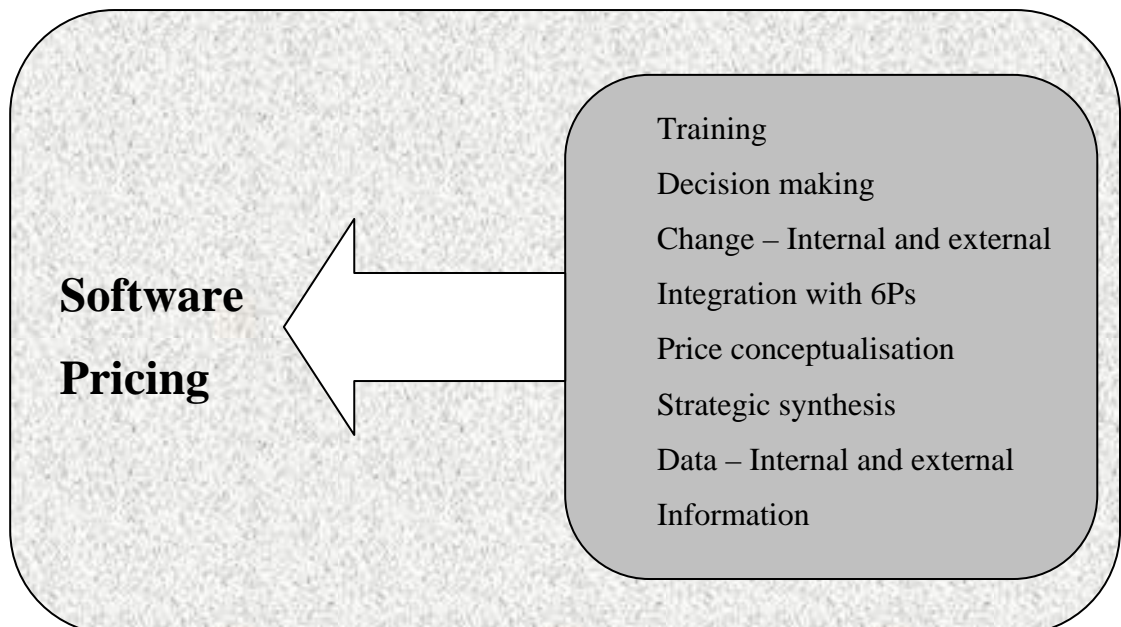
Price is not an issue that can be treated separately from other elements of the marketing mix and the temptation in technical firms dominated by technical experts may be to leave price as a residual issue rather than deal with it as a very connected variable. For example, by considering price in conjunction with delivery platforms, sales and production processes, the calibre of people involved in providing the software offering, the price chosen is more likely to represent a better fit with the other elements than if dealt with in isolation.

A price is multi faceted concept and again this may well be contributing to the difficulty encountered by managers with responsibility for pricing in software firms. It

represents a sense of value for customers, it provides a basis for calibrating payments, it affects utilisation, it is compared with competitors' quotes, it carries with it a set of terms and conditions, it lasts for a certain time period, it may fluctuate, it has a trend or pattern, it may be standardised or it may be customised or tailored, it may be communicated as a rate or a cash aggregate, it is a manifestation of the relationship between the parties. So while initially, it may appear that a price is just one or two numbers, at a deeper level it has much more meaning and consequence for those who are directly involved and indeed sends currents beyond those parties that affect others who are actors in the marketplace including distributors, competitors and tax authorities.

A business software model which gives expression to a firm's overall strategy also will have the pricing issue as a critical enabler for achieving the goals implicit in the strategy. It helps determine cashflow, it positions the firm in the marketplace, it will have direction, which will affect resources and capacities, it will demand adaptive responses by virtue of its pattern of change.

Figure 9.1 *Factors that impact on software pricing*



The literature in this study has shown the quite distinctive terminology that is used with respect to pricing issues in the software industry. This suggests that greater dialogue

between the different domains of software development, marketing and accounting would help bridge the appreciation and perspective of each and advance the theory and practice of those well versed in the individual disciplines. This research and dissertation is a contribution to that dialogue.

9.4 Limitations

The present study had several limitations. The first and most important of these was the fact that the study was limited to the indigenous software industry. However, the findings may also be applicable to other industries such as, the hardware or middleware industry. Ireland is fortunate to have a large number of software multinationals. Due to a large number of software companies operating in Ireland it was decided to narrow the field to the indigenous software sector. It is possible that a different set of results would have been obtained if the entire software sector was surveyed as large software companies tend to have greater bargaining power over their customers than the smaller start-up companies.

A further limitation of the present research was the fact that all the primary data used in the present study was gathered over a short period and each respondent was interviewed only once. A longitudinal study may have yielded different results and sensitive issues surrounding software pricing may have been explored.

An interesting observation was brought to this researcher's attention during the questionnaire phase of the research. A few questionnaire participants suggested that there should have been two separate questionnaires - one questionnaire for product companies and one for service companies. Some participants indicated that the survey was product orientated and as a result, it failed to fully embrace SaaS companies and their pricing practices. This observation was missed during the pilot stage of the questionnaire phase. Consequently, when it was detected it was too late to amend the questionnaire. It is possible that the imbalance between the product only and service only companies is a result of this and this may have made it difficult to draw meaningful conclusions between the two offerings. A final limitation concerns the time constraint of a master by research project.

9.5 Future research

A number of factors have been revealed as having a significant impact on pricing. This study presents several areas worthy of further research. A further study could look at how each of these factors impact on each other and identify the most important factors in the pricing decision-making process. This section aims to enlighten the reader on future research into the area of pricing in the software sector.

9.5.1 Transition from perpetual licences to SaaS: Pricing model change

One area that could be investigated is how traditional companies are finding the transition from perpetual licences to SaaS. Questions arising from such a study may include: Is the transition difficult? Can all software companies move? How expensive/costly has the transition from offering a perpetual licence to offering the software as a service over the web? Can traditional companies generate similar profits from on-demand software applications as they currently can with on-premise software?

9.5.2 Financing a SaaS company: A new financial model for software businesses

Alternatively, further research could explore the profitability of SaaS companies. Questions arising in this area include: How are SaaS start-ups financing their business? How are they surviving without the large upfront payments? Where can SaaS software vendors turn to assist them obtain the upfront capital needed to support software development? How have their sales cycles changed? Has this change had an impact on the sales person's rate of pay/commission? Has the software vendor been successfully selling subscription software?

9.5.3 Customers' perspective of software pricing: The other half of the software dyad

A more general case might be to investigate pricing practices from the customers' perspectives. Questions such as the following might address this issue: How can a

software vendor price its products accurately to reflect the value of the software? What is the correct measure of value and does it vary according to customer size or industry?

Which is more profitable for the company or customer a fixed or usage-based pricing scheme? This could be looked at by segmenting customers and their sensitivity to prices. What is the cost of having software on the users desktop and the customer not actually using it?

9.5.4 Software exporting

An alternative study could focus on software exporting. This is an area that is particularly relevant for Irish software companies due to the small domestic market. Government agencies such as, the IEA and the ISA would be particularly interested in findings from such a study.

9.5.5 Practical application of a software pricing matrix

There are many costs associated with developing software. It is possible that a researcher might develop a software application that could illustrate and calculate the benefits and the TCO of delivering the software on-demand or on-premises. Such a software application would help the vendor satisfy a customers' needs by providing a valuable application for the customer. The application may enable the software vendor to show the customer how much the on-premise software would cost to develop and maintain over its life. Similar calculations could be computed for the on-demand software application and draw up a comparison between the two.

9.5.6 Future expectations

There is no doubt that things will evolve in the near future with regard to software pricing and licensing. Traditional, SaaS and OSS models will continue to exist in harmony. It is possible that pricing models will reflect value to the customer based on their usage. Thus, it is likely that software vendors will use matrices to track customer habits to determine software usage patterns. As a result reporting and identifying value attributes to the customer will become more important and vendors will need to prepare for this eventuality. Software vendors ought to think about charging on a per storage

basis as the users use more of the service (for example per gigabyte of storage per month) because servers are expensive to own and rent. Pricing issues with SaaS are more complex than they appear and as a result, it will be more difficult because there are several implications that need to be taken into consideration. For instance, value provided to the customer, an estimate of competitive alternatives, cost of development, cost of storage, the cost of hardware, desired return on investment and cost communication. To conclude there is no doubt that in the future SaaS will be free or inexpensive software. Free software will include bundling software with hardware and supplementing the costs through advertising.

9.5.7 Advice for software vendors

Software vendors have several options for enlarging their businesses. For instance, they could opt for developing a distinguishable competitive feature that might add to their sales package, which might help, their customers grow their business. Alternatively, software vendor could look at methods of improving profits for software customers. They could look at algorithms to aid maximisation of profits. Such algorithms may provide clues to how they could provide value to their customers for instance, profit. Additionally, software vendors could investigate approaches to enable them to communicate the benefits of their offering in a manner linked to the customers business activity.

9.6 Closing comments

The research indicates that software vendors ought to determine their costs, choose a pricing strategy, establish a competitive price and consider their customers requirements by adopting a holistic approach to their software pricing practices. The importance of understanding the customer and what the customer values has strongly emerged from the empirical findings of this research. It is therefore crucial that a greater focus should be on keeping the customer satisfied and understanding their needs.

SaaS will change the way software is used, bought, developed and distributed. The concept behind SaaS is simple. Instead of the software vendor selling a software licence that requires maintenance and upgrades, the vendor hosts the software and provides access to the system via the Internet for a subscription fee or usage-based fee. In order for SaaS to work effectively for traditional vendors they need to re-evaluate their traditional application and mould it to suit the SaaS application.

The software market is going through a fundamental shift. SaaS is disrupting the traditional software pricing models in the software industry. The rise of SaaS has led to the rebirth of usage fee pricing schemes.

Pricing can be difficult as it can be challenging to find a price that will suit customers and generate revenues for software vendors. Before deciding upon a price or pricing process, software vendors need to bear in mind some of the following questions: What is the software worth to the customer? What the customer is willing to pay? What is the competition charging? What is the development cost involved with producing the software?

Pricing usually involves asking questions such as how much can one charge for this product or service. A better question for a software vendor is to ask is how much do customers value the product or services? The unique cost structure and characteristics of software products and services make it impossible for software vendors to follow the traditional cost plus pricing structure. One way to ensure customer satisfaction is to ensure quality procedures are in place and that the application is always available especially for critical tasks.

9.7 Critical reflection

This final section of the thesis will be written in the first person instead of the third person. The purpose of this section is to chronicle my research journey (Appendix L). I am glad that I have finally reached this stage of my dissertation, there was a time that I genuinely did not see the light and the end was not in sight but through perseverance and dedication I continued with the task that I set out to accomplish at the outset of my

research career. Had I known what was involved, one might ask - would I do it all again? The answer can only be yes! Although there are many aspects of my research experience that I would change. Firstly, I would begin the write-up process earlier. I truly underestimated the length of time that it took to complete the individual chapters and edit the entire thesis. Secondly, I would have read previous thesis earlier, this I believe would have helped clarify what a research thesis ought to look like. Finally, I would have liked more time in Newfoundland with the view to conducting a longitudinal case study between software companies in Ireland and Newfoundland. This I believe would have benefited the results of this study greatly.

Completion of my literature review cumulated in the presentation of two papers at separate conferences. The literature at the time took a broad overview of pricing in general. Over the course of a year and half the focus of the literature had changed and was driven predominately by SaaS and software licensing methods. The literature revealed that SaaS is a growing business and revenue model that is central to software pricing and it will co-exist with traditional software licensing for sometime. Subsequently, this discovery helped close some of the gaps associated with software pricing and my literature review expanded to three chapters. This in itself illustrates the complexity of software pricing as it borders on many peripheries and is of interest to many people especially those in the process of setting up their software business. I have to admit I found writing-up the literature extremely daunting and confusing because I have vast quantity of data from articles, books and reports. Consequently, structuring the literature chapters proved problematic and troublesome and as a result, this task took longer than I had anticipated.

The most enjoyable chapter to write was the methodology as it gave birth to my interest in philosophy. I found this chapter relatively easy to complete, in part due to having presented my second conference paper that was structured around my methodology. This chapter enabled me to reflect on my philosophical viewpoint in addition, it helped frame my position with respect to the ontological debate. Ultimately, this led me to using a mixed-methods approach to collect the primary data.

I really enjoyed collecting the data especially the interview data and my trip to Newfoundland added to this experience. The semi-structured approach through which

I conducted the interviews allowed me great flexibility to converse with the interview candidates and having knowledge of the software industry and software terms helped to facilitate the assignment. The approach to analysing the interviews was somewhat different to that of the questionnaire. Analysing the interviews consisted of identifying common themes and major differences within the individual interview transcripts. On the other hand, the questionnaire analysis involved looking for relationships and correlations between data variables. The findings from the questionnaire were mainly descriptive, as I did not find any meaningful relationships between the variables. Having mastered a mixed-methods approach to the data collection and analysed both datasets using SPSS and NVivo I feel comfortable with undertaking different research methods in my future research endeavours.

Developing a software-pricing template gave me a clearer understanding of some of the tasks that are set before software managers during negotiations to capturing a deal on paper. I anticipate expanding on this template in the near future and hopefully there will be a positive outcome from it.

Finally, I would like to conclude by saying that I now realise that there is always room for improvement but at some stage, one has to let go of the literature and the findings and begin the daunting task of writing-up. Now I realise that the task at hand is not only finding out how software companies price their software products and services offerings, but to master all the challenges that come your way and to overcome all the obstacles and to learn new tasks - this is a skill in itself. Hindsight is powerful!

The one question that everyone asks ‘How much for a software application?’ The complex answer is it depends – it depends on your costs, your competitors, your target customers, your staff costs, your business model, your product or service offering and your business objectives (make profit, cover costs and value for money). In opinion of the researcher, software pricing is about making pricing acceptable to the customer.

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Appendices

		Objective of the firm								
		Segment differential pricing			Competitive pricing			Product line pricing		
Pricing objective	Customer characteristic	Value based pricing	ITEPS pricing	Emerging revenue models	Value based pricing	ITEPS pricing	Emerging revenue models	Value based pricing	ITEPS pricing	Emerging revenue models
Penetration pricing	High search costs									
	Low reservation price		Automated Reverse auctions		Low price leader Experience curve	Automated (dynamic pricing)	Free open source	Bundling	Bundling	
	Special transaction code									
Skim pricing	High search costs			Upfront licence	Price signalling Reference point	Price signalling	Upfront licence	Image pricing	Custom pricing	Upfront licence
	Low reservation price									
	Special transaction code		Revenue management				Pay per use			Subscription
Hybrid pricing	High search costs	Random discounting		Subscription			Subscription	Premium pricing		
	Low reservation price	Periodic discounting					Free but not free Advertising Service based	Complementary pricing		
	Special transaction code	Second market discounting						Complementary pricing		

Appendix A: Pricing Strategy Matrix Taxonomy of IT service pricing model

Pricing strategy matrix – Dimensions and characteristics

Customer characteristic	Random discounting Same product Different prices to each segment	Competitive pricing Similar products Pricing for competitive economic advantage		Product line pricing Different products Pricing within same or multiple segments
High search costs Some view cost of search are high and remain less informed Some are willing to search and are more informed	Random discounting Unpredictable timing Uninformed pay higher prices Informed give market incentive for lower price Variants: Coupons Cents off Trade promotions Various other promotions	Price signalling Differentiated brands Price info easier to get than quality Variants: Price/quality	Reference pricing Differentiated brands Price info easier to get than quality Uninformed use reference in decision Variants: Reference pricing Prestige pricing Sales pricing Customary pricing Above/at/below market Even/odd pricing	Image pricing Similar model but substitutes Image difference Price info easier to get than quality Only some want low price model Variants: Image pricing Prestige pricing
Low reservation costs Some are price sensitive Some are willing to pay high price	Periodic discounting Predictable known discounts Discounts available to all All are informed Price sensitive users buy at any end of the season Variants: Skimming Seasonal discounts Prime-time/matinee Peak load pricing Cash discounts	Trade-ins Some trade discounts Quantity discounts Senior's discounts	Penetration Cost advantages Price sensitive groups Low price keeps out competition Average price higher than average cost Variants: Penetration pricing Cost plus Target pricing Standard mark-up Sealed bid	Experience curve Cost advantage Price sensitive lowers price to all Lower price keeps out competition Large cost gains through increased production Variants: Experience curve Learning curve Price bundling Independent goods Perishable Differing demand for each product Variants: Price bundling Premium pricing Similar model but substitutes Price sensitive across features Variants: Premium pricing Price lining
Special transactional costs Situations leading to high cost of purchase	Second market discounting Unused capacity Separate segments Second market provides outlet Variants: Domestic vs foreign Manufacture brand vs private label Other price discrimination methods	Geographic pricing Some want convince Distribution efficiencies Variants: FOB vs CIF Uninform-delivered price Zone pricing Freight absorption		Complementary pricing Transaction costs vary across products Losses covered by another product Variants: Captive pricing Two-part pricing Loss leaders

Appendix B: Enterprise Ireland Support



IDA Business Park,
Cork Road,
Waterford

051 333500

To Whom It May Concern:

Waterford Institute of Technology are currently undertaking a research project on the “Pricing Practices employed by Software Companies”, and they will be contacting you to complete a questionnaire on this topic for them.

Enterprise Ireland are supportive of this research project as it will provide detailed information that will assist the development of existing companies and will be of major benefit to new start-up companies in this sector. It is important for the validity of the information collected to have a large sample on companies, and we would appreciate it if you could make a special effort to complete the questionnaire.

Thank you,

Yours truly,

Michael Dee
Regional Development Executive,
South East Region.
051 333500

Appendix C: Phase 2 - Questionnaire

Luke Wadding Library,
Waterford Institute of Technology,
Cork Road,
Co. Waterford.
+353 (0) 86 xxxxxxxx
10 December 2007

Dear XXX,

Research on Pricing Practices in Irish ICT Firms

This is a request for assistance in a research project on pricing practices.

I am a postgraduate student undertaking a Masters Degree in Business Studies by research in the School of Business at WIT. My project is focused on an examination of the variables, the process and outcomes achieved in the pricing arena. This is a key success variable for Irish businesses both in domestic and international markets. Graduate business research relies heavily on practicing managers sharing their insights and experience in developing our understanding of this critical and challenging area. Your participation through the completion of a research survey will lay a commercial foundation from which it is intended to derive a pricing template as well establishing benchmarks for pricing activity. Business research informed by the market realities faced by Irish firms contributes to the development of more advanced and sophisticated responses to those challenges. Successful pricing is integral to revenue growth, profitability and return on capital. There has been remarkably little research in this field in Ireland.

The conclusions and principal messages from the research will be available in an executive summary in 2008 for all participants who request a copy. It is also intended to publish an academic journal article and present at relevant professional/academic conferences, thereby furthering management education and development.

The project enjoys financial and other support from The Ireland Newfoundland Partnership in the Dept of An Taoiseach, The Centre for Entrepreneurship at WIT, The

South East Business Innovation Centre and Enterprise Ireland (EI). The South East Regional Manager for EI has shown his support for this project. Please refer to the attached letter for more details of his support.

The target date for receipt of completed responses is **Friday the 21st of December 2007** and your cooperation in meeting this deadline would be greatly appreciated. You will be contacted shortly to complete a questionnaire.

This research obtained ethical clearance from the relevant research committee in WIT and this obliges the researcher, and her supervisor, to assure the confidentiality of participants' identities and to uphold the proper academic use of responses.

Your company is one of a small number of companies being contacted to give their opinion on this matter. Your email address was drawn from one of the following; the Enterprise Ireland company profile, the Business Innovation Centres company profile or the Platform Programs company profile. This study is important at this time because this is a new and under researched area and it has generated a lot of interest in this sector. This questionnaire has the support of Enterprise Ireland, the South Eastern Enterprise Platform Program and the South Eastern Business Innovation Centre. It is extremely important that you complete this questionnaire and that each questionnaire is returned. If you have any questions or comments regarding the research, please do not hesitate to contact me at 086 xxxxxxxx or by emailing soconnor@wit.ie. Alternatively, you may contact my supervisor Mr John Maher at 051 302457 or by emailing jmaher@wit.ie.

Thank you for taking the time to consider this request and for sharing your insights by completing the questionnaire. In doing so you will increase the validity of this project's outputs, deepen our collective understanding of pricing, thus facilitating enhanced performance by Irish firms in a globalised marketplace.

Yours sincerely,

Siobhán O'Connor BSc in Commercial Software Development

SCHOOL OF BUSINESS
WATERFORD INSTITUTE OF TECHNOLOGY



How indigenous software companies price their product and
service offerings: An exploratory investigation

The questionnaire aims to investigate managers, owners and/or decision makers' perspective and decisions with respect to pricing practices.

The questionnaire is directed at personnel involved in the pricing decision process. The questionnaire is designed to allow you to answer the questions within approx. 20 minutes.

All information provided will be kept CONFIDENTIAL and is used only for academic research. Only the researcher and supervisor will have access to the primary data. No person will be identified at any stage.

Correspondent Details

Siobhan O'Connor

Mobile No. 086 3467674

Email soconnor@wit.ie

Department of Accounting and Finance

Waterford Institute of Technology

This questionnaire is supported by Enterprise Ireland.

To answer the questionnaire please read the following instructions carefully.

- 1) There are 55 questions in total. Please read all questions and instructions carefully.
- 2) Please use the glossary at the end of the questionnaire for terms that you may not fully understand.
- 3) The questionnaire is divided into the following sections
 - General Information
 - Company Details - Questions 1 - 7
 - Personal Details - Questions 8 - 25
 - Guideline Details – Questions 26 - 33
 - Product and Service Details – Questions 34 - 39
 - The Pricing Process – Questions 50 - 55
- 4) Please answer all questions in the given order unless otherwise stated. Some questions may not be applicable to you or your company if this occurs please continue to the next suitable question.
- 5) To indicate a response to a question, please tick (✓) the appropriate box or circle (O) whichever option best describes your situation, attitude or opinion.
- 6) Some questions are scaled 1-5 so choose the nearest option you think best describes your perspective on the issue raised.

Thank you for your cooperation, your assistance is much appreciated.

Please email me at soconnor@wit.ie if you wish to receive a copy of the findings of this questionnaire.

SECTION 1: GENERAL INFORMATION - COMPANY DETAILS

Q 1: How long has the company been trading?

Please tick (√) appropriate box.

1 yr 2 yrs 3 yrs 4 yrs 5 yrs 6+ yrs

Q 2: Which of the following sectors are you trading in?

Please tick (√) one or more boxes.

Education
Health
Industrial
Commercial
Services
Transport
Environmental
Games
Design / Development
Multi-Media
Communications / Internet
Other
Other please specify

Q 3: What is the size of your company in terms of Annual Turnover?

<1 million Euro 1-3 million Euro 3-10 million Euro 10+ million Euro

Q 4: How many people are employed in your company?

<2 <10 <50 50+

Q 5: How many Clients/Customers does your company have?

<2 <10 <30 30+

Q 6: Do you use OSS (Open Source Software)?

Yes

No

If you answer no, please skip to Question 8.

Q 7: If OSS is used give a brief description outlining the following: What licence you use, if you are in competition with any OSS products, how much you are charging.

SECTION 2: GENERAL INFORMATION - PERSONAL DETAILS

Q 8: Please indicate your position in the firm.

Please tick (✓) appropriate box.

Owner / Entrepreneur

Sales/Marketing manager

Commercial manager

Other

Other please specify _____

Q 9: As an owner/manager how many years experience do you have with pricing?

Please tick (✓) appropriate box.

0-2 yr

3-5 yrs

6-8 yrs

9-11 yrs

12+ yrs

Q 10: Which of the following age categories do you belong to?

Please tick (✓) appropriate box.

<29 yrs

30-39 yrs

40-49yrs

50+ yrs

Q 11: Have you ever received professional training with respect to pricing?

Please tick (✓) appropriate box.

Yes

No

If you answer no, please skip to Question 13.

Q 12: How is training provided?

Please tick (✓) appropriate box.

On the job (once off or regular training)

External course (e.g. in association with a university or Institute of Technology or other)

Attendance at externally provided seminars (e.g. IDA or Enterprise Ireland or other)

Other

Other please specify _____

Q 13: Do you personally have experience dealing with foreign markets?

Yes

No

If you answer no, please skip to Question 15

Q 14: If you have experience dealing with foreign markets, do any of the following situations apply to you? Please tick (✓) appropriate boxes below.

Previously worked overseas

Previously sold to overseas customers

Other

Other Please specify _____

Q 15: How do you personally find the pricing decision process?

Please circle (O) the number that best describes your feelings before/during the process.

Straightforward

Difficult

1

2

3

4

5

Why is this so please explain _____

Q 16: How many people are directly involved in the pricing decision process?

Please tick (✓) appropriate box.

1 2-4 5+

Q 17: Have you ever used a third party to contract-out or delegate the pricing decision?

Yes No If no please skip to question 20

Q 18: If you use a third party, please specify how frequently such a service is used by circling (O) the most appropriate number below.

Always Sometimes Rarely
1 **2** **3**

Q 19: Are any of the following third parties used to assist you with the pricing decision process?

Please tick (✓) appropriate box.

Agencies (Enterprise Platforms, BICs etc)
Support centres
Consultants
Other

Other please give details of other types of sources of assistance used

Q 20: Which of the following targets best describes the company's pricing objectives with respect to price setting?

Financial Targets Market Targets Both Other

Q 21: Which of the following financial targets determine the way prices are set?

Please tick (√) appropriate box.

- | | |
|--|--------------------------|
| Sales Driven (sales minus all costs) | <input type="checkbox"/> |
| Sales Margin Driven (sales minus direct costs) | <input type="checkbox"/> |
| Profit oriented | <input type="checkbox"/> |
| Cost recovery | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |
| Other please specify _____ | |

Q 22: Which of the following market targets determine the way prices are set?

Please tick (√) appropriate box.

- | | |
|---|--------------------------|
| Volume oriented | <input type="checkbox"/> |
| Desire to achieve a particular market share | <input type="checkbox"/> |
| Desire to achieve a position within a particular market | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |
| Other please specify _____ | |

Q 23: Approximately what percentage of company revenue comes from product(s) developed in the following periods?

Please indicate a suitable percentage for products.

	Products
In last 12 months	<input type="text"/> %
2-3 years	<input type="text"/> %
4+ years	<input type="text"/> %

Q 24: Approximately what percentage of company revenue comes from developed in the following periods?

Please indicate a suitable percentage for services.

	Services
In last 12 months	<input type="text"/> %
2-3 years	<input type="text"/> %
4+ years	<input type="text"/> %

Q 25: In a selling situation how frequently is the intended or original target price achieved?

Please tick (✓) the most appropriate percentage.

>90%	<input type="checkbox"/>
70-90%	<input type="checkbox"/>
50- 70%	<input type="checkbox"/>
<50%	<input type="checkbox"/>
Never	<input type="checkbox"/>

Please outline reasons for your answer _____

SECTION 3: GUIDELINE DETAILS

Q 26: Does your company have current pricing guidelines available to assist decision makers with the pricing process?

Please tick (✓) appropriate box.

Yes No If you answer no, please skip to Question 34.

Q 27: Please indicate which of the following best describes the guidelines available to you?

Please tick (✓) appropriate box.

- | | |
|---------------------------|--------------------------|
| Formal / Written | <input type="checkbox"/> |
| Informal / Oral | <input type="checkbox"/> |
| Both (Written & Informal) | <input type="checkbox"/> |
| None | <input type="checkbox"/> |

Q 28: Who devises these guidelines?

Please tick (✓) the appropriate boxes.

- | | |
|------------------|--------------------------|
| Owner | <input type="checkbox"/> |
| Manager | <input type="checkbox"/> |
| Team of managers | <input type="checkbox"/> |
| All staff | <input type="checkbox"/> |
| Government body | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |

Other please specify _____

Q 29: What do the guidelines cover?

Please tick (✓) the appropriate boxes.

- | | |
|---------------------------------------|--------------------------|
| Responsibility for signing off a deal | <input type="checkbox"/> |
| Composing the price | <input type="checkbox"/> |
| Allocation of discounts | <input type="checkbox"/> |
| Payment terms or conditions | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |

Other please specify _____

Q 35: How many product(s) do you have that are currently available on the market for sale? Please tick (✓) the appropriate box.

None 1-2 3-4 5-6 7+

Q 36: How many service(s) do you have that are currently available on the market for sale? Please tick (✓) the appropriate box.

None 1-2 3-4 5-6 7+

Q 37: Which of the following categories best describes your product(s)?
Please tick (✓) the appropriate the appropriate box.

	Product
New to the world	<input type="checkbox"/>
Customised / Bespoke	<input type="checkbox"/>
Generic / Off-the-shelf	<input type="checkbox"/>
Product improvements	<input type="checkbox"/>
Me-too products	<input type="checkbox"/>
Other	<input type="checkbox"/>
Other please specify	

Q 38: Which of the following categories best describes your service(s)?
Please tick (✓) the appropriate the appropriate box.

	Service
New to the world	<input type="checkbox"/>
Customised / Bespoke	<input type="checkbox"/>
Generic / Off-the-shelf	<input type="checkbox"/>
Product improvements	<input type="checkbox"/>
Me-too products	<input type="checkbox"/>
Other	<input type="checkbox"/>
Other please specify	_____

Q 39: Do you use the same pricing procedure for pricing all products or services sold in the Republic of Ireland?

Yes No

Please explain _____

Q 40: Are the products or services priced the same for all customers?

Please tick (✓) appropriate box.

Yes No

Please explain _____

Q 41: Are there circumstances where you are prepared to lower prices or use free products or services.

Please tick (✓) appropriate box.

Yes No

Q 42: If yes to the above question does this happen under any of the following conditions?

Enter a market

Launching a new product/service

Discontinue a product/service

Make contact

Other

Other please specify _____

Q 43: Do you export any products or services?

Please tick (✓) appropriate box.

Yes

No

If you answer no, please skip to question 50.

Q 44: To which of the following regions are your products/services exported?

Please tick (✓) appropriate boxes.

EU

Rest of Europe

UK

USA

Canada

Asia

World

Q 45: When exporting what currency do you price-in?

Please tick (✓) appropriate boxes.

Euro

Sterling

US Dollar

Local Currency

Q 46: Are exported products or services priced differently from products sold in the Republic of Ireland?

Please tick (✓) appropriate box.

Yes

No

Q 47: Is this difference in price due to any of the following factors?

Exchange Rates

Different Market Opportunities

Transport Costs

Localisation Costs

Tax / Stamp Duty Regulations

Insurance

Lost / Stolen Goods

Returns

Other

Other please specify _____

Q 48: Approximately what percentage of company revenue comes from export product(s) developed in the following periods?

Please indicate a suitable percentage for both products and/or services.

	Products	
In last 12 months	<input type="text"/>	%
2-3 years	<input type="text"/>	%
4+ years	<input type="text"/>	%

Q 49: Approximately what percentage of company revenue comes from export service(s) developed in the following periods?

Please indicate a suitable percentage for both products and/or services.

	Services	
In last 12 months	<input type="text"/>	%
2-3 years	<input type="text"/>	%
4+ years	<input type="text"/>	%

SECTION 4: THE PRICING PROCESS

Q 50: In your opinion which of the following forces impinge on high-technology pricing decisions?

Please tick (✓) one or more boxes as appropriate.

Investment costs	<input type="checkbox"/>
Uncertainty of adoption	<input type="checkbox"/>
Short product life-cycles	<input type="checkbox"/>
Understanding the market	<input type="checkbox"/>
Nature of the product or service	<input type="checkbox"/>
Product or service quality	<input type="checkbox"/>
Competition	<input type="checkbox"/>
Internet	<input type="checkbox"/>
Customers' perception of costs/benefits of new technology	<input type="checkbox"/>
Pressure on price-performance ratio	<input type="checkbox"/>

Q 51: Please rank the importance of each of the following when making pricing decisions.

Rank importance from 1-7, 1 being the most important and 7 the least important

- | | |
|-----------------------------|--------------------------|
| Competitors | <input type="checkbox"/> |
| Customer | <input type="checkbox"/> |
| Legislation | <input type="checkbox"/> |
| Profit targets | <input type="checkbox"/> |
| Costs | <input type="checkbox"/> |
| Substitute product/services | <input type="checkbox"/> |
| Market | <input type="checkbox"/> |

Q 52: Do any of the following factors in the marketing mix affect the pricing decision process?

- | | |
|-------------------|--------------------------|
| Product/Service | <input type="checkbox"/> |
| Place | <input type="checkbox"/> |
| Promotion | <input type="checkbox"/> |
| People | <input type="checkbox"/> |
| Process | <input type="checkbox"/> |
| Physical Evidence | <input type="checkbox"/> |

Q 53: Do you use any of the following methods when pricing software?

Please tick (✓) one or more boxes as appropriate.

- | | |
|--|--------------------------|
| Transfer rights (Buyer owns the product) | <input type="checkbox"/> |
| Single user licence | <input type="checkbox"/> |
| Multiple user licence | <input type="checkbox"/> |
| Pay-per usage | <input type="checkbox"/> |
| Subscription | <input type="checkbox"/> |
| Leasing | <input type="checkbox"/> |
| Price bundling | <input type="checkbox"/> |
| Free trial | <input type="checkbox"/> |

Q 54: Indicate which of the following pricing procedures are most commonly used during the pricing decision process.

Please circle (O) the frequency that is most appropriate in each instance. Please answer all parts to this question.

	Always	Frequently	Sometime	Rarely	Never
Cost based	1	2	3	4	5
Cost plus	1	2	3	4	5
Target return	1	2	3	4	5
Break even analysis	1	2	3	4	5
Competition Based					
Pricing similar to the competitor	1	2	3	4	5
Pricing above the competitor	1	2	3	4	5
Pricing below the competitor	1	2	3	4	5
The average market price	1	2	3	4	5
Price according to the demand	1	2	3	4	5
Market Based					
Value pricing	1	2	3	4	5
Skimming	1	2	3	4	5
Penetration	1	2	3	4	5
Negotiated price					
	1	2	3	4	5

Q 55: Have you any further comments with your experience in pricing?

GLOSSARY OF TERMS USED IN QUESTIONNAIRE

HOW IRISH TECHNOLOGY COMPANIES PRICE THEIR PRODUCT OR SERVICE OFFERINGS?

Terms used in Section 1: General Information

Annual Turnover – Gross income.

Financial Targets – Numerically driven targets.

Foreign Markets – All markets external to the domestic market (inc Northern Ireland).

Market Targets – Desired volume of sales to particular markets. (goals other than financial goals)

Third Party - Refers to some other person or entity with some involvement in the decision-making process.

Terms used in Section 2: Guideline Details

Guidelines – Formal or informal benchmarks to assist with the pricing decision process.

Terms used in Section 3: Product and Service Details

Customised / Bespoke - made at a customer's behest, and exactly to the customer's specification.

Different Market Opportunities – Identify potentially profitable market segments not previously targeted.

Generic / Off-the-shelf – Products produced in large numbers without regard to individual customer requirements.

Localisation Costs - Costs which apply to a particular country or region.

Me-too products – Products offered by a company in response to a similar product offering made by a competitor.

New to the world – Innovative products that are completely original.

Terms used in Section 4: Pricing Process

Break even analysis – This is conducted by businesses with the aim of predicting the point where total revenue received equals total costs.

Costs – Expenses incurred by the business.

Cost plus – A method of pricing which has the aim of covering costs with an additional allowance for profit.

Legislation – Laws applying in a particular jurisdiction.

Negotiation – A bargaining process between groups or individual parties.

Penetration – Businesses set lower prices at product launch to capture maximum market share.

People - Anybody that interacts with the customer.

Physical Evidence Helping - potential customers ‘see’ what they are buying e.g. previous products or services.

Place - Location of product, e.g. shops or Internet.

Pressure on price-performance ratio - price-performance ratio refers to a product's ability to deliver performance, of any sort, for its price.

Product/Service - Tangible or intangible.

Promotion - Method of communicating what's on offer.

Price according to the demand – Businesses remain sensitive to demand in the market and set price accordingly.

Price bundling – Business offers discounts to customers who purchase bulk quantities of products or services.

Process - The process of giving a service, e.g. information and helpfulness.

Skimming – Start with high prices and lowering over time.

Subscription – An undertaking by a customer to purchase a preset number of products over a defined period of time.

Transfer rights – Giving away the rights of the software.

Value pricing - The practice of setting prices based on the value of a product to the customer, in contrast with other approaches such as pricing based on cost.

Consent Form

Pricing Policies and Practices Business Academic Research Project

We have read the consent letter attached and our firm hereby agrees to participate in the research.

1. I/We agree to conduct interviews with the researcher (please tick box):

- With recording of the dialogue and with handwritten notes
- With handwritten notes only

2. I/We agree that our firm will be identified in publications by (please tick box):

- Name
- Specific industry sector
- Generic sector only e.g. service, hi tech, trade mag, software etc

3. I/We agree to the preparation of a draft case study for educational purposes, which will be submitted to us for review, and will only be published after our written consent to an agreed case text (please tick box).

Permission for draft case study

YES	<input type="checkbox"/>
-----	--------------------------

NO	<input type="checkbox"/>
----	--------------------------

Date _____

Research Participant

Date _____

Researcher

Pricing Practices Case Study
Ethics Protocol

Siobhán O'Connor, Masters of Business by research, Department of Accounting & Economics of Waterford Institute of Technology is conducting this research.

The Ireland Newfoundland Partnership in the Department of An Taoiseach has sponsored this research.

I am the principal investigator of this research. Should you have any queries or need further clarification you may contact my supervisor. He may be contacted by phone at 051-302457 or by email at jmaher@wit.ie.

Thank you for your participation in this research project. Your participation is very much appreciated. Before we start, I wish to emphasis the following points.

Firstly, your participation in this interview is entirely voluntary. You are free to refuse to answer any questions at any time and you can withdraw from the interview at any time. The interview will be kept confidential and will be only available to the researcher and her supervisor. Extracts of this interview will be made part of the research report but under no circumstances will any material be included without your express permission. A copy of all cases involving your firm will be furnished to you for correction and amendment before inclusion in any publication.

If you are satisfied to proceed on this basis, kindly sign this form as an indication of your consent.

Interview name

Date

Siobhán O'Connor

Date

Pro Forma Initial letter of introduction

Dear XXX,

Pricing Policy and Practices

Business Academic Research Project

I refer to the above project, in respect of which I would like to interview your firm.

The purpose of the research is to gain an understanding of these practices in businesses in Ireland and Newfoundland with a view to developing a model that could communicate best practice.

The fieldwork will be conducted by face-to-face interview and by reference to any business documentation you wish to provide to the researcher. Reference may also be made to material about your firm that is in the public domain such as newspaper or magazine articles. Typically, an interview will take about an hour: the number of interviews and the staff interviewed are at the discretion of your company.

Participation is voluntary and may be withdrawn at any stage during the research process.

I will seek your consent for the use of any material or information provided by you. This includes an undertaking to treat such material with the high degree of confidentiality appropriate for the commercial sensitivity it commands. I will analyse the data across all sources with a view to identifying themes, patterns and relationships as a basis for determining findings and conclusions as well as to map out areas for further research. Appropriate computer software may be deployed in completing this analysis.

The academic outputs from this project may include conference papers and presentations, peer reviewed journal articles, contributions to professional journals such as those published by the accountancy bodies, and research monographs for Waterford Institute of Technology. An educational output may also be case studies based on the experiences of participating firms. Such a study this will only be created if an individual

participating firm provides explicit consent to the text of the case which would be furnished separately in advance for due consideration.

The material gathered will be stored in locked facilities at the Luke wadding Library in WIT. I may use administrative staff in collating data and they will be similarly bound by the confidentiality and ethical standards that apply to me. My telephone number is 086-XXXXXXX and my email address is soconnor@wit.ie.

Thank you for your cooperation in this endeavour. Through this research, I look forward to expanding our respective knowledge bases and may the relationship we form deliver benefits that are commensurate with the valuable inputs provided.

Yours sincerely,

Researcher

Follow up pro forma Letter shown at the initial interview.

Dear XXX,

**Pricing Policy and Practices
Business Academic Research Project**

Thank you for expressing an interest in this research.

As already indicated, the purpose of the research is to gain an understanding of these practices in businesses in Ireland and Newfoundland with a view to developing a model that could communicate best practice.

The research appointments will be made with your office at times that is convenient for you and it is envisaged that each interview will last about 1 hour. If you consent, the interview(s) will be recorded. Alternatively, you may wish that only handwritten notes be taken during interview. The choice is entirely yours.

The benefits of participation principally lie in the insights you obtain regarding your own practices in this area and in the access to the overall best practice findings of the project.

Some commercial risk may exist with respect to proprietary information relating to your firm. This may influence the amount and type of information you may wish to reveal. The researcher will maintain all research data in locked facilities at the Luke Wadding Library of Waterford Institute of Technology. The researcher will confirm the interview data with the interviewees. No other persons will have access to the research data aside from administrative staff assisting with data compilation. The names of those interviewed will not be disclosed in publications. You may elect to withdraw from the study at any time and to withdraw your data from the project. The research data will be used for academic research purposes and will be maintained only for as long as is required by academics standards designed to uphold the integrity of findings and publications. These protocols assisting in reducing risk exposures that may exist.

If you have any reservations regarding this aspect of the research, please do not hesitate to discuss them with the researcher. The proposal for this research has been approved by the Research Ethics Committee at Waterford Institute of Technology. If you have ethical concerns (such as the way you have been treated or your rights as a participant) about the research that are not dealt with by the researcher, you may contact the research supervisor at 051-302457 or by email at jmaher@wit.ie.

Thank you for your contribution to the research process, thereby expanding the knowledge base of our society and developing the potential of our communities.

Yours sincerely,

Researcher

**SCHOOL OF BUSINESS
WATERFORD INSTITUTE OF TECHNOLOGY**

INTERVIEW SCHEDULE



How indigenous software companies price their product and
service offerings: An exploratory investigation

SIOBHAN O'CONNOR
Waterford Institute of Technology

March/April 2008

COMPANY DETAILS

1. Describe the nature of your business?
2. Do you offer a product, service or a mixture?
3. How long have you been trading?
4. How many people do you employ?

PERSONAL DETAILS

1. Outline your role in the company.
2. Can you tell me a bit about your background and how it affects your approach to pricing? (Your education level and prior experience, work overseas, etc).

COSTS

1. Briefly, can you tell me about your cost structure?
For instance, overhead costs, training expenses, facility expenses (s/w development costs, hardware purchases, servers), operation costs (phone calls, Internet usage, wages, mileage, etc) and marketing costs.
2. Do your costs include expenses incurred in the past or are they set purely on the basis of the development costs of the offerings?
3. Do you build in a margin to finance growth or future commercialisation processes?

THE PRICING PROCESS

1. How do you compose or develop your price in a particular sales scenario?
2. What methods are you using?
 - a) Why are you using these methods?
 - b) Did you manage to recoup your costs?
 - c) Did you make a profit?
 - d) Is this an adequate return on investment?
 - e) How long have you been using this method?
3. How many years' pricing experience do you have?
4. Briefly, can you tell me about your past experience with pricing?
 - a) Has your experience with pricing contributed to the approach you are currently using and in what way?

- b) Briefly, can you give me an example of a good negotiating deal in the past?
 - c) Briefly, can you give me an example of a poor negotiating deal in the past?
- 5. Do you feel confident about your pricing ability?
- 6. Can you obtain advice if needed? From whom can you obtain advice?
- 7. How do you increase or maximise your revenue?
 - a) Do you get revenue from any of the following: maintenance fees, updates, customisation?
- 8. Briefly can you describe to me the process for deciding prices in your company?
- 9. Do you wish to make any further observation with respect to pricing in your business?

MARKET

- 1. How do you distribute your offering to the market or what distribution channels do you use to reach customers?
- 2. Do you lease/rent, sell outright or licence your software?
- 3. To gain market position are you more likely to under-price or over-price your product or service offering?
- 4. Is there a floor or ceiling price for your offering?
- 5. For your offering are you aware of what the market will bear?
 - a) How satisfied are you with that level?
 - b) What alternatives have you considered for addressing this matter?

CUSTOMER

- 1. Without naming them, could you describe your customers?
- 2. How do your customers influence your approach to pricing?
 - a) How does this approach interact with other matters like cost, product design, mode of delivery, contractual terms, etc?
- 3. Have you conducted market research into what the customer wants and did you address price directly or indirectly in that research?
- 4. What have you learned from your interactions with customers?
- 5. How do you assess what the customer is willing to pay for a product or service?

6. Are your pricing structures in line with your customers' needs e.g. budgets, system requirement, specification?
7. Are you certified e.g. six sigma, ISO?
 - a) Are your customers interested in this certification?
8. Is your software beta tested?

COMPETITION

1. Briefly, can you tell me a little about your competitor?
2. Do you set prices in reaction to those that the competition has set for similar offerings?
3. Are you aware of how other software companies are pricing?
4. What are your sources of information with regard to your competitor's activities?
5. How quickly does a business have to respond in your market?
6. Is the response in terms of price or some other aspect of the market proposition?

EXPORT

1. Do you export?
2. If yes, can you tell me about your exporting experience?
 - a) How does this experience differ from experience with the domestic market?
 - b) When dealing with export markets do you adopt different pricing strategies from dealing with domestic markets?
 - c) Do you price your export offerings differently from those sold in Ireland?
 - d) What countries do you export to?
 - e) How do you gain access to these markets?
3. If you do not export, why not?

NEGOTIATING

1. Briefly, tell me about your price negotiating procedure.
2. When negotiating a price with your customer how much flexibility do you have?
 - a) Will you undercut yourself to make the deal? Or do you get something from the customer (e.g. agree a higher volume of usage, etc)?
 - b) Which is more important, closing the deal or getting the right price?
3. Do you have a software support system in place?

Dear XXX

**HOW ARE TECHNOLOGY COMPANIES PRICING THEIR PRODUCT OR
SERVICE OFFERINGS?**

I would like to take this opportunity to extend my gratitude to you for your time and cooperation in participating with the above research.

Please find attached your interview transcript which took place on and the interview schedule that was used by the interviewee on that day.

I would greatly appreciate if you would read the transcripts, sign it and email it back to me. If you have any further comments or recommendations please feel free to include them with your reply.

Once again thank you for your participation. I will be in contact in the near future with the results from this research.

Yours sincerely,

Siobhán O'Connor BSc in Commercial Software Development

Post-Graduate Researcher.

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Waterford Institute of Technology,

Waterford,

Ireland.

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INTERVIEW CHECK LIST:

1. Introduce myself and talk about my background and why I am interested in this topic.
2. Thank the participant for their participation.
3. Explain the nature of the research.
4. Give the participant the consent form to read and sign.
5. Confirm audio use during the interview and remind them that it will be destroyed once I am finished with it.
6. Explain that they can ask questions at any point and feel free to make comments.

CONFIDENTIAL DATA:

CASE NUMBER: _____

DATE: _____ TIME: _____

BUSINESS NAME: _____

INTERVIEWEE NAME: _____

POSITION HELD IN THE COMPANY: _____

NUMBER OF YEARS PRICING EXPERIENCE: _____

FINAL NOTE:

1. Thank the participant for their co-operation and time.
2. Ask if they would like a copy of the research findings.

Appendix E: NVivo Nodes

Name	In Folder	Created
Adequate return on investment	Free Nodes	2008-7-10 7:36 PM
Marketing mix	Free Nodes	2008-7-11 3:31 PM
Advantages of software	Free Nodes	2008-7-11 4:03 PM
Company detail	Tree Nodes	2008-7-9 3:04 PM
Personal detail	Tree Nodes	2008-7-9 3:04 PM
Customer	Tree Nodes	2008-7-9 3:05 PM
Pricing - the process	Tree Nodes	2008-7-9 3:05 PM
Market	Tree Nodes	2008-7-9 3:06 PM
Export	Tree Nodes	2008-7-9 3:07 PM
Cost structure	Tree Nodes	2008-7-9 3:08 PM
Competition	Tree Nodes	2008-7-9 3:10 PM
Conclusion	Tree Nodes	2008-7-9 3:10 PM
Customer\Beta test	Tree Nodes	2008-7-9 4:57 PM
Conclusion\advice to start-ups	Tree Nodes	2008-7-9 5:00 PM
Cost structure\cost structure	Tree Nodes	2008-7-9 5:01 PM
Market\distribution channel	Tree Nodes	2008-7-9 5:08 PM
Personal detail\education or work	Tree Nodes	2008-7-9 5:09 PM
Company detail\employ	Tree Nodes	2008-7-9 5:09 PM
Export\export	Tree Nodes	2008-7-9 5:09 PM
Export\export price different	Tree Nodes	2008-7-9 5:31 PM
Market\market	Tree Nodes	2008-7-9 5:32 PM
Market\market niche	Tree Nodes	2008-7-9 5:32 PM
Customer\market research	Tree Nodes	2008-7-9 5:33 PM
Company detail\VC funding	Tree Nodes	2008-7-9 5:34 PM
Company detail\trading since	Tree Nodes	2008-7-9 5:34 PM
SaaS comments\SaaS comments	Tree Nodes	2008-7-9 5:35 PM
SaaS comments	Tree Nodes	2008-7-9 5:35 PM
Company detail\role in n the organisation	Tree Nodes	2008-7-9 5:38 PM
Company detail\nature of your business	Tree Nodes	2008-7-9 5:38 PM
Company detail\product or service	Tree Nodes	2008-7-9 5:38 PM
Customer\customer give them value	Tree Nodes	2008-7-9 5:40 PM
Cost structure\revenue %	Tree Nodes	2008-7-9 5:40 PM
Pricing- the process\price method	Tree Nodes	2008-7-9 5:41 PM

Pricing- the process\price maintenance & support	Tree Nodes	2008-7-9 5:42 PM
Cost structure\cost - other detail	Tree Nodes	2008-7-9 5:47 PM
Pricing- the process\price SaaS	Tree Nodes	2008-7-9 6:01 PM
Customer\data protection issues	Tree Nodes	2008-7-9 7:13 PM
Competition\competition - direct	Tree Nodes	2008-7-10 11:30 AM
Market\change in the market - react	Tree Nodes	2008-7-10 11:36 AM
Competition\competitor source of information	Tree Nodes	2008-7-10 11:39 AM
Customer\customer interaction with pricing	Tree Nodes	2008-7-10 2:52 PM
Customer\customer type	Tree Nodes	2008-7-10 2:54 PM
Pricing- the process\pricing decision people involved	Tree Nodes	2008-7-10 3:35 PM
Competition\pricing looking at competitors price	Tree Nodes	2008-7-10 3:39 PM
Pricing- the process\pricing method from the start	Tree Nodes	2008-7-10 3:44 PM
Personal detail\past experience with pricing	Tree Nodes	2008-7-10 3:53 PM
Customer\close a deal just to get the sale	Tree Nodes	2008-7-10 7:34 PM
Customer\negotiation	Tree Nodes	2008-7-10 7:34 PM

Appendix F: Software Pricing Template

Software pricing template - Help make decisions by keeping track of the knowledge that the sales person has during the negotiation process.

Customer focus:

New/existing customer _____

Customer business _____

On-premise/on-demand (upfront licence/subscription) _____

How much was the customers software budget? _____

Was the value of the software conveyed to the customer (in terms of price and differential features)? _____

Direct costs _____ Indirect costs _____

Weight of the 3Cs (in order of 1, 2, 3): Cost ____ Competition ____ Customer ____

Competition focus:

Comparable offering firms 1. _____ 2. _____ 3. _____

Competition price range 1. _____ 2. _____ 3. _____

What is the market like (vertical or horizontal/mass or niche/saturated or unsaturated)?

In summary, this customer seeks _____

Therefore, we should price as follows _____

Licence tracker

Number of licences purchased _____

Number of active users _____

Number of inactive users _____

Peak usage time _____

Peak traffic _____

The managers/sales people should be mindful of the following factors:

Tradition licences Q4 – end of quarter sales- sales people will sell at any price just to

secure the deal and negotiators will push prices down because they know that the sales person wants to close the deal.

Pricing variance analysis

Target price _____ Quoted price _____ Agreed price _____ Secured price _____

Overall perception _____

Ease of installation _____

Ease of customisation _____

Ease of use _____

Ease of learning _____

Does the software have the required functionality? _____

Is the software application compatible with other software? _____

Is the software application reliable? _____

Is the software manual well documented and easy to understand? _____

Is the software support service adequate? _____

The following two matrices are action orientated which enforce adaptive behaviour on behalf of the software manager to assess the costs associated with developing a software application and the perceived value attributed with that software from the customers perspective.

Matrices A: Manager/sales person’s perspective of *Cost- price matrix: Internal view*

Cost- price matrix				
Development costs	High	Very dissatisfied	Dissatisfied	Satisfied
	Medium	Dissatisfied	Satisfied	Very satisfied
	Low	Satisfied	Very satisfied	Very satisfied
		Low	Medium	High
		Price received		

Matrices A enables a software manager to assess whether the development costs exceed the price received for a software application. For instance, if the development costs are high and the price received is low the possible outcome will be a **very dissatisfied** manager. On the other hand, if the development costs are low and the price received is medium/high the possible outcome will be a **very satisfied** manager. If managers record their levels of satisfaction or dissatisfaction using the cost-price matrices overtime it will emerge whether the software application is costing more than it is generating.

Matrices B: Customer's perspective of *Price-value matrix: External view*

Price-value matrix				
Price paid	High	Very dissatisfied	dissatisfied	Satisfied
	Medium	Dissatisfied	Satisfied	Very satisfied
	Low	Satisfied	Very satisfied	Very satisfied
		Low	Medium	High
		Customer value received		

Matrices B enables a software manager to assess whether their customers are getting value from a software application. For instance, if the price that the customer paid is high and the value received is low the possible outcome will be a **very dissatisfied** customer. On the other hand, if the price that the customer paid is low and the value received is medium/high the possible outcome will be a **very satisfied** customer. If managers record their customers levels of satisfaction or dissatisfaction using the price-value matrices overtime it will emerge whether their customers are experiencing value from the software application or not. Depending on such an outcome managers can act or react to correct the situation.

Appendix G: Product Revenue Findings – Domestic Market

Product revenue year 1

		Frequency	Percent	Valid Percent
Valid	0	10	15.6	20.8
	1	1	1.6	2.1
	5	1	1.6	2.1
	10	5	7.8	10.4
	15	1	1.6	2.1
	20	4	6.3	8.3
	25	3	4.7	6.3
	30	1	1.6	2.1
	50	6	9.4	12.5
	70	2	3.1	4.2
	75	1	1.6	2.1
	80	1	1.6	2.1
	85	1	1.6	2.1
	100	11	17.2	22.9
	Total	48	75.0	100.0
Missing	99	16	25.0	
Total		64	100.0	

Product revenue years 2 -3

		Frequency	Percent	Valid Percent
Valid	0	20	31.3	41.7
	10	1	1.6	2.1
	15	1	1.6	2.1
	20	3	4.7	6.3
	25	2	3.1	4.2
	30	3	4.7	6.3
	40	3	4.7	6.3
	50	6	9.4	12.5
	60	1	1.6	2.1
	75	2	3.1	4.2
	80	2	3.1	4.2
	85	1	1.6	2.1
	100	3	4.7	6.3
	Total	48	75.0	100.0
Missing	99	16	25.0	
Total		64	100.0	

Product revenue year 4 +

		Frequency	Percent	Valid Percent
Valid	0	35	54.7	72.9
	10	1	1.6	2.1
	25	1	1.6	2.1
	30	1	1.6	2.1
	40	2	3.1	4.2
	70	1	1.6	2.1
	75	2	3.1	4.2
	80	3	4.7	6.3
	100	2	3.1	4.2
	Total	48	75.0	100.0
	Missing	99	16	25.0
Total		64	100.0	

Appendix H: Service Revenue Findings – Domestic Market

Service revenue year 1

		Frequency	Percent	Valid Percent
Valid	0	11	17.2	21.2
	10	6	9.4	11.5
	15	3	4.7	5.8
	20	3	4.7	5.8
	30	1	1.6	1.9
	40	1	1.6	1.9
	50	3	4.7	5.8
	60	2	3.1	3.8
	70	2	3.1	3.8
	75	1	1.6	1.9
	80	2	3.1	3.8
	90	1	1.6	1.9
	100	16	25.0	30.8
	Total	52	81.3	100.0
Missing	99	12	18.8	
Total		64	100.0	

Service revenue years 2-3

		Frequency	Percent	Valid Percent
Valid	0	23	35.9	43.4
	5	2	3.1	3.8
	10	2	3.1	3.8
	15	1	1.6	1.9
	20	6	9.4	11.3
	25	1	1.6	1.9
	30	1	1.6	1.9
	40	2	3.1	3.8
	50	4	6.3	7.5
	60	2	3.1	3.8
	70	1	1.6	1.9
	80	1	1.6	1.9
	90	1	1.6	1.9
	100	6	9.4	11.3
	Total	53	82.8	100.0
Missing	99	11	17.2	
Total		64	100.0	

Service revenue year 4+

		Frequency	Percent	Valid Percent
Valid	0	40	62.5	75.5
	5	1	1.6	1.9
	10	2	3.1	3.8
	15	1	1.6	1.9
	20	1	1.6	1.9
	40	1	1.6	1.9
	60	1	1.6	1.9
	75	1	1.6	1.9
	100	5	7.8	9.4
	Total	53	82.8	100.0
Missing	99	11	17.2	
Total		64	100.0	

Appendix I: Export Product Revenue Findings

Export product revenue year 1

		Frequency	Percent	Valid Percent
Valid	0	3	4.7	9.4
	5	2	3.1	6.3
	7	1	1.6	3.1
	10	1	1.6	3.1
	15	1	1.6	3.1
	20	3	4.7	9.4
	25	2	3.1	6.3
	30	2	3.1	6.3
	40	2	3.1	6.3
	50	3	4.7	9.4
	70	2	3.1	6.3
	80	3	4.7	9.4
	85	1	1.6	3.1
	90	2	3.1	6.3
	100	4	6.3	12.5
	Total	32	50.0	100.0
Missing	99	32	50.0	
Total		64	100.0	

Export product revenue years 2 -3

		Frequency	Percent	Valid Percent
Valid	0	15	23.4	46.9
	5	2	3.1	6.3
	10	2	3.1	6.3
	20	3	4.7	9.4
	30	2	3.1	6.3
	50	2	3.1	6.3
	60	1	1.6	3.1
	70	1	1.6	3.1
	80	3	4.7	9.4
	100	1	1.6	3.1
	Total	32	50.0	100.0
Missing	99	32	50.0	
Total		64	100.0	

Export product revenue year 4 +

		Frequency	Percent	Valid Percent
Valid	0	25	39.1	78.1
	5	1	1.6	3.1
	15	1	1.6	3.1
	20	1	1.6	3.1
	30	1	1.6	3.1
	75	1	1.6	3.1
	80	1	1.6	3.1
	100	1	1.6	3.1
	Total	32	50.0	100.0
Missing	99	32	50.0	
Total		64	100.0	

Appendix J: Export Service Revenue Findings

Export service revenue year 1

		Frequency	Percent	Valid Percent
Valid	0	5	7.8	13.9
	2	1	1.6	2.8
	5	2	3.1	5.6
	10	4	6.3	11.1
	15	2	3.1	5.6
	20	4	6.3	11.1
	30	1	1.6	2.8
	40	1	1.6	2.8
	50	4	6.3	11.1
	60	1	1.6	2.8
	70	1	1.6	2.8
	80	4	6.3	11.1
	90	2	3.1	5.6
	100	4	6.3	11.1
	Total	36	56.3	100.0
Missing	99	28	43.8	
Total		64	100.0	

Export service revenue years 2-3

		Frequency	Percent	Valid Percent
Valid	0	20	31.3	55.6
	1	1	1.6	2.8
	5	1	1.6	2.8
	10	2	3.1	5.6
	15	3	4.7	8.3
	20	1	1.6	2.8
	30	1	1.6	2.8
	50	2	3.1	5.6
	70	2	3.1	5.6
	80	2	3.1	5.6
	90	1	1.6	2.8
	Total	36	56.3	100.0
Missing	99	28	43.8	
Total		64	100.0	

Export service revenue year 4+

		Frequency	Percent	Valid Percent
Valid	0	30	46.9	83.3
	1	1	1.6	2.8
	5	1	1.6	2.8
	30	1	1.6	2.8
	100	3	4.7	8.3
	Total	36	56.3	100.0
Missing	99	28	43.8	
Total		64	100.0	

Appendix K: Final Comments from the Questionnaire Participants

Question: Have you any further comments on your experience in pricing?

1. Q15 There is a balance between an attractive price & leaving value on the table. The customer never says the price is too low. Q26 Current guideline yes we have a price list but we discuss pricing internally after getting a feel from the customer as to what is appropriate. Q11 Our pricing ends up being more complicated than can be captured in pricing guidelines in practice. Q54 Right to use licence & volume licences.
2. In a B2B market the customer always wants a discount. Now the discount is priced in - but the price is always different. In a B2B market the price will vary based on the size of the customer and number of subscribers we target.
3. Frequent lack of understanding of what a job might entail - Time and quality of work. A lot of people think Internet design is cheap & fast. Sometimes anxious about how customised the job might be.
4. In both my prior jobs we sold shrink wrapped software products internationally. Pricing was very difficult and something we always struggled with. It constantly seems to be a trade off between what a similar competitor is charging, how much we think the customer would be willing to pay (for add on service related work in particular) while considering break even figures/sales projections etc pricing software is a black art it's hard to put a value on it compared to physical products.
5. One of the most challenging aspects of the business because it is difficult to put a value on software. It's hard to assess the value to different customers. Balancing act between over pricing and selling short. Customers perception is key just because I can do it a lot cheaper doesn't mean I wasn't to or that it is wise to.
6. We are a start-up company and are just about entering the market.
7. Pricing based on value and benefits to customers is critical. If you can prove and sell real benefit to customers, which helps alleviate business pain make pricing less sensitive.
8. It's really down to know your customers, your competitors pricing and value vs cost (quick ROI).
9. Understand customer wants and the costs before you price.

10. Not specifically. Maybe the fact that the weak dollar has affected increasing product prices for the last number of years.
11. We are a small company with a niche product without direct competitor applications. This has made pricing a very difficult area as the customer has no idea as to how much they should pay. We have found the price points through experience and gauging prospects reaction. As the customer has no means of comparison we rely on a cost justification template to calculate payback.
12. It is challenging at times to know what competitors are charging for similar products/services.
13. Industry specific training on pricing strategies from Enterprise Ireland, or industry bodies, would be very useful.
14. Pricing is an external thing, particularly for software. Customers' perception of value is key. The market is the best place to get a guideline on price.
15. We operate in both Consumer and Enterprise markets and the approach to pricing is very different in each, you have less flexibility in a consumer/subscription model as your price point is set against the broad market for similar and substitute services. When reaching a transaction price point with an enterprise it is primarily based on cost reduction and ROI.
16. Price is a variable within any company. It needs constant attention.
17. Competitors and value for money drive our pricing decisions.
18. Yes, charge what you think you will get away with.
19. For longer term customers (who have a constant stream of work being carried out for them pricing is in good faith. For example, if the pricing was determined to be too low after the fact (i.e. delivery) then a margin would be applied to the successive project's pricing. This can be both with/without the client's knowledge.
20. Trying to determine what price to charge for the product was very difficult with several different attempts made through trial and error before finally settling on current price. Web-based product creates potential for high value - high volume model.
21. Large companies in mature markets can impose pricing policies. The price that a small company sell to large customers will get is normally down to the negotiating skills of the sales person and is unfortunately independent of the value delivered.

Appendix L: The Researcher's Journey

