The Important Role that IT Management Play in Taking a Holistic View of People, Process and Technology Working Together in Unison Rather than Isolation.

Damien Sheridan

A dissertation submitted in partial fulfilment of the requirements for the degree of Masters of Science for Management

The National College of Ireland

August 2011

Research Supervisor:

Nora O'Gara

Declarations

I declare the following:

1. That the material contained in this dissertation is the end result of my own work and that due acknowledgement has been given in the bibliography and references to ALL sources be they printed, electronic or personal.

2. I agree to my dissertation being submitted to the plagiarism detection service, where it will be stored in a database and compared against work submitted from this or any other School or from other institutions using this service.

Signed: Damien Sheridan

Date: 15/08/2011

Student Number: 00044274

Acknowledgements

The research and writing of this dissertation has been one of the most difficult undertakings I have in a long time. It has been a labour of love for me over the last year, given my interest in the subject matter.

Without the help of the following people, I probably would not have succeeded in finalising it. In particular, I would like to thank my supervisor Nora O'Gara for her patience and guidance, enthusiasm and interest in the subject matter, which kept my spirits high when I felt defeated. To Fabian Armendariz who first convinced me to take on the course in 2010, for his constructive and positive feedback during the year, and last but by no means least, Roderick Mahoney for his positive and uplifting encouragement every time we bumped into one another during the summer break.

To family, friends and colleagues for their unwavering patience and encouragement throughout the last year.

Thank you all.

Abstract

Information Technology is ubiquitous in our everyday lives, not only do we use technology to do our day-to-day work tasks, but we now use social media to organise and participate in our social lives outside of the office or factory.

As a result many organisations invest heavily in their IT infrastructure and people to help them gain competitive advantage, such are the rewards for being first to market for a new and innovative products and services.

The challenge that faces many organisations in building and maintaining that competitive edge, is keeping their costs low, whilst doing much more for less in terms of financial outlay, be it Capital expenditure to purchase equipment or Operational expenditure.to maintain it.

Organisations and Managers have become much more innovative in how they have embraced and faced such challenges. Once upon a time, not long ago, outsourcing in isolation was the panacea that would reduce total cost of ownership (TCO) of technology for many organisations.

Managers and in particular IT Managers challenged by the economic times that now exist have looked to technology innovation and process evolution as a way to be creative, in meeting the challenges of reducing costs, whilst maintaining and developing the flexibility to meet the ever changing needs of the market.

Cloud computing technology, outsourcing using managed services providers, and ITIL for managing both, combined as an end-to-end IT service delivery solution represent an opportunity for small, medium and large businesses to grow, without the risk normally associated with such market endeavours.

By combining all three elements in an end-to-end IT service delivery solution, IT Management can act as a conduit that allows a business to meet its key market objectives.

Table of Contents

Glossary

IT – Information Technology

IS – Information Systems

MSP – Managed Service Provider

KPI – Key Performance Indicator

TCO – Total Cost of Ownership

CTO – Chief Technology Officer

CIO – Chief Information Officer

SOA – Service Oriented Architecture

ITIL – Information Technology Infrastructure Library

SaaS – Software as a Service

PaaS – Platform as a Service

HaaS – Hardware as a Service

CPU – Central Processing Unit

CRM – Customer Relationship Management

TUPE – Transfer of Undertakings Protection of Employment

List of Figures

CHAPTER 1 - INTRODUCTION

1.1 Explanation for Research

Having worked in the Technology sector for the last seventeen years, pursuing a career in Technology Management and Consultancy, the researcher had noted increased use of ITIL for process optimization in the IT operations space, paired with the prevalence of managed service providers to outsource people, and a more recently, the phenomenon of Cloud computing technology.

As a result, the researcher developed an interest in these three areas, and in particular, the important role that IT Management can play in taking a holistic view of people, process and technology working together in unison rather than in isolation, within the confines an organisation.

The motivation to undertake this study has come about because of the researchers' personal interest in the subject matter, as well as the media hype surrounding the benefits the cloud computing technology if integrated with a business.

There is also the career motivation of the researcher playing a significant part, with career opportunities in the technology industry, that it is hoped would ultimately benefit the researchers' career in the long-term.

As part of the research preparation prior to undertaking this study, the researcher spoke to hardware vendors, expert technology engineers, technology managers and senior executives who all consider there to be huge potential in organisations having access to end-to-end IT service delivery solutions, that incorporate managed services for outsourcing, cloud computing technology, and ITIL as a management layer.

1.2 Aim of Research

The overall aim of this dissertation is investigate the use of managed service providers for outsourcing, cloud computing technology and ITIL for process optimisation, and how important the role of IT Management is in integrating all three elements to work in unison rather than isolation.

Introduction

1.3 Objectives of Research

- Understand the role of Information Technology (IT) in business today
- The importance of IT Management throughout organisations
- Define the terms outsourcing, cloud computing and ITIL
- Give a historical context to outsourcing, cloud computing and ITIL
- Why organisations use outsourcing, cloud computing and ITIL
- Give the case for and against outsourcing, cloud computing and ITIL
- Examine outsourcing, cloud computing and ITIL working in isolation, verses working in unison
- Conduct a case study of an organisation that has outsourced, to understand motivations, and whether cloud-computing technology and ITIL were considered as in-scope for such a program of work
- Identify lessons learned from the case study, which could be applied to such projects within the organisation
- Conduct a survey targeting senior IT managers and executives on whether or not they consider cloud-computing technology, integrated with ITIL and managed service providers could add-value to an organisation
- Recommend possible options that an organisation could explore to develop a commercial offering to the market for an end-to-end IT service delivery solution

CHAPTER 2 – LITERATURE REVIEW

2.1 Introduction

The purpose of this literature review is to research and examine the various academic sources and views on the topics of the use outsourcing for people, cloud computing for technology, ITIL for process development, and the value that each can bring to a business in terms of technology, process development, and people when packaged as an IT service delivery solution.

The headings in this chapter will reflect the flow and logical fit of the subject matter, and relate directly to the title and lead us to the research question.

We first look to IT and its transforming effect on our daily and business lives, followed by the important role played by IT Management in enabling innovations to become standard practice, and ultimately leading to competitive advantage for many organisations.

The focus will then shift to the definition of outsourcing, its historical context, why organisations outsource, the case for and against outsourcing, which will echo the approach taken as the researcher examines ITIL and Cloud Computing.

Adding weight to the literature review will be the theoretical framework of Operations Management, which will back up the view held by the author that managers, and in particular IT Operations managers are very often at the leading edge of innovation, as they endeavour to meet the challenges posed by the business environment.

Finishing off the literature review will be an examination of outsourcing, ITIL and cloud computing operating in isolation, and then in unison, and which the researcher considers reap the best results.

Ultimately the literature review will then assist in the developing the research question and the subsequent selection of primary research methods that will either prove or disprove that each can bring value to an organisation when combined in a tailored business solution.

Literature Review

To begin, we need to step back in order to bring this research forward, by first taking a look at Services Oriented Architecture, Business Strategy, and IT Alignment

Spohrer et al (2007, p.71-78) defines services as the application of competence and knowledge to create value between providers and receivers. Value accrues from the interactions of services systems that involve people, technology, organisations, and shared information.

Literature Review

In the IT context of service-oriented systems address the fusion of business processes and technologies by building innovative bridges or autonomous, implementation-independent interfaces from business processes to software, data, and technology services.

They also provide the capability to transform current technologies that exist in silos across the organisation in support of flexible IT services.

Linkages between business processes and services that source their execution are aligning in a manner that facilitates cost advantages from the commoditization of hardware (e.g. on-demand utility computing, software-oriented infrastructure with virtualised resources, and infrastructure service providers. It is has become known as SOA or service oriented architecture.

SOA is about the value of distributed processes, reuse, information and co-ordination. With services thinking, companies co-create their offerings with customers and break process silos into modular services that can be used in loosely coupled services systems or out-tasked/sourced to external providers (Demirkan et al, 2008, p.356-376).

Accordingly, the services paradigm is a new, with the technologies and practices changing rapidly. Leading the author to share the views of Bardhan et al (2010, p.22) in their assertion that we need to rethink our managerial approaches to technology from new organisational and technical vantage points, thus, providing and acting as a key motivator to the researcher for the pursuit of this area of research.

Literature Review

2.2 Information Technology

IT has become a principal component of both daily operations and strategic initiatives in many industries. Its classical role has been to provide desktop tools for personal productivity applications and to corporate and financial sales data.

According to DeLisi, Danielson, and Barry (1998,p.65) increased communication requirements resulting from geographical dispersed manufacturing facilities and the need for prompt access to process control data are making it sine qua non of organisations.

The view of DeLisi, Danielson, and Barry (1998, p.65) has been proven in time, with innovations in computing and Internet technologies having transformed the way people conduct businesses, engage in social lives and daily activities. IT innovations have created new products and services, destroyed old business models and replaced them with new business styles, disrupted entire industries, built new business processes and transformed the day-to-day conduct of business (Laudon, K. & J. 2007, preface)

According to Xing,Wang, and Chen (2010, p.369), during the process of making business strategies, it is crucial for industry leaders, business executives, and technology developers to refresh their traditional concept of information technologies.

IT has moved from the traditional view (Knahl, 2009, p 449) to the modern domain, whereby the Moores Law continues to be true, i.e. that computing powers will continue to double in and about every two years (www.intel.com – date accessed 01/07/11)

The Internet will continue to destroy the old businesses, transform the traditional industries and reshape the social infrastructures. Along with high-speed wireless and the telecommunications, the Internet continues to alter the entire human society according to Xing,Wang,Chen (2010, p.642).

Literature Review

Contemporary information technologies typically featured in mobilizations for computing devices, virtualizations for business operations, IT collaborations with all kinds of technologies; convergence and transformations for traditional businesses and industries.
These features are certainly the leading direction for the movement of businesses and technologies in the 21st century Xing,Wang, and Chen (2010, p.642).

Dreher et al (2009, p.222), support the view of Xing, Wang, and Chen (2010) and consider that as the knowledge economy evolves, the increasing use of IT (Web 2.0) in business and the general population means that information systems (IS) and education must keep pace with current developments and anticipate future developments.

www.CIO.com (date accessed – 01/07/2011) consider Web 2.0 to describe the major shift in computing because in the new paradigm, *the Internet itself becomes the computing platform*. That is, a "true" Web 2.0 application—whatever that is—would be indistinguishable from a desktop application. Like a desktop program, the ultimate Web 2.0 application would have immediate feedback and would update information without a deliberate refresh. In this context, often these applications called rich Internet applications.

The author considers that we are in age of technology, where IT is critical to the success of business, even back in 1998 CEO's were quoting 'IT as it's like air. It's everywhere and you can't live without it' DeLisi, Danielson, and Barry (1998, p.66).

Consequently, the author supports that view that IT/Technology Management have an important role to play in business, as IT evolves from the traditional perspective (Knahl, 2009, pp. 449) that was technology focused, to a more modern, proactive, preventative, and business focused perspective on IT.

Literature Review

2.3 The Important role IT Management

It is important that underlying context for this purpose of this paper is touched upon, and that is the important role of that IT Management plays in contributing to the overall success of a firm.

Accordingly, the author concurs with Wade and Hulland (2004, pp.107-142) who consider that IT is a strategic organizational resource. Many U.S. corporations allocating more than 50% of their capital investments and 4.2 % of their annual revenues to IT (Weill and Ross, 2004, p.30), with managers under constant pressure to reduce costs and increase the value of their firm's IT investment in technology and resources (Tanriverdi, H, 2006, pp.57).

The challenge is particularly salient in firms with business units operating in different industry segments. Since different industries have different competitive imperatives, business units usually seek autonomy from the centre when developing their IT strategies, IT infrastructures, IT vendor relations, and IT human resources (Tanriverdi, H, 2006, p.58).

The fundamental principles of good IT management are applicable across a wide range of industries. An example of good IT management is the alignment of a firm's business and IT strategies,
(Sabherwal , Chan, 2001,pp.11-33).

To illustrate this point, the specific contents of the business and IT strategies of an aircraft engine business and a medical system business may be different, the IT management principle of aligning business and IT strategies is applicable to both (Tanriverdi, H, 2006, p.59).

Similarly, the principles used in formulating IT strategy, making IT investments, or managing business unit IT relations are applicable across business units even

though the specifics of the IT strategies, investments, and relationships may be unique to each business unit (Tanriverdi, H, 2006, p.59).

Principles used in managing IT human resources (Agarwal and Ferratt, 2002, p.73-p.74) and IT vendor relations (Feeny and Willcocks, 1998, pp.9-21) are not specific to any particular industry either. Information Technology is a boundary-less profession, with IT professionals easily moving across firms within the IT occupation, across occupations, or across industries. The multifaceted mobility of IT professionals indicates that IT skills and knowledge are applicable across many different functions and industries (Boh et al. 2001, p.).

According to the resource-based view (RBV) of diversification, the use of common factors of production across multiple business units creates sub-additive production cost synergies (Farjoun 1998, p.612; Robins and Wiersema, 1995, pp.277-299). Resource complementarity is also a major source of cross-unit synergy (Tanriverdi and Venkatraman 2005, pp. 97-119).

Echoing the earlier view of Wade and Hulland (2004, pp.107-142), IT is the largest capital investment item in many U.S. firms, in particular, have large scale IT investments and operations. Furthermore, most information technologies and IT management practices are applicable across a wide range of businesses (Tanriverdi, 2006, p.57).

The author considers the role of IT management to be a strategic resource, with IT managers under constant pressure to reduce cost (Tanriverdi, H, 2006, p.57), and increase value of the firms IT resources.

According to Mary Brandel (2008, p.32), the job of maintaining the perception of relevance — and possibly avoiding extinction may require IT managers to take a close look at their current management styles and make some tweaks, especially if they've been working in IT for a while.

Literature Review

As such the author considers innovations in IT to driven by the business needs re get more bang for your buck, i.e. getting more out less financial resources.

Downward pressure on costs has mirrored by the growth in the use of managed services providers to outsource people to reduce cost, and the leveraging of external technical expertise, as well as the adoption of ITIL to optimise operational processes, and the increased use of cloud computing to reduce the costs associated with technology.

IT Management is playing a key role enabling such innovations to become standard practice for many organisations, as they endeavour to optimise financial performance whilst reducing costs, with CEOs unanimous in their belief that IT was critical to the success of their firms, as one said in a recent survey, ‘It’s like air. It’s everywhere and you can’t live without it’ (DeLisi, Danielson, and Barry (1998, pp.66)

Literature Review

2.4 People - Outsourcing Defined

According to the Computer Economics report 2010 (2010, p10), IT outsourcing is defined as the transferring of responsibility for all or part of an IT function normally performed in-house to a service provider.

This can include both technology as well as people under the Transfer of Undertakings (Protection of Employment) Regulations (TUPE), and protects employees' terms and conditions of employment when a business is transferred from one owner to another. (www.acas.org.uk – date accessed 1st June 2010)

A service provider is the organization that manages the work. While some IT organizations consider hiring a sole contractor as outsourcing, the computer economics report of 2010, (2010, p10) excludes that use of the term.

The use of contract workers for the purposes of augmenting on-house staff is not outsourcing if contractors work under the day-to-day supervision of the IT organization.

In his book, the age of unreason, noted London Business School Professor and Consultant Charles Handy predicted, “Less than half of the workforce in the industrialized world will be in ‘proper’ full-time jobs in organisations by the beginning of the twenty first century”.

He goes on to describe his idea of the shamrock organisation, in which each leaf of the shamrock represents elements of the organisation’s workforce. The first leaf is made up of core workers, the second made up of contracted workers, the third, flexible labour (part-time/temporary workers), and the fourth is the growing practice of getting the customer to do the work. (Handy, C. 1991, p. 31, p. 90, p. 93, p.101)

Literature Review

2.5 Historical Context to Outsourcing

'Outsourcing is one of the world's greatest Flatteners'

- Thomas L. Friedman, - The World Is Flat: A Brief History of the Twenty First Century.

The story of outsourcing is as old as the history of humankind itself. Since individuals started to form groups, small communities, and societies, outsourcing became commonplace. To overcome a lack of knowledge or labor, individuals' skills focused on specialized tasks, and specialization led to divisions of labor. Outsourcing has emerged with the production and sales of food and tools. People with specialized professions began to trade with each other for goods and services.

Adam Smith propagated the overall concept of outsourcing as a way to make business competitive in his still relevant book, The Wealth of Nations, first published in 1776. He emphasized, "It is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner, but for their regard for their own interest."

Following Smith's ideas, modern companies participate in the international market and pursue their own interests by making the most productive use of their resources.

By pursuing profit maximization, firms remain competitive, and the result is cheaper goods and services and a higher standard of living at lower cost for consumers.

Since 1776, the meaning of the term outsourcing has undergone a progressive change itself. What started with the shifting of manufacturing to countries that provided cheap labor during the Industrial Revolution, outsourcing has taken on the new connotation in today's scenario to include off shoring and global competition for services.

Literature Review

Adam Smith formulated this theory of competitive advantage extracting the notion of outsourcing, as a way to cut costs. The information technology (IT) revolution has redefined Smith's theory by making outsourcing the fastest growing market dynamic worldwide. Technically, outsourcing formally got a business strategy in 1989.

It was a piece of cost-saving policy that outsourced features and services that were key but not crucial to the business itself.

The very first company to outsource was Eastman Kodak, which was at the time in an extremely difficult financial state because of debts in the billions of dollars related to corporate acquisitions. While being one of the largest firms in the United States, Kodak needed to find ways to cut costs and improve profitability, so they outsourced their information processing to another New York based firm, IBM.

Eastman Kodak's decision to outsource the information technology systems that supported its entire business enterprise was revolutionary in 1989, but it was actually the result of rethinking what their business was actually about…

Other major corporations followed Kodak's lead, whose managers had determined that it was not necessary to own the technology to get access to information they needed. When affordable minicomputers and personal computers arrived on the scene, demand for time-sharing dropped, and many processing tasks were brought back in-house.

Time-sharing on mainframe computer was not scaled back because it was a bad idea, it occurred because the technology of personal computers reduced the costs of processing tasks internally.

Not until the Internet came along was there a cheap, non-proprietary means for a desktop computer to communicate with an off-site application host system and not a standard client environment that could interact with the remote application.

Literature Review

The internet provided a publicly accessible infrastructure that connects users to off-site application servers. (Brown and Scott, 2005, preface)

2.6 Why Organisations Outsource

'Companies outsourcing business functions outperform the S&P and NASDAQ during recessions'.

- John Mack, CEO, Morgan Stanley

Each organization has different motives for Outsourcing IS. The most common Include:

- Accelerate re-engineering benefits

Re-engineering aims to achieve improvements in key performance indicators for an organization, e.g. Cost, quality, service and momentum, however, the need to increase efficiency can come into direct conflict with the need to invest in the core business.

- Gain access to world-class capabilities

Excellent vendors make major investments in technology, methodologies, and personnel, and they gain expertise by working with many clients facing similar challenges. This combination of specialization and expertise results in competitive benefits for their customers, as well as saving them the cost of investing in technology and training for the now outsourced functions.

- Earn cash back

Outsourcing often involves the transfer of assets from the service recipient to the service provider. Assets such as equipment, facilities, vehicles, and licenses used in the current operations have value and are sold or transferred on to the vendor. The vendor then uses these assets to provide services back to the client. Depending on the value of the assets involved, the sale may result in significant cash payment to the customer. Assets are typically sold or transferred at book

value, and can be higher than the actual market value. In these cases, the difference between the two actually represents a loan from the vendor to the client, and paid back within the price of the services in the course of the contracts duration.

- Release resources for other purposes

Every organization has limits on the resources available to it. Outsourcing enables an organization to redirect its resources, most often human resources from non-core activities to those that serve the customer. The organization can redirect these people - or at least the staff positions they represent to activities of greater worth.

- Improve company focus

Outsourcing frees a company to focus on its core business and to meet its customer needs by having operational functions assumed by an outside expert.

- Make capital funds available

Outsourcing can reduce the need to invest capital funds in non-core business functions. Instead of acquiring resources through capital expenditures, they are contracted for on an “as used” operational expense basis. Outsourcing can also improve certain financial measurements of the firm by eliminating the need to show return on equity from capital investments in non-core areas.

- Lower operating costs

An outsource provider’s lower cost structure, which may be the result of a greater economies of scale or other advantage based on specialization, reduces a company’s operating costs and increases its competitive advantage.

- Minimize risk

Tremendous risks are associated with the investments an organization makes. Markets, competition, government regulation, financial conditions, and technologies all change at electronic speed today. Keeping up with such changes

requires major investment, and hence is very risky. In contrast, because outsourcing providers make investments on behalf of many clients, this spreads the risk, thus markedly reducing the risk borne by a company.

- Gain access to resources not available internally

Companies outsource because they do not have access to the required resources in-house. Outsourcing is a viable alternative to access the needed capability, particularly for start-up companies. (Brown & Wilson, 2005, p.42, p.43, p.44)

Literature Review

2.7 The Case For and Against Outsourcing

"Outsourcing is forever. The issue for the economy isn't outsourcing - it's bringing in more talent from overseas. The debate over outsourcing should be over by now. It was pretty much all about politics to begin with. The question now is not how we stop outsourcing, but how do we use outsourcing to enhance competitiveness in what is, and forever will be, a global marketplace."

- **Jack and Suzy Welch, "The Welch Way," Business Week**

Outsourcing categorized by two opposing views;

The first view is that outsourcing is a beneficial and reasonable way to manage the information technology and services of a firm either because a major asset can be shifted in the balance sheet, or because a management headache can be eliminated, or because a firm can gain access to a firm's core competencies.

The second view is that outsourcing is a poor alternative to a firm's internal management of information technology and services because it is tantamount to selling your 'birthright' and, at best, is appropriate only as a Band-Aid for companies 'on the ropes'.

The real answer in the outsourcing decision lies somewhere between these two extremes, outsourcing can make a lot of business sense for some companies if done correctly, or it can be disastrous if it is the wrong course for another company.

2.8 The Case For Outsourcing

- Reducing Costs and/or Infusing Cash

The most direct and immediate benefits associated with outsourcing are those associated with reduced expenses by obtaining external services at a lost less than a firms internal costs to provide the services, and with obtaining cash through either the sale of assets or transfer of IS staff to an external vendor.

Literature Review

- Disengaging the firms from costly, outdated technological resources, transforming information systems from a fixed asset, which is hard to justify during business slowdowns, to variable expense, and can be more easily reduced or increased according to business requirements, reducing staffing levels and transferring personnel to a vendor, or reducing overhead expense; and leveraging purchasing power with vendors .

- Developing Information Technology Applications more Rapidly

Off-load of Information systems to a service provider enables a firm to focus its internal resources and energies on those IS activities that remain internally. Such a strategy is particularly attractive when scarce internal resources applied to mundane or support activities rather than directed towards activities that focus on the core business mission (Brown and Wilson, 2005, pp.51).

- Improving Service Quality and Productivity

Often the quality and productivity of information technology or services improves after they have been outsourced. This occurs for numerous reasons, for example, the vendor may access to more current technological environments, have qualified or more motivated personnel, provide a greater breadth of services, have better management systems to coordinate or control the provision of services, and simply be more committed than internal staff to making the alliance with the customer work well.

- Gaining Access to Leading-Edge Technologies

Developing close relationships with service providers enables a firm not only to utilize the MSP's technologies but also to tap into the provider's links with other technology providers and users. As a result, the firm may be able to gain access to leading-edge technologies faster and less expensively than they otherwise would (Brown and Wilson, 2005, pp.51).

- Reducing Technological Risk and Increasing Technological Flexibility

Literature Review

If a firm's technological infrastructure is transferred to an MSP, the provider rather than the firm must, bear the risks of both technological obsolesces and variable services demand. As the provider provides the investment for the infrastructure, it is easier for a firm to move to a different or improved infrastructure (in order to exploit new technologies or strategic opportunities) either with the same vendor or with a different vendor.

- Implementing Change More Rapidly

Quite often, it is more effective or much easier for an MSP to implement a radical (managerial, technical or organizational) change than it would be for an internal IS group. There are two reasons for this. First, the provider might have more expertise and experience with a particular initiative and with managing change initiatives. Secondly, the vendor is under far less pressure to bend to the bureaucracy or politics of an organization. The use of consultants or systems integrators is seen as an effective strategy to implement changes that would otherwise be very difficult to effect through purely internal channels (Brown and Wilson, 2005, pp.51).

- Assessing Current Information Management Capabilities

The existence of external service providers, presents a readily available 'reality check' on the quality and cost of a firm's internal capabilities to handle a certain information systems activity. J An executive questioned by the Journal of Information Technology, said that he frequently brought in consultants for specific projects to 'keep the troops on their toes' by providing a point of reference for current thinking and practices (Brown and Wilson, 2005, pp.51).

- Enhancing the Status of the Senior Information systems Executive

Through IS outsourcing, it is possible for senior information systems executives dramatically to reduce their firms' short-term information systems expenses and investment base and to broaden and redirect their personal organization role to reflect a more strategic business orientation. The political benefits of outsourcing

alone are sufficient to induce many managers to consider the outsourcing alternative.

- Easing the Information systems Management Tasks of Senior Management

By its nature, IS outsourcing makes the associated costs much more visible and provides the potential to manage these services in a fashion similar to many other corporate functions.

As may be expected, such benefits are especially attractive to the senior executive who has become disillusioned with a CIO's inability to demonstrate the business value than could be obtained from the organization investment in information technology. (Brown and Wilson, 2005, pp.51)

2.9 The Case Against Outsourcing

- Increased Costs

Over the long term, it is questionable whether a service provider can deliver information systems at lowers costs than those experienced by well-managed, well equipped and well-staffed internal IS function. Since the profitability of outsourcing to the service provider lays in the size a long-term-cost differential, the vendor is unlikely to pass all productivity improvements to the client firm, as predicated by Williamson (Williamson, 1975, p.78) among others.

Further, unexpected (and, hence, often unaccounted for) costs often arise (Due, 1992, p78 -81). Three such costs: vested pension and insurance plan compensation paid to employees transferred to a vendor, software license transfer fees that are paid to software houses in order for a vendor to continue running client software, and the considerable contract administration and governance costs incurred in most arrangements (Walker and Weber, 1987, p. 373, p. 378)

- Increase Risk

Literature Review

To the extent that the decision to outsource is a manifestation of organizational risk taking, it is a decision of extreme complexity. Certainly, senior executives must recognize that they are encountering risk in any strategic decision.

Whenever an agent performs tasks for a principal, the principal always bears the risk of the agent not completing the task as expected or of being less vigilant than the principal would be. When service recipients outsource their contractual responsibilities to secondary vendors, it can become very difficult to pinpoint responsibility for particular activities.

Another well documented source of risk is the potential that the service provider may not act in the service recipients best interest but may instead opt for 'solutions' that benefit the service provider more than the client. (Eisenhardt, 1989, p.57 - 74)

- Loss of Internal Technical Knowledge

Every company depends increasingly on knowledge about business processes and technologies, management and technical skills, information about customer and suppliers. They often breed tacit understanding about the company and its activities bound up in the experience and intuition of its employees. It is through tapping and managing this base of intellectual capital that a company is able to create sustainable competitive advantage. An increasing area of importance is knowledge. In the area of technology, this knowledge constantly and rapidly growing, and includes development, deployment, and information systems management.

Whenever technology services are outsourced to a managed service provider, the service recipient loses some understanding of the service over time. Whenever service providers undertake innovative services for a client, much of the knowledge gained remains with the service provider and not transferred. If a significant element of the service recipients information systems are outsourced, and no steps are taken to counter this loss of expertise, it may not only find itself lacking technical specialists who understand the firm's business managers needs,

but also lacking in business managers or professionals who remain aware of the business and strategic roles of information technology. Even more importantly, is the possibility that the firm is very

likely to lose its ability to keep abreast of technological advances as any internal capacity to absorb new knowledge about information technology and information systems will slowly dissipate (Clarke et al, 1995, pp.228- 232).

- Loss of flexibility

If a firm becomes locked into long-term outsourcing contracts, it can be very difficult to reverse the decision to outsource, as the firm would have to rebuild its internal technological infrastructure. Other reasons include, the cost involved may be prohibitive, attracting the staff needed becomes very difficult, and then ultimately the time required to restructure is prohibitive (Clarke et al, 1995, pp.228-232).

Given the nature of contractual relations, service providers may find it difficult to respond to workload increases/decreases or to a desire to readjust priorities, or to move in new technological directions. Instances where major shifts along such lines have occurred necessitated renegotiating the contract and, in some cases, cancelling portions of contracts - both of which may require penalty payments. Renegotiating alone can be quite difficult because of changed expertise and the evolving nature of all business alliances (Clarke et al, 1995, pp.228- 232).

- Increased information systems management complexity

Often, the initial motivation to consider outsourcing arrangements are driven by the naïve assumption that information systems management needs will be simplified by delegating these responsibilities to an external service provider.

What actually occurs, instead, is the management responsibility for information systems is replaced by management responsibility for the service provider's performance. It is quite likely that the absolute level of management complexity faced may increase, and it will most certainly be of a different nature. In-particular

procurement and contract management will become much more important and complex (Clarke et al, 1995, pp.228- 232).

2.10 Process – ITIL Defined

According to www.ITIL.org, ITIL is an abbreviation for the guideline Information Technology Infrastructure Library, developed by CCTA, now the OGC (Office of Governance Commerce) in Norwich (England) developed on behalf of the British government.

ITIL is a set of concepts and policies for managing information technology (IT) infrastructure, development and operations. ITIL is one of the quality improvement tools or techniques specially designed for improving IT service and the creation of added-value quality. In short, ITIL helps organisations to meet customer satisfaction through maximizing their information services processes and increasing IT service quality. (Shang, 2010, p.54)

According to industry experts, the latest research, and successful users, the deciding factor in aligning IT with your business is whether you have implemented best practice in IT service management. In view of that Garford (2003, p10), over the past ten years points to the Infrastructure Technology Infrastructure Library (ITIL) having become the de-facto service management methodology, and is the common denominator on which most international standards are based.

ITIL published in a series of books, with the most recent version being ITIL V.3.0. ITIL provides a description of a number of important IT ‘best practices’ with process definitions, role descriptions and realisation guidelines that can be tailored to any IT organisation to improve efficiency of the IT-Service provision, (Knahl, 2009, p 448).

2.11 Historical Context to ITIL

ITIL developed in the late 1980s by an agency of the British government, now called the Office of Government Commerce (OGC), as a way to describe a systematic approach to the provisioning and management of IT services.

Literature Review

ITIL became popular In Europe during the 1990s, but it did not catch on in the U.S. until well after 2000. ITIL was, and remains, literally a library of books, though the OGC also offers a raft of ITIL-related materials on its Web site (Anthes, 2008, p.28). Published in 2001 Version 2 focuses on two pillars of IT infrastructure and operations: service support and service delivery. ITIL prescribes best practices for incident, change, capacity, and configuration management. Using these best practices, companies found that they were able to improve and standardize their data centre operations (Anthes, 2008, p.28).

Today ITIL is the worldwide de-facto-standard for service management and contains broad and publicly available professional documentation on how to plan, deliver and support IT service features.

The UK Office of Government Commerce governs the ITIL standards. ITIL developers have refined the standards so much since their creation in 1980 that the new ITIL Version 3 (released May 2007) contains only five core volumes, whereas the original version comprised 31.

The newest release designed to provide a more cohesive and better-organized description of ITIL standards. The project to create v3.0 begun in 2004 and was a massive effort including input from thousands of stakeholders, i.e. Business that have adopted ITIL, the vendor community, managed service providers, training organizations, consulting firms, and academia. (Computer Economics Report, 2007, p.4-5)

The ITIL refresh includes a new focus on specific vertical markets and technological issues. Additionally, the latest release offers material that will help explain ITIL to non-IT business professionals, with an emphasis on IT and business alignment. This is an important addition, as many business professionals have indicated that they feel ITIL was too technical and somewhat out of step with business needs.

Literature Review

2.12 Why Organisations use ITIL

In response to global competitive pressure, service firms are searching for ways to deliver more cost-effective, high quality IT service, including the principles of total quality management, and ITIL that became ISO20000 in 2005 (Shang, 2010, p.54)

According to McDonough (Cox, 2004, p60) of Michigan State who participated in a case study of an ITIL implementation, "Too often, IT departments become their own worst enemies". McDonough says. "Something breaks and we fix it, and then that fix breaks something else. The state wanted to formalize the process so we're not trying to upgrade a server at the same time someone else is trying to back it up."

The Michigan team found in one case that on-call staff where repeatedly, albeit promptly and efficiently — fixing a server that consistently lost connectivity during the night, which pushed up the state's overtime bill. Because there was no consistent way to capture this data and identify a persistent problem, the root cause of the loss of connectivity was not identified nor addressed.

ITIL-based problem resolution identified the cause and created a permanent fix. The state is saving thousands of dollars just in this one case, McDonough says. As of yet, there's no overall savings estimates, but ITIL has dramatically reduced the number of changes gone bad. All changes now are scheduled and visible, and changes are only approved if they have a "back-out plan"— a process for restoring the system to its original state if the change fails for any reason (Cox, 2004, p.60).

Given the attractiveness of ITIL just touched upon, such as increased productivity, increased efficiency, and reduced downtime, more and more organisations across the world have embraced and implemented ITIL, e.g. IBM, HP, Proctor and Gamble, and HSBC. (Shang, 2010, p.54)

Literature Review

2.13 The Case for ITIL

According to Chesbrough and Spohrer, (2006, p. 35), IT services have existed since the adoption of IT systems. However, there has been rather limited progress in the standardisation of process for the delivery of IT Services.

Worthen (2005, p.1-5) notes that ITIL helps IT departments improve their service quality, including improvement upon project deliverables and time, resource utilization, a decrease in rework, and providing services that meet business, customer, and user demands.

Twenty years ago, if an IT system failed and was down for a few days it was annoying, but not business critical. This situation is unimaginable now, as the impact of IT failures is instant and conspicuous.

In fact, a system breakdown, such as the website collapse as experienced by Sainsbury's during the launch of its Nectar loyalty card a number of years ago, can make front-page headlines in minutes.

The 'unforeseen demand' blamed for the network crash process that the retailer didn't align business needs with IT provision," claims Vernon Lloyd, consultancy and training business manager for Fox IT.

Garford (2003, p10) considers that Sainsbury's should have predicted what the online demand would be, based on the number of eligible customers, and then provided sufficient skills and resources to meet the demand.

Given the rising costs within IT and the importance of IT in today's organisations, the need for IT alignment (i.e. the alignment or correspondence between the business goals and the IT requirements), management of IT services has become evident (Masak, 2006, p 72).

The author considers that ITIL as an IT service management methodology has evolved the traditional perception of IT, from one that focuses on functional IT silo's (e.g. Desktop services, LAN/WAN, Application support etc…) to

reactive and ad-hoc support, to one that is business centric, process driven, proactive and preventative in nature.

Evelyn Hubbert, analyst at Forrester Research Inc., says ITIL v3 will accelerate the already rapid adoption of ITIL, with the most widely used today are incident management, problem management, and change management (Anthes, 2008, p.28).

Fig 1.0 illustrates at a high level the simplicity of ITIL as a methodology for IT organisations to adopt and adapt to meet organisational specific needs, with a more detailed narrative following in Fig 2.0.

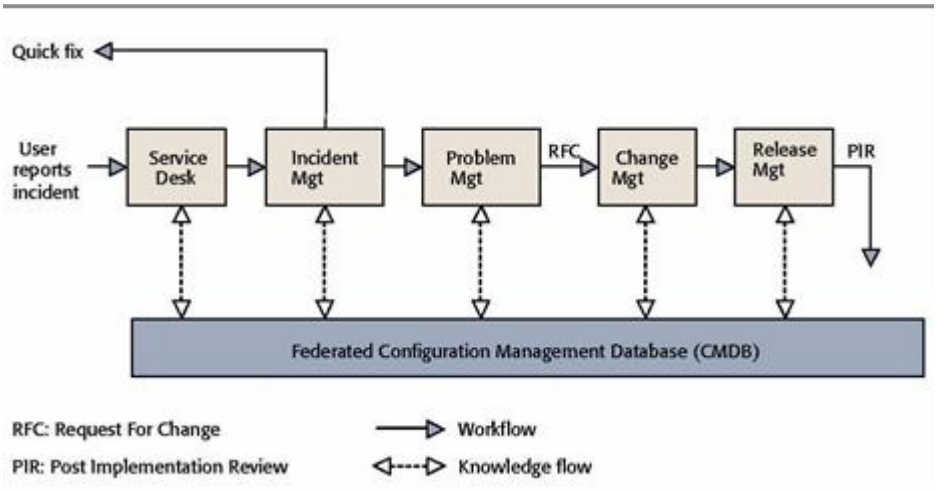


Fig 1.0 ITIL functions - adapted from Murray and Murghani, 2007, p. 23

Service Desk	Service desk offers an integrated platform for information users and service providers. Service desk is also responsible for providing instructions to fix problem and helping customers to solve their information-related problems
Incident Management	This is to provide an incident management flow in order to reduce or minimize the impact of information service problems. The of the incident management flow focuses on how to solve

	problems quickly rather than analysing the cause of the problem
Problem Management	This process is to analyse the cause of abnormality in order to reduce customers' loss. This will help customers to avoid the same error in the future
Configuration Management	This defines all service components, and controls these components as so to ensure accurate management. Thus, configuration management database (CMDB) is one of the most important steps in configuration management
Change Management	This refers to service providers using mechanisms of assessment, check implementation, and verification to management all change operations
Release Management	This procedure refers to all the implementation management process that are required before post-changed service resources or service components are connected to information systems

Fig 2.0 ITIL functions explained Adapted from Shang, 2010, p.55

ITIL is best used for overall service management, said Sharon Taylor, chief architect at the ITIL Version 3 project and president of Aspect Group Inc.

Bartolini and Salle (2006, pp.45-55) consider a number of general key requirements exist in IT Management are further complimented by ITIL as an IT service management best practice;

Literature Review

1. Align IT and business strategy;
2. Reduce total cost of ownership;
3. Provide required IT services and standardize IT operations;
4. Increase customer satisfaction and productivity.

According to Knahl (2009, pp.449) the traditional perception of IT is that it was considered technology focused, reactive, ad-hoc, which is now in stark contrast to modern IT, which now considered process focused, preventative, proactive and customer focused.

If we look to figure 1.0 and 2.0 ITIL at its most basic level, service desk, incident management, problem management, change management, release management, and configuration management. ITIL provides guidelines of best practice for each process within these areas without prescribing the medicine required to remedy the incident/problem/change or release issue.

The researcher considers the shift in thought from traditional IT to the more contemporary and modern IT to be very much a product of the indoctrination of ITIL into the collective consciousness of the IT manager.

Traditional IT versus Modern IT

Traditional IT		**Modern IT (ITSM Processes)**
Technology Focused	matures to	Process focused
Fire-fighting	matures to	Preventative
Reactive	matures to	Proactive
User	matures to	Customer
Centralised or Distributed ad-	matures to	Centralised /Outsourced support

hoc in House Support		
Isolated IT silos	matures to	Holistic IT architecture
Ad-hoc Processes	matures to	Repeatable / Measureable
Unstructured Processes	matures to	Formal Best Practice Processes
IT Perspective	matures to	Business Perspective
Functional Orientation	matures to	Business Orientation
IT Goals	matures to	Business Goals

Fig 3.0 Tradition IT versus modern IT - adapted from Knahl, 2009, p 449

According to Bardhan et al (2010, p.13-14), for organisations to respond to market changes promptly, their business strategies need to be linked with their IT operations. The author as an ITIL certified practitioner is in alignment with this view.

Organisations need to sense and respond to market changes and reallocate their resources dynamically. Today, some organisations still do not have the capabilities to reactive fast due to their IT infrastructures.

According to Bardhan et al (2010, p.23), most enterprises do not have documented processes and policies in place, therefore gaps processes become apparent, with ITIL providing advice to those preparing to change how they operate in order to "concentrate on service quality and a more customer-oriented approach," ITIL also offers generic process templates (Marquis, 2006, p. 49).

ITIL also is about establishing business-aligned IT processes and continuously improving the operational and tactical aspects of those processes to remain focused on service quality as perceived by customers and users. ITIL is a

continuous way of operating IT. Many mistakenly think ITIL is a project you do which, when complete, is over. This is a common fallacy and reason for ITIL failure (Marquis, 2006, p. 49).

The author concludes that ITIL is about doing the very basics right, be it incident, problem, configuration, and change management. Notwithstanding many organisations may be following ITIL practices almost intuitively without express or explicit knowledge of the methodology. Nevertheless, ITIL does provide guidance to a structured framework that organisations can adopt and adapt to suit their particular need.

2.14 The Case Against ITIL

Costs associated with ITIL implementations are often under-estimated by organisations wishing to implement it as best practice for IT service management.

According to Bauli (2008, p.8) ITIL cannot cut costs, free resources, or speed up processes. Instead, it will do the opposite. Marquis (2006, p.52) believes that practicing ITIL means leading a continuous process of review, audit, analysis and modification of the processes undertaken by an IT department, and perhaps this is why so many find ITIL confusing in terms of costs.

Costs involved with implementing ITIL can be both direct and indirect, direct costs include training, and the engagement of ITIL consultants and project managers. Indirect include the costs incurred preparing for ITIL, e.g. business processes discovery, and finally the in-life management costs associated with ITIL, such as training, audits and compliance.

According to Eckhaus, (2005, pp.43) before a firm considers ITIL, they must discover what their processes are in the first place. There must be an understanding of current processes to be able to standardize them by bridging the

gap between the ones already in place and the "goal" processes of your company's future: the key is to build on existing strengths.

Marquis (2006, pp.51) considers such a discovery processes to gather such information;

- Roles - owner, manager, implementer, auditor
- Responsibilities - outputs, conformance to requirements
- Authorities - to direct/perform activities
- Activities - to meet responsibilities
- Procedures - documentation of how to perform actions required, etc., for operating, planning, reporting, metrics, audits and maintenance.

This can be a costly exercise, albeit an indirect cost, but essential to understand the before picture in advance of an ITIL implementation, so that the standards advocated by ITIL can be implemented and measured effectively.

ITIL cannot be implemented verbatim, and is not a once size fits all, thankfully. Marquis (2006, p.49) considers that ITIL cannot be used word for word, nor can you create an organisation around it. Which explains why firms cannot use everything in the ITIL, and why ITIL does not require full process maturity, ITIL simply describes the things you should take into account when you are designing processes.

Businesses that hold the traditional view of IT as well as those with ingrained legacy environments often have a hard time with implementing ITIL, according to IDC’s Chris Murray "The traditional IT imperative was always to keep it up, safe and cheap, but now everything needs to be integrated and effective," Murray said. "Focus on managing business processes rather than assets can be problematic for such environments," (Bauli, 2008, p.8)

Another problem with ITIL is the lack of clearly defined and standard implementation strategies that firms of varying size can follow or even use as a guideline.

A recent study by Vathanophas (2007, p.439-440) noted that participants differed in their choice of implementation strategies. Some used the “big bang” approach (i.e., an implementation strategy that cuts over all parts of a system at the same time in a company or division), whilst others used phased or parallel approaches that bring on board new systems or processes module by module.
The type of implementation strategy employed appears to depend on the situation, company direction and budget.

The big bang approach is viewed as the most ambitious and difficult for several reasons including resistance to change, nature of existing business processes and the “mind-set required to adapt to an entirely new system”. It would appear that the big bang approach seems more appropriate for small companies faced with shorter implementation times or initial setups in new firms.

The parallel or phased approach appears to work well for large organisations with existing legacy systems where consultants have to be employed for a much longer period, and as a result, greater costs would be incurred, Pollard and Carter-Steel (2005, p.166).

Since the ITIL publications do not prescribe how to adopt, adapt or implement the guidelines as part of a service management strategy, it would seem useful for firms to explore different implementation strategies organizations are employing in their adoption of ITIL best practices, Pollard and Carter-Steel (2005, p.166)

Other challenges implementing ITIL have been identified in the study of US and Australian companies by Pollard and Carter-Steel (2010, pp.173-174), include;

Literature Review

- Dual roles - whilst the acceptance and use of ITIL appears to give clarity to roles and responsibilities of employees, some find it challenging to wear two hats and do two roles while initially conforming to the ITIL process in their everyday work.

- Engaging the right people – challenges to much-needed change are experienced in the corporate culture, in large organisations it takes a long time to get to the right people to affect the culture change required.

- Gaining support from technical staff – resistance to adhering to new documentation and communication process can be experienced, especially when its complete mind-set change from crisis management and/or workarounds to consideration of the problem as defined by ITIL, and resolving the important underlying causes of incidents.

- Measuring the return on investment – while costs can be quantified, be it pre and project implementation of ITIL, it can be difficult to measure the real benefits.

Measuring the return on investment can be more difficult if a firm does not have baseline performance metrics of its IT department, rather than budget line items of capital and operational expenditure. Which further illustrates the importance of the creation of baseline performance metrics before a firm considers implementing ITIL, in itself can have a cost implication.

Literature Review

2.15 Technology - Cloud Computing defined

"There are painters who transform the sun to a yellow spot, but there are others who with the help of their art and their intelligence transform a yellow spot into a sun"

Pablo Picasso

The word cloud computing has been buzzing around the place for the last couple of years, with many people not understanding what it actually means, which in essence is IT resource sharing, but on a massive scale.

Greer (2009, p11) considers that computing off-premises is long-standing enterprise practice, and that since the 1970's service providers have been hosting business applications on behalf of enterprises that chose not own a mainframe computer. During the past four decades as the prevailing computer models evolved and new platforms technologies emerged, off-premises computing has evolved as well. Today, an observer can find many models of off-premises computing in operation at the same time.

The modern concept of the cloud in the authors view has been aided by the application of Moore's law in relation to Microprocessor performance, which has grown 1,000-fold over the past 20 years, driven by transistor speed and energy scaling, as well as by microarchitecture advances that exploited the transistor density gains from Moore's Law (Bokar, Chien, 2011, p.67).

Much like the quote of Picasso about the sun, the concept of the cloud has been around for some time, but what really matters is what we do with technology that makes a difference.

Moore's law has propagated the pace of technology evolution, thus making it economically possible for the cloud to evolve and become ubiquitous over the last number of years.

Literature Review

The National Institute of Standards in Technology (NIST) Information Technology Laboratory provides the most comprehensive definition of the term Cloud Computing.

Cloud Computing is a pay-per-use model for enabling available, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal management effort or service providers interaction (Linthicum, Addison, 2009, p.9).

Whereas Ryan and Loeffler (2010, p 22) argue that the premise of cloud computing is to avoid acquiring and maintaining computer equipment and software, increasing ease-of-use and flexibility of the benefit offered by the technology.

Cloud computing allows computer technology to be easily accessed as a service over the internet or via a private network from any location, so that computer technology, software programs, and data can be available when and where the user needs them.

The customer only pays for as much technology capacity as it needs. For computer processing, a company using cloud computing can avoid the capital expenditure and the on-going expense of maintain the computer infrastructure. The same concept applies to the software applications, allowing the company to avoid the upfront licence fee.

Both views capture what is in essence the concept of cloud computing, its ease of use, flexibility, cost, and maintenance free.

2.16 Demystifying the Cloud

Cloud computing gets its name as a metaphor for the internet. Typically, the internet as a concept or graphic illustration is often represented in network diagrams as a cloud.

Literature Review

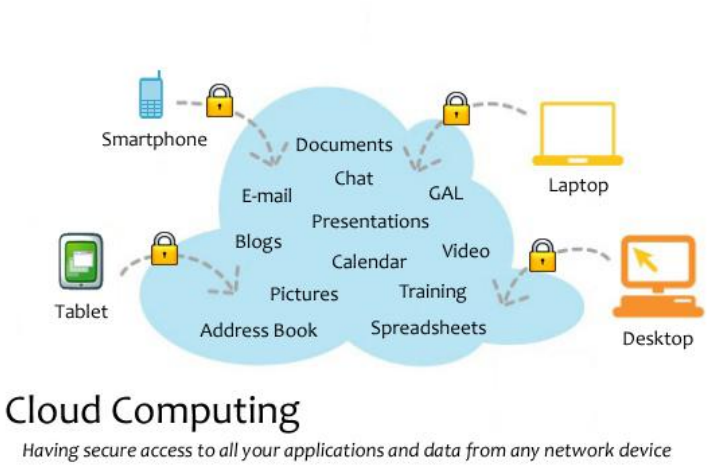


Fig 4.0, Cloud Computing high level - adapted from Velte et al, 2010, p.4

In essence, cloud computing is a construct that allows you to access applications that actually reside at a location other than your computer or other internet-connected device, most often this will be a distant datacentre (Velte et al, 2010, p.3)

Cloud Components

In a simple, topological sense, cloud computing is made up of several elements, clients, the datacentre, and distributed servers.

Clients

Clients are, in a cloud computing architecture, the exact same as things that they are in plain, old, everyday local area network (LAN). They are, typically, the computers that just sit on your desk. They might also be laptops, tablet computers, mobile phones, or PDA, all big drivers for cloud computing because of their mobility.

Literature Review

Clients are the devices that end-users interact with to manage their information in the cloud (Velte et al, 2010, p.7)

Datacentre

In its simplest form, the datacentre is the collection of servers where the application to which you subscriber is housed. It could a large room in the basement of your building or a room full of servers on the other side of the world that you access via the internet (Velte et al, 2010, p.7).

Distributed Servers

All servers cloud computing do not need to be housed in the same location, often servers are in geographically disparate locations. To the end user or subscriber, these servers act if they are humming away right next to each other.

This gives the service provider flexibility in options and security. For instance, Amazon.com has their cloud solution in servers all over the world. If something were to happen at one site, causing a failure, the services would still be accesses through another site. In addition, should the cloud need some additional hardware, service providers need not throw more servers in the safe room, they can add them at another side and simply make it part of the cloud (Velte et al, 2010, p.8)

The beauty of cloud computing is that another company hosts your application (or suite of applications for that matter). This means that they handle the costs of servers, they manage the software updates, and depending on how you construct your contract, you pay less for the service.

We must not forget the equipment that a firm won't need to buy, which will result in fewer capital expenditures, by having someone else host the applications, a firm need not buy the server nor pay for the electricity to power and cool them (Velte et al, p.4)

Literature Review

Traditional Computing versus Cloud Computing

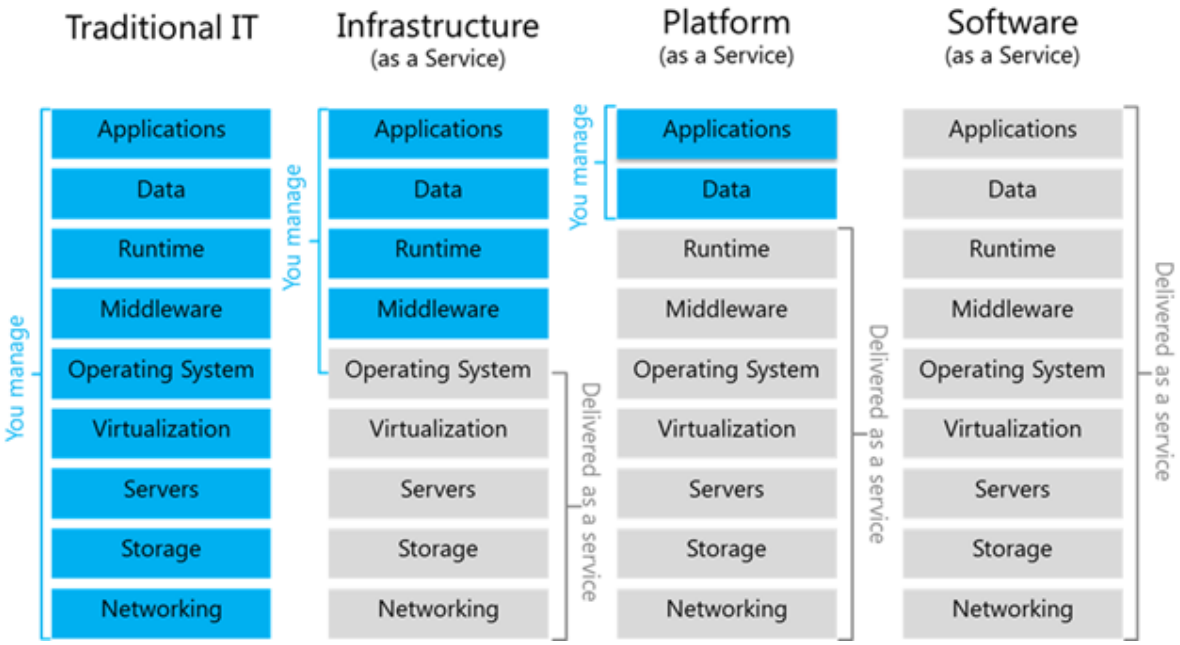


Fig 5.0, Traditional Computing versus Cloud Computing - adapted from Greer, 2009, p.16, Gartner, 2008

Services in the cloud

The term services in cloud computing is the concept of being able to use reusable, fine-grained components across a vendors network. This is widely known as 'as a service.'

Offerings with as a service as a suffix include traits like the following"

- Low barriers to entry, making them available to small businesses
- Large scalability
- Multi-tenancy, which allows resources to be shared by many users
- Device independence, which allows users to access the systems on different hardware

Literature Review

2.17 Types of Services in the Cloud

Software as a Service (SaaS)

Software as a service (SaaS) is the model in which an application is hosted as a service to customers who access via the internet. When the software is hosted off-site, the customer does not have to maintain it or support it. On the other hand, it is out of the customers hands when the hosting service decides to change it.

The idea is that you use the software out of the box as is and do not need to make many changes or require integration to other systems. The provider does all the patching and upgrades as well as keeping the infrastructure running.

Costs can be a double-edged sword on the one hand costs for accessing the software can be an on-going thing. Rather than pay for it once and be done with it, the more you use it, the more you will be billed for its use.

On the other hand, in most cases you don't have to pay up front and you are only billed based on your use of the application (Greer, 2009, p.45).

Platform as a Service (PaaS)

Platform as a service (PaaS) is another application delivery model, PaaS supplies all the resources required to build applications and services completely from the internet, without having to download or install software.

PaaS services include application design, development, testing, deployment, and hosting. Other services include team collaboration, web service integration, database integration, security scalability, storage, and versioning.

A downfall to PaaS is a lack of inter-operability and portability among service providers. That is, if you create an application with one cloud provider and decide to move to another, you may not be able to do so, or you will have to pay a high price.

In addition, if the service provider goes out of business, your applications and data could potentially be lost and non-retrievable (Velte et al, 2010, p.14).

Hardware as a Service (HaaS)

Hardware as a Service (HaaS) is the next form of service available in cloud computing. Where SaaS and PaaS are providing applications to customers, HaaS does not.

It simply offers hardware so that your organisation can put whatever they want on to it. HaaS allows you firm to 'rent' such resources as

- Server space
- Network equipment
- Memory
- CPU
- Storage space

Additionally, the infrastructure has the ability to be scaled-up, or down in size, based on the application resource needs. Furthermore, multiple tenants can be on the same equipment at the same time.

Typically, billing takes place on a utility computing basis, so providers charge by how many resources are consumed by the customer (Velte et al, 2010, p16)

2.18 Benefits of Cloud Computing

According to Ahmed (2011, p.13), and Buttell (2010, p.6), and Pring (2010, p.10-11) cloud computing offers such benefits:

- Faster entry into new markets

The speed at which a new office can be up and running can be minimized, with Buttell (2010, p.6) indicating that some vendors could have a service functioning for a new client within a few hours.

Literature Review

As the technology gains acceptance, more companies with more applications are moving into the space, making it easier for a firm to establish a presence in a new market. The option is available for firms to manage the set-up themselves, or hire an outsource firm to take on this task, hence the simplicity that the cloud bring.

Back-up space can be purchased as a service, that allows you space to store all of your scanned document, with your application vendors providing redundant backups to the information that is stored on their application.

- Cost control/savings

There is cost savings in terms of money and time in cloud computing, according to Julien Mordacai, principal and consultant with All Back Office Consulting in Edenton, N.C, says while the costs to enter a cloud environment vary depending on how big your office is and how much outsourcing you want to do.

It is much less than the tens of thousands of dollars you might have to spend on a server, office back-up systems, desktop software and IT help. "You could be talking about thousands of dollars a year rather than tens of thousands of dollars a year," Buttell (2010, p.6).

- Improvements in mobility

One of the major benefits of the cloud is instant mobility, you can be anywhere, it gives you reliability and flexibility no matter where you are (Buttell, 2010, p.7)

- Simplicity

Not having to purchase and buy new equipment allows you and your IT staff to get right to your business. A cloud solution makes it possible to get your application started immediately, and it costs a fraction of what it would cost to implement an on-site solution.

- Scalability

Literature Review

Cloud computing can help you manage spikes in demand for your computer resources. Rather than having to buy, install, and configure new you equipment, you can buy CPU cycle or storage from a third party.

- More internal resources

By shifting non-mission-critical data needs to a third party, IT department resources are freed to work on important, business-related tasks. You no long have to add more resources and training that stem from having to deal with these low-level tasks (Velte et al, 2010, p.31)

- High availability

Cloud computing providers such as Microsoft, Google, and Amazon have better resources to provide more up time than almost any other organizations and companies do (Han, 2010, p.90).

- Data safety

Organizations are able to purchase storage in data centres located thousands of miles away, increasing data safety in case of natural disasters or other factors. This strategy is very difficult to achieve in a traditional off-site backup (Han, 2010, p.90).

2.19 Limitations of Cloud Computing

There are cases when cloud computing is not the best solution for your computing needs, and these need to be understood by any firm considering entering into an agreement with a cloud computing provider.

- Sensitive information

If you have data that is regulated, for example under Sarbanes Oxley (SOX), your firm is well advised to be very careful in your plan to place such data on the cloud.

Literature Review

If private data gets out, certainly in the US, Directors and Officers of the firm are liable for fines up to $1,000,000, $5,000,000 for the institution, and up to 20 years prison for an individual (Velte et al, 2010, p.26)

- Legislative issues

There exist laws and government policy instruments that allow the government (certainly in the USA) freer access to data on a cloud than on a private server. For example, the Stored Communications Act (US) allows the FBI access to data without getting a warrant or the owner's consent.

- Geopolitical concerns

It may be simply illegal to post information on a cloud. If you are in Canada (for example) and you want to post your data to an American cloud, it is not possible. The Canadian government has declared that government IT workers may use network services that are operating within US borders. The reason is that the Canadian data stored on those servers could be negatively impacted based on the Patriot Act.

Canada might be a friendly neighbour of the USA, but all it would take is for the US government to seize a server with foreign data on it, and before you know it we have an international incident on our hands.

The same can be said for clouds operating outside of the US, as laypeople we more than likely don't know the laws (if there are any) governing our privacy and protection in a foreign country. (Velte et al, 2010, p.26)

- Server control

If your application demands complete control over everything that is running, a cloud solution may not be the right solution for your firm. If you need detailed control over the amount of memory, CPU, hard drive specs, or interfaces, then the cloud isn't an appropriate match for your application (Velte et al, 2010, p.27).

- Cost

One of the big draws of cloud computing is cost, i.e. it tends to be less expensive to run an application on a cloud than to invest in the infrastructure, buy the application outright, and then manage it day to day.

However, over time, it may cost more to pay the cloud subscription than to have simply bought the servers yourself, so it is important to factor in everything from facilities, staff, software and hardware (Velte et al, 2010, p.27).

- Latency concerns

Since data is typically located on a series of geographically disparate from your own site, it is going to take some time for data to reach you. This isn't an issue of hour or days, or even minutes. If your firm requires data instantaneously, the cloud might not be the best option, e.g.it might be the case that a worker can request given data and it comes through in less than a second, and that speed is fine. However, if that same worker needs the data faster than a second it might not be coming through quick enough (Velte et al, 2010, p.29).

- Throughput demands

Since cloud-computing solutions generally billed in a utility format; you pay for what you use. That is well and good, until you deploy applications that use a lot of throughput and costs start to rise. For instance, if you are streaming high-definition video from over 100 sources, your costs are going to spike sharply (Velte et al, 2010, p.29)

2.20 Cloud Computing Summary

In summing up the advantage and disadvantages of cloud computing, we can say that the benefits outweigh the disadvantages, which can be summarised as operational and economic benefits.

Literature Review

Operational

1. Reduced cost, since technology is paid for incrementally, a firm saves money in the end.
2. Increased storage, you can store more data on the cloud than on a private network.
3. Automation, IT staff no longer needs to worry that an application is up to date, that is the provider's job.
4. Flexibility, your firm has more flexibility with a cloud solution. Applications can be tested and deployed with ease.
5. Better mobility, users can access the cloud from anywhere with the internet connection. This is ideal for telecommuters, or someone who needs to access systems after hours.
   (Velte et al, 2010, p.77-78)

Economic

1. People, if your firm moves applications to the cloud, it'll require less staff to keep the lights on.
2. Hardware, with the exception of very large enterprises or governments, major cloud suppliers can purchase hardware, networking equipment, bandwidth, and so forth, much cheaper than a 'regular' business. That means if you need more storage, it's just a matter of upping your subscription costs with your provider instead of buying new equipment. If you need more computational cycles, you needn't buy more servers, rather you just buy more from your cloud supplier.
3. Pay as you go, think of cloud computing like leasing a car, that instead of buying the car outright, you pay a small amount each month, though you never end up owning the car.

4. Time to market, one of the greatest benefits of the cloud is the ability to get applications up and running in a fraction of the time needed in a conventional scenario (Velte et al, 2010, p.78)

Literature Review

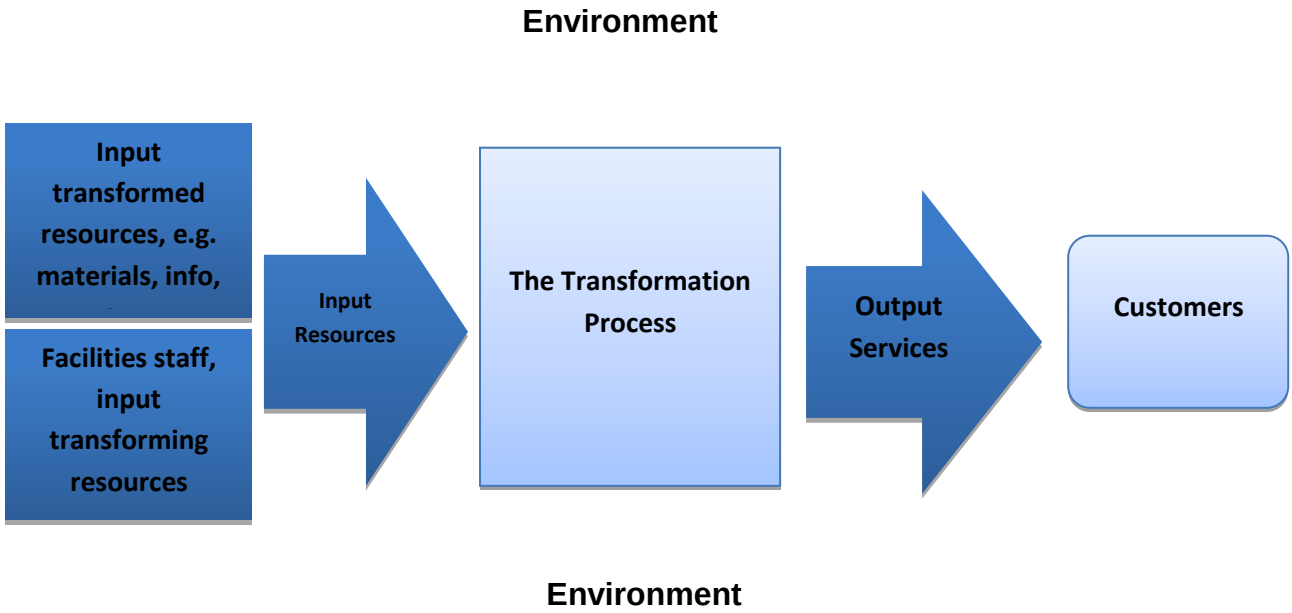
2.21 Theoretical Framework – Operations Management

The author considers the use of cloud computing for technology, ITIL for process development, and the use of managed service providers (MSPs) for people, to be part of a toolkit that allows IT managers to better manage people, process and technology.

The researcher considers these tools to be essentially part of the Operations Managers toolkit, that can be used to effect the achievement of the organisational objectives, and as such, Operations Management as a field of study underpins the proposition presented of this research paper.

The view of Armstrong (2001, p.139) sums up the authors understanding of operations management, 'Operations Managers look for the best ways of organising their resources. They develop the strengths of the organisation into a distinctive competence allowing them to compete against other organisations'.

Whereas Stack et al (2001, p.3) considers that operations processes take in a set of input resources, which are then used to transform something, or transformed themselves, into outputs of goods and services that satisfy customer needs.



Literature Review

Fig 6.0, Input – Transformation – Output model of operations - adapted from Stack et al 2001, p. 18

The researcher considers Armstrong's definition of operations management to be more succinct than that of Stack et al, although Stacks transformation-output model stands up under scrutiny, when we look to cloud computing, process development and the use of managed service providers.

Operations management is a key function of any organisation, one of the three core functions of any organisation, which include:

1. The marketing (including sales) function, which is responsible for communicating the organisations products and services to its markets in order to generate customer requests for service;

2. The product and/or service development function. This is responsible for creating new and modified products and services in order to generate future customer requests for service (Stack et al, 2001, p. 12, 13).

3. The operations function is responsible for fulfilling customer requests for services throughout the production though to delivery of products and services (Stack et al, 2001, p. 6).

Operations managers have some responsibility for all of the activities in the organisation that contribute to the effective production of goods and services.

Operations strategy is clearly part of an organisation's total strategy, but most authors on the subject have slightly different views and definitions. Commentators agree with Stack et al (2001) on the existence of four different perspectives.

1. Operations strategy is a top-down reflection of what the whole group or business wants to do.
   A large, diversified corporation will need a strategy to position itself in its global, economic, political and social environment. This will consist of

decisions about what type of business to be in, what part of the world it wants to types of business to be in, what parts of the world it wants to operate in, how to allocate its cash between its various different businesses, and so on.

Decisions such as these form the corporate strategy of the corporation. Each business unit within the corporate group will also need to put together its own business strategy, which sets out its individual mission and objectives. Similarly, within the business, functional strategies need to consider which part each function should play in contributing to the strategic objectives of the business.

The first perspective on operations strategy is that it should take its place in this hierarchy of a corporation. The top down perspective provides an orthodox view of how functional strategies should be devised (Stack et al, 2001, p 67)

2. Operations strategy is a bottom-up activity where operations improvements cumulatively build strategy.

An alternative view to top-down strategic perspective, many strategic ideas emerge over time from operational experience. The idea of strategy being-shaped by operational level experience over time is the concept of emergent strategies.

In the context of an IT Operations manager, outsourcing, cloud computing and the adoption of ITIL has grown and evolved over the last number of years. This evolution has driven by empirical studies that point to each dimension as a way to reduce costs, which improving efficiency of the organisation (Stack et al, 2001, p 68).

Commentators and managers in the field fall in behind Stack and agree that such a strategy is generally shaped over time and built on real-life experience rather than theoretical positioning and given that cloud computing given that cloud-computing is very much in its infancy stage.

Fig 7.0. The four perspectives on operations strategy – adapted from Stack et al 2001, p. 66

3. Operations strategy involves translating market requirements into operations decisions.

One of the more obvious objectives for any organisation is to satisfy the market it is attempts to serve. No operation that continually fails to serve its markets adequately is likely to survive in the long term. And although understanding markets is usually thought of as the domain of the marketing function, a market perspective is also of importance to operations management (Stack et al, 2001, p.66, p. 67) .

4. Operations strategy involves exploiting the capabilities of operations resources in chosen markets.

The fourth operations perspective strategy is based on a particular influenced theory of business strategy – the resource based view (RBV) of the firm. The RBV holds firm that firms with an 'above average' strategic performance are likely to

have gained their sustainable competitive advantage because of the core competences (or capabilities) of their resources (Stack et al, 2001, p.66, p. 67).

This means that the way an organisation inherits, acquires, or develops its operations resources will, over the long term, have a significant impact on its strategic success. Furthermore, the impact of its 'operations resource' capabilities will be as great, if not greater, than that which it gets from its market position (Stack et al, 2001, p.66, p. 67).

Stack et al (2001, p.94) confirms that author's assertion that when product/service designers have to make or use the things they design, it can concentrate the mind on what is important.

Operations sometimes attempt to overcome the cost penalties of high variety by standardising their products or services. This allows them to restrict variety to that which has real value for the end customer. In effect, standardisation is a way of moving operations down the volume-variety scale (Stack et al, 2001, p 66 – 77).

It is this assertion by Stack et al where the author considers, managed service providers, cloud computing, and ITIL align with the operations management school of thought.

The standardisation of technology using cloud computing, the standardisation of processes using ITIL for incident, problem, change and configuration management, as well as the use of managed service providers to provide a service, allows organisations to push down costs by standardising technology, processes and the types of service providers used to deliver a service.

The standardisation of inputs into an operation can also reduce complexity and therefore *costs* (Stack et al, 2001, p.103).

The standardisation of inputs into a process can reduce complexity and ultimately costs, adding credence to the hypothesis of the researcher.

Literature Review

2.22 Outsourcing – In Isolation

According to Greaver II (1999, p.3) the traditional view of outsourcing is that it is the act of transferring some of an organisations recurring internal activities and decision rights to outside providers, as set forth in a contract.

Because the activities are recurring and a contract is used, outsourcing goes beyond the use of consultants. As a matter of practice, not only are activities transferred out to the service provider, but the factors of production and decision rights often are, too. Factors of production are the resources that make activities occur and include people, facilities, equipment, technology and other assets. Decision rights are the responsibilities for making decisions over certain elements of the activities transferred. (Greaver II, 1999, p.3)

The author refers to the earlier section of the historical context to outsourcing, in which he refers to the Adam Smith book the Wealth of Nations (1776) in which he formulated his theory of competitive advantage extracting the notion of outsourcing, as a way to cut costs.

The information technology (IT) revolution has redefined Smith's theory by making outsourcing the fastest growing market dynamic worldwide. Technically, outsourcing formally got a business strategy in 1989 by Eastman Kodak (Brown and Scott, 2005, preface).

Time-sharing on mainframe computer was not scaled back because it was a bad idea, it occurred because the technology of personal computers reduced the costs of processing tasks internally (Brown and Scott, 2005, preface).

The author considers time-sharing to have come full circle, with the application of Moore's Law, where Microprocessor performance has grown 1,000-fold over the past 20 years, driven by transistor speed and energy scaling, as well as by microarchitecture advances that exploited the transistor density gains from Moore's Law (Bokar, Chien, 2011, p.67).

This has ultimately resulted in the cost of computing power significantly reducing, and making cloud computing on a large scale feasible for many enterprises.

As a note of warning to enterprises, that contract with traditional outsourcing vendors should keep a careful watch on the business strategies of their vendors to understand how they are reacting to these important trends and to understand what impact these shifts are having on the health of their businesses. This, of course, can have serious ramifications on the outsourcing provider's ability to provide high-quality service within an existing contract (Pring, 2010, p3).

This leaves the researcher to conclude that outsourcing of a technology function of an organisation in isolation is no longer a feasible option for organisations to follow, cloud computing has arrived on a large scale and put a fly in the ointment of traditional outsourcing models. If organisations are to adapt to the changing dynamic, they must embrace a more holistic approach to people, process and technology.

Benefits and Drawbacks of the Cloud for Traditional Outsourcing Approaches According to Gartner (Pring, 2010, p.10) for most users, the cloud model offers alternatives, not nirvana.

Benefits include:

- Pay for what you use (theoretically)
- Costs derive from an operational budget
- More basic functionality that you *really* need, not bells and whistles that you *might* need
- No operational management worries
- No infrastructure overhead/management
- Midterm lower total cost of ownership (TCO) (theoretically)
- Faster implementations
- Easier integration (theoretically)

Drawbacks include:

- No asset value
- Less central management of IT
- More basic functionality (sometimes real, sometimes perceived)
- Vendor management (including oversight of their operational management)
- Security concerns
- Longer-term TCO uncertainties
- “On-premises to on-demand” integration

(Pring, 2010, p.10)

2.21 ITIL – In Isolation

One of the most common areas of confusion regarding ITIL is how to use it. Many vendors and consultants offer services in restructuring for ITIL, and many customers seek such guidance. However, ITIL does not promote an organizational structure, or require any particular management structure. Nor does the ITIL mandate any particular workflow design or process.

Agreeing with Marquis (2006, p.50) the author trusts that the role of IT has since expanded and today's IT services are complex communications and collaboration systems spanning the traditional silo’ed technologies, as well as the technology departments managing them. This expansion and interconnection of IT services makes it hard to staff a process-driven operation.

Marquis (2005, pp.51) views the ITIL process approach meaning processes have to be managed over more than one department within traditional hierarchical company structures, and therefore the success of ITIL working in isolation without involvement of the separate IT functions and business units is not possible.

Literature Review

Successful ITIL adoption depends upon cross-silo process interaction and shared responsibilities. The entire IT organization must work together as a service delivery chain.

Key to success is to establish a sound process framework without going overboard. The adapting of elements of existing workflow, process and procedures while moulding new behaviours into existing workers is actually perfect when it comes to ITIL.

Successful companies commonly use other best practices, standards, and management techniques in conjunction with the implementation of ITIL. ITIL books describe Service Support and Service Delivery best practices, but ITIL is clear that it does not stand alone, and in fact, can only succeed when used with other practices (Marquis, 2005, p.50-51).

The three main practices required to support ITIL usage are:

1. Project management and a Continuous Service Improvement Program (CSIP)
2. Appropriate goal setting through a Process Maturity Framework (PMF)
3. Rigorous auditing and reporting through a Quality Management System (QMS)

Since ITIL is business aligned, understanding what the business needs is essential. The CSIP is a formal process of involving stakeholders, establishing goals, and managing the process of change required to move an IT organization. Implementing CSIP is "doing ITIL." According to Marquis (2005, p.51)

The assertions of Marquis (2005, p.50-51) underpin the authors understanding that ITIL cannot be implemented in isolation, and that it requires a top down approach from management, with support of practices such as CSIP, PMF and QMS to successfully implement, as well as managing in-life.

Literature Review

Forrester research (2004) urged in 2004 "Rather than implementing ITIL in isolation, companies should take the opportunity to map their core IT services and upgrade their infrastructure management systems in conjunction with the ITIL implementation," (www.computerweekly.com, 2004, Saran – date accessed 10/07/11)

2.22 Cloud Computing – In Isolation

As far back as 2003, Bernstein (2003, p.99) considered utility computing, also known as on demand computing back then not a new idea but a concept dating back as far as the creation of the Internet.

The idea was that computing resources (computational power, bandwidth, storage and applications) could be pooled, harnessed and delivered cheaply, when needed, and across a network, similar to the way electricity is being distributed as a utility today.

Utility computing has now come to be known as cloud computing, and is congruent with the earlier variations of similar components, most notable that of Greer mentioned earlier (2009, p.11), that computing off-premises is long-standing enterprise practice. That since the 1970's service providers have been hosting business applications on behalf of enterprises that chose not own a mainframe computers.

The author sees an alignment of Greers (2009, p.11) understanding of utility computing with the earlier definition of cloud computing by the National Institute of Standards in Technology (NIST) Information Technology Laboratory (Linthicum, 2010, p 9).

According to Bernstein (2003, p.99) most IT resources are underutilized, running at less than half their peak capacity (estimated at about 40% in 2003). This is due to the simple fact that IT systems have to be configured to support peak loads even though these high loads do not last long, e.g. online trading platforms peak

from 9:30 a.m. to 4:00 p.m., while online retailers peak for about two weeks in December.
As a result, since most IT resources (CPUs, memory, and storage) remain idle for the majority of the time, resulting in excess capacity, this formed the premise or opportunity for cloud computing providers to exploit (2003, pp.99).

Thus, the researchers interpretation of the modern concept of cloud computing is that it is an evolution or dare I say a rebranding of earlier uses of timesharing and utility computing, only it failed to ignite mass adoption until recently.

The cloud has existed in one form or other since the 1970s, packaged and branded as something else, though missing that mass-market appeal, so it has been operating in isolation in the background with many businesses, though missing the joined up thinking to make a viable business model.

The application of Moore's law (Bokar, Chien, 2011, pp.67), explains the leaps forward in terms of speed, and downward pressure on cost for technology, making it economically viable for large firms such as Amazon, Google, and Microsoft to offer cloud services, as well as capitalising on first mover advantage (Velte et al, 2010, p.22)

The author supports the views of Bokar, Chien (2011), Velte et al (2010), and Pring (2010) that leads to the formation of the opinion that cloud computing is evolving at a fast pace, therefore making it more possible today for cloud computing no longer to operate in isolation as time-share arrangements, and off-site computing arrangements between firms.

2.23 In Unison – ITIL, Outsourcing and Cloud Computing

The author supports the view that Cloud Computing for Technology, ITIL for process and the use of Managed Service Providers for people are natural bedfellows, working better in unison than isolation, for the following reasons.

ITIL supports a modern view of IT that is process focussed, preventative, customer focussed, supports centralised/outsourced, formalises best practice processes, is business focussed and aligned, supporting the achievement of business objectives (Knahl, 2009, pp.449).

ITIL provides frontline capability to support the business in terms of its IT infrastructure, be the front line internal to the organisation or outsourced. Service desk, incident, problem, configuration, change and release management (Shang, 2010, p.55)

ITIL is complimented by project management and a continuous service improvement program CSIP, appropriate goal setting through a process maturity framework (PMF), and rigorous auditing and reporting through a quality management system (QMS), Marquis (2005, pp.51), which ensures continued alignment of IT with the business.

The author considers ITIL to span across the IT Service Value Chain, regardless of where an incident or problem occurs along the in the value chain, as well as specifying of when the relevant system can be taken down (if at all) for maintenance, or the application of changes.

In particular McCann (2010, pp.24) draws attention to the care that should be taken with outsourcing contracts, with the author advocating the defining of qualifying or selection criteria for service provider selection to include ITIL as best practice for service management.

Literature Review

By having clearly defined selection criteria, it creates a baseline of expectation with managed service providers. The same method of selection of managed service provider selection should be applied to cloud computing service providers.

According to Dubie (2005, pp.30), it is difficult to meet the governing principles if you do not have a good operational foundation from which to draw. Vendors need to be aware of the governing principles; ITIL provides a governing method that is industry best practice.

Pring (2010, p.14) echo's the view of Dubie (2005, p.30), though less prescriptive does not specifically mention ITIL, 'in an ideal world, your organization should have an IT policy document that outlines roles, responsibilities, rights, and governance processes, and that sets out an agreed-on corporate position on how IT-enabled business processes, are developed and managed. Where this document exists, it should already be sufficient to deal with the emergence of cloud computing'.

This brings us on naturally to outsourcing and cloud computing dovetailing with ITIL as industry best practice for managing IT services , with Bernstein (2003, p.100) seeing utility/cloud computing progressively evolving from outsourcing, with new services deployed incrementally as the technology matures. Through outsourcing services, companies can offload both the operation and ownership of their IT assets to specialized IT services companies, allowing them to reduce costs while focusing on their core competencies.

Accordingly, Bernstein (2003, p.100) considers outsourcing to offer little economy of scale beyond that which the client can achieve on his or her own, because the IT resources provided by the service company are not leveraged and shared across a large pool of customers.

Pring (2010, p.3) advocates the view of that the growth of cloud computing and cloud services will have a profound impact on the outsourcing industry during the

next five to 10 years. As "externalization" of services continues, organizations' way of thinking about and executing "outsourcing" will change as well. Organizations will no longer think about buying a technology product first, then outsourcing it later, but will think about buying the "service" first. Because of this,

traditional outsourcing vendors will have to adapt to these new realities. With Fewer new third party technologies will be available to be outsourced, e.g. firms do not need to outsource their email services, as outsourcers will have to become cloud-services vendors themselves or risk decline (Pring, 2010, p.3).

Giving context to the views of Bernstein (2003) and Pring (2010), the past fifteen years has seen an industrialisation of IT services – creating standardised, repeatable services has grown in popularity. This popularity is because of the commoditisation and standardisation of technologies (Pring, 2010, pp.3-4), complimented by the increased adoption of ITIL standardisation of best practices for IT service management (Knahl, 2009, pp.448-449), alongside the dramatic growth in the popularity of the internet and the web, (Pring, 2010, p.3-4).

There is increased buyer demand for “low cost” services and expectations for outsourcers to do “more for less” have been another important countervailing trend. Such factors, taken together, have created a new opportunity to shape the relationship between those who use IT services and those who sell them.

Pring (2010, p.16) considers cloud computing to represent a revolution that will wash away traditional outsourcing as we know it, or is it simply a force that will change it in a more evolutionary way, how outsourcing services are bought and sold?

Cloud computing does represent a radical new set of principles and practices that are upsetting business as usual for the better. Ideas of paying for what you use, of flexibility in contracts and commitments, innovation, and in ease of use are all clearly good things, especially in times of recession.

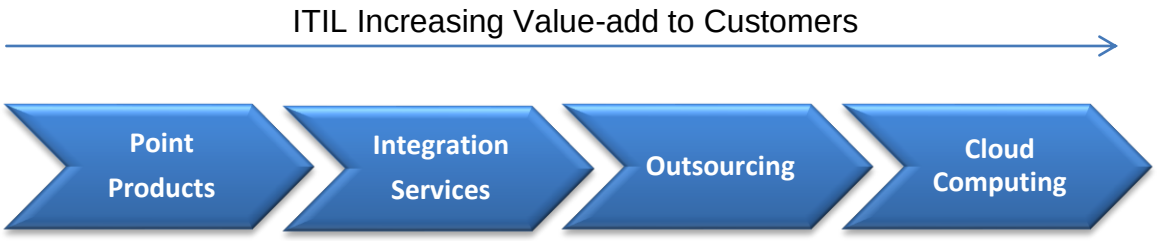
These innovations, however, are largely coming from new vendors is where the revolutionary nature of cloud computing's impact originates. Incumbent

outsourcing vendors — which have been slow to introduce innovation while in their market-dominant positions — are on the defensive as they react to these trends, and this defensive stance hampers their ability to leverage these new ideas (Pring, 2010, p.16).

Through the alignment of IT and business strategy, reducing total cost of ownership, provide required IT services and standardise IT operations, and the increasing of customer satisfaction and productivity (Bartolini, Salle, 2006, pp.45-55). The author considers that ITIL, outsourcing, and utility/cloud computing working together in unison, rather than in isolation throughout an organisation can increase value-add to the customer, be it internal or external to the organisation.

Fig 8.0 reinforces how the researcher views of the value of ITIL and the value-add to customers of outsourcing and cloud computing. By ITIL providing an operational framework or foundation (Dubie , 2005, pp.30) from which to draw, a manager could potentially realise the benefits, cost savings, and synergies so often spoken about with outsourcing and cloud computing.

IT Service Value Chain



Specific point applications (e.g. database, CRM etc.)	**Leveraging applications across enterprise Turning data into knowledge**	**Lower IT Operating costs. Offload ownership of IT assets to outsourcer Incremental services**	**Higher utilization levels and operating efficiencies Increase IT flexibility and scalability (i.e. on demand)**

Fig 8.0 IT Service Value Chain - adapted from Bernstein (2003, pp.101)

Consequently, the author reaffirms the view that ITIL, outsourcing and cloud computing to be good bedfellows, one complimenting the other, with ITIL ensuring IT aligns with the business strategy.

The authors view has been given credence by recent events in industry, HP Enterprise Services UK Limited (NYSE:HP) and BP International Limited, have signed a five-year outsourcing services agreement valued in excess of USD400m.

According to the agreement, HP said it will deliver consistent global data centre services that will enable BP to standardise and consolidate its hosting services and take advantage of innovations such as cloud computing.

In addition, the agreement also will provide BP with the platform and option to deploy HP's enterprise private and public cloud-computing services, along with external cloud services from other providers in a holistic cloud architecture. HP also will support BP with industry-standard services aligned with the Information Technology Infrastructure Library (ITIL) Version 3 service management framework (www.m2.com, 2010, date accessed 14/07/2011).

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Introduction

This chapter aims at explaining the suitability of the selected research design and analytical strategies to answer the research question and to provide the rationale behind the selected research design. The chapter also describes the research process and how the methods selected were implemented and includes a description of the selection process of the participants, how they were contacted and agreed to participate.

The chapter will also provide the reasons for using the types of research selected as well as discussing the benefits and limitations of the type used.

There are generally two types of approaches to research, namely quantitative and, qualitative research. Quantitative research defined as research into an already identified problem, based on testing a theory, measured with numbers, and analysed using statistical techniques. The main quantitative research method is the survey.

For qualitative research, the research questions are mainly open-ended and expressed in non-numerical terms. Both approaches have their own strengths and weaknesses and it seems that many researchers agree that both of these research methods need each other more often than not.

In most cases however, researchers will fall into one or other category, either relying exclusively on upon survey questionnaires and the statistical analysis quantitative approach or using only qualitative, non-numerical methodologies.

In the instance of this research topic, the researcher selected both qualitative and quantitative methods as appropriate method of adding credibility to the study, given that each approach hold positive attributes and that combining both methods can result in gaining the best of both.

Research Methodology

3.2 From Literature Review to Research Question

The literature review shows the topics of cloud computing for technology, ITIL for processes, and the use of outsourced service providers for people, cover a broad range of areas under the IT and Management umbrellas. Learning in these areas is of interest as a research area as many companies endeavour to reduce total cost of ownership of their technology departments, whilst at the same time remaining dynamic, relevant and competitive in the market place.

Understanding the benefits of and actually integrating cloud computing technology, ITIL and the use of outsourced service providers as an end-to-end packaged IT service delivery solution has gone without much consideration by many IT practitioners and academics, until recently.

A shift in mind-set has begun within many companies who are experiencing a downward pressure on costs because of the economic recession. At the same time, companies such as Microsoft, Amazon, and HP have realised that there are enormous opportunities in the market to exploit by offering solutions that bring down the total cost of ownership of technology.

The continued relevance of Moore's Law has also brought the cost and speed of technology to a place where large corporations can leverage economies of scale, and offer to share their infrastructure for a price, alleviating in many companies the need to invest heavily in new technology hardware.

The literature review shows that cloud computing for technology, ITIL for process, and the use of outsourced service providers for people, can work in their own right as solutions to business problems, with lots of research completed by academics and practitioners in these areas.

More specifically this thesis aims to aims to answer the following questions:

- The important role that IT Management play in aligning IT objectives with those of the wider organisation.

Research Methodology

- Does the marrying up of cloud computing, ITIL, and outsourcing, in a packaged IT service delivery solution make business, economic and synergetic sense.
- Which recommendations can be given credence with regard to a large multi-national telecommunications company wishing to develop a business model that allows it to leverage its size, technology and expertise, to exploit potential opportunities in the market place and gain first mover advantage by integrating cloud computing, ITIL and managed service providers.

Research Methodology

3.3 Methodology and Research Design

In order to address the aforementioned questions the research design consists of primary research in the form of a survey and a case study, complimented by secondary research in the form of a literature review.

A survey targeted at senior IT executive stakeholders in both private and state enterprises in Ireland, as well as senior United States military IT stakeholders, which aims to investigate the most up to date thinking in industry. The secondary aim of the survey is to ascertain whether there exists an appetite in the market for reducing costs of doing business though the integrating of cloud computing with ITIL and outsourcing service providers.

A case study investigates the motivations of a large multi-national telecommunications company to outsource their second line support function to a subsidiary of the same company based India, and whether or not ITIL and cloud computing were explored as options that could work in unison to reducing the cost of ownership.

The secondary research is data collected from external sources such as internet, books, and television or research articles. There is obviously a lot of secondary information; however, it is quite often the reliability, accuracy and integrity of the data that is uncertain. On the other hand, primary data is be relied upon because the researcher knows where the data comes from and what manipulation, if any was carried out.

According to Gill and Johnson (2005, p.25) regardless of scale any project will involve reading what is already known about a topic and presenting it in a manner which demonstrates some awareness of the current knowledge available including its limitations.

Research Methodology

3.4 Primary Research

The qualitative approach undertaken by the researcher consisted of a case study. According to Bryman and Bell (2007, p. 27), qualitative is a research strategy emphasising words rather than quantification in the collection and analysis of the data that:

- Predominately emphasises an inductive approach to the relationship between theory and research, in which the emphasis placed on the generation of theories.
- Has rejected the practices and norms of the natural scientific model and of positivism in particular preference for an emphasis on the which individuals interpret their social world.
- Embodies a view of social reality as a constant shifting emergent property of individuals creation.

According to www.edu.plymouth.ac.uk (pp, date accessed 05/08/11), quantitative research generates statistics with survey research, using methods such as questionnaires or structured interviews. This type of research reaches more many more people than qualitative research, but the contact with those people is much quicker than with qualitative research.

The survey questions for this research paper were devised upon the completion of secondary research, which gave contextual understanding and a balanced view to the researcher on the subjects of cloud computing, ITIL, and outsourcing.

The targeted participants to complete the survey were senior IT executives and stakeholders within privately owned and state controlled organisations in Ireland and the USA.

According to Saunders, Lewis and Thornhill (2009, p.212), it would be impractical for you to collect data from the entire population, you need to select a sample. This will be equally important whether you are planning to use interviews, questionnaires, observation or some other data collection technique.

Research Methodology

The researcher selected probability sampling as the sampling technique that best suited their need in terms of the survey-based research strategy chosen (Saunders, Lewis, Thornhill, 2009, p.214)

The researcher drew upon an extended professional network to identify suitable and influential stakeholders in IT and businesses to make up the sample size required.

A target number of fifty participants considered a good sample size, with forty-five participants responding positively to engagement with the survey.

Forty respondents successfully completed the survey questionnaire, with 88.9% of those who started the survey, completing the survey successfully.

Survey Monkey (www.surveymonkey.com – date accessed 15/07/11) was the tool chosen to push the survey to the selected sample.

As much as business behaviour is about people's behaviour, the research topic and question of the researcher has come about by a series of observations made in the workplace. As with grounded theory, such data leads to the generation of predictions which are then tested in further observations that may confirm, or otherwise, the predictions, (Saunders, Lewis, Thornhill, 2009, p 148-149).

Within grounded theory, choice of cases through which to gather data and refine concepts is termed 'theoretical sampling'. In this way sampling is purposive, whereby critical cases are chosen to further the development of concepts and categories being used, so as to aid the process of developing the emerging theory that will be thoroughly grounded in data.

Theoretical sampling will continue until 'theoretical saturation' is reached, which occurs when data collection ceases to reveal new data that are relevant to category, where categories have become well developed and understood and relationships between the categories have been verified, (Saunders, Lewis, Thornhill, 2009, p 509).

Research Methodology

The researcher proposed gathering of data by theoretical sampling, by scheduling an interview with a Senior IT Operations Manager, and use the non-probability sampling procedure of snowballing, from which subsequent respondents were obtained by information provided by the initial respondent, (Saunders, Lewis, Thornhill, 2009, p 233, p 601).

Case study research data obtained was through the identification of a project that undertaken by the Vodafone Ireland IT department, to outsource the second line support team of the IT Operations department.

A senior IT Operations Manager within the organisation was engaged to participate in the case study, and who subsequently identified other stakeholders as possible participants, with the snowballing effect-ringing true in this instance.

In total ten people were approached to participate, with five people responding and engaging in various forms of interviews and questioning.

Opinions relating to the subject matter of this research where also sought informally from the researchers peer group, colleagues, senior managers and decision makers working in the technology sector, covering both private and state owned companies in Ireland and the USA.

Information was also sought opinions of hardware and software providers in the marketplace, who he was able to meet formally and informally through the course of his work as an IT Service Delivery Manager (Contractor), by engaging in conversation where there was relevance and context to the workplace situation, in particular to the area of cloud computing, ITIL and outsourcing. Such providers include Salesforce.com and Hewlett Packard Ireland account managers and directors.

Such informal engagement contributed greatly to the development and shaping the researchers interest and understanding of the areas of this thesis, and provided routes to both the primary and secondary research undertaken.

Research Methodology

3.5 Limitations of Primary Research

The relatively small sample size of the case study group could be a limitation of the case study research. This was due to the availability of a limited number people still working in the organisation who had worked on the outsourcing project.

Nevertheless, the researcher found enough consistency among the interviewees to suggest that a bigger sample might not have provided any further insight into the topic of this dissertation.

A limitation of the survey could be that the authors preconceived notions towards outsourcing, cloud computing and ITIL, as ways to reduce total cost of ownership for technology departments. These preconceived notions were challenged as well as championed in the results of the survey, and was further supported by the secondary research undertaken.

Ethical Considerations

According to Saunders, Lewis and Thornhill (2007, p.28) there are a number of general ethical issues a researcher must consider;

- Privacy of possible and actual participants in the research
- Voluntary nature of participation and the right to withdraw partially or completely from the process
- Consent and possible deception of participants
- The maintenance of the confidentiality of data provided by individuals or identifiable participants and their anonymity
- Reactions of participants to the way in which you seek to collect data, including embarrassment, stress, discomfort, pain and harm
- Effects on participants of the way in which the researcher uses, analyses and report your data, in particular the avoidance of embarrassment, stress, discomfort, pain and harm
- Behaviour and objectivity of you as researcher

Research Methodology

As the primary research was purely for academic purposes little of ethical arose.

3.6 Survey Questionnaire

This section details the questions posed in the survey sent to senior and executive IT stakeholders.

Outsourcing

1. Are you familiar with the term Technology outsourcing?

Answer (Y) (N)

2. Does your organisation use Managed Service Providers to outsource Technology services?

Answer (Y) (N) (Don't Know)

3. If the answer to the previous question is no, would you consider using Managed Service Providers to outsource all or part of your Technology organisation?

Answer (Y) (N) (Don't Know)

4. What do you consider the benefit (s) of outsourcing Technology teams to Managed Service Providers to your organisation? Select one or several answers where applicable.
    - Cost reduction
    - Improve service quality
    - Gain access to leading edge technologies
    - Other
5. What do you consider the disadvantages to using Technology outsource service providers? Select one or several answers where applicable.
    - Increased cost
    - Increased risk
    - Loss of flexibility
    - Loss of technical knowledge

- Increased information systems management complexity
- Other

6. Would you recommend the use of Technology outsourcing service providers to the Executive team of your organisation?

   Answer (Y) (N)

Information Technology Infrastructure Library (ITIL)

1. Are you familiar with ITIL as a best practice method for IT service management?

Answer (Y) (N)

2. Does your organisation use ITIL as a method to manage its IT environment?

Answer (Y) (N) (Don't Know)

3. If the answer to the previous question is no, would you consider ITIL as best practice method for the management of an organisations to manage its Technology environment?

Answer (Y) (N) (Don't Know)

4. What do you consider the main benefit (s) of using ITIL? Select one or several answers where applicable.
   - Provides vendor neutral and impartial best-practice advice
   - Non prescriptive and flexible
   - Advocates the standardization of IT services
   - It is a consistent and well thought out approach to service management
   - More proactive approach to technology ownership
   - Increased customer satisfaction and productivity
   - Aligns IT with business strategy
   - Other

5. What do you consider the main disadvantages of using ITIL? Select one or several answers where applicable.
   - Upfront costs
   - In-life management and ownership costs
   - Hidden costs
   - Non prescriptive
   - Difficulty in measuring return on investment
   - Other
6. Would you recommend the use of ITIL as best practice service management to the Executive team of your organisation?

Answer: (Y) (N) (Don't Know)

Technology – Cloud Computing

1. Are you familiar with the term Cloud Computing technology?

Answer (Y) (N)

2. Do you know what the term Cloud Computing technology means?

Answer (Y) (N)

3. Does your firm use Cloud Computing technology in any form?

Answer (Y) (N) (Don't Know)

4. What do you consider the main benefit (s) of using Cloud Computing technology to business? Select one or several answers where applicable.
   - Faster entry into new markets
   - Cost control/savings
   - Improvements in mobility
   - Simplicity
   - Scalability

- More internal resources
- High availability
- Data safety
- Other

5. What do you consider the main disadvantages of using Cloud Computing technology to business? Select one or several answers where applicable.
   - Storage of sensitive information
   - Legislative issues
   - Geopolitical concerns
   - Server control
   - Cost
   - Latency concerns
   - Throughput demands
   - Other
6. Would you recommend the use of Cloud Computing to the Executive Team of your organisation?

Answer: (Y) (N) (Don't Know)

Fusion of MSP/ITIL/Cloud Computing

1. Do you consider Managed Service Providers for people, ITIL for process and Cloud Computing for technology to work as standalone solutions to business problems?

Answer: (Y) (N) (Don't Know)

2. Do you consider that synergies exist through the careful integration of an organisation's Managed Service Providers with ITIL and Cloud Computing technology?

Answer: (Y) (N) (Don't Know)

3. What do you consider the benefits of integrating your organisations Managed Service Providers with ITIL and Cloud Computing technology? Select one or several answers where applicable.
   - Reduced operating costs
   - Quicker time to market for new products
   - Increased customer satisfaction and productivity
   - More proactive approach to technology ownership
   - Management overhead reduced in managing people, process and technology
   - Access to leading edge technology and expert human resources
   - Greater mobility and control
   - Other

4. Would you consider that Cloud Computing Technology, ITIL, and the use of Managed Service Providers integrated together by IT Management can add-value to a business if packaged as an IT Service Delivery Solution?

Answer: (Y) (N)

5. Why / Why not

Research Question

3.7 Research Question

Cloud computing for technology, Information Technology Infrastructure Library (ITIL) for processes, and the use of outsourced service providers for people, integrated together by IT Management, can lead to a better understanding of what value each can bring to a business in terms of people, process and technology when packaged as an IT service delivery solution.

CHAPTER 4 – SURVEY AND INTERVIEW RESULTS

This chapter presents the results from the primary research undertaken by the researcher, first giving the breakdown of the results of the survey, followed by the interview findings.

4.1 Survey Results

Q.1 - Are you familiar with the term Technology Outsourcing?		
Answer Options	**Response Percent**	**Response Count**
Yes	100.0%	45
No	0.0%	0
answered question		**45**
skipped question		**0**

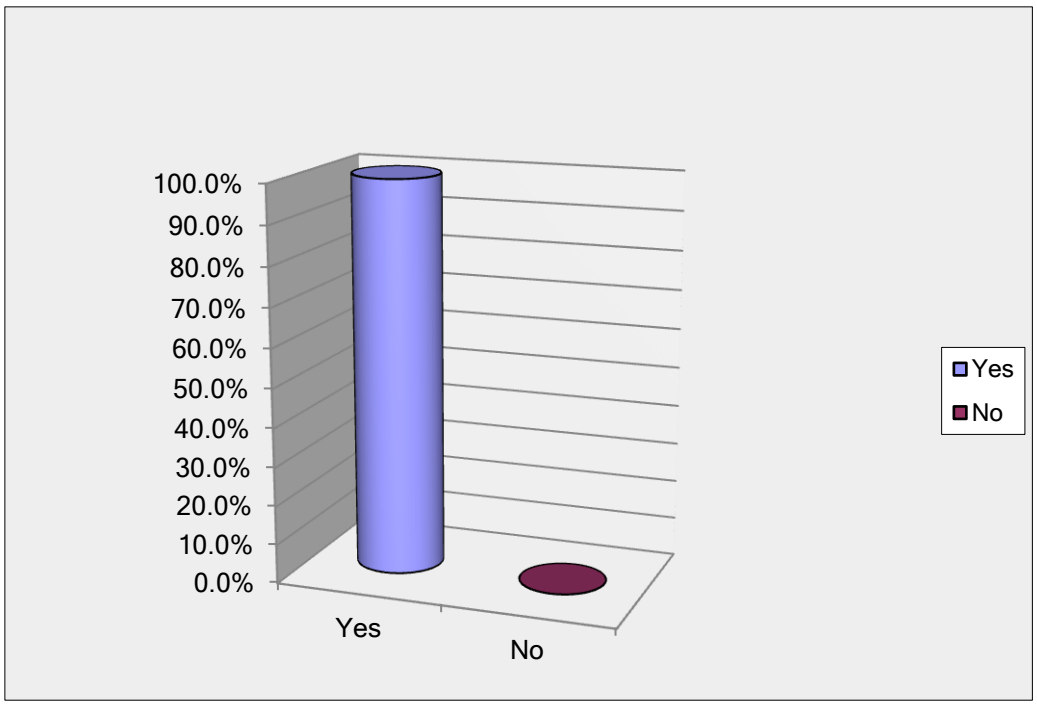


Fig 9.0 – Are you familiar with the term Technology Outsourcing

Of the 45 respondents to question one, all have indicated that they are familiar with the term technology outsourcing, which is no surprise to the author, as those selected to participate are senior IT/Technology stakeholders.

Survey and Interview Results

Q.2 - Does your organisation use Managed Service Providers to outsource Technology services?		
Answer Options	**Response Percent**	**Response Count**
Yes	71.1%	32
No	17.8%	8
Don't Know	11.1%	5
answered question		**45**
skipped question		**0**

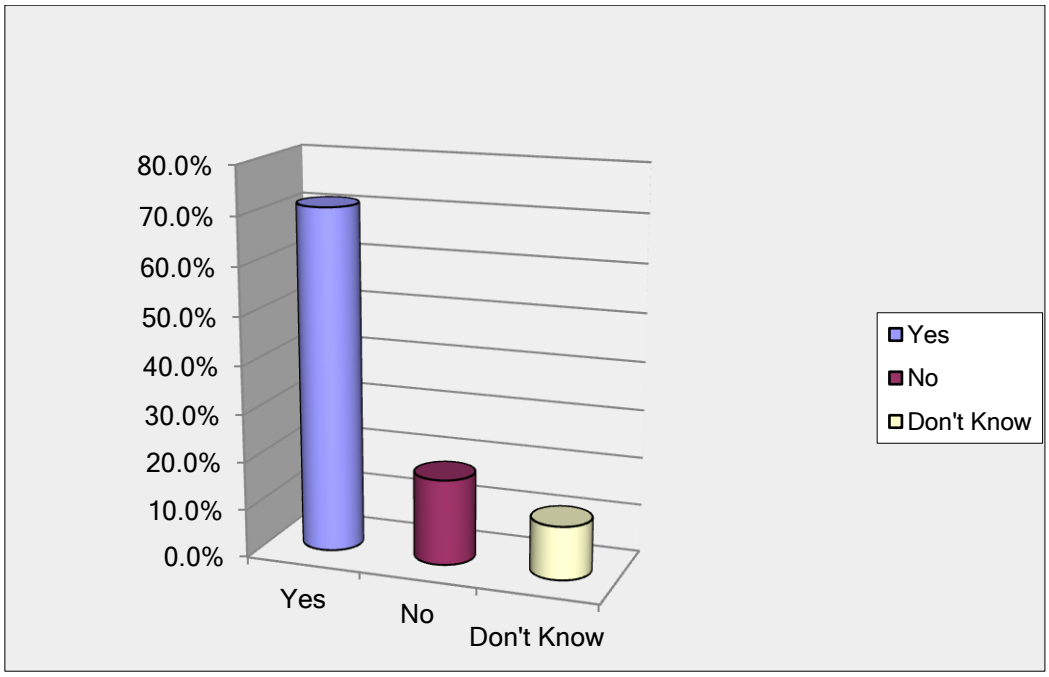


Fig 10.0 – Does your firm use Managed Service Providers

The results of question two highlights the prevalence of outsource service providers in many organisations today, with over 70% of those surveyed indicating the presence of outsource service providers in the organisations that work as part of.

Survey and Interview Results

Q.3 - If the answer to the previous question is No, would you consider using Managed Service Providers to outsource all or part of your Technology organisation?		
Answer Options	**Response Percent**	**Response Count**
Yes	35.6%	16
No	24.4%	11
Don't Know	40.0%	18
answered question		**45**
skipped question		**0**

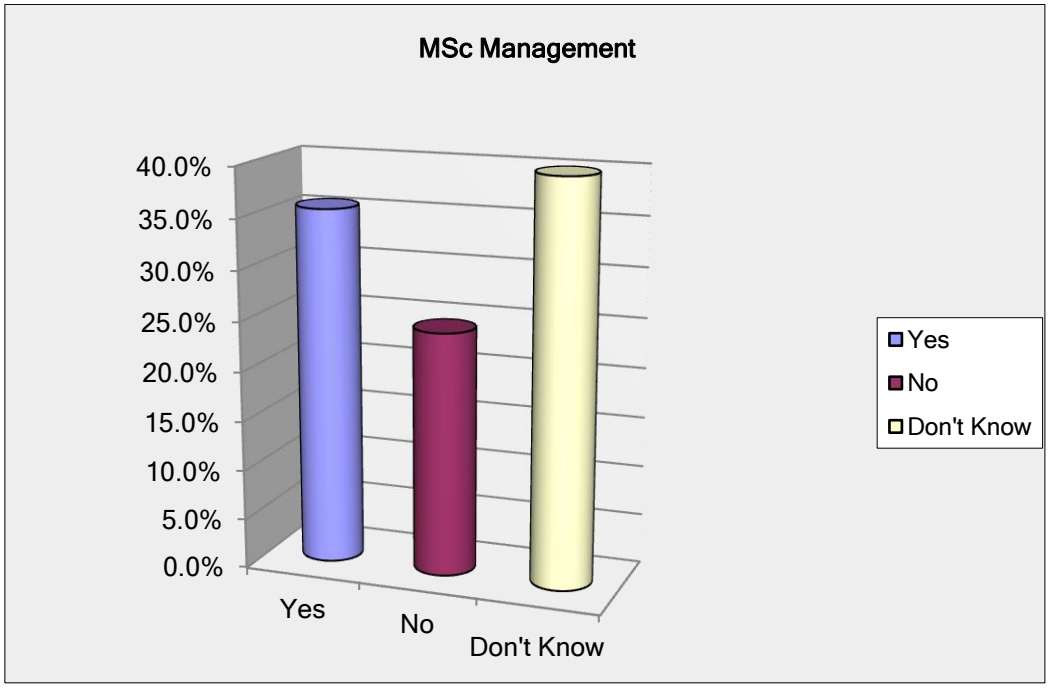


Fig 11.0 – Would you use Managed Service Providers

Of those who answered No to question two, 35% of respondents indicated that they would consider using managed service providers in their organisation, whilst 40% indicated that they do not know whether they would consider using such a service.

Survey and Interview Results

Q. 4 - What do you consider the benefit (s) of outsourcing Technology teams to Managed Service Providers to your organisation? Select one or several answers where applicable.		
Answer Options	**Response Percent**	**Response Count**
Cost reduction	80.0%	36
Improved service quality	40.0%	18
Gain access to leading edge technologies	57.8%	26
Other	6.7%	3
answered question		**45**
skipped question		**0**

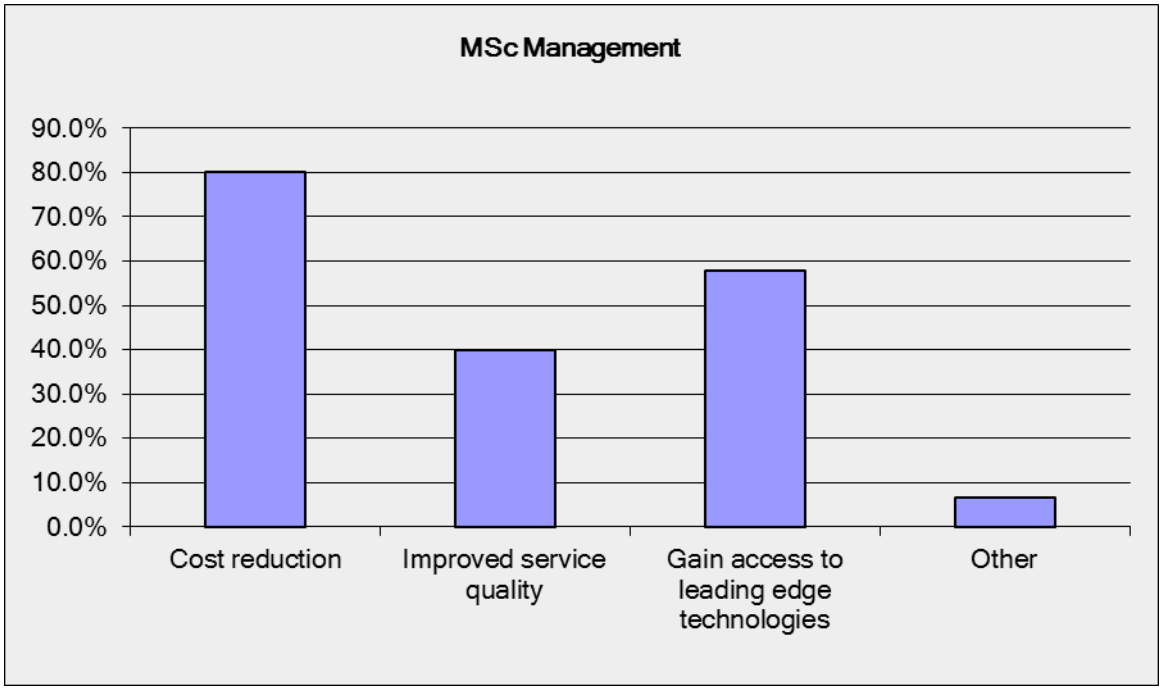


Fig 12.0 – The benefits of Managed Service Providers

The benefits of using managed service providers to outsource service providers provide interesting results, with 80% of respondents stating that they believe cost reduction to be the main benefit of outsourcing, followed by gaining access to leading edge technologies.

Survey and Interview Results

Q. 5 - What do you consider the disadvantages to using Technology outsource service providers? Select one or several answers where applicable.		
Answer Options	**Response Percent**	**Response Count**
Increased cost	20.0%	9
Increased risk	46.7%	21
Loss of flexibility	62.2%	28
Loss of technical knowledge	75.6%	34
Increased information systems management complexity	33.3%	15
Other	13.3%	6
answered question		**45**
skipped question		**0**

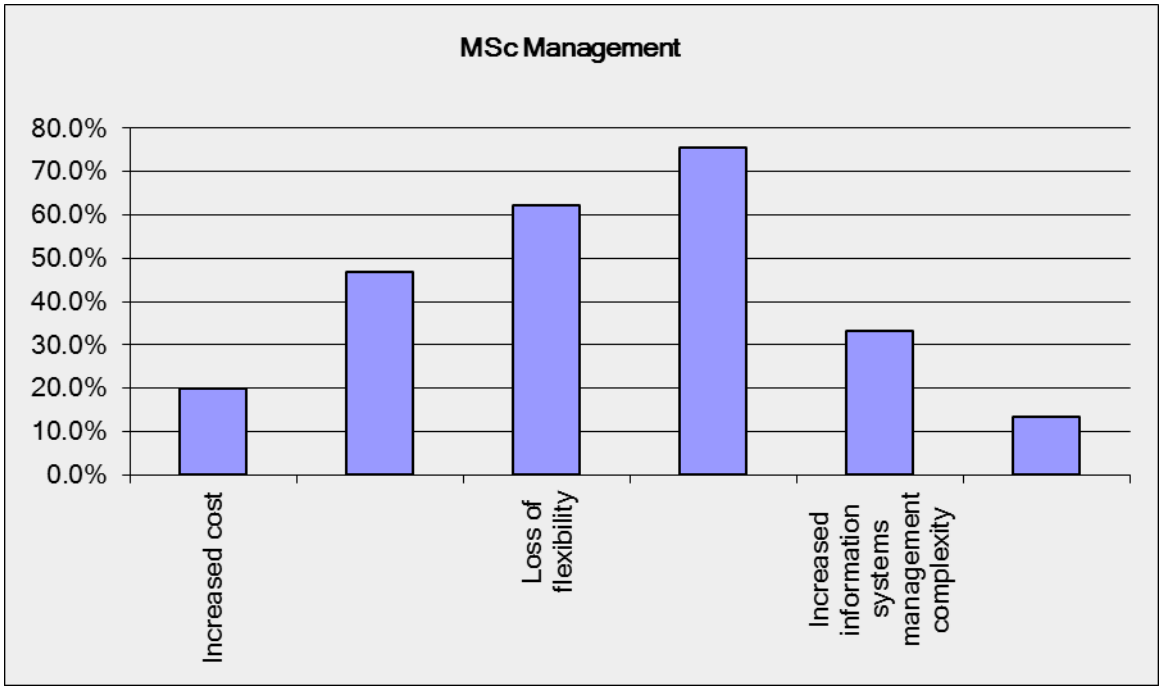


Fig 13.0 – The disadvantages of Managed Service Providers

Loss of technical knowledge(75%) has come at the top of the disadvantages of using managed service providers, which is hardly surprising if staff are TUPE'D to

a managed service provider, this is followed by loss of flexibility which is characteristic of such agreements.

Q.6 - Would you recommend the use of Technology outsourcing service providers to the Executive team of your organisation?		
Answer Options	**Response Percent**	**Response Count**
Yes	62.2%	28
No	37.8%	17
answered question		**45**
skipped question		**0**

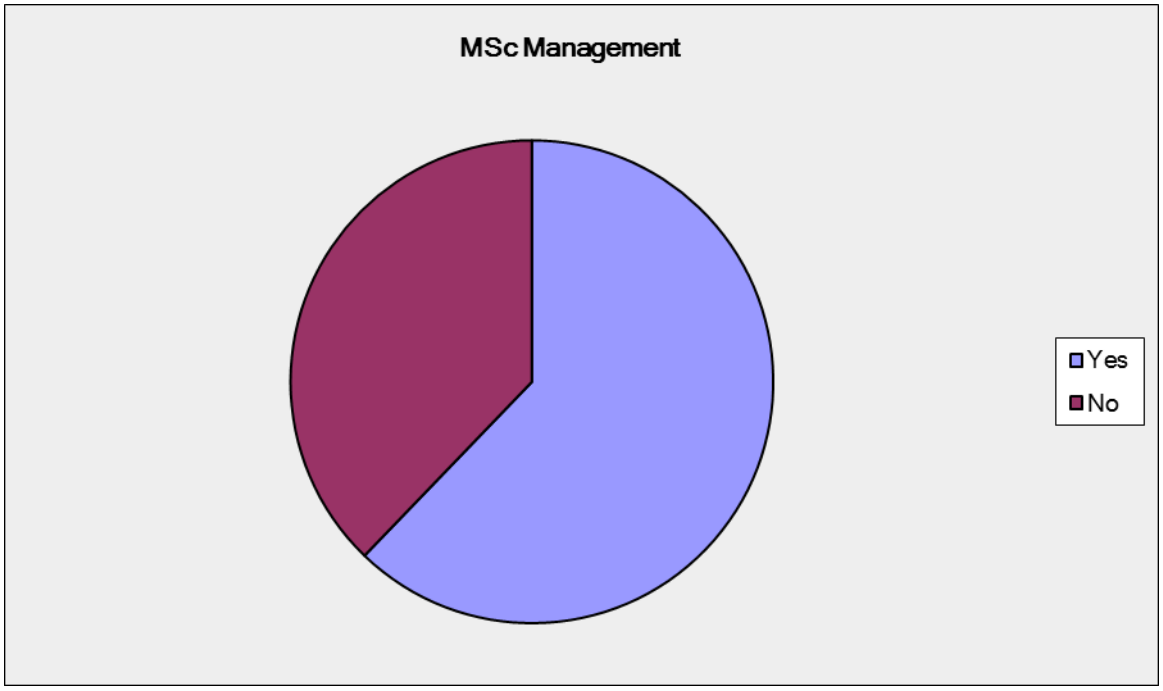


Fig 14.0 – Would you recommend the use of Managed Service Providers

The majority of respondents (62.2%) indicate that they would recommend technology outsourcing service providers to the executive team of their organisation.

Survey and Interview Results

Q.7 - Are you familiar with ITIL as best practice method for IT service management?		
Answer Options	**Response Percent**	**Response Count**
Yes	83.7%	36
No	16.3%	7
answered question		**43**
skipped question		**2**

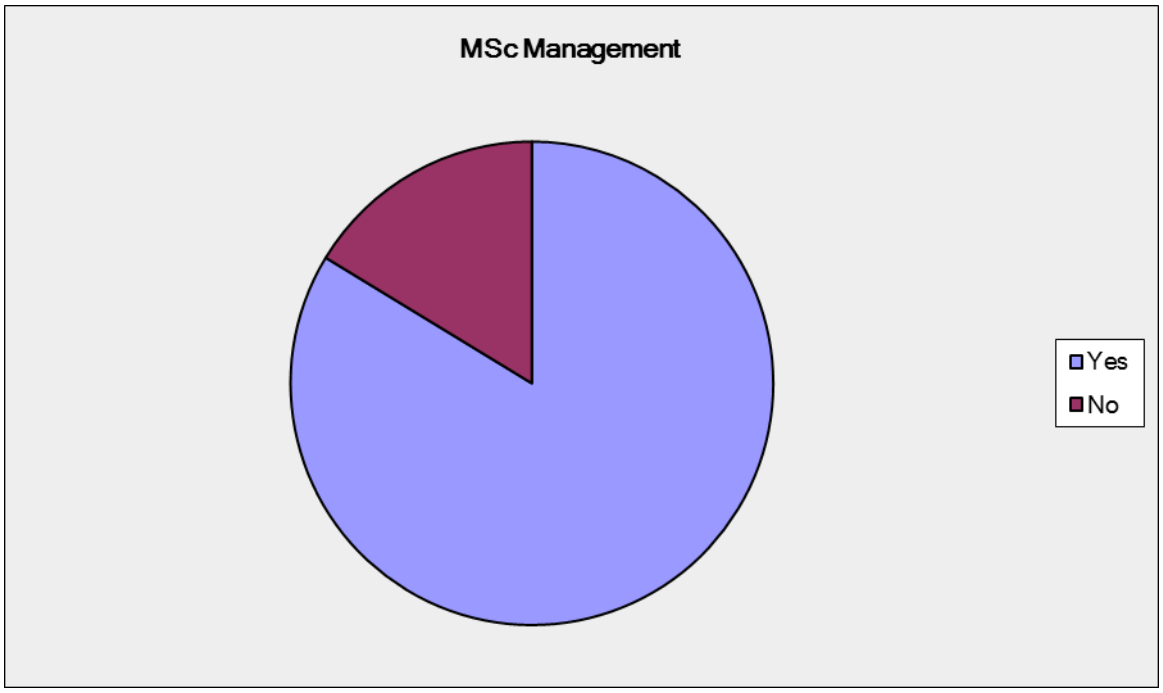


Fig 15.0 – Are you familiar with ITIL for best practice IT service management

83.7% of respondents consider ITIL as best practice for IT service management

Survey and Interview Results

Q. 8 - Does your organisation use ITIL as a method to manage its IT environment?		
Answer Options	**Response Percent**	**Response Count**
Yes	51.2%	22
No	25.6%	11
Don't Know	23.3%	10
answered question		**43**
skipped question		**2**

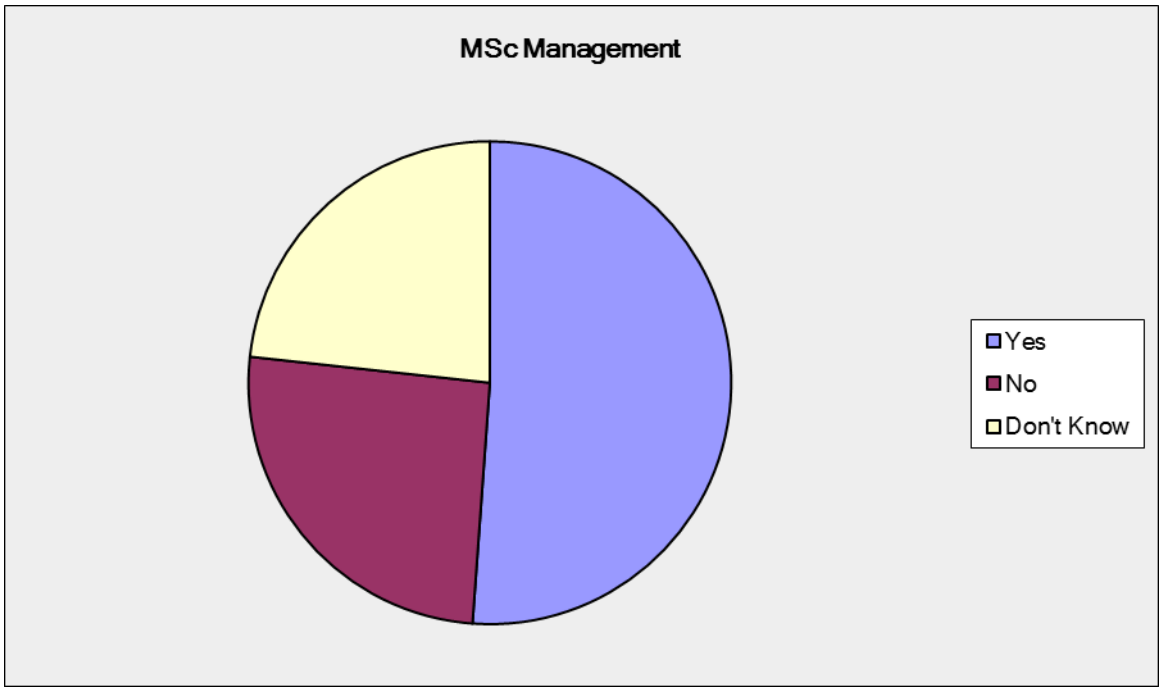


Fig 16.0 – Does your organisation use ITIL to manage its IT environment

Whilst ITIL is recognised by respondents as best practice method for IT service management, only 51.2% of respondents acknowledge its use in their current organisation.

Survey and Interview Results

Q. 9 - If your answer to the previous question is No, would you consider ITIL as best practice method for the management of an organisations to manage its Technology environment?		
Answer Options	**Response Percent**	**Response Count**
Yes	41.9%	18
No	11.6%	5
Don't Know	46.5%	20
answered question		**43**
skipped question		**2**

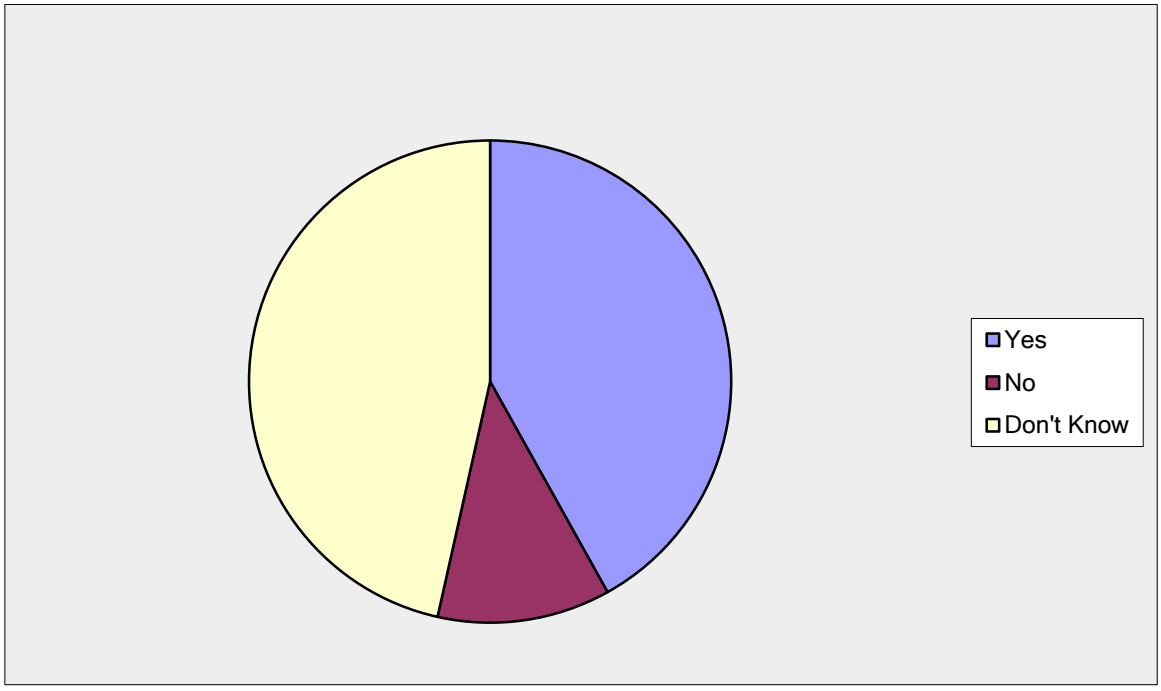
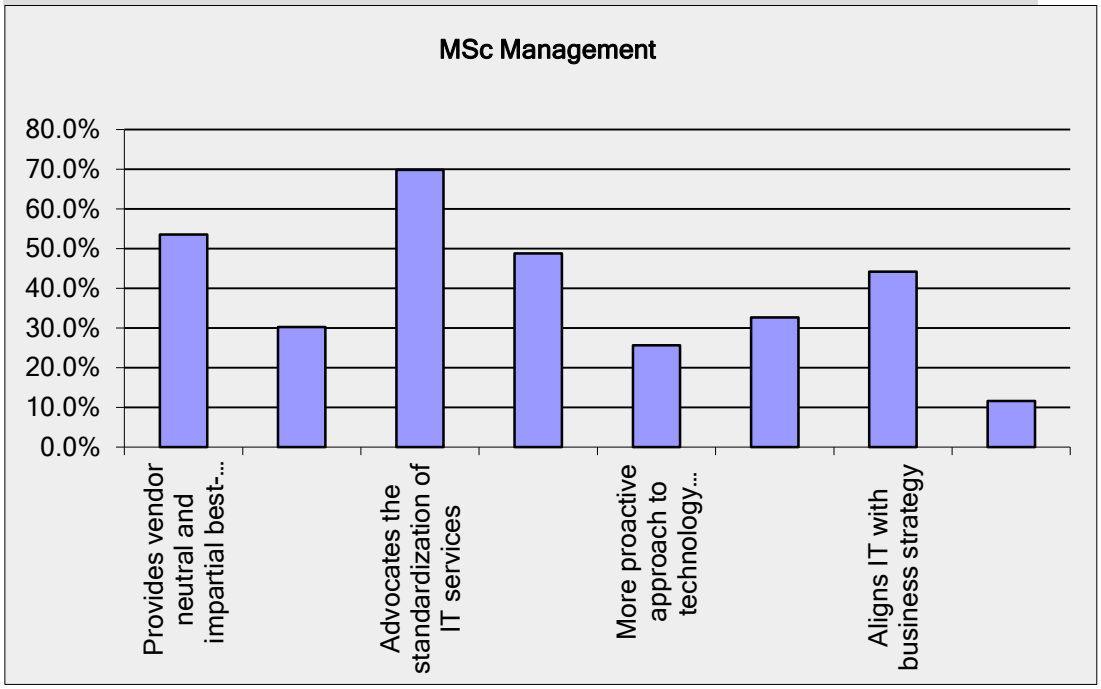


Fig 17.0 – Do you consider ITIL as best practice for IT service management?

Respondents answer to this question is unclear, though the researcher considers that confusion existed in terms of the question phrasing – there has been feedback to the researcher around this question, which indicates some confusion.

Survey and Interview Results

Q. 10 - What do you consider the main benefit(s) of using ITIL? Select one or several answers where applicable.		
Answer Options	**Response Percent**	**Response Count**
Provides vendor neutral and impartial best-practice advice	53.5%	23
Non prescriptive and flexible	30.2%	13
Advocates the standardization of IT services	69.8%	30
It is a consistent and well thought out approach to service management	48.8%	21
More proactive approach to technology ownership	25.6%	11
Increased customer satisfaction and productivity	32.6%	14
Aligns IT with business strategy	44.2%	19
Other	11.6%	5
answered question		**43**
skipped question		**2**



Survey and Interview Results

From previous, page - Fig 18.0 – The benefits of using ITIL

Q. 11 - What do you consider the main disadvantages of using ITIL? Select one or several answers where applicable.		
Answer Options	**Response Percent**	**Response Count**
Upfront costs	30.2%	13
In-life management and ownership costs	32.6%	14
Hidden costs	25.6%	11
Non prescriptive	9.3%	4
Difficulty in measuring return on investment	53.5%	23
Other	23.3%	10
answered question		**43**
skipped question		**2**

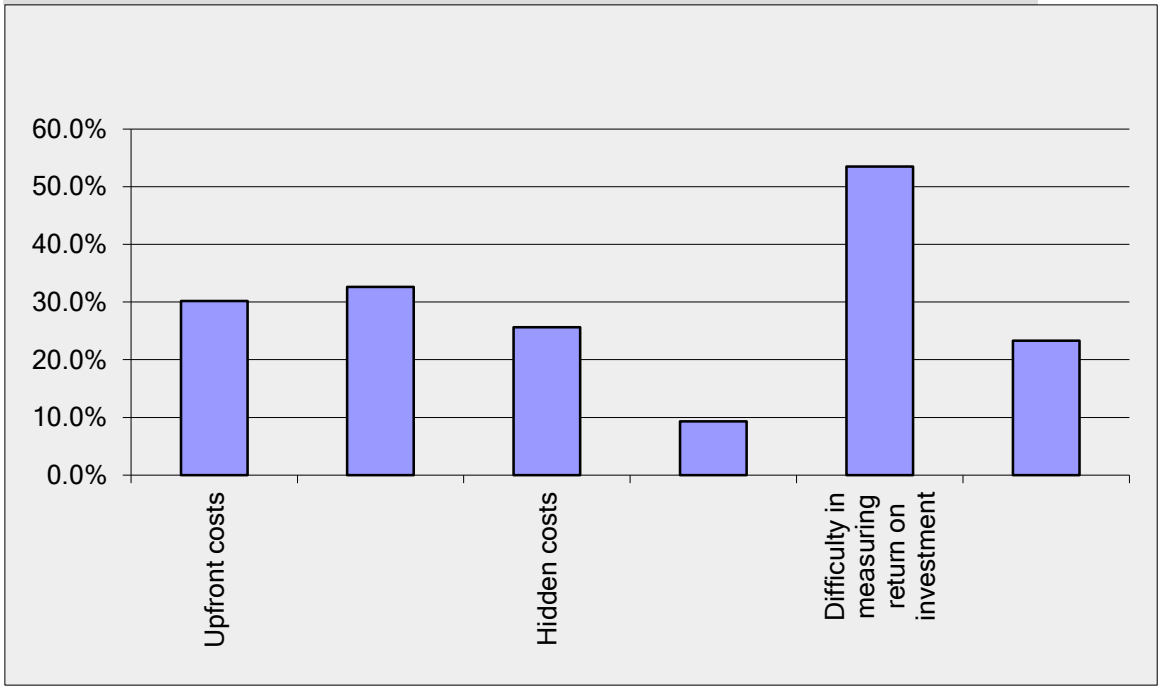


Fig 19.0 – Disadvantages of using ITIL

Responses to the previous two questions point to a clear understanding of the advantages and disadvantages of ITIL, which is further supported by the secondary research.

Survey and Interview Results

Q. 12 - Would you recommend the use of ITIL as best practice for IT service management to the Executive team of your organisation?		
Answer Options	**Response Percent**	**Response Count**
Yes	60.5%	26
No	18.6%	8
Don't Know	20.9%	9
answered question		**43**
skipped question		**2**

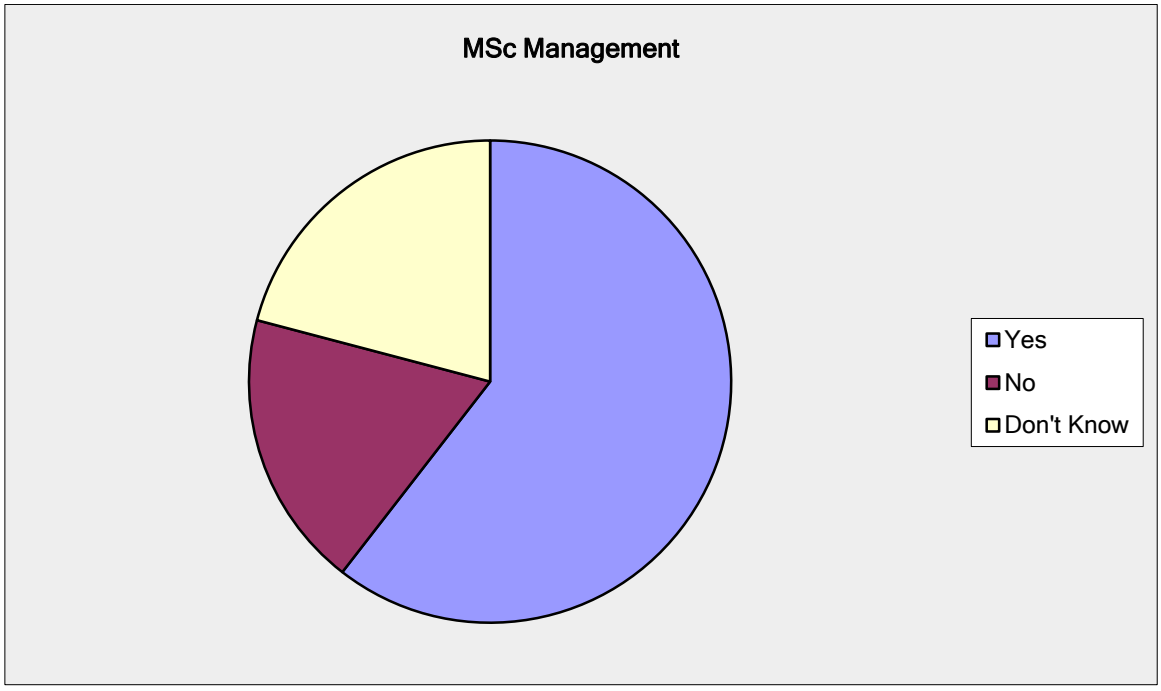


Fig 20.0 – Would you recommend ITIL as best practice IT service management

ITIL as best practice for IT service management would be recommended by 60% of respondents.

Survey and Interview Results

13. - Are you familiar with the term Cloud Computing technology?		
Answer Options	**Response Percent**	**Response Count**
Yes	95.3%	41
No	4.7%	2
answered question		**43**
skipped question		**2**

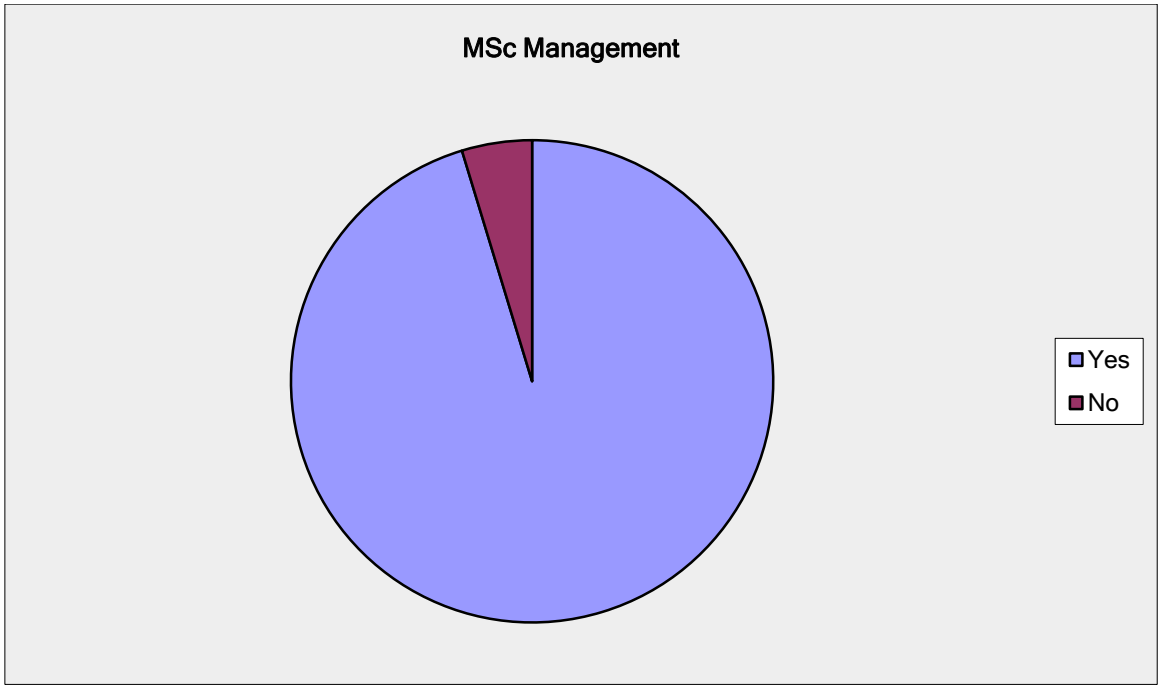


Fig 21.0 – Are you familiar with the term Cloud Computing?

Over 95% of those surveyed indicated their familiarity with the terms cloud computing technology. This is hardly surprising to the researcher, given the media attention in Ireland that surrounds this technology.

Survey and Interview Results

14. - Do you know what the term Cloud Computing technology means?		
Answer Options	**Response Percent**	**Response Count**
Yes	95.3%	41
No	4.7%	2
answered question		**43**
skipped question		**2**

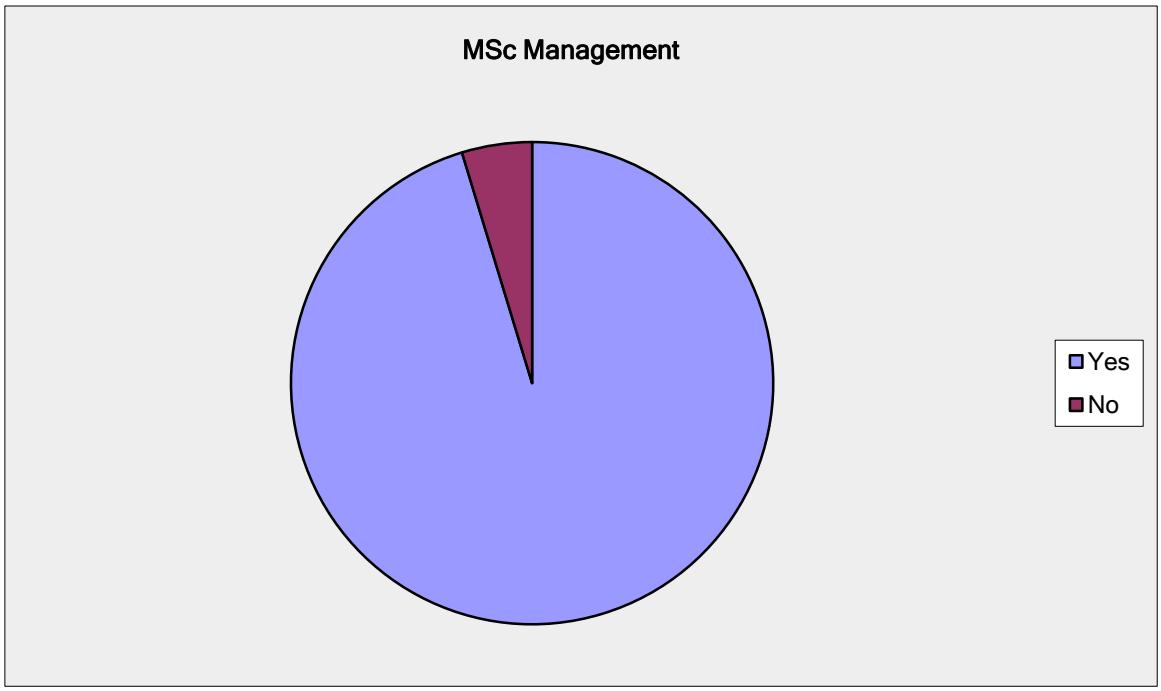


Fig 22.0 – Do you know what the term Cloud Computing means?

Similar to the previous question, over 95% of respondents indicated that they understand the meaning of the term cloud computing. This is not a surprise to the researcher, given the profile of the target respondents.

Survey and Interview Results

15. - Does your firm use Cloud Computing technology in any form?		
Answer Options	**Response Percent**	**Response Count**
Yes	46.5%	20
No	34.9%	15
Don't Know	18.6%	8
answered question		**43**
skipped question		**2**

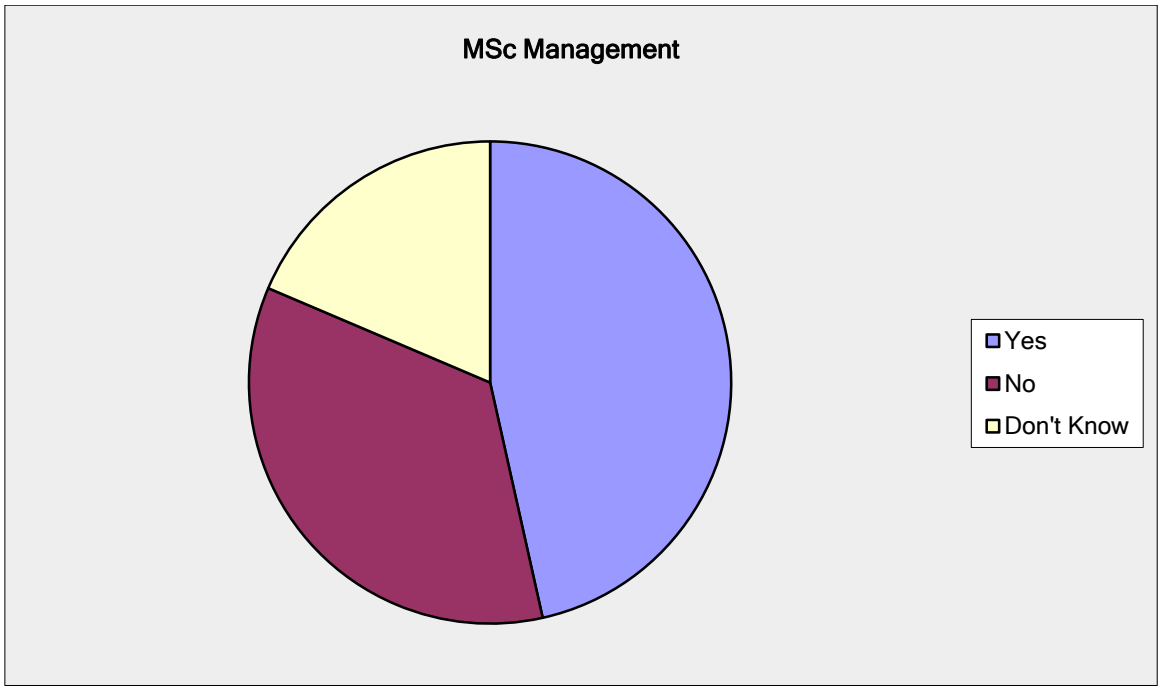


Fig 23.0 – Does your firm use Cloud Computing?

There is a spread in the results of this question, with 46.5% responding positively to their firm use of cloud computing technology. This is not surprising given that utilization of this technology is still in its infancy stage.

Survey and Interview Results

Q. 16 - What do you consider the main benefit(s) of using Cloud Computing technology to business? Select one or several answers where applicable.		
Answer Options	**Response Percent**	**Response Count**
Faster entry into new markets	44.2%	19
Cost control/savings	76.7%	33
Improvements in mobility	55.8%	24
Simplicity	41.9%	18
Scalability	72.1%	31
More internal resources	11.6%	5
High availability	58.1%	25
Data safety	30.2%	13
Other	7.0%	3
answered question		**43**
skipped question		**2**

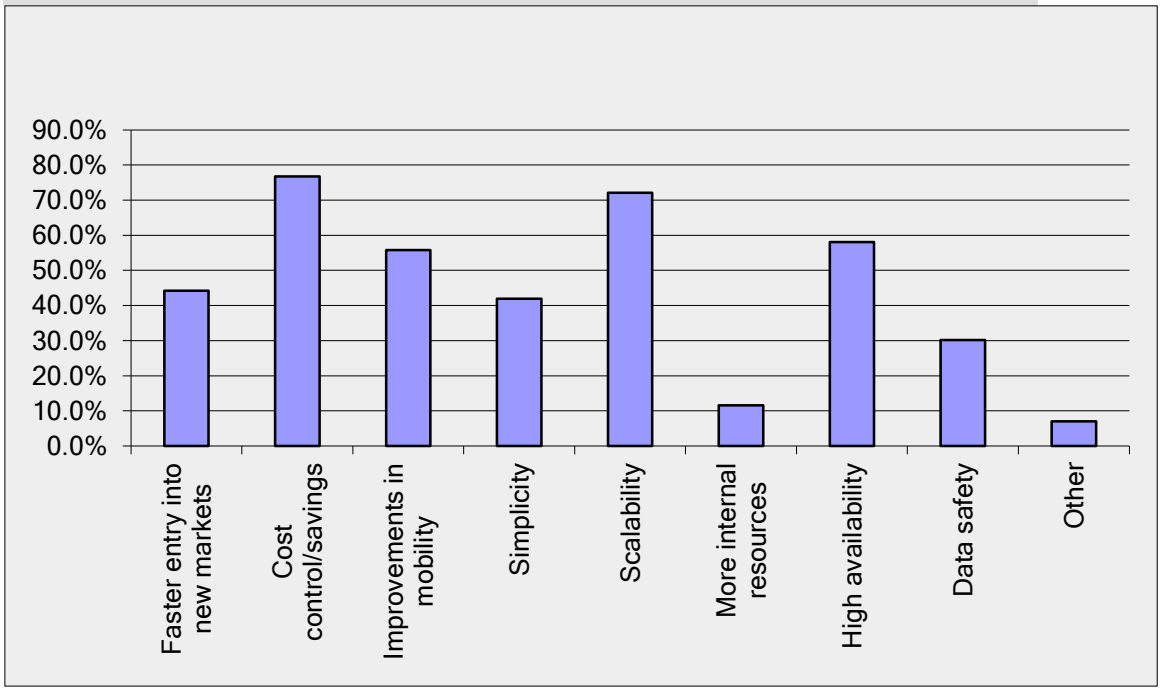


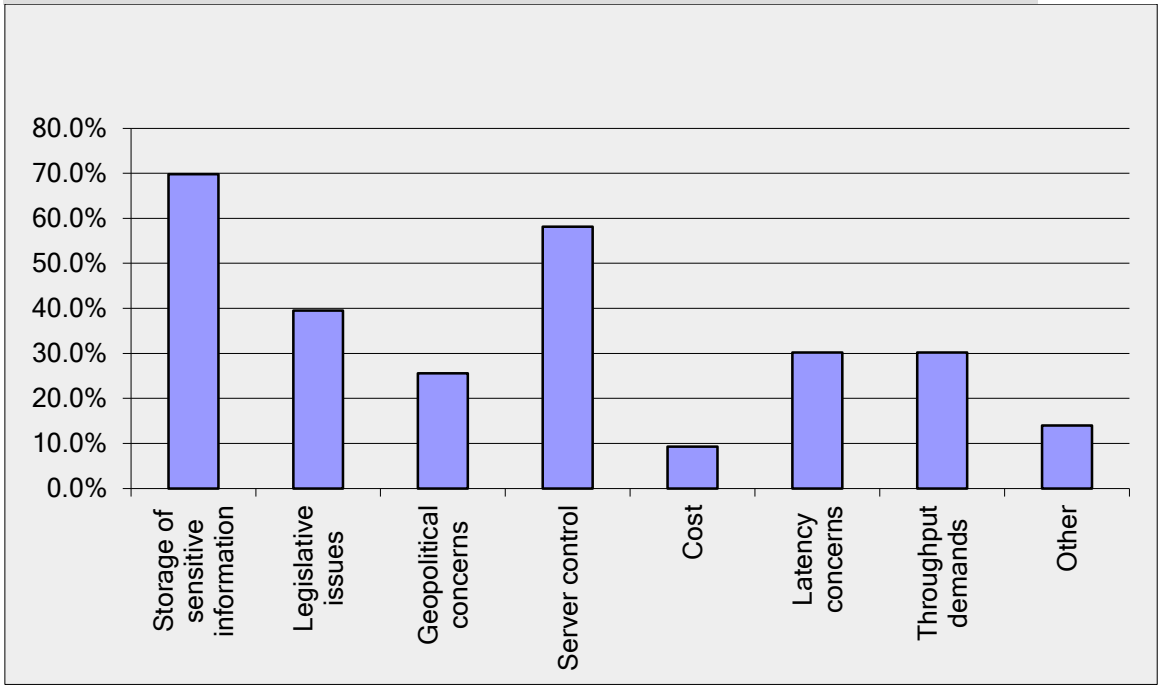
Fig 24.0 – The benefits of Cloud Computing

Survey and Interview Results

The spread of answers to this question point to a clear understanding of those surveyed of the benefits of cloud computing technology, with cost and scalability topping the poll. These answers are supported by the secondary research in this paper.

Q. 17 – What do you consider the main disadvantage(s) of using Cloud Computing technology to business? Select one or several answers where applicable.

Answer Options	Response Percent	Response Count
Storage of sensitive information	69.8%	30
Legislative issues	39.5%	17
Geopolitical concerns	25.6%	11
Server control	58.1%	25
Cost	9.3%	4
Latency concerns	30.2%	13
Throughput demands	30.2%	13
Other	14.0%	6
answered question		**43**
skipped question		**2**



Survey and Interview Results

Continued from the previous page, Fig 25.0 – The drawbacks of Cloud Computing

Similar to the previous questions, the span of answers given, indicate a clear understanding that exists in industry of the 'perceived' disadvantages of cloud computing technology. These answers are supported by the secondary research in this paper.

18. - Would you recommend the use of Cloud Computing technology to the Executive Team of your organisation?		
Answer Options	**Response Percent**	**Response Count**
Yes	76.7%	33
No	9.3%	4
Don't Know	14.0%	6
answered question		**43**
skipped question		**2**

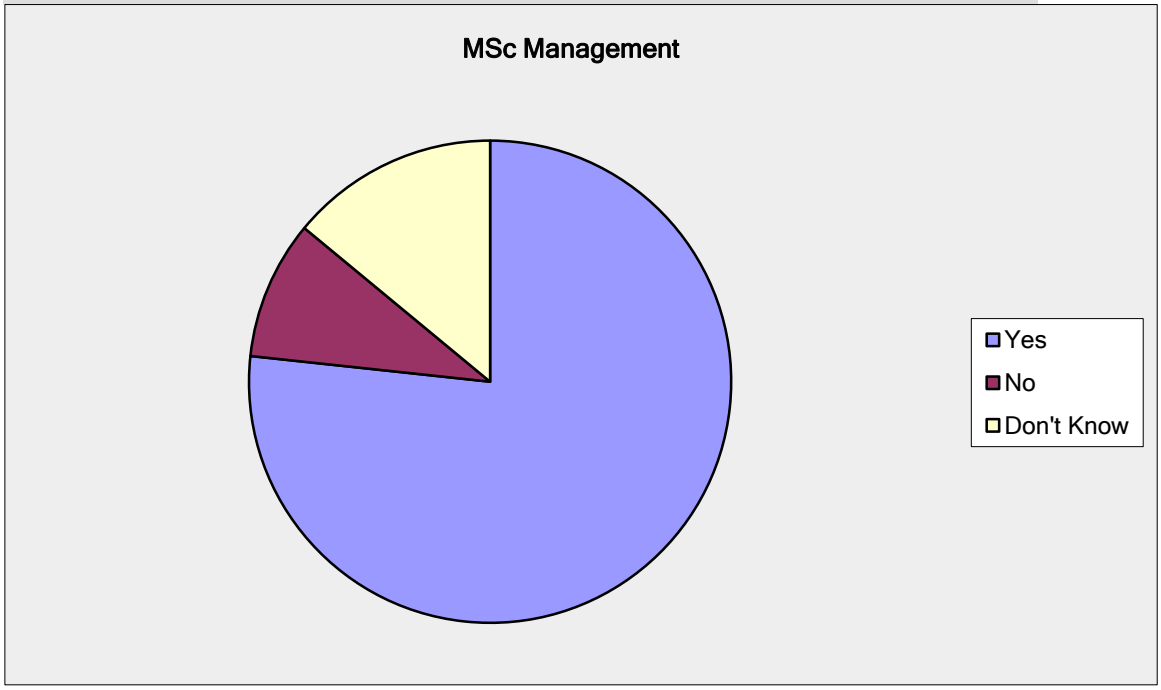


Fig 26.0 – Would you recommend your Cloud Computing?

Survey and Interview Results

Continued from the previous page - Given the advantages and disadvantages of cloud computing, those surveyed (76.7%) indicated that they would be happy to recommend the use of cloud computing technology to the executive team of their organisation.

19. - Do you consider Managed Service Providers for people, ITIL for process and Cloud Computing for technology to work as standalone solutions to business problems?		
Answer Options	**Response Percent**	**Response Count**
Yes	30.0%	12
No	52.5%	21
Don't Know	17.5%	7
answered question		**40**
skipped question		**5**

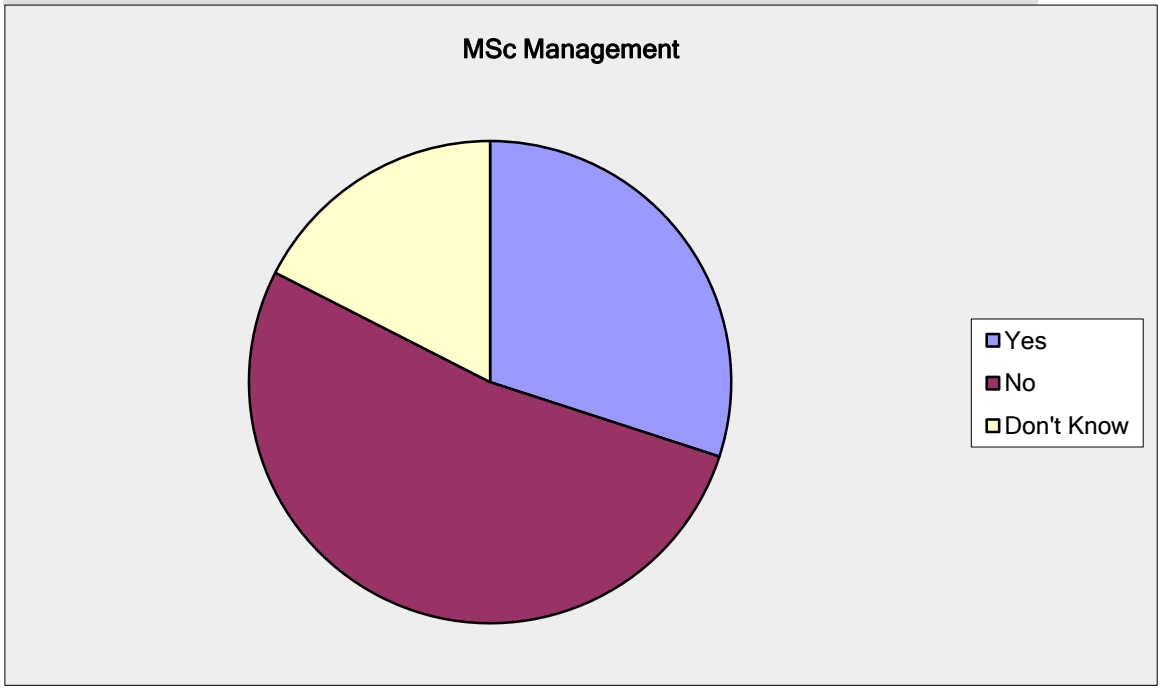


Fig 27.0 – Combined Managed Service Providers, ITIL and Cloud Computing

Many of those surveyed (52.5%) indicated that they do not consider managed services for people, ITIL for process and cloud computing technology to work as standalone solutions to business problems.

Survey and Interview Results

20. - Do you consider that synergies exist through the careful integration of an organisation's Managed Service Providers with ITIL and Cloud Computing technology?		
Answer Options	**Response Percent**	**Response Count**
Yes	80.0%	32
No	7.5%	3
Don't Know	12.5%	5
answered question		**40**
skipped question		**5**

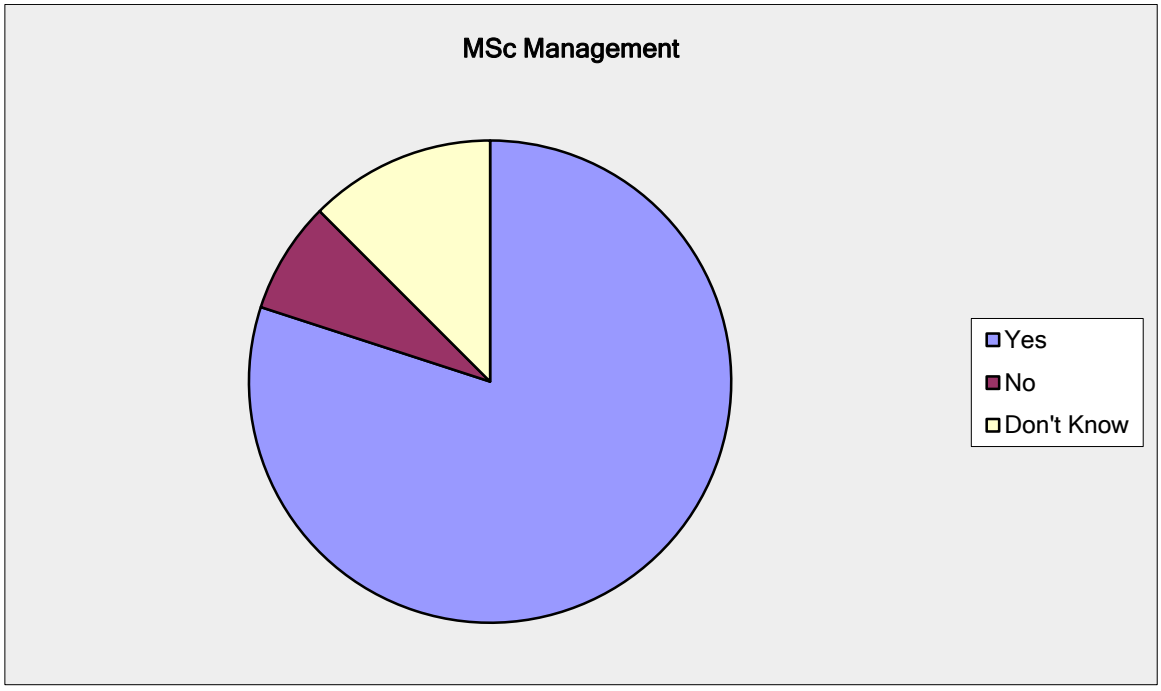


Fig 28.0 – Synergies Managed Service Providers, ITIL and Cloud Computing

80% of respondents consider that there exist synergies through the integration of an organisations managed services providers with ITIL and cloud computing technology. This view is further supported by secondary research.

Survey and Interview Results

21. - What do you consider the benefit(s) of integrating your organisations Managed Service Providers with ITIL and Cloud Computing technology? Select one or several answers where applicable.		
Answer Options	**Response Percent**	**Response Count**
Reduced operating costs	55.0%	22
Quicker time to market for new products	37.5%	15
Increased customer satisfaction and productivity	40.0%	16
More proactive approach to technology ownership	42.5%	17
Management overhead reduced in managing people, process and technology	52.5%	21
Access to leading edge technology and expert human resources	32.5%	13
Greater mobility and control	45.0%	18
Other	10.0%	4
answered question		**40**
skipped question		**5**

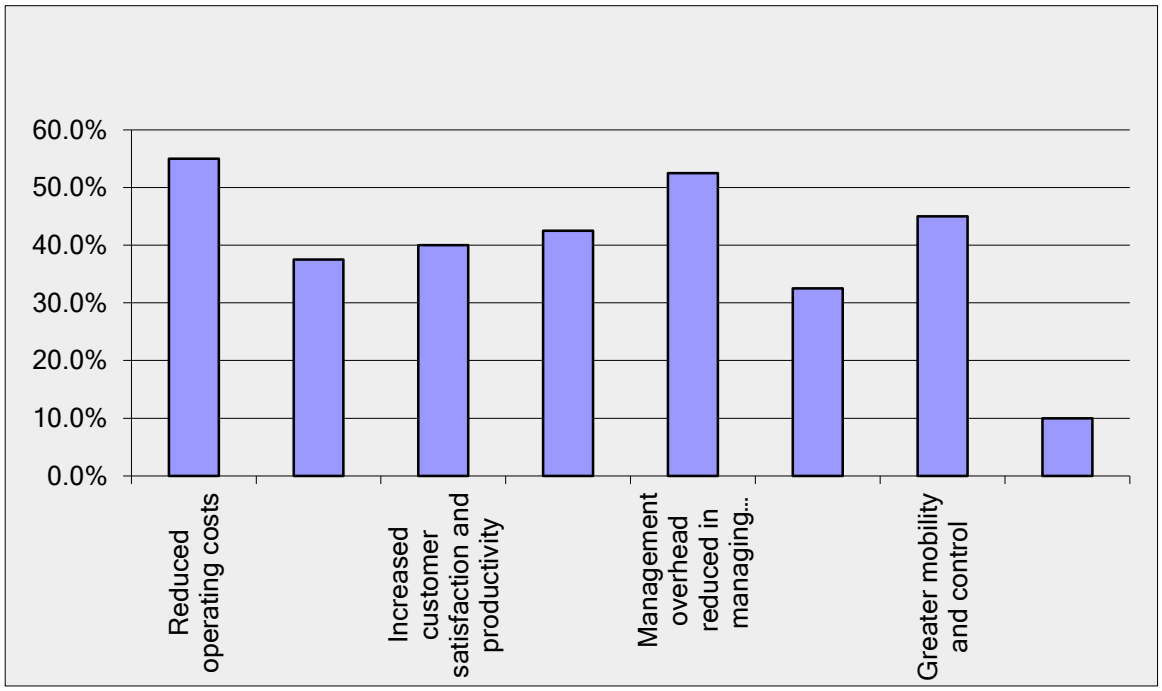


Fig 29.0 – The benefits of integrating Managed Service Providers, ITIL and Cloud Computing

These results indicate that respondents can see that there many benefits though integrating their organisations managed service providers with ITIL and cloud computing technology.

Survey and Interview Results

22. - Would you consider that Cloud Computing Technology, ITIL, and the use of Managed Service Providers integrated together by IT Management can add-value to a business if packaged as an IT Service Delivery Solution?		
Answer Options	**Response Percent**	**Response Count**
Yes	82.5%	33
No	17.5%	7
answered question		**40**
skipped question		**5**

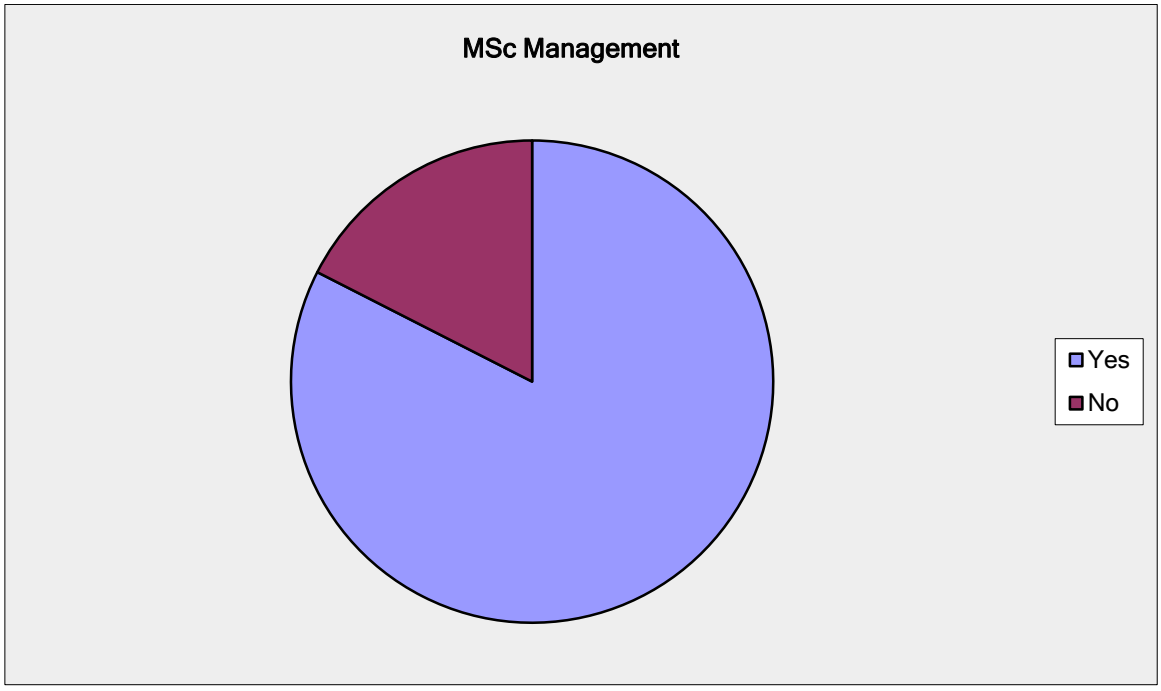


Fig 30.0 – End-to-End IT Service Delivery Proposition

Respondents consider that integrating cloud computing technology, ITIL and the use of managed service providers to add-value to a business if packaged as an IT Service Delivery solution.

Survey and Interview Results

23. - Give reason(s) for your answer to the previous question	
Answer Options	**Response Count**
	40
answered question	**40**
skipped question	**5**

1. SME's could hugely benefit from the integrating all of these elements together.
2. Immediately gives you access to wider Market and although upfront costs can be expensive with the TCO (total cost of ownership) potentially reduced.
3. NA
4. ITIL can offer a good structure to the business but may cause problems in terms of adapting it to certain business types. Cloud Computing technology can make a lot of sense if you are a small business that is looking to expand. In this case the business only pays for the number of requests made and if the requests are increased the business can be assured it can continue to produce the same response time for its customers.
5. More Transparency from a business point of view to see what they are buying.
6. Cost efficiencies
7. Yes, it can add value but given the current environment, we are having issues trying to get management to commit to further outsourcing. Cloud is a no-no at the moment as there is too much bureaucracy in upper management at the moment, they are afraid to take two risks in close succession. Q2 is possible but it needs to be sold to the business, i.e. money/resource saving package with minimal risks, this is the only way management would buy in!
8.

9. Shared resources = shared and lowered costs
10. Would need to be aligned with Business needs
11. Makes economic sense
12. Most Businesses don't see the benefit in spending any money on IT, it is an necessary evil to keep the company going, and as a technologist we are always last to get any funding, let’s see what’s left over from finances' Christmas kids parties budget before we set the budget for the it department in the coming year... In addition, an upfront cost, CAPEX cost, rather than on-going OPEX, could probably save the company and the IT people in the long run
13. Not sure they do
14. Certainly, by understanding what services are most valuable to retain vs. those that can be outsourced/centralised/offshored. The retained disciplines are typically the service management disciplines, which allow service quality be controlled locally. By tackling the technology, processes, org, on their own limits the value of what can be achieved. Developing them in harmony, based on a well-defined business-driven service model, however, creates a very powerful capability to offer optimal service quality and value to customers.
15. N/A
16. IF IT WILL LEAD TO AN IMPROVE PRODUCTIVITY LEVEL
17. Most efficient use of resources and budget for what should be leading technology and processes.
18. N/A
19. Yes, reduces cost and saves time
20. Managed Service Providers can reduce cost - however, must be carefully managed within an appropriate framework (e.g. ITIL) to ensure that service quality and customer experience is not negatively impacted
21. Gives even a small organisation access to large capability.

22. Cost savings alone can in these recessionary times
23. The combination of the 3 provides a customer with flexibility /scalability / ability to access services/ applications that would normally be cost prohibitive delivered through a partner who with embedded ITIL practices provides the customer with a high level of assurance that the services will be delivered consistently and that service quality can be easily and continually measured and improved.
24. I am not in a position to benefit from the consideration requested.
25. Yes, the provision of technologies hosted at a central (cloud) location for individual access is highly beneficial to an organisation (see adv's I selected above). If a product is marketed and packaged as an IT service solution correctly, utilising the technologies outlined above, I feel the advantages for outweigh the disadvantages.
26. The risks are great, ITIL has proven itself as a process method, and Cloud is dependent on other infrastructures not in the company's control and MSPs are in conflict by other customers. Cloud and ITIL are part of the delivery technologies therefore success depends greatly on MSPs.
27. Absolutely, yes, but these solutions must not be considered a 'panacea' - they will not solve all your problems. The big advantage in the current climate is cost reduction but there are still significant risks; Cloud Computing is still relatively new and the use of MSPs can frustrate as the initial costs savings are soon forgotten
28. It provides the complete technical solution under one price tag and ensures that heads of companies are free to focus on other business strategies outside the technology plan
29. Comprehensive process, tools and organisation package for managing IT services in any organisation
30. It enables you to deliver the best product/service available for the least amount of cost/resource/time frame if used correctly. A happy client means happy business, more profit, business etc....

31. Allows IT organizations create long-term strategies and work more collaboratively when determining technology solutions to meet business needs.
32. Because ITIL is an out-dated and inflexible approach to business processes no matter what technology stream it is packaged with. Cloud computing is driven in part by flexibility and to better match this with a business process framework, the AGILE method is far more appropriate.
33. This packaged solution is a comprehensive, integrated approach that represents lower risk than a "piece-meal" solution.
34. I believe that a combination of IT solutions such as those mentioned above can be beneficial as long as u have the right employees to put it together.
35. All are key enablers in the future of information systems, cost reduction and bringing synergies and efficiencies into an organisation as well as much tighter controls around change and configuration management
36. Speed to Market in a scalable solution
37. IT management and processes are too diverse to consider such a cohesive solution.
38. Total cost of ownership reduction to business - doing more with less
39. *Note: Three spoilt answers with non-legible data*

Survey and Interview Results

4.2 Case Study

Case Study – Outsource of Second Line Support Services and the Undertaking of a Feasibility Study on Cloud Computing Technology

The Company

Vodafone is Ireland's leading total communications provider with over 2.35 million mobile and fixed subscribers. It employs approximately 1300 people in Dublin and Dundalk; almost half of whom work in customer care, providing customer support 24 hours a day, seven days a week (www.vodafone.ie – date accessed 30/07/11).

Vodafone first entered the Irish market in May 2001, after acquiring Eircell in the largest deal ever in Irish corporate history, with origins dating back to 1984, when Ireland's first mobile phone service was launched as part of the former state company Telecom Eireann. Operating under the separate brand, Eircell,

Introduction

A project initiated in October 2010 to outsource second line application support services, which consisted of customer care call centre applications such as IVR, middleware, and web applications to a Vodafone support team in India, to action a group-wide initiative to off shore IT support services.

Separate teams within the Vodafone Technology teams, and external partners developed all applications under the remit of the project.

The second line support team had grown organically, and consisted exclusively of contractors, with a rate of pay up to €400 per day, costing the company over €600k per year, without consideration of overtime, and out of hours work.

Sponsorship of the project came from the Senior Executive Team. Members of the IT Operations Management team resourced the project, with confidentiality maintained by the signing of non-disclosure agreements.

Survey and Interview Results

Questions were devised and interviews held with the individuals listed. Where not possible to meet an individual, phone interviews, instant messaging, and email conversations sufficed.

The position held by each interviewee within the organisation

- Head of IT Operations – Project Sponsor and Stakeholder – Shane Gaffney
- Second Line Support Manager - Project Manager and Stakeholder – Liz Conroy
- First Line Support Manager – Stakeholder – Luke Bradley
- First Line Support Manager – Stakeholder – Joey Phelan
- Programme Manager – Stakeholder – William Waldron

Case Study Questions

People

1. What in your view were the main drivers to outsource?
2. Did a project manager within Vodafone manage the project?
3. What were the key deliverables of the project?
4. What qualified the project manager as a suitable lead for the project?
5. Did the vendor selected provide suitably qualified staff to work on the project?
6. What was included as part of the project, people, technology, process or other?
7. Did TUPE (transfer of undertaking protection of employment) take place?

Process

1. What qualified a service provider as a suitable partner for the project?
2. Did the service provider selected have any familiarisation/accreditation with ITIL?
3. What controls where introduced to govern the actual project, and in-life management?

4. What project management methodology was used to manage the project?

Technology

1. Was cloud-computing technology considered as a viable option as outsource the technology element of the project?

    - If yes or no – can you give reasons?

2. Based on the answer to the previous question – is cloud-computing technology something that could be used to reduce technology costs in this case?

Other

1. In hindsight, would you consider the use of ITIL as best-practice for Service Management, working in unison with Managed Service Providers for outsourcing, and Cloud-Computing Technology, to be a natural fit if used together in such a project to add-value?
2. If given the opportunity to contribute to such a programme of work again, what would you do differently?

Survey and Interview Results

4.3 Interview Answers

Interview conducted on 21st July 2011 - Second Line Support Manager – Liz Conroy

Questions and Answers

People

1. **What in your view were the main drivers to outsource?**

- Reducing the cost of support to the business, as well as the development of skills in-house (albeit offshore) in India, as we had an over-reliance on highly paid contactors, and who by the transient nature of their contract roles were difficult to manage.

2. **Did a project manager within Vodafone manage the project?**

- No project manager allocated to manage this project. This role allocated to me (second line support manager by virtue of my proximity to managing the team.

3. **What were the key deliverables of the project?**

- To offshore the second line support of Vodafone customer care, retail, and online applications to our group IT hub offering.
- Ensure the migration and adoption of key operational and business process to the team in India.
- Facilitate and organisation classroom and on the job training sessions between the incumbent staff and the team in India.

4. **What qualified the project manager as a suitable lead for the project?**

- Seriously – as no PM allocated to run the project, as Team Leader of the team, the task managing the project fell to me as I understood best the responsibilities and working of the team.

Survey and Interview Results

5. **Did the vendor selected provide suitably qualified staff to work on the project?**

- Yes, each subject matter expert (SME) had multiple years of experience working with the respective technologies – however how these technologies are adapted for use within VFIE Service Offering is more complex and a learning curve was evident after go live.

6. **What was included as part of the project, people, technology, process or other?**

- People
- Workflow Tools
- Physical Connectivity
- Logical Connectivity

7. **Did TUPE (transfer of undertaking protection of employment) take place?**

- TUPE did not form part of the agreement.

Process

1. **What qualified a service provider as a suitable partner for the project?**

- The decision to offshore made at the group level – Vodafone Ireland was not privy to the strategic decision making process.

2. **Did the service provider selected have any familiarization or accreditation with ITIL?**

- Yes

3. **What controls where introduced to govern the actual project, and in-life management?**

- The project did not follow our standard release cycle and little controls where implemented, timelines to implement were very tight with no time to implement such controls.

- Governance Structured delivered in the form of key performance indicators, and weekly and monthly service review meetings.
- Roles and responsibilities of the off shore team in India were clearly defined during the transition stage of the project.
- Governance structures and roles, responsibilities were signed off before go live.

4. **What project management methodology was used to manage the project?**

- Standard PMI

Technology

1. **Was cloud-computing technology considered as a viable option as outsource the technology element of the project? If yes or no – can you give reasons?**
   - NO – this project focused purely on people, hardware was not included in scope for this project.

2. **Based on the answer to the previous question – is cloud-computing technology something that could have been used to reduce technology costs in this case?**
   - Technology was not in scope of this project, though it is something we could consider in future.

Other

1. **In hindsight, would you consider the use of ITIL as best-practice for Service Management, working in unison with Managed Service Providers for outsourcing, and Cloud-Computing Technology, to be a natural fit if used together in such a project to add-value?**
   - Yes

Survey and Interview Results

2. If given the opportunity to contribute to such a programme of work again, what would you do differently?

- I would have insisted that a suitably qualified and experience project manager be ring-fenced to manage this project.
- The incumbent staff should have been engaged with the project much earlier, and have been incentivised stay with the company throughout the to support the project, rather being told that they were losing their job, and before they leave the company, they have train up the people who were in essence taking their job.
- There was no budget allocated to run this project, which meant extra pressure on me when trying to get certain activities such remote connectivity between Dublin and India. I would insist on a proper budget be assigned to the project, as to ensure timely delivery of expected results.

Survey and Interview Results

Interview conducted on 23rd July 2011 – SMC Team Leader – Stakeholder – Joey Phelan

People

1. What in your view were the main drivers to outsource?

- To reduce costs and return intellectual property back to the Vodafone group. Despite the team outsourced to India, they are Vodafone employees in India, rather than contract resources. The contract resources employed cost the company significantly more than those within Vodafone India.

2. Did a project manager within Vodafone manage the project?

- The project manager assigned to manage the project was Liz Conroy, the second line support team manager, who is very capable. She was also close enough to the team to understand both the technology, and customer requirements to build a project plan around key deliverables.

3. What were the key deliverables of the project?

- To offshore the second line support of Vodafone customer care, retail, and online applications to our group IT hub offering.
- Ensure the migration and adoption of key operational and business process to the team in India.
- Facilitate and organisation classroom and on the job training sessions between the incumbent staff and the team in India.
- To set-up governance structures that would allow other teams and services to dovetail with the offering of Vodafone India in the future.

4. What qualified the project manager as a suitable lead for the project?

- The project manager was the person who knew most about the team, personalities, technology, and the processes followed. The team manager Liz Conroy appeared to be the most appropriate person.

5. Did the vendor selected provide suitably qualified staff to work on the project?

- In my opinion, the team in India were not suitably qualified staff to work on the project. On paper, everything looked fine, but post-implementation I realised that there was not a good cultural fit, as well as the skill level.

6. What was included as part of the project, people, technology, process or other?

- People
- Workflow Tools
- Physical Connectivity
- Logical Connectivity

7. Did TUPE (transfer of undertaking protection of employment) take place?

- No

Process

1. What qualified a service provider as a suitable partner for the project?

- I do not know the answer to this question.

2. Did the service provider selected have any familiarisation/accreditation with ITIL?

- Apparently, Yes, but hindsight has provided a different picture.

Survey and Interview Results

3. What controls where introduced to govern the actual project, and in-life management?

- From my perspective as a stakeholder, I did not see any formal project plan, or have visibility of what actions undertaken by whom, with the exception of contract staff in the second line team. All did not appear to be well , in terms of proactive maintenance schedules, or indeed having to constantly follow-up with the India team on the most basic of items.

4. What project management methodology was used to manage the project?

- I did not witness any, though this is possibly because I was not involved in a more granular level of detail.

Technology

1. Was cloud-computing technology considered as a viable option as outsource the technology element of the project?

- Not in scope as far as I am aware of, with technology in terms of hardware being managed by a central group within the company that spans multiple countries.

2. If yes or no – can you give reasons?

- I do not know the answer to this question.

3. Based on the answer to the previous question – is cloud-computing technology something that could be used to reduce technology costs in this case?

- Absolutely, though this would require a strong project manager, who knew the intricacies of the wider IT organisation. I personally think that it was an

opportunity missed. Although this is something, I would expect this to be considered in the future.

Other

- **In hindsight, would you consider the use of ITIL as best-practice for Service Management, working in unison with Managed Service Providers for outsourcing, and Cloud-Computing Technology, to be a natural fit if used together in such a project to add-value?**

- Yes this is something that I would consider, but this means a more holistic approach is taken to the entire IT organisation, rather than a piece-meal project approach, and would need to done at a strategic level in order to make it down the operational layer of management. Based on my experience, if these three elements could work together, then there can be significant savings made to the business. Although, I think this might be too much to consider, when given the short sightedness that I have witnessed within the company.

- **If given the opportunity to contribute to such a programme of work again, what would you do differently?**

- I would have assigned a project manager to work with the second line support manager, to provide structure, and method to the discovery phase of a project, as well as throughout the project lifecycle. There seemed to be too much for one person to do, given their relative inexperience of project management, as well as managing outsourcing projects.
- Sought references from other Vodafone operating companies on the service provided by the team in India.
- Have a local account manager on-site in Ireland for two months post-transition to India, to provide an interface to the India team.
- Sought proof of actual accreditation of staff in India, as it has become apparent that they are not ITIL qualified, or indeed very proficient using Unix to troubleshoot problems.

Survey and Interview Results

Interview conducted on 23rd July 2011 – Programme Manager - IT Operations

Stakeholder – William Waldron

People

1. **What in your view were the main drivers to outsource?**

- Operational cost reduction

2. **Did a project manager within Vodafone manage the project?**

- No, the Team Leader managed the migration with the support of a Group Project Manager and a local Technical Lead.

3. **What were the key deliverables of the project?**

- Offshore second line support capability.

4. **What qualified the project manager as a suitable lead for the project?**

- The 'Project Manager' was the Team Leader.

5. **Did the vendor selected provide suitably qualified staff to work on the project?**

- There was no vendor involved but the Group PM provided a Manager for the off shore team and a skilled team based on a profile agreed with the local Team Lead.

6. **What was included as part of the project, people, technology, process or other?**

- Was not 100% sure of the entire scope of the project, though very little information was shared by the 'Project Manager'.

7. **Did TUPE (transfer of undertaking protection of employment) take place?**

- Doubt it.

Survey and Interview Results

Process

1. **What qualified a service provider as a suitable partner for the project?**

- It was Vodafone Group strategic solution to set up a hub for operational support services in India using VF India Staff, very little discussion took place with the team in Ireland.

2. **Did the service provider selected have any familiarisation/accreditation with ITIL?**

- The Vodafone Group Project Manager would have.

3. **What controls where introduced to govern the actual project, and in-life management?**

- Information not shared due to its sensitive nature.

4. **What project management methodology was used to manage the project?**

- I do not believe any standard project management methodology was used to run the project.

Technology

1. **Was cloud-computing technology considered as a viable option as outsource the technology element of the project?**

- A discussion about cloud computing was not discussed with the IT Operations Management team.

2. **If yes or no – can you give reasons?**

- Information not shared outside of the immediate project team, due to its sensitive nature.

3. **Based on the answer to the previous question – is cloud-computing technology something that could be used to reduce technology costs in this case?**

Survey and Interview Results

- Yes. Vodafone Group are already moving towards this with a Server and Storage Virtualisation initiatives and move towards the Vodafone CLOUD.

Other

1. **In hindsight, would you consider the use of ITIL as best-practice for Service Management, working in unison with Managed Service Providers for outsourcing, and Cloud-Computing Technology, to be a natural fit if used together in such a project to add-value?**

- Most definitively yes!

2. **If given the opportunity to contribute to such a programme of work again, what would you do differently?**

- The use of methodologies within the Programme, the sign off and handover controls, as well as tighter governance.

Survey and Interview Results

Interview conducted by email and instant messenger on 28th July 2011 – Service Management Team Leader - IT Operations Stakeholder – Luke Bradley (Currently based in Pune, India)

People

1. **What in your view were the main drivers to outsource?**

- A combination of cost and an opportunity to improve the quality of service through the creation of 8 new service control roles.

2. **Did a project manager within Vodafone manage the project?**

- The VISPL team (a Vodafone company in India) officially manage the project (John and Ashish) but they are quite light touch in all honesty.

3. **What were the key deliverables of the project?**

- Migration of all operational and support activities performed by the SMC

4. **What qualified the project manager as a suitable lead for the project?**

- Managed similar migrations in past.

5. **Did the vendor selected provide suitably qualified staff to work on the project?**

- Yet to be determined

6. **What was included as part of the project, people, technology, process?**

- Going to be people

7. **Did TUPE (transfer of undertaking protection of employment) take place?**

- Don't know.

Survey and Interview Results

Process

1. **What qualified a service provider as a suitable partner for the project?**

- Group mandated India as the IT hub of the organisation.

2. **Did the service provider selected have any familiarisation/accreditation with ITIL?**

- The project manager did but not sure about staff yet.

3. **What controls where introduced to govern the project, and in-life management?**

- Not sure if there was any project controls, given the lack of communication.

4. **What project management methodology was used to manage the project?**

- No idea

Technology

1. **Did cloud-computing technology get consideration a viable option to outsource the technology outsourced?**

- I do not believe that it was considered as in scope of the project, saying that, centralising operations and data centres into major hubs is heading in the right direction.

2. **If yes or no – can you give reasons?**

- N/A

3. **Based on the answer to the previous question – is cloud-computing technology something that could be used to reduce technology costs in this case?**

Survey and Interview Results

- Yes

Other

1. **In hindsight, would you consider the use of ITIL, Outsourcing Service Providers, and Cloud-Computing Technology used together in such a project as creating value-add to this project?**

- I do not know to be honest.

2. **If given the opportunity to contribute to such a programme of work again, what would you do differently?**

- Avoid it, actually a serious answer

A short and informal interview conducted on 28th July 2011 – Head of IT Operations - Stakeholder – Shane Gaffney

1. What was the learning from the outsourcing programme of work?

- We should have had full time dedicated local Vodafone Ireland resources to manage the project and migration.
- We should have had longer collocation period in India post go-live.
- Address retention of key staff / contractors through to migration completion.
- Recognize cultural differences between Ireland and India and plan to cater for same

2. What would you consider the challenges if your team were to embark on another such project in the future?

- Stabilise current operational service performance
- Manage transition in parallel to significant IT Ops transformation
- Secure strongest talent within post migration retained org

- Structure retained org optimally in terms of skills, spans and layers (may include conversion of subset of contractors and exit of subset of perm staff)

4.4 Case Study Findings

Upon the conclusion of the interviews, an analysis was undertaken by the researcher to try to identify trends that stood out, marking the success or indeed the failings of the project.

What became apparent early in the analysis is there was a consistent theme that resonates throughout the case study interviews, and that is the organisation was not adequately prepared to launch into such a programme of work.

The findings presented below represent a learning opportunity for the organisation in question, that could apply in future outsourcing programs, which the researcher expects to be a feature of the organisation in the near future.

Findings:

- Cost savings was a significant factor in deciding to offshore the second line support team to Pune, India.

- The project manager assigned to work on the project also had a fulltime role to pursue, whilst project managing this project, making it very difficult to strike a balance between day-to-day operations and the project.

- The project manager assigned to the project did not have the requisite experience to manage such a project, and as such was running the project with little if any prior knowledge or experience to facilitate a smooth transition of support.
- No formal project management methodology used to run the project, with little time given to the governance of the project throughout its lifecycle.
- There should have been a longer collocation period in India post go-live.
- An impact analysis was not undertaken, which would have identified the impact of not retaining key staff for a period after services migrated.

- There was no recognition of cultural differences between Ireland and India.
- There was no pre-defined criteria that qualified vendors to participate in a competition to provide services to the organization.

These findings taken into consideration represent a learning curve for the organisation in question, many of which could be applied without significant cost, delay or risk to the organisation, should a another such program begin in the near future.

Accordingly, the researcher proposes the implementation of the following recommendations should the organisation embark on such a program of work in the future.

Recommendations;

- The organisation should take a holistic approach when considering such programs of work. By taking a step back from the immediate budgetary challenge presented, and evaluating the situation in terms of reducing total technology ownership costs, looking at people, process, and technology as a service delivery package, rather than in isolation as standalone business challenges.
  In taking such an approach, a compelling business case could be constructed that not only delivers upon budgetary challenges, but also places the organisation to the leading edge of innovation in how they use the latest technology innovations to achieve business objectives, whilst at the same time optimizing business performance.

- Embrace cloud computing technology to compliment the managed services team that Vodafone has in India, further reducing ownership costs.

- Work with the organisations Procurement team to develop minimum selection criteria managed service providers, cloud computing technology providers, e.g. ITIL accreditation, ISO security standards etc.

- Guarantee the services that a suitably qualified and experienced programme/project manager to manage such a complex project in future.

- Ensure that a formal project management methodology e.g. PRINCE II or PMBOK is used to ensure that a project plan is drawn up that facilitates the identification of requirements, as well as the recognition of milestone achievement.

- Identify key staff members, and develop and structure a retained organisation that allows it to be ambidextrous in nature. Maintaining a structure required to maintain day-to-day mechanistic activities, e.g. batch processing and procedural activities. Whilst at the same time having the flexibility that comes with organic organisations, that allows the organisation to change shape and be creative in how it enables the organisation to achieve its strategic objectives.

- Apply the same selection criteria of the managed services staff as you would when hiring new starters into the organisation itself, e.g. the verification of ITIL and technical accreditation of the managed services organisations staff.

CHAPTER 5 – CONCLUSION

In starting this research paper, the author had preconceived ideas about how IT Management could apply the basic rules of planning, leading, organising and controlling as way to manage their respective teams and organisations, management 101 according to Tiernan et al (2001, pp.2-3)

As a practitioner, the researcher attempted to confront these preconceived notions and looked to industry for real-life business challenges that could be overcome by a thorough examination through this research. Economic challenges were the challenges presented by industry when the researcher sought to assist a business to resolve a business challenge, given the current economic climate, this is hardly surprising.

An opportunity was presented that allowed the researcher delve deep into the role that IT Management play in taking a holistic view of people, process and technology working together in unison rather than isolation.

What the researcher found whilst conducting secondary research, as illustrated in chapter 2 was that there is lots of information readily available on cloud computing technology, managed service providers, and ITIL as solutions to business problems.

This information was very useful and helped in developing the researcher's ideas about how such technology, service providers and methodology, if integrated together by IT Management could address some of the challenges presented in industry today.

The secondary research pointed to the challenges that many organisations have in today's climate, such as improving processes, keeping abreast of the latest technology, doing more with less as a basic business rule, and reducing total cost associated with technology ownership.

Conclusion

What the secondary research failed to do was provide a link to empirical studies that marry the three areas of cloud computing technology, managed service providers in an end-to-end IT service delivery solution, and any value that such a solution could bring.

The secondary research did however fail to provide insight into the value that integrating all three would have for a business, and this is where the researcher believes the survey results provides valuable insight into the appetite for such a business solution.

It was from here that the researcher decided to embark on the primary research undertaken, as it was felt that industry was looking at new ways of improving cost efficiency and effectiveness of their IT departments.

The marrying of cloud computing technology, ITIL and managed service providers as an IT service delivery solution to the researcher who is also a practitioner makes perfect synergetic sense, although there appears to have been a reluctance of academia and many firms to pioneer and embrace such an approach.

The primary research through a case study looked at a large multi-national corporation and their use of managed service providers, albeit in a recently set-up subsidiary that displayed all of the characteristics of offshoring, i.e. moving production support to a cheaper location in India.

The challenge within the organisation was to reduce the costs associated with providing second level support activities to the organisation. The case study identified shortcomings in the project, most notable the absence of the inclusion of technology in the outsourcing project.

This prompted the researcher to consider a survey as a relevant approach to understand industry thinking about the integration of cloud computing technology,

Conclusion

ITIL and outsourcing service providers as an end-to-end IT service delivery solution.

The results of the survey was surprising, giving the researcher a view to senior managers and executives thinking about the integrating of all three aforementioned disciplines into an end-to-end IT service delivery solution.

The majority of respondents understood the three areas, and were open and honest about where they consider the advantages and disadvantages of each, with the primary research backing up what the secondary research the primary research in terms of advantages and disadvantages of each respective area.

Managers in general, should they be general or IT managers in today's environment are now challenged to increase efficiencies, reduce spending and to be more creative by doing more with less. A respected senior IT manager recently gave an insight into his thinking, indicating the mind-set of 'doing what you've always done, will get you the same results' is no longer an option for managers.

The researcher considers that Managers need to be thinking outside of the traditional mind-set box, with such challenges brought about by the prevailing economic conditions. No longer are managers being challenged to do things right, but to do the right thing!

This mind-set permeated in the survey results, with respondents giving positive indications to the idea of marrying all three elements an end-to-end IT service delivery solution.

It from this point in the research that the researcher got enthused, as the survey pointed towards a potential business opportunity worthy of further research to develop the idea of an end-to-end IT service delivery solution, that incorporates cloud computing technology, ITIL and managed service providers.

Conclusion

The researcher considers that there to be enough publicity surrounding the benefits of cloud computing in the media, with increasing demand from public and private enterprises to reduce costs and realise synergies. Such public enthusiasm is backed-up by government agencies in Ireland willing to work with Hi-Tec enterprises to develop new and innovative products and services for the home and export markets.

For a moment, let us consider a large multi-national company with locally available technology resources, with a proven record of investing in Ireland, as well having lower cost resources in an offshore location.

How could the company manage at first such disparate elements?
The answer to this question is simply through ITIL as industry best practice for IT service management to manage the cloud solution provider and the managed service provider.

This is how Vodafone Group operate, but for a moment imagine if we develop this idea further, incorporating the creation of a 'Vodafone Cloud' computing platform, that first of all allows the Vodafone group of companies use the 'Vodafone Cloud' for the development of standardised applications that are used group-wide.
Once the cloud is established, applications developed and storage space optimised, Vodafone could apply the learning from the implementation of the 'Vodafone Cloud' and package with its managed services subsidiary in India, ITIL as the management layer, providing the customer with incident, problem, change and release management capability that could be drawn down on a Platinum, Gold, Silver or Bronze service level.

Therefore offering the complete end-to-end IT service delivery solution to its existing customer base of small, medium and large enterprises.

Conclusion

In providing such a solution to its enterprise customers, what would have previously been page after page of budget line numbers on spread sheets, data centres full of servers, offices full of IT techies could now be potentially reduced to a one-line budget item on a financial statement of the IT/Technology department.

The primary and secondary research undertaken backs the researchers view that an end-to-end IT service delivery solution could add-value to an organisation, by allowing it the ability to flex up and
down technology and people resources using cloud-computing technology, and the use of managed service providers.

Flexibility and scalability are essential to businesses wanting to break into a new market, cloud-computing technology and managed service providers provide such flexibility with lower costs than starting from scratch, ITIL providing that management capability method.

In concluding this paper, the researcher considers that the evidence presented in the literature review points to the benefits, as well as disadvantages of cloud computing for technology, ITIL for process and the use of managed service providers for people.
The results of the primary research in terms of survey results, and case study findings, points to the integration of all three elements, adding-value to an organisation if carefully integrated by IT Management as an end-to-end IT service delivery solution.

CHAPTER 6 – RECOMMENDATION

The researcher considers there to be enough evidence to warrant further investigation by academia and industry to research the viability of developing a commercial product and service.

Such a product and service offering that creates economic value to all stakeholders, e.g. employers, employees, local communities through the commercialising of a that solution that offers something to all business types, be it small, medium or large enterprise, which could benefit in times of slow and incremental growth.

Therefore, the recommendation of this paper is that further research is required to ascertain the commercial viability of developing an IT service delivery solution that integrates cloud-computing for technology, ITIL for process, and managed services providers for people in an end-to-end solution for small, medium and large enterprises.

Appendix 1 proposes options that Vodafone Group could develop and such a solution in-house for its own use, before offering to its enterprise customers as an end-to-end IT service delivery solution.

CHAPTER 7 – BIBLIOGRAPHY

1. Agarwal, R., and Ferratt, T. W. (2002) “Enduring Practices for Managing IT Professionals,” *Communications of the ACM* (45:9), pp.73-79.

2. Ahmed, A. (2011) April, Using COBIT and ITIL to manage the benefits, risks and security of outsourcing cloud computing, Vol. 2, IT Governance Institute

3. Anthes, G. (2008) How to get more out of ITIL with V.3.0, Computer World, July Edition, p 28-31

4. Armstrong, M. (2001) A Handbook of Management Techniques, 3rd Edition. Kogan Page Ltd

5. Barua, A., and Whinston, A. B. (1998), Decision Support for Managing Organizational Design Dynamics,” *Decision Support Systems* (22:1), January 1998, pp. 45-58.

6. Bauli, D. (2008), Think ITIL will reduce cost, you’re wrong! Network World Asia; June Edition, Vol. 4 Issue 5, p8-8, 1/2p

7. Bardhan, I.R., Demirkan, H., Kannan, P.K., Kauffman, R.J., Sougstad, R. (2010), Spring Edition, An interdisciplinary perspective on IT services management and service science,Vol.26, No.4.

8. Barolini, C. Salle, M. Trastour, D. (2006), IT service management driven by business objectives, an application to incident management. 10th IEEE/IFIP Network Operations and Management Symposium, p 45-55.

9. Bernstein Research, (2003), The Long View, Enterprise Hardware: Is Utility Computing the Next Technology Wave?

10. Beckett, H. (2006)Toolkit for a common approach, Computer Weekly, p.24-25

11. Bernstein, S. C. (2004) www.computerweekly.com, Forrester: ITIL Boosts Efficiency

12. Bernard G. Sloan, (1985), the new age of linked systems, ‘now, systems suppliers will even help you link with competing systems’. American Libraries 1985

13. Boh, W. F., Slaughter, S., and Ang, S. (2001) “Is Information Technology a ‘Boundary-less’ Profession? A sequence analysis of the career histories of IT professionals from 1979-1998,” in *Academy of Management Best Paper Proceedings*, Academy of Management, Washington, DC

Bibliography

14. Borkar,S. Chien, A.A. (2011) May , The future of Microprocessors, Communication of the ACM

15. Brandel, M. (2008), Are You Obsolete? How to Stay Relevant in the World of Web 2.0, Wii and Other Wonders, Computerworld, Jan 28, 2008

16. Bryman, A. Bell, E. (2003). Business Research Methods, 2nd Edition, Oxford Press.

17. Brown, D., Wilson, S. (2005), The Black Book of Outsourcing, How to Manage the Changes, Challenges, and Opportunities

18. Buttell, A.E. (2010), Jan/Feb, Six reasons to switch to cloud computing, , Practice Management Solutions, www.FPA.PracticalManagement.org – date accessed 01/06/11

19. Carter-Steel, A. P., & Tan, W.G. (2005) Implementation of Information Technology Infrastructure Library (ITIL) in Australia: Progress and Success Factors. Paper presented at the IT Governance International Conference, Auckland, NZ

20. Clark, T.D. Jr., Zmud, R.W., McCray, G.E, (1995), The Journal of Information Technology, Vol.10

21. Chesborough, H. and Spohrer, J (2006), a research manifesto for services science, Communication of the ACM (49.7), July, pp. 35-40

22. Cox, J., (2004), Implementing ITIL, The State of Michigan's Gradual Rollout of Best Practice has Eased Growing Pains

23. Demirkan, H., Kauffman, R.J., Vayghan, J., Fill, H.G., Karagiannis, D., Maglio, P.P. (2008),Fall Edition, service-oriented technology and management: Perspectives on research and practice for the coming decade, Electronic Commerce Research and Applications, p.356-376

24. DeLisi, P.S., Danielson., R.L., Posner, B.P., (1998), A CEO's-Eye View of the IT Function Business Horizons, January-February, p.65-73.

25. Dreher, C., Reiners, T., Dreher, N., Dreher, H., (2009), Virtual worlds as a context suited for information systems education: Discussion of Pedagogical Experience and Curriculum Design with Reference to Second Life, Journal of Information Systems Education, Vol. 20 (2)

Bibliography

26. Dubie, D. (2005), Network World, interview with computer software vendor, Managed Objects' director for service management, Michele Hudnall, on the functions of the Information Technology Infrastructure Library (ITIL). Reasons behind the popularity of ITIL; Level of ITIL adoption in the U.S.; Ways by which vendors can help information technology organizations adopt ITIL; Stages of process maturity for ITIL, Vol.22, Issue 30, p.27-39, 2p

27. Eckhaus, J., (2005) ITIL: The First Stepping Stone to Standardisation, www.dmreview.com

28. Eisenhardt, K.M. (1989), Agency Theory, An Assessment and Review, Academy of Management Review 14, p.57-74

29. Feeny, D. F., and Willcocks, L. P. (1998) “Core IS Capabilities for Exploiting Information Technology,” *Sloan Management Review* (39:3), pp. 9-21.

30. Farjoun, M. (1998) The Independent and Joint Effects of the Skill and Physical Bases of Relatedness in Diversification,” *Strategic Management Journal* (19:7), pp. 611-630.

31. Garford, A. (2003), The source for better service, IT Training, Feb 2003, p.10-14

32. Gill, J. Johnson, P. 2005, Research Methods for Managers, 3rd Edition, Sage Publications

33. Greaver, M. (1999), Strategic Outsourcing, A Structured Approach to Outsourcing Decisions and Initiatives

34. Greer, M.B. Jr. (2009), Software as a service inflection point, using cloud computing to achieve business agility

35. Han, Y. (2010) On the Clouds: A new way of computing, Information Technology and Library 2010, p.87-91

36. Handy, C. (1991) The Age of Unreason, Harvard Business School Press

37. Hunter, P. (2009), Cloud Aloud, the concept of cloud computing is going to reorganise the tenets of enterprise IT, Engineering and Technology, September 26th Edition, www.theiet.org/magazine

Bibliography

38. Knahl, M.H. (2009), A Conceptual Framework for the integration of IT Infrastructure Management, IT Service Management and IT Governance, Proceedings of World Academy of Science, Engineering and Technology, V.40.

39. Landon, K., and J. Landon. (2007) Preface of Management Information Systems, Prentice Hall, 10th Edition.

40. Linthicum, D.S., Addison, W. (2009) Cloud Computing and SOA convergence and your enterprise, a step by step guide, Pearson Education, Boston

41. Marquis, Hank, (Dec 2006), Business communication review, p.49-52

42. Masak, D. (2006), IT Alignment, Springer Verlag

43. McCann, D, (2010), Be clear about the cloud, CFO, Vol.26, Issue 10, p.23-25, 3p

44. Milgrom, P., and Roberts, J. (1994), Complimentary and Fit Strategy, Structure, and Organizational Change in Manufacturing," Journal of Accounting & Economics (19:2/3), 1995, pp. 179-208.

45. Milgrom, P., and Roberts, J. (1990), the economics of modern manufacturing: Technology, Strategy, and Organization,"American Economic Review (80:3), 1990, pp. g1-528.

46. Miller, D. (1988) Relating Porter's Business Strategies to Environment and Structure: Analysis and Performance Implications, Academy of Management Journal, Vol.31, No.2 , p.280-308

47. Murray, A., Murghani, M. (2007) The role of ITIL in building the enterprise of the future, Vol. 16, p22-23

48. Pollard, C., Carter-Steel, A. information systems management, 26, p.164-175, Taylor and Frances Group, LLC. Justifications, strategies, and critical success factors in successful implementations in US and Australian Companies: An exploratory study.

49. Pring, B., Gartner Research (2010) ID Number: G00207255, Cloud Computing: The Next Generation of Outsourcing

Bibliography

50. Robins, J., and Wiersema, M. F (1995), a Resource-Based Approach to the Multi-business Firm: Empirical Analysis of Portfolio Interrelationships and Corporate Financial Performance, Strategic Management Journal (16:4), pp. 277-299

51. Ryan, W. M., Loeffler, C.M., (2010), Intellectual Property Technology Law Journal, Vol. 22, Issue 11, p 22-28

52. Sabherwal, R., Chan, Y. E. (2001) "Alignment between Business and IS Strategies: A Study of Prospectors, Analyzers, and Defenders," *Information Systems Research* (12:1), pp.11-33

53. Saunders, M., Lewis, P., Thornhill, A. (2009) Research Methods for Business Students, 5th Edition, Pearson Education

54. Spohrer, J. Maglio, P.P. Baily, J., Gruhl, D. (2007), January Edition, Steps toward a science of service systems, IEEE Computer, 40, 1

55. Shang, S.C. (2010) Barriers to implementing ITIL – a Multi-case study on the service based industry, Contemporary Management Research, Vol.6, No.1, March Edition, p.53-70.

56. Stack, N., Chambers, S., Johnston, R. (2001), Operations Management, 3rd Edition, Prentice Hall

57. Smith, A. (1977) [1776], An Inquiry into the Nature and Causes of the Wealth of Nations. University Of Chicago Press

58. Tanriverdi, H. (2006), MIS quarterly, Vol. 30, No.1, March 2006, pp.57-77

59. Tanriverdi, H., Venkatraman, N. (2006) Knowledge Relatedness and Performance of Multibusiness Firms, Strategic Management Journal (26), 2005, pp. 97-119

60. Tiernan, S.D., Morley, J., Foley, E. (2001), Modern Management, Theory and Practice for Irish Students, 2nd Edition, Gill and MacMillan

61. Vathanophas, V. (2007), Business Process Approach Towards an Inter-Organizational Enterprise System. *Business Process Management, Journal*, *13* (*3*), 433

62. Velte, T.J., Velte, A.J., Elphinpeter, R.C. (2010), Cloud Computing a Practical Guide, McGraw Hill, New York.

Bibliography

63. Wade, M., and Hulland, J. (2004) “Review: The Resource Based View and Information Systems Research: Review, Extension, and Suggestions for Future Research,” MIS Quarterly (28:1), pp. 107-142.

64. Walker, G., Weber, D. (1987) Supplier Competition and Uncertainty, and make-or-buy decision, Academy of Management Journal 30, p.373-p.378

65. Weill, P., and Ross, J. W. (2004) IT Governance: How Top Performers Manage IT Decision Rights for Superior Results, Harvard Business School Press, Boston, MA

66. Worthen, B. (2005) ITIL power, why ITIL is becoming the most popular process framework for running IT in America, and what it can do for you, CIO, 18 (22), p.1-5.

67. Xing, R., Wang, J., Qiyang, C., (2010), The contemporary IT transformations, Operation Research and Management Information Systems, p.639-640

68. www.7388.info – rise of the cloud info system – date accessed 15/07/11

69. www.CIO.com – definition of the term Web 2.0 - date accessed 01/07/11

70. Intel, (2009) Moore’s law, available at: www.intel.com/technology/mooreslaw - date accessed 01/07/2011

71. www.edu.plymouth.ac.uk – date accessed 05/08/11

72. www.Vodafone.com – date accessed 30/07/11

73. www.surveymonkey.com – date accessed 10/07/11

74. www.acas.org.uk – TUPE definition – date accessed 18/06/11

75. ITIL adoption moves into the US mainstream, (2007), Computer Economics Report, July Edition, p.5-11

76. www.m2.com (2010, date accessed 14/07/11), HP to Provide Global Hosting Services to BP Under USD400m Agreement

77. IT organisations shift more of total IT spending towards purchasing outsource services - article - Computer Economics Report; Nov2010, Vol. 23 Issue 11, p10-14, 5p, - the 2010 IT Outsourcing Statistics study

CHAPTER 8 – APPENDIX

8.1 Option for Vodafone Ireland to explore

Vodafone Group set-up a strategic business unit tasked with developing an organisational strategy in the following areas:

- Cloud-computing technology
- Managed services – offshoring
- ITIL and other process methodologies, e.g. PRINCE for Project Management
- Research and development centre for mobile technology and cloud computing

1. Develop strategic relationships with world leading cloud solution providers, e.g. Salesforce.com.

2. Nurture and develop in-house capability in the areas of cloud-computing technology, managed services – offshoring, ITIL and other process methodologies.

3. Bring to market an end-to-end IT service delivery solution, that marries the best of Vodafone (mobile technology) with the best of Salesforce.com

8.2 Option for Vodafone Ireland to explore

The Technology department of Vodafone Ireland pioneer a new business model by developing of IT Service Management as a Service (ITSMaaS) across the Vodafone group of companies, through the following:

1. Undertake market research akin to the primary research undertaken in this research paper, albeit more rigorous and robust to understand if there is demand for such an integrated solution.

2. Head of IT Operations working with a cross functional team of consultants complete an end-to-end review of costs associated with developing, supporting and maintaining the current IT estate in Vodafone Ireland over the course of the last three financial years. Incorporating hardware, software, licence charges, third party service provider charges, and managed services.

3. Once an average budgetary spend for the previous three years has been determined – engage with market leading IT consultancy house to investigate the costs of developing a 'Vodafone Cloud' in Ireland.

4. Compare and contrast the budget spend for the previous three years with the costs associated with developing a 'Vodafone Cloud'.

5. Apply a discount rate to measure the expected rate of return that the company requires to determine if the project is feasible. Calculate the appropriate metrics e.g. Net Present Value (NPV), Internal Rate of Return (IRR), Return on Capital Employed (ROCE). Apply these metrics to the making of cloud a private Vodafone Cloud, then apply the various metrics and discount factors to making it a public cloud, i.e. a commercial offering.

6. Create a business model that incorporates the Vodafone Managed Services team in India, offering large, small and medium enterprises the opportunity to develop and use the Vodafone Cloud.

7. Create bespoke packages of applications for different types of business, and include as a standard service, offering enhanced applications for increased fees.

8. Once proven as a viable commercial idea, roll out the other Vodafone companies around the globe, before commercialising the idea and selling to the company's current enterprise customers base.