

IT Value in Irish Micro-Enterprises and the Adoption of Zero-Cost Services

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Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work, and has not been submitted as an exercise for a degree at this or any other university. I further declare that this research has been carried out in full compliance with the ethical research requirements of the School of Computer Science and Statistics.

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Abstract

The exploration of how IT investment can add value in industry has a long history. There has been much debate regarding the benefits or otherwise of the evaluation of IT investment in terms of financial expenditure and return on investment. There is, however, scope for an investigation into how businesses perceive value in the absence of a financial cost through the use of zero-cost solutions.

While the adoption of zero-cost services in larger enterprises may be a fraction of the IT portfolio, the adoption of IT in a micro-enterprise has the potential for a proportionally significant impact. The micro-enterprise sector in Ireland makes up over 90% of all registered businesses and employs 27% of the workforce. The sector, however, has been under-represented in information systems research.

Over the last five years the Irish economy has been subject to a recession. In times of limited access to capital and limited options in terms of growth and investment, micro-enterprises in Ireland have had to weather the storm as best they can, seeking efficiencies and compromises that previously may not have been considered. In this study, through semi-structured interviews with the key decision-makers of ten Irish micro-enterprises, the value of IT investment is investigated within the context of the micro-enterprise, and the adoption or otherwise of zero-cost solutions is examined.

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1 Introduction

1.1 Background

The micro-enterprise is the basic building block of industry. From a simple informal sole trader to larger entrepreneurial enterprises, the micro-enterprise provides the seedbed for larger enterprise, through accrual of capital and by supporting the business-to-business needs of larger enterprises. In Ireland, the micro-enterprise sector makes up over 90% of all enterprises and employs more than a quarter of the workforce (Section 2.3). These figures are indicative of the general trend across the European Union. Despite the ubiquity of the micro-enterprise, it has been all but ignored in terms of information systems research, particularly the forms of entrepreneurial micro-enterprise that are so common in Ireland. Rather, emphasis is placed on the Small and Medium Enterprises (SME) group of which the micro-enterprise is a subset. This emphasis ignores the particular needs of the micro-enterprise in terms of the management of the IS/IT systems, and how these systems can add value in that context.

The micro-enterprise is typified by a lack of access to the resources that would be available to a larger enterprise, for example financial and human capital. Ireland has, over the last five years, been subject to a recession. During this time, many businesses have experienced significant difficulties in accessing finance, resulting in difficulties with investment in operations and innovation, and a limited scope for hiring more staff that would bring additional skills to the enterprise. In order to stay in business micro-enterprises have had to adapt to the new financial environment, seeking efficiencies and compromises that otherwise might not have been considered.

The study of value in IT has a long history. While we are still a long way from a complete model for the evaluation of the contribution of IT to industry, the various methods can be grouped into two camps – the econometric perspective, which holds that IT is a financial investment and should be measured and controlled on that basis (incorporating, for example, return-on-investment considerations, charge-back policies for IT departments and others), and the strategic alignment perspective which holds

that in addition to financial benefits that may be realised directly through investment in IT, there are also qualitative benefits that significantly contribute to the performance of the company, albeit in an indirect manner. This area will incorporate strategic alignment initiatives that will ensure that IT expenditure is made in areas that will benefit the strategic goals of the business, and will measure those benefits as part of an integration of business goals.

While there has been significant emphasis on the financial cost associated with investment in IT, there are areas of investment that do not readily lend themselves to this perspective. In parallel with the development and sale of commercial software there has been a growth in availability of many different types of zero-cost software or solution. This includes many different philosophical and practical models for the creation and distribution of software and services. For example, there are a number of different models behind the open source method of software distribution, each with specific goals. Free/Open Source Software (FOSS) and Free/Libre Open Source Software (FLOSS) have been studied in detail (Section 2.4). However, there is also a long history of the provision of shareware and freeware in support of various goals that is now common in zero-cost internet services. The advertisement-supported versions of software and solutions would include this, for example Facebook and various services from Google.

The use of zero-cost software and services, then, provides a unique insight into the importance of IT to an enterprise. In the absence of overt financial expense, there may be clues to be gleaned from how an enterprise perceives and achieves value in real terms. In this way, the study of zero-cost services may reveal insights into how IT value can be measured by information systems researchers. Lastly, given the financial pressures that are being exerted on micro-enterprises, an investigation into whether the recession has affected their levels of adoption of zero-cost services is warranted.

Ten Irish micro-enterprises were approached to be included in this study. In an effort to sufficiently explore the context behind the adoption of IT software and services, a qualitative approach was taken. A selection of questions was prepared and a semi-

structured interview with the key decision-maker at each enterprise was completed. These interviews are the source of the primary data in this study.

1.2 The Research Questions

The topic of study is IT Value in Irish Micro-Enterprises and the Adoption of Zero-cost Services.

This will be examined in terms of two questions:

- How is the adoption of IT products and services managed in Irish micro-enterprises?
- Are zero-cost services an attractive option in terms of minimising cost and maximising strategic alignment?

Through an analysis of the interview responses of the representatives of the micro-enterprises, an effort has been made to establish the context in which decisions regarding IT adoption are made and what attributes of IT solutions are important in that context. Also, the perceptions of zero-cost services and their level of use in the micro-enterprise are studied. Comparisons are made between the general perceptions of zero-cost services versus paid-for software and services.

For the purposes of this study, and in keeping with the perception of what qualifies as IT as presented by the respondents, the definition of IT is assumed to incorporate all information and communication technologies (ICT) and information systems (IS) that may be available to a micro-enterprise.

1.3 Relevance

It is hoped that this study of the adoption of zero-cost software and services in the Irish micro-enterprise will provide a foundation for further study of this sector. The findings of this study will position zero-cost services in the micro-enterprise sector and will identify the types of zero-cost solution that are being adopted at this level. The topic is

of interest to lobby and representative groups for micro-enterprises that may find that there are cost-savings and efficiencies that are being exploited by a subset of micro-enterprise that would benefit larger groups if there were sufficient awareness and support for them.

This study will identify the circumstances under which a zero-cost service is being used in the selection of micro-enterprises. These findings may be of relevance to the providers of zero-cost software and services, both in terms of areas where adoption of those solutions is considered appropriate and also where there is reluctance to pursue zero-cost services. This will allow zero-cost service providers to adapt their marketing focus for micro-enterprise to better exploit these perceptions and also to address any latent concerns that may be preventing adoption in this sector.

1.4 Scope

This study targeted ten Irish micro-enterprises for in-depth semi-structured interviews to research the adoption of IT in that sector. The enterprises were selected through opportunistic sampling and efforts were made to ensure a representative and diverse group was chosen. The study was completed between May and August of 2013. Given the time constraints involved it was decided to pursue a cross-sectional study. This identifies the current perceptions of the micro-enterprise decision-makers, but necessitates a hind-sight approach to recent IT adoption.

With an awareness of time constraints, this study was limited to ten respondents in order to sufficiently explore the context of IT adoption in those enterprises.

1.5 Subsequent chapters

This dissertation is divided into five chapters, of which this is the first. An overview of the remaining chapters is presented below.

Chapter 2

This chapter presents the results of the literature review. The literature review was targeted at the areas judged to be most relevant in terms of the research questions. There is an exploration of the current state of research regarding value in IT, and where that value may be found in the absence of direct financial expense. There is a discussion of the micro-enterprise and its place in the Irish economy, and also how an investigation of the literature regarding micro-enterprises and their use of IT. There is an exploration of what is termed 'Free Software' and its relevance in industry. The term 'zero-cost software and solutions' is defined for the purposes of this study.

Chapter 3

This chapter describes the available methodologies for the discovery of knowledge in terms of the research questions. The reasons for the adoption of the chosen method are given in terms of its fit for the research questions. There is a description of the ethical implications of this work and the procedures that were undertaken to ensure that the appropriate ethical standard was maintained. There is a discussion of the limitations and problems associated with the chosen method and what efforts were made to mitigate these.

Chapter 4

This chapter presents the data in the form of summaries of the interviews. The data is then evaluated across all micro-enterprises in terms of topic. This information is split into two main topics, the general perception of IT and IT adoption, and the perception of zero-cost services and solutions and their adoption.

Chapter 5

This chapter presents the discussion and conclusions as prompted by the data analysis. The research findings are placed in the context of the current knowledge and thinking on the topic, and topics for further research are suggested.

2 Literature Review

2.1 Introduction

This chapter introduces the key themes of the study with supporting examples from the literature. There is a brief discussion of how IT value has been examined and where value may be gained outside the area of financial measurements. There is an examination of the importance of the Small and Medium Enterprise (SME) sector in Ireland with specific emphasis on the micro-enterprise, including the measures being taken by the Irish Government in support of growth in this area. There is also a discussion of the term 'free software' and what it implies in different contexts. Finally, there is an examination of the difficulties inherent in the adoption and use of IT in the micro-enterprise as identified by researchers.

2.2 Value in IT

The academic study of the value of IT has been long and rich, and has produced a "surfeit of methodologies" (Bannister and Remenyi, 1999). Broadly speaking, there have been two perspectives – the econometric evaluation in terms of return on investment (ROI) in combination with other financial measures, and the qualitative evaluation in terms of strategic alignment, enablement and transformational benefits of IT.

Both have their proponents – for example, in many enterprises, the Chief Information Officer (CIO) reports to the Chief Financial Officer (CFO) (Banker et al., 2011). In these circumstances, IT value is treated as a function of cost, and any measured benefits are evaluated in terms of the cost (Love et al., 2005). The econometric perspective and its implications were explored in the provocative "IT Doesn't Matter" (Carr, 2003). There has been much discussion around this article. In particular, Bannister and Remenyi (2005) show that the specifics of Carr's analysis of IT value exclude a significant portion of how IT adds value in an enterprise. Carr's focus on maintaining a transformational or "quantum shift" competitive edge is only one aspect of many reasons for investment in IT, listed by Bannister and Remenyi (2005) as:

- Competitive advantage - quantum shift
- Competitive advantage - incremental change
- Fundamental to Business
- Long term value
- Platform for change
- necessary for survival
- platform for innovation

The practicalities of these are explored by Gammelgård and Ekstedt (2006) in terms of how IT affects different business areas, and examples are provided such as improved efficiency, better decision making through accurate and timely information, cost reductions, and control of process.

It is generally considered to be the case that investment and control systems that are based purely on financial metrics are rarely designed with the achievement of long-term strategic objectives in mind (Kaplan and Norton, 2007, Banker et al., 2011). The value of IT investments may be realised years later, beyond the measurement period applied by the econometric methods (Costello et al., 2007, Bannister and Remenyi, 1999). Many enterprises that view strategic alignment as a key deliverable for IT investment will adopt metrics to ensure that business goals are being realised (Luftman, 2003, Banker et al., 2011). These metrics also require the IT investments to be made in terms of the goals of the company as a whole. For this to occur, the business goals must be explicitly identified, quantified and managed.

Kaplan and Norton (1992) present the “balanced scorecard” approach for ensuring that the key elements of a company’s strategy are being measured. The core principle is to break down the corporate strategy into four perspectives – the financial perspective, the customer perspective, the internal business process perspective, and the learning and development perspective. This method has been adopted by enterprises as a strategic management framework (Kaplan and Norton, 2007, Norreklit, 2000) that ensures that, not only are IT investments aligned with the goals of the business, but also that that investments are made with consideration of all strategic perspectives (or ‘lenses’) within a company, including the financial. The challenge in a medium or large

enterprise is to efficiently and accurately represent the goals and perspective of each business department (or 'lens') within the balanced scorecard. This allows them to match IT service provision to the achievement of those goals.

In a larger enterprise, visibility of these strategic lenses can be managed through a board or committee of departmental representatives. In a micro-enterprise, however, all lenses are visible to the (typically) sole decision maker in terms of IT investment. It could, therefore, be that there are elements of large enterprise alignment strategy that are being pursued as a matter of necessity in micro-enterprises. If this is the case, the adoption of IT in micro-enterprises would deserve further attention in information systems research.

2.3 The Micro-Enterprise in Ireland

The micro-enterprise is defined as an enterprise employing less than ten people (www.cso.ie, 2012, ec.europa.eu, 2012). In 2010, Small to Medium Enterprises (SMEs) in Ireland represented 99.8% of active enterprises, of which 90.8% are classed as micro-enterprises (www.cso.ie, 2012). These micro-enterprises account for 11.0% of total turnover in the business economy and employ 27.2% of the total persons engaged. As examined by Grosh and Somolekae (1996) and Parrilli and Elola (2012), there is considerable interest in whether micro-enterprise development can provide the environment for larger enterprises to flourish, either through growth of the micro-enterprise, the accrual of capital that will support the creation of larger enterprises, or by providing an environment that can support the business-to-business needs of larger enterprises.

In successive strategic initiatives and as part of the Irish Government Action Plan for Jobs, the Irish Government has targeted micro, small and medium enterprises as being of particular relevance to economic recovery – "Ireland is depending on its micro and small and medium enterprises (SMEs) achieving their potential" (www.djei.ie, 2012), (www.djei.ie, 2013). The proportion of Irish enterprises in the SME category is typical across Europe (www.cso.ie, 2012, Ayyagari et al., 2007), however in Ireland the segment is under-performing in comparison to the EU average, with gross value added (GVA) from the sector at 51% compared to the European Union average of 59%

(www.cso.ie, 2012). Since the start of the recession in 2008, Irish SMEs are experiencing difficulty accessing finance (www.een-ireland.ie, 2010, ec.europa.eu, 2012, Lawless et al., 2012). In an effort to address this, the government has implemented a number of initiatives, including the Credit Guarantee Scheme and the Microenterprise Loan Fund Act 2012 (www.djei.ie, 2013, www.taoiseach.gov.ie, 2013) to support SMEs and encourage growth.

Micro-enterprises are generally considered to be a subset of the SME category of businesses. The enablers and inhibitors of growth in SMEs have been studied extensively. Studies have shown (Korunka et al., 2011, Kelliher and Reinl, 2009) that there are many factors that can affect the success of an SME – the size of the firm, availability of capital, etc. SMEs experience many of the same demands as a larger business (Biswas and Baptista, 2012). Taking this perspective to its logical extreme, it could be said that the micro-enterprise is a small instance of the forces and deliverables that are required of all enterprises. In the absence of sufficient human resources, skills and capital (Fink, 1998, Kelliher and Reinl, 2009), SMEs must attempt to meet these requirements in different ways. In an ideal environment, these demands can lead to flexibility and innovation (Roberts and Wood, 2002), however the limited availability of human resources and capital can be profound inhibitors to success. Additional pressures can come from trading partners - it will generally be incumbent upon the micro-enterprise to meet the technological and procedural processes of its partners in order to maintain the business relationship.

These difficulties are exacerbated during times of recession. Generally, downsizing is not an option, particularly in the case of the micro-enterprise. The micro-enterprise will, typically, outsource non-core business processes such as accounting, marketing and IT support to focus on its core deliverables in a similar manner to a larger enterprise trying to streamline its business process. As discussed in section 2.2, the micro-enterprise as a result of its very structure will integrate its business decisions across multiple lenses and make strategic decisions from a position of unity. The micro-enterprise can be said to implement out of necessity many of the strategies that are desirable to efficiency-seeking larger enterprises and may indeed grow into dynamic and efficient larger firms (Qureshil et al., 2009). It is here that the micro-enterprise can serve as a pointer to research that is relevant across all enterprises.

Despite this, the micro-enterprise has not had the same treatment in the literature as larger SMEs. This may be due to the diversity of micro-enterprise styles e.g. informal vs. formal and necessity vs. entrepreneurial (Duncombe, 2007). It is also the case that it is only in recent times that a micro-enterprise may be 'born-global' (Munoz, 2010) in that international markets that have previously only been available to larger international firms are now available to smaller firms, allowing those micro-enterprises that have difficulty maintaining viability in the local region to flourish on an international market (Shiels et al., 2003). This introduction of international trade to the micro-enterprise opens the door to more direct comparisons to be made between the strategies of micro versus larger enterprises.

2.4 Free Software

The term 'Free Software' has been adopted by many different interests in the software community and beyond, and is commonly misrepresented either accidentally or deliberately (Stallman, 2009). The diversity of the term comes from the ambiguity of the word 'free'. Specifically, free software can be broken down into two categories – open source and closed source free software.

2.4.1 Free / Open Source Software (FOSS)

The use of the term 'Free Software' in this context is commonly used in reference to the principles of the Free Software Movement, a movement designed to safeguard the freedoms of users of software. It is a philosophical and ethical standpoint that has practical preconditions for its adoption. From the GNU Operating System homepage (GNU-Community, 2013):

"Free software" means software that respects users' freedom and community. Roughly, the users have the freedom to run, copy, distribute, study, change and improve the software. With these freedoms, the users (both individually and collectively) control the program and what it does for them. When users don't control the program, the program controls the users. The developer controls the program, and through it controls the users. This nonfree or "proprietary" program is therefore an instrument of unjust power. Thus, "free software" is a matter of liberty, not price. To

understand the concept, you should think of “free” as in “free speech,” not as in “free beer”.

The GNU Operating System website goes on to specify the four essential freedoms that are necessary for a program to be considered ‘free’.

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbour (freedom 2).
- The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.

In principle, free software under this definition may have a monetary cost associated with it.

A second style of software licensing is often referred to as ‘Free Software’ on the grounds that commonly the source code is freely available to interested parties, and may be modified by the user for their own purpose, thus fulfilling part of the requirements of the GNU definition above. However, software that is distributed under this banner may use any number of licenses, many of which are not designed to preserve the freedoms of the end user in a manner that adheres to the GNU philosophies. In an attempt to emphasise the differences in the two implementations of open source, the differentiating term FLOSS (Free/Libre Open Source Software) has been introduced to describe software that endeavours to preserve the freedoms of the end user.

2.4.2 Closed Source

Closed source free software also has a long history. Typically, closed source software falls into one of three categories – ‘freeware’, ‘shareware’ and ‘freemium’. Freeware generally implies a distribution model that expects no direct financial reward for the distributor. Freeware can act as an inducement to purchase other products from the same vendor, or released in support of those products to improve the end user experience, or as an advertisement for the skills of the developer (Baravalle and Chambers, 2007). The Shareware model is a ‘try before you buy’ model. It

encourages adoption of the software and may postpone a request for payment until the end of the trial period or leave payment as optional, but recommended. 'Freemium' has become a popular method of encouraging uptake of a particular software solution or product. It has recently been added to the Oxford English Dictionary:

"noun [usually as modifier]- a business model, especially on the Internet, whereby basic services are provided free of charge while more advanced features must be paid for."

2.4.3 Relevance in Industry

'Open Source' software has proven to be a powerful ethos for software development and has been shown to be an effective method that a software and services enterprise can use to reduce time to market and produce better quality code (Hawkins, 2004, Mount and Fernandes, 2013). Fitzgerald (2006) documents the movement from the informal and undisciplined origins of FOSS to the modern corporate guidance and sponsorship of strategically important products. The apparent paradox in a company providing open access to its intellectual property has been studied (Vanderhart, 2011) and the benefits as a business model for providers of software and services are documented (Shah and Keefe, 2010). Piva and Rossi-Lamastra (2012) describe how the adoption of open source software can enable entrepreneurship by reducing costs and increasing time to market, and also how service and support needs associated with the implementation and management of such software provides a market that can be exploited by the supplier of the code or by third parties. Kumar et al. (2011) shows how the adoption of a commercial open source software (COSS) strategy can produce better quality products and increase overall revenues for participating enterprises.

It's not only private sector enterprises that are seeking to maximise value through FOSS products. A number of governments have policies in place regarding the use of FOSS (Lansiti, 2012, Garcia-Perez et al., 2006). In 2003, citing concerns regarding being dependent on closed software for their information systems and the associated lock-in that this implies, the city of Munich chose to migrate their operations to a FOSS-based solution for as many government functions as is practical. In support of this and in partnership with IBM, they have developed a dedicated distribution of FOSS

software. So far, over 13000 desktop and laptop machines have been migrated to the FOSS solution from proprietary and closed source software (www.muenchen.de).

A telling example of how a functionally similar product can be marketed and distributed under each of these above distribution models, and also how disruptive the FOSS model can be, is the web browser. In the early days of the World Wide Web, there was little incentive to create web pages because a web browser was a rare commercial software product. Netscape released a zero-cost browser called the Netscape Navigator that was free to download and use. This model was designed to prompt consumers to use paid-for and advertising supported Netscape services. It triggered a “browser war” with Microsoft which continues in some form today. Microsoft bundled Internet Explorer with Windows at no extra cost and rapidly gained the majority market share. In 1999 Netscape released its source code for the browser under a new entity, the Mozilla Organisation, which led to the creation of Mozilla Firefox. The source code was made publicly available under the Mozilla Public License (MPL), allowing modifications to be made to the code and redistributed. There was still room for the paid-for product at that time; until 2005, the Opera Web Browser was available in both paid-for and a zero-cost, advertising supported versions. The competition for market share between Microsoft Internet Explorer, Mozilla Firefox and Opera browser led to innovations in web browsers and pushed the development of the World Wide Web (Sen, 2007). In 2008, Google released the Chrome browser as a freeware browser and released much of its source code under three open source licenses, the GPL, the Mozilla Public License and the Berkeley Software Distribution (BSD) license. These four browsers, along with Safari from Apple, now constitute over 99% of all desktop browsers in use today (www.netmarketshare.com). See Figure 2.1 for a breakdown of their market share.

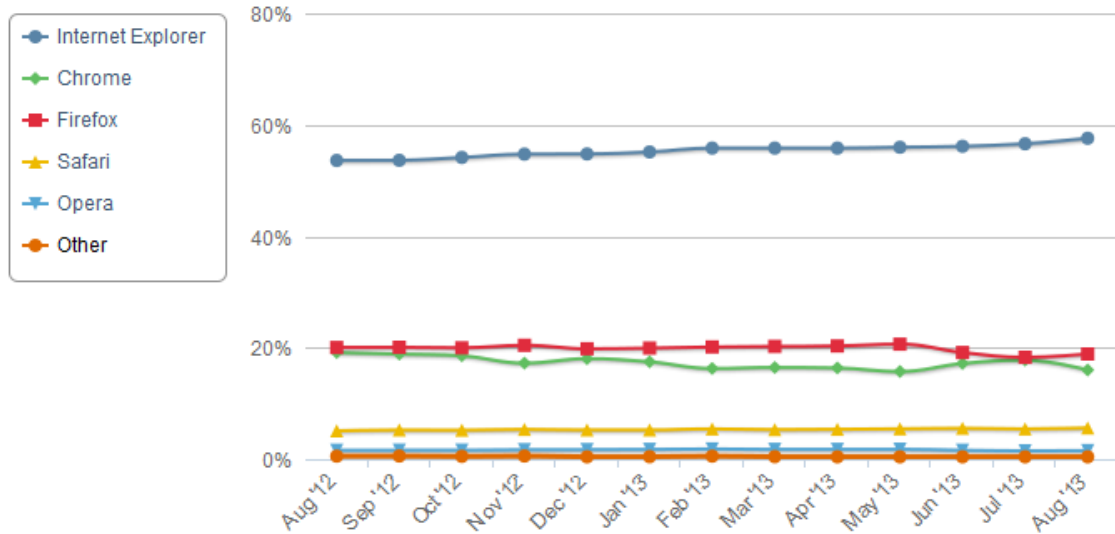


Figure 2.1 – The Market Share of the Major Desktop Browsers (source www.netmarketshare.com, August 2013)

On the server side of the web revolution, a similar battle for market share was raging between the Microsoft Internet Information Services (IIS) web server and the open source Apache web server.

2.4.4 Definition

For the purposes of this study, the term zero-cost software and solutions was chosen to incorporate all software, services and solutions that may be adopted by a micro-enterprise without direct financial cost.

2.5 Micro-Enterprise adoption of IT

Studies that show how IT adoption in micro-enterprises is managed are few. In order to explore the types of difficulties that a micro-enterprise may meet in the adoption of IT, the literature review was extended to include select studies regarding adoption in SMEs. This, in combination with the studies that are focused on micro-enterprises, provided greater insight into the difficulties that could be expected for the micro-enterprise than from the micro-enterprise literature alone.

Julien and Raymond (1994) document that in the retail sector, micro-enterprises typically have a lower level of adoption of IT than larger enterprises. These findings were echoed by a large study of SMEs in Northern Ireland, of which a significant

number were micro-enterprises (Shiels et al., 2003), showing a generally poor level of business integration and overall sophistication in the IT adoption in the area.

Riemenschneider et al. (2003) have shown how small enterprises can have basic problems with technology, citing poor software, lack of training and inability to relate IT investments to value. Qureshil et al. (2009) found that “micro firms were not aware of most technologies that could be used for improving their business performance”. O'Dwyer and Ryan (2000) suggest that micro-entrepreneurs will not consider training unless made aware of a new technology that may address a weakness in the business. Fink (1998) shows that in the absence of significant internal IT expertise, regular contact with an outside expert will facilitate IT adoption in an SME. Fink (1998) also describes how when decisions are made regarding IT investment in an SME, it tends to be prompted by a specific need with little strategic emphasis being made. In such situations, the product needs to be freely available and well packaged for the SME environment. This is supported by the findings of Qureshil et al. (2009) when they found that IT adoption tends to be ad-hoc, unless it is driven by specific customer needs.

Studies have shown (Hairuddin et al., 2012) that even if technical resources are made available to a micro-enterprise, there is a reluctance to use it. A number of studies have been done regarding the effect of the “IT Therapy” model of intervention in the management of IT in micro-enterprises (Wolcott et al., 2008, Qureshil et al., 2009, Hairuddin et al., 2012). This research is typically action research (see chapter 3 for a discussion of action research), where the difficulties of IT adoption in specific contexts are identified by the researcher. Training and strategy is provided for the goals of the targeted micro-enterprise. Wolcott et al. (2008) in a preparatory literature review identified a number of difficulties that could be encountered by micro-enterprises in their adoption of IT (Figure 2.2).

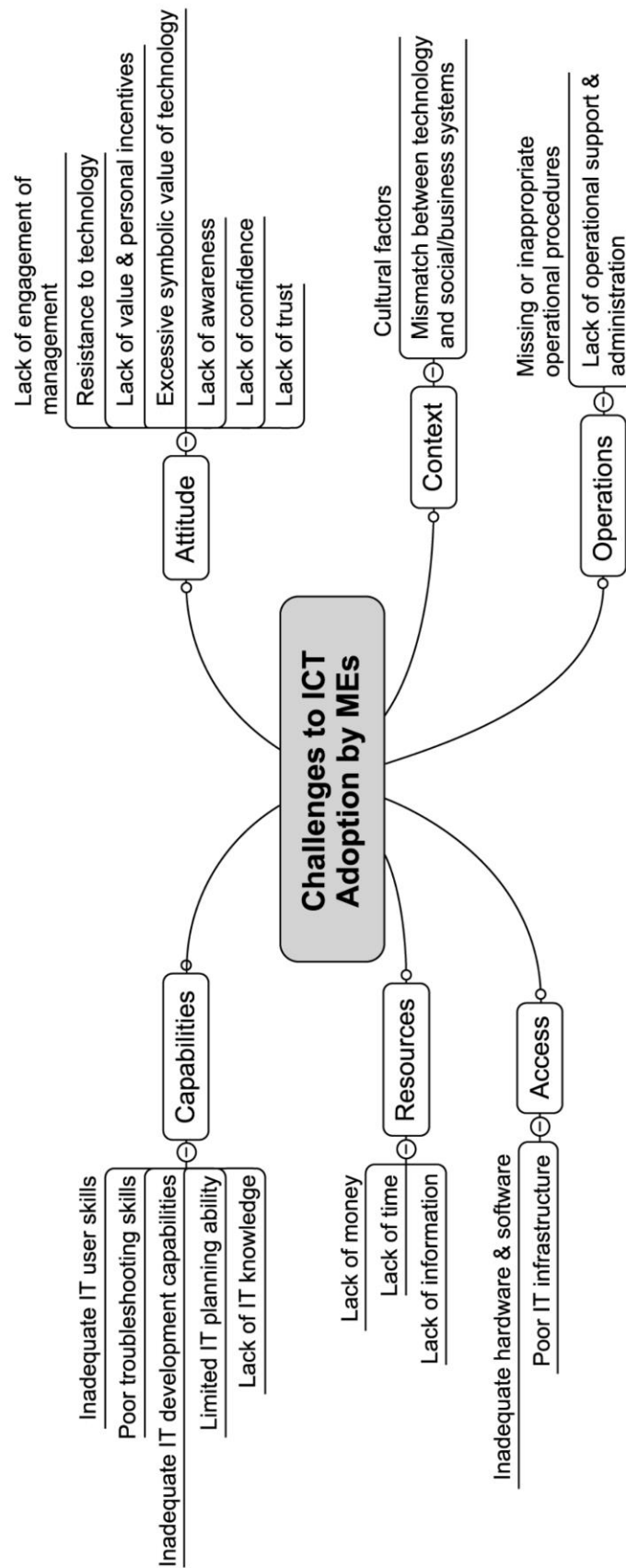


Figure 2.2 An Overview of the Challenges to ICT Adoption by Micro-Enterprises (Wolcott et al., 2008)

Matthews (2007) finds that a key constraint to the adoption of IT in an SME is confidence in the technology. There are parallels to this in research regarding adoption of zero-cost services in general. In their examination of free software users perceptions, Gwebu and Wang (2010) describe significant perception-based inhibitors to the adoption of free open source software, including concerns regarding software updates and support, and that FOSS tends to require the adopters to be confident in the technology or “tech-savvy”.

(Roberts and Wood (2002)) show that a micro-enterprise can indeed use IT in a strategic manner. In their longitudinal case study, the micro-enterprise was able to differentiate themselves from their competitors using typical office software to enhance efficiencies and provide relevant information in a timely manner. The strategic implementation of commodity IT products has contributed significantly to the continued success of the enterprise in the study.

2.6 Conclusion

Roberts and Wood suggest that, given their relative sizes, the impact of the adoption of IT may be greater in a micro-enterprise than in a larger company, and that it may be more critical to the success of the micro-enterprise. In the context of the micro-enterprise as a crucial economic player in the Irish economy, it is interesting to investigate how IT is meeting the requirements of these businesses. Given that a key attribute of this sector is the limited access to capital, it is of interest to investigate whether Irish micro-enterprises are using zero-cost software and services to meet their IT requirements. If so, then this will be an interesting study in IT value in the absence of financial metrics.

3 Methodology and Fieldwork

3.1 Introduction

In this chapter, the philosophies of research methods are explored. These philosophies are considered in the context of the research question and their application to the question is considered. The method that is judged to be most appropriate to the discovery of knowledge in this context is chosen.

3.2 Philosophical approaches

There are many ways to approach research. The approach chosen informs the type of strategies adopted. In choosing a research philosophy, it is incumbent upon the researcher to be true to the methods that are best suited to the discovery of knowledge from that philosophical perspective. Saunders et al. (2012) describe four philosophies: Positivism, Realism, Interpretivism and Pragmatism.

The natural world has, typically, been measured and modelled utilising a positivist philosophy. Myers (Mingers and Willcocks, 2005) states that

“The basic ontological assumption of positivist philosophy is that reality is objectively given and can be described by measurable properties that are independent of the observer (researcher) and his or her instruments”.

An objective reality can yield laws or generalisations that will remain true regardless of who makes the measurement. Positivism demands a highly structured methodology to facilitate rigorous verification and replication of results. Adopters of positivist methods may argue that they conduct research that is value-free. However, as Saunders et al. (2012) point out, the adoption of any philosophical stance, including positivism is in itself value-driven, as is the choice of the subject of research.

Realism shares some philosophical principles with positivism and adopts a similar, natural sciences approach to the development of knowledge. Realism holds that reality exists independently of the human mind. It can be further broken down into direct realism, which holds that our senses show us an accurate representation of

reality, and critical realism which incorporates social knowledge and forces in the process of understanding. In this way, critical realism complements positivism; Bhaskar (2010) says of critical realism that

“It provides a set of perspectives on society (and nature) and on how to understand them. It is not a substitute for, but rather helps to guide, empirically controlled investigations into the structures generating social phenomena.”

Critical realism is, therefore, particularly suited to types of business research that lend themselves to quantitative analysis in the context of social forces.

Interpretivism is in direct contrast to Positivism. Walsham (2006) states that

“Interpretive methods of research start from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors”.

As explained by Saunders et al (2012), we each act out our interpretation of our role as a social actor in terms of the values we hold, and interact with others i.e. other social actors in terms of our values. Interpretivism, therefore, is a value-driven philosophy that includes the interpretation of human meaning in the analysis of social constructs. As a result, it is particularly well suited to types of business research that aim to investigate phenomena that arise from the interaction of values.

Pragmatism holds that there may be no single philosophy that will meet the requirements of investigating the research question. Saunders et al. (2012) suggest that concepts are only relevant when they support action i.e. that a philosophical standpoint that prohibitively limits the discovery of knowledge is not beneficial to the research process. A research question may require a ‘continuum’ or ‘spectrum’ approach, on which the extremes of philosophical standpoints are the logical limits of a range of approaches. Through a pragmatic approach, the researcher is permitted to select methods appropriate to the investigation of the research question.

Each of these philosophical approaches informs the methods appropriate to the investigation of the research question. A purely positivist approach suggests the pursuit of data that are independent of the research process – typically quantitative and

numerical data. In the manner of experimentation in the natural sciences, it is desirable to evaluate changes in one variable against a known constant to seek out dependencies and correlations in such a manner as that may be repeated by another researcher. Advocates of Interpretivism suggests that the investigation of social constructs such as businesses would be limited by a positivist approach, in that complex relationships between social actors and forces may be lost by adopting the assumption that they should be quantified. As such, it is generally appropriate to evaluate the research question in terms of which philosophical approach will yield the most useful insights.

3.3 The research questions

The research topic is “IT Value in Irish Micro-enterprises and the Adoption of Zero-Cost Services”. It was decided to evaluate this topic via two main routes

- How is the adoption of IT products and services managed in Irish micro-enterprises?
- Are zero-cost services an attractive option in terms of minimising cost and maximising strategic alignment?

3.4 Research methods considered

There are, generally, three main approaches to research – deductive, inductive and abductive (Saunders et al., 2012). In the deductive approach, a conclusion is logically derived from a set of premises and is used to identify causal relationships. Deduction is often found within the positivist and realist philosophical approaches to research and is common in the natural sciences. The goal of using deductive methods is to achieve a generalizable result (Orlikowski and Baroudi, 1991). The researcher is independent of the data and the focus is on clear definitions and a highly structured approach.

Induction, on the other hand, is more common within the interpretivist philosophical approach. Induction includes human meaning in the evaluation of data. It is a common approach in social science where social constructs and actors interact to produce phenomena and meaning. In this way, it is particularly well suited to business. It requires a close understanding of the research context on the part of the researcher

(Saunders et al., 2012). It acknowledges that the researcher is part of the research process and as such the researcher's values are taken into account. Induction allows a more flexible approach than deduction in that complex relationships can be investigated without being limited to direct logical cause and effect.

Abduction begins with what Ketokivi and Mantere (2010) referred to as the 'surprising fact', and known facts are then presented to suggest the cause of this fact:

"(1) the surprising fact C is observed; (2) but if A were true, C would be a matter of course; (3) hence, there is reason to suspect that A is true. Abduction is distinct from both deduction and induction and is logically the weakest form of reasoning; indeed, it falls prey to the fallacy of affirming the consequent."

Given the inherent weaknesses of abduction as a research method, it is somewhat surprising that it is ever used. However, as a component of a research process that includes deduction or induction, it can serve to point to areas of interest that can stand up to more rigorous methods of investigation.

3.4.1 Approach

Given that the literature review has revealed no previous studies in the adoption of zero-cost IT products and services in Irish micro-enterprises, it would be natural to quantify the level of adoption. One approach would be to survey a selection of micro-enterprises regarding their use of zero-cost technologies and which areas they have found themselves using zero-cost services. While this would be interesting from a phenomenological point of view, the next logical step would be to perform an analysis of which areas would lend themselves best to zero-cost services, which micro-enterprises are best structured to benefit from zero-cost servers, and perhaps direct research into which business areas may benefit from a strategic emphasis on zero-cost services. This would be a deductive approach in keeping with the positivist or perhaps realist philosophies.

However, it was judged that this research path would be essentially descriptive and would occlude any insights into how the choice is made to adopt zero-cost solutions. It would also fail to show whether there are perceptions common to micro-enterprises

that drives the uptake or otherwise of zero-cost services. It was also deemed likely that, given the diversity of interpretations of 'free' software and services as discussed in chapter 2, there may be a risk of preconceptions, bias and misinterpretation of the goals of the study. Adoption of zero-cost services is a business decision and as such requires greater insight into how the decision is made. An inductive approach allows research into the human meaning associated with the decision. As suggested by Saunders et al. (2012), an inductive approach as part of an interpretivist philosophy can allow a more in-depth approach with a smaller research sample to establish context. Establishing context is the primary aim of this research.

3.4.2 Strategy

A number of strategies are available to the information systems (IS) researcher, as described in Saunders et al. (2012).

- Experiment
- Survey
- Archival Research
- Ethnography
- Action research
- Case study
- Grounded Theory
- Narrative inquiry

Each of these was considered in the context of the research question. In this context, adopting an experimental strategy would be qualitatively similar to an action research strategy. Experiment/Action research would require a willing company or companies to change their IS/IT strategy to promote the evaluation of the adoption of a zero-cost solution from beginning to end. It would have been unethical to direct a micro-enterprise in this matter without first having supporting evidence that the adoption process would not adversely affect their business goals or competitiveness. However, as was shown in Chapter 2, this evidence is not available for micro-enterprises. In addition, evidence that adoption of a zero-cost service would positively affect their business would introduce significant bias to the research.

A survey-based strategy was deemed insufficient for the reasons previously described in section 3.4.1. It is also the case that, in the context of the research question, a survey approach would be sufficiently proscriptive as to require a significant level of assumption in the choice of questions. Using a survey to research the method by which people evaluate software assumes that the values and judgements used in the decision are already known to the researcher and that the survey is the method implemented to quantify the levels at which each of those values and judgements are invoked in the decision process. While this approach is appropriate for other studies, this suggests significant research bias in this context. Such bias is generally avoided by applying the survey strategy to quantifiable data and also by allowing scope for descriptive responses to qualitative questions. This can be done within any of the common survey forms, e.g. questionnaire or structured interview.

An archival research strategy i.e. an analysis of archive data in terms of their position as part of the reality being studied (Saunders et al., 2012), is not a good fit for the research question. From the CSO (www.cso.ie, 2012) most micro-enterprises are sole traders and most micro-enterprise business strategies are driven by a single employee (Riemenschneider et al., 2003, Kelliher and Reinl, 2009). There is no reason to expect that the decision process would produce archive data.

Ethnography is qualitatively similar to the multiple-case case study method in this context, but lends itself to the perspective that there are cultural aspects that are common to all micro-enterprises. To evaluate the decisions of Irish micro-enterprises when choosing software in terms of common cultural phenomena would require a large sample set and an in-depth analysis that would be impractical in the time available. It is likely, also, that in this case the ethnographic study would rely heavily on interviews.

Saunders et al. (2012, p179) states that a case study “explores a research topic or phenomenon within its context, or a number of real-life contexts”. Given that it is difficult to quantify how business decisions are made, and what information, influences and perceptions are in play when those decisions are made, a case study approach was considered. As stated previously, acknowledging the context is a critical

component of this research. Yin (2009) breaks down case study research into the following commonly used sources of evidence:

- Documentation
- Archival Records
- Interview
- Direct Observation
- Participant Observation
- Physical Artefacts

In terms of this topic of research, documentation and archival records are sufficiently similar to warrant evaluation as a single source of evidence. Archival research, as stated above, is unlikely to yield sufficient material to gain insights into the decision-making process in micro-enterprises. While not a direct substitute for documentation/archival records (in that the data could not be shown to be directly related to any given enterprise), data has been sourced from CSO figures relating to micro-enterprises and was included in chapter 2. Direct observation would be better suited to a study of the effectiveness of zero-cost solutions after the decision has been made to adopt one. Participant observation would require the research to be completed by an employee of a micro-enterprise, which is not practical in this case, and also would be limiting in terms of identifying generalizable data. Of all the evidence sources suggested by Yin, only the interview is appropriate to the research question. It was, therefore, deemed inappropriate to use the case study method for this research.

Grounded Theory was developed by Glaser and Strauss (Orlikowski et al., 1991) to challenge the dominance of positivism in research. Simply put, it is a method by which theories can be developed without a dominant initial hypothesis. Research is conducted in an inductive and interpretivist manner by codifying data and relationships, and by adopting a strategy of constant comparison. These can be complemented by deductive steps that in turn inform further codification of the data in the context of new data until a hypothesis is formed. In this manner it suits the goals of this research topic well. Unfortunately, the sample size required and dynamic evaluation of data put it out of the scope of the timeline associated with the topic.

Narrative inquiry is a relatively new introduction to social science research methods (Bell, 2010). It allows the research respondent to dictate the structure of their response in a manner that they find most appropriate or comfortable. Narrative inquiry is based on the principles of story-telling and will generally involve the analysis of transcriptions of open-ended interviews. It can provide deep insights into personal experiences of the respondents (Whyte and Classen, 2012), however as outlined by Bell (2010) this may require the development of a close relationship between the interviewer and the respondent, and the interviews are, by their nature, time consuming. Interpreting the data presents its own challenges. Depending on the requirements of the research, other methods may be applied to the data to discover trends and meaning, for example Grounded Theory (Whyte and Classen, 2012). Narrative inquiry was considered for this research but was discarded in favour of a more guided approach that would allow specific topics to be analysed across multiple respondents. It was felt that the narrative approach would not necessarily target the areas of interest that are relevant to the research question.

3.5 Research method adopted

The methods described in section 3.4.2 were evaluated in terms of the research question as described in section 3.3. Each of ethnography, case study, survey, grounded theory and narrative had components that would be appropriate to the discovery of knowledge in this context:

- Ethnography would likely be heavily reliant on interviews in this context
- Relevant case study evidence would also be reliant on interviews
- Survey methods such as questionnaire or structured interview were considered to be proscriptive and have a significant risk of bias, unless a semi-structured approach was taken to allow a more qualitative response
- Grounded Theory would again be heavily reliant on interviews, without guaranteeing a fair treatment of the topic
- Narrative inquiry could not be relied upon to provide sufficient focus to guarantee a fair treatment of the topic.

It was decided, therefore, to adopt the approach of the semi-structured interview to allow sufficient scope for the discovery of unexpected themes while still targeting specific areas. A list of interview questions was prepared (Appendix A) in order to guide the interviewee through a discussion of their IT strategy and adoption process, their perceptions of IT in general, their current and/or future level of adoption of zero-cost services and how those decisions are made. Finally, the interviewee was given the opportunity to reflect and offer further information in relation to their IT adoption process. A cross-sectional timeline was adopted because it was felt that a longitudinal analysis could introduce bias via an extended focus by the enterprises in question on zero-cost services.

3.5.1 Type of data

The data gathered was in the form of responses to the interview questions. These responses were recorded on an audio recorder and were later analysed for trends and notable perspectives.

3.5.2 Method of selection

Interviewees were selected through the recommendations of industry contacts. A representative of each suggested micro-enterprise was approached with a description of the proposed research process and with the requirements of the research i.e. that the enterprise must employ less than ten people. Volunteers that met the criteria were then interviewed at a time and place of their choosing. Representatives of particular sectors were neither sought nor avoided, including those that might rely heavily or completely on IT. Ten respondents were interviewed in total.

3.6 Ethics

The research method was submitted to the Ethics Committee of the School of Computer Science and Statistics of the University of Dublin, Trinity College in accordance with the school research ethics protocol. Approval was granted to proceed with the proposed research method. In accordance with the protocol, each interviewee was supplied with an information sheet explaining their rights and was requested to sign an informed consent form under these terms. In addition, to provide for the case

where the interviewee was not also the director of the company, further information sheets and permissions forms were prepared for the employer (Appendix B).

In particular, all interviewees were advised of the following:

- That all data held is subject to the Data Protection Acts (1988, 2003)
- That the interviewee may decline to answer any and all questions, and may withdraw their participation at any time without penalty whereupon all research information relating to them would be destroyed.
- That all audio recordings will be used in support of this research and will be destroyed immediately after the final acceptance of the dissertation by Trinity College.
- That their data will be treated with full confidentiality and if published, will not be identified as theirs.
- That in the unlikely event that illicit activity is disclosed as part of this research that the researcher will be obliged to report it to the appropriate authorities.
- That no conflicts of interest have been identified in the research proposal or method.

3.7 Limitations, reliability, problems and observations on the chosen method

Ten interviews were conducted. The purpose of these interviews were to establish trends and to identify perspectives related to the adoption of IT and zero-cost IT services by micro-enterprises in Ireland. A significant limitation was the interpretation of zero-cost services. Surprisingly, some interviewees were not conscious of zero-cost services until the late stages of the interview. It is here that the semi-structured interview shows its validity in this research, in that there was scope to cover those areas pertinent to the research question at the late stage of the interview while maintaining the overall structure of the responses.

Yin (2009) identifies the following dangers in the interview method:

- Response bias
- Reflexivity - The interviewee gives what interviewer wants to hear
- Bias due to poorly articulated questions
- Inaccuracies due to poor recall [on the part of the interviewer]

The interview questions were carefully worded in order to minimise any suggestion of a desired response and where a particular position could not be avoided within a question, the alternative position was presented in the question that followed. The questions were displayed on a screen so that the respondent would have the opportunity to comprehend the question structure. The questions were worded in order to seem (what Yin refers to as) “genuinely naïve” about the topic to reduce the chances of eliciting a defensive response, or responses being affected by response bias or reflexivity. Bias due to poorly articulated questions was minimised by wording questions in a concise way. Inaccuracies due to poor recall were eliminated by recording the interviews. No respondent declined to be recorded and none expressed discomfort at being recorded. It is noted that by investigating whether micro-enterprises are using zero-cost solutions for their strategic IT needs, that there is an implicit suggestion that zero-cost solutions are suitable and capable of meeting these needs. The questions were worded and ordered to minimise this. Additionally, the final question in the semi-structured interview was on whether they would be more or less inclined to seek out zero-cost IT solutions as a result of the interview. All respondents said that their position was unchanged.

3.8 Conclusion

The philosophies of research methods were explored. The method that was chosen to be the most applicable to the research question was the semi-structured interview, adopting the interpretivist philosophy to identify the values associated with the adoption of IT and zero-cost services in Irish micro-enterprises. An inductive approach was selected in order to provide scope for the discovery of broad trends. The research design chosen was qualitative to provide for the subjective and socially constructed phenomena associated with the domain of the research question. This was an exploratory study with a cross-sectional time horizon.

Chapter 4 – Findings and Analysis

4.1 Introduction

In this chapter, the data from semi-structured interviews with the decision makers of ten Irish micro-enterprises is presented (section 4.2). The demographics of each enterprise in terms of age of the enterprise and number of employees are listed (Figure 4.1, Figure 4.2). Similarities and differences between the enterprises are noted. An investigation of their enterprise structure is made with an emphasis on the context of their business goals, pressures and decisions. Their attitude to business expansion is recorded.

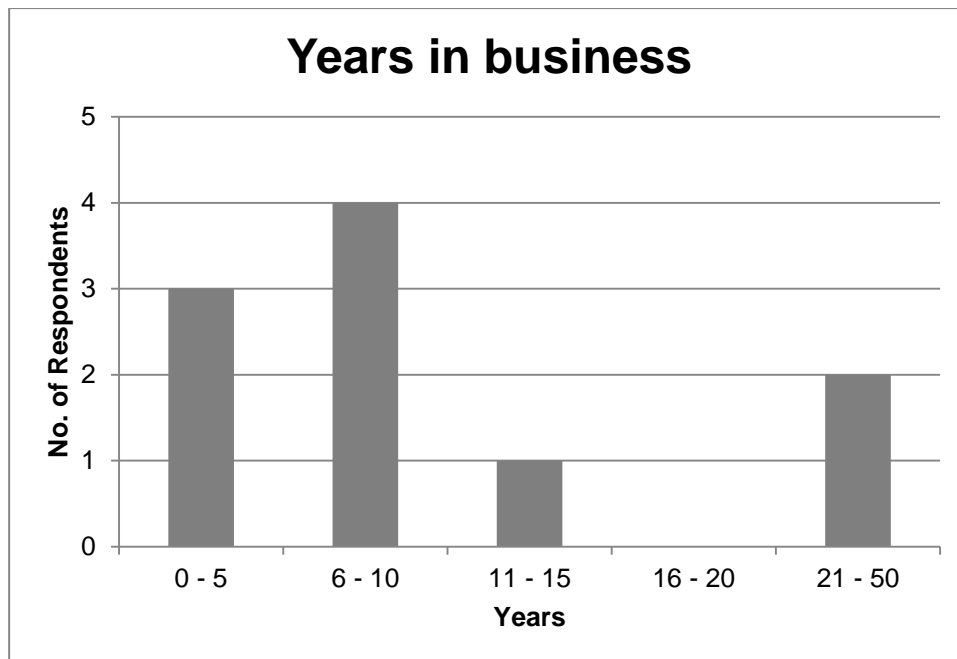


Figure 4.1. The number of years that each micro-enterprise has been in business. Note that the final bin is larger than the others. There are two companies in this range, one at 37 years and another at 45. All but the first bin have been in business throughout the recession.

The adoption level of information technologies in supporting these business goals is investigated (4.3.1). The perceptions of IT in each enterprise and what is considered important in terms of IT adoption is examined, along with where IT is perceived to be adding value. The adoption level of zero-cost services in each enterprise is explored

(4.3.2), and the manner in which these services and software solutions are meeting business goals is studied.

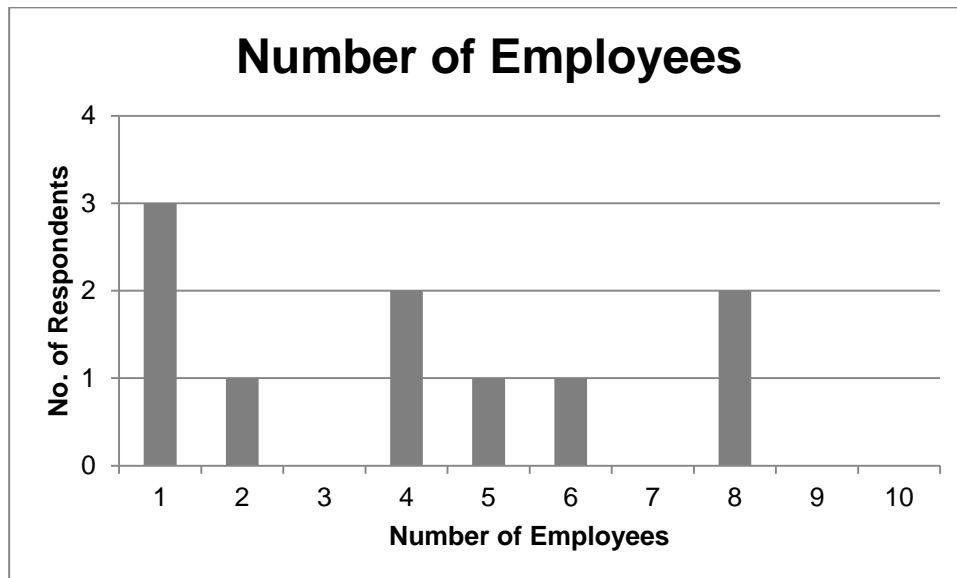


Figure 4.2. The number of employees of the micro-enterprises in this study. The numbers range from one to eight employees. The mean number of employees is four.

An inquiry of the general perception of zero-cost solutions in terms of their fit for business is presented.

4.2 Interviews

Interview 1

The first interview was conducted with a part-time sole trader. She has been in business for two years, creating jewellery and selling it internationally – an example of the 'micro-global' enterprise as described by Munoz (2010). Her enterprise was 'born-global' – she believes that without the opportunities presented by the internet to sell internationally, the business would not have been viable. She uses internet based solutions for portfolio advertising and ordering and considers IT products and services to be strategic enablers for her business. She has noticed that her products sell best in autumn and winter, and has been able to maintain a market by focussing on this and targeting markets around the world during this stage of their seasonal cycle. She finds the internet to be a mixed blessing, in that she cannot now sell into shops because her

prices are based on the low-overhead model provided by a purely internet-based enterprise. In order to sell into shops she feels she would have to lower her prices to make her product suitable for in-store price mark-up, and these lower prices would seriously undermine the viability of her business. Her micro enterprise is supplemental and is not her main source of income. Hers is one of only two supplemental or part-time enterprises in this study and the only one that has not at one stage been a dedicated full-time enterprise. She does not consider business expansion to be one of her goals.

Her specific business model has been enabled by an integrated solution provided by Etsy.com, an online marketplace tailored specifically for the art and craft industries. It incorporates advertising and secure online purchases under the umbrella of the familiar and trusted Etsy.com portal. The fee for this service is a percentage of the revenues accrued from sales. She has found that this removed much of the management overhead in providing an international business presence but also limits her options. She does not believe that a viable alternative exists for her and is completely dependent on the vendor. Etsy.com does not, however, provide all IS/IT components necessary for her to manage her business. For example, she also uses photo editing software, Photoshop Elements by Adobe, to present her work in the best light and uses a third party zero-cost website to showcase her work (pinterest.com). Although she was aware of free alternatives for the manipulation of images, she preferred to pay for a solution that she knew from previous experience would fit her needs.

In terms of her IT strategy and adoption of free services, she stated that she will spend money for products if the product has a good reputation, and would be inclined to pay for a product if the product or service is likely to save her time. The free solutions she uses were found through recommendations by the preferred vendor in areas that were not covered by their services – an interesting strategy that encourages a more complete solution without the risk of losing customers to another vendor. In this case, the vendor is using free services to provide a better quality offering at no extra cost. She does not see herself as having the time to seek out alternative solutions, and because of her integration with her preferred vendor, believes that changing provider would be prohibitively difficult.

Her adoption of free software and services are in areas that she does not consider to be core to her business e.g. email and free advertising. While she sees these are important areas, they can be easily managed through other providers that she feels would be equivalent in functionality. She is not interested in pursuing free alternatives to the paid-for solutions that she has adopted. In particular, she has already made one-off payments for the solutions that would most easily lend themselves to being managed by free alternatives (for example, photo editing) and would gain nothing by adopting an equivalent free solution at this point. She has said that the fact that a product or service was free would not be relevant in her decision to adopt that product – preferring ease of use, possible time savings and the quality of the offering to guide her. In addition, she is suspicious of zero-cost software because it is not obvious how the provider is benefiting from providing that solution.

Finally, she wishes that she had more options available to her in terms of features in her IT adoption, but admits that she has not looked.

Interview 2

The second interview is unique in this study in that the respondent solely provides products and services based on IT, and as such is able to provide insights both as an adopter and a provider of IT products and services. His company produces point-of-sale and accounting software, integrates it into the customers' environment and provides support services around that product. The company has been in business in its current form for ten years and employs five people, however was previously part of a larger enterprise that was incorporated in 1985. The respondent takes pride in the reputation that has been built up around the company's product and services portfolio over the total 28 years. Business expansion is one of his strategic goals.

There is a significant level of IT skill and knowledge already present in the company. The respondent says that his IT decisions and research are helped considerably by advice and research provided by interested and enthusiastic employees regarding third party offerings and solutions. He will deliberately seek out zero-cost solutions to save money and to be able to provide a more competitive solution to his customers. For example, he has moved from a proprietary third-party database solution to a zero-cost

database for that component of his software. He has passed the associated savings on to his customers. The adoption of zero-cost solutions has had a significant impact on his business structure. He credits free voice-over-IP (VOIP) and calendaring solutions with enabling him to close a second office and thereby significantly reducing his overheads. The developers that worked at that office were happy to work from home – VOIP allowed them to effectively interact with their colleagues for meetings and collaboration. He expressed upset regarding paid-for solutions that offered no discernible benefit over free solutions, in particular solutions that maintained a monopoly by being perceived as an accepted standard.

Despite his enthusiasm for zero-cost solutions, his choice of product is based on quality at the right price. He has adopted paid-for solutions when he was confident of its quality and contribution to the business. His position on technology is that it is a strategic enabler that is “all about increasing the bottom line”. He sees technology as leading business process, however the business goal should be identified first and the product should fit that goal. He has the in-house skills to be confident in adopting solutions that may not be streamlined for individual goal but that ultimately provide greater choice and utility than more streamlined solutions. Like the previous interviewee, he expressed mistrust of free solutions that do not offer an obvious benefit to the solutions provider, but has no concerns in that regard if the provider’s business model is apparent. He confesses that his concerns do not affect his choices – he does not have the time to dedicate to analysis of software and solutions at this level.

As a software vendor, he believes that there is a general trend for “dumbing down” software solutions in what is a very competitive market. He believes that while this reduces development costs, it is not necessarily what the customer needs. He had “bet his business” on adopting a software design strategy that provides more functionality and believes that this provides a significant differentiator for his product – one that is sought after by his current and new customers. He believes that vendor lock-in is a fact of life, especially in the case of integrated solutions that would be prohibitively disruptive to replace, and that when vendor lock-in is done well it will benefit the customer as much as the vendor. He believes that most small enterprises will buy software on the basis of their relationship with the vendor.

Interview 3

The third interview was with a sole trader. His full-time business is based entirely around the teaching, performance and composition of music. He has been in business for 37 years. His business strategy is based on the diversification of services based on his core skills of music performance and composition. While he sees his core business to be essentially IT-free, he believes that IT has provided significant opportunities to him and has had a profound impact on his enterprise. He is enthusiastic about IT developments and equates the development of the internet to the invention of the printing press in importance.

IT has enabled him to operate at a global level. His adoption of a free video-calling solution (Skype) has allowed him to continue teaching students even after their emigration. His use of online video services (www.youtube.com) as a platform to demonstrate his skills has led to international collaborations and invitations to perform in other countries. His use of the internet for research has allowed him to source rare sheet music from all over the world in support of his study of music.

He describes his core business as “one-on-one, like a physiotherapist”, i.e. the core product is generally an interaction between him and one or more other people and while the adoption of IT provides many opportunities for diversification, the success or otherwise of an IT solution will not affect the basic product. His focus on IT has been threefold – to improve the quality of the product (recordings, sheet music etc.), to provide a better experience for his students, and to diversify his business so that he can continue to earn revenue in the event of him being unable to play or teach. He learns of new software and services informally through word-of-mouth. His choices on IT adoption are based primarily on whether a product can enhance what he’s doing or give him “a new angle” on his product portfolio. While he will investigate zero-cost software and solutions on the basis of their price, his final decision is based on the quality of the product, its ease of use and how well it fits his business goals. In particular, he mentioned that the search for quality offerings means that he has taken on paid-for solutions for audio and video editing, and also score composition, on the grounds that the quality of these paid-for products reflect positively on the business;

given the significant place that music has in internet services, it is important to be seen to be professional.

In addition to quality and business fit, he mentioned that IT can make the management of his enterprise more convenient and more satisfying. Once a product or service is adopted, his level of personal investment in terms of time and interest in that product is the same regardless of the price paid. He is currently spending significant time and money on a revised web presence to allow the sale of his audio recordings and sheet music worldwide. He hopes this will help his competitive position in the market and will allow him to continue to earn revenue in the event that he is unable to perform or teach.

Interview 4

The fourth interview was with a sole trader. His business is the youngest in the study at just over ten months at the time of the interview and he is still at the early stage of examining his business requirements in terms of IT adoption. He provides gym and personal training services in a business park in a unit that he rents specifically for this purpose. Expansion is part of his business goals. He supplements his income from the gym and associated services with contract work as an engineer, but sees the gym as his main place of employment.

He describes IT as being important in the achievement of his business goals and has approached the adoption of IT services in an organic or reactive way as the business need becomes apparent. When choosing a product or service, he will generally follow the advice of friends rather than conduct his own research. He describes himself as neutral regarding IT, but said on a number of occasions during the interview that he found that IT can be frustrating and “complicated, too complicated”. He is conscious that IT service provision is not his core role and will evaluate IT software and solutions on the basis of ease-of-use. He is tolerant of complications as long as he expected them prior to adoption, and will spend more time on complicated software and solutions if they will benefit him or the business in the long term. He prefers to manage his IT requirements himself rather than through a vendor, but finds it difficult to keep up

with new developments in technology. He would generally dedicate more time and effort to a paid-for solution.

He deliberately seeks out low or zero-cost solutions for his business goals to reduce costs. He will use free messaging applications instead of SMS when possible and uses free social media solutions for advertising. His adoption of zero-cost solutions is primarily focused on web-based services and social media and he considers these services to be very important for advertising and in engaging with his regular customers. The content management system for his website is a zero-cost solution but was a significant undertaking in terms of time and effort. He has incorporated a zero-cost online booking system into his website to meet a specific business need. He is, however, suspicious of free software vendors, even if the business model is apparent. He believes that it is more likely that a zero-cost solutions provider will exploit his information for profit in an unexpected and unwanted way.

Interview 5

The fifth interview was with the owner/manager of a retail establishment that sells games room equipment (e.g. snooker, billiard and pool tables, darts boards etc.) to commercial entities and to the public. The company has been trading in Ireland since 1994 and they have been incorporated as an Irish company since 2002. The company employs four people. He attributes their continued success through difficult market times with their earned reputation for supplying quality products and professional after-sales service. The enterprise has experienced a notable contraction in domestic sales since the start of the recession and business expansion is not part of his goals for the foreseeable future, although it has been in the past.

He describes his attitude to IT as enthusiastic, but “perhaps naïve”. He describes IT as an “integral part of running a profitable business”. While his products are generally not technological in nature and he considers his IT strategy to be distinct from his other business goals, he uses IT extensively through the business, from an integrated desk/mobile phone system to accounts and stock control. He has found that developments in IT have made them quicker to respond to customer queries, more consistent with their quotes, has helped build a good reputation for the business and

has helped them gain market share in difficult economic times, both domestically and internationally. For example, they have recently gone through a rebranding process centred on their web presence and credit that with a notable increase in number of their customer base.

He considers his adoption of IT to be “incremental or evolutionary” and is concerned that they may not be keeping up with IT developments that may benefit the business. He suspects that a re-evaluation of his IT infrastructure could possibly effect considerable positive change in how the business operates but does not feel that they are in a position to research and implement those changes. He said that “no matter how rich you are, everyone is ‘time poor’”, and that this does not change with market conditions. As a result, he seeks out IT services and solutions that will simplify his business process and he emphasises ease-of-use as an important attribute in IT.

The recession in Ireland has had an effect on how he adopts IT. Prior to the recession, his decisions were “all about what’s right for the business” but since the economic downturn he has postponed the replacement of aging server hardware and point-of-sale systems despite their obvious deficiencies that he believes could be addressed with investment. When possible, he will not adopt the subscription-based support and maintenance contract recommended by his vendors and will instead pay for support on a per-incident basis. The most significant improvements to the IT components of his business have been as a result of newer solutions being made available that not only simplified and improved his business process but were also, crucially, cheaper to implement and to run than the existing systems. For example, he changed to a phone/internet provider that would allow integration with mobile phones which meant that he could be more available to customers even if the shop was closed. The change in providers also eliminated some issues they were having with sending emails that the previous provider had not been able to resolve. In a separate move, they replaced their mobile phones with smart phones and integrated them into the company email system, resulting in greater agility in their daily business. Both of these changes replaced legacy systems with systems that brought measurable improvements to their business, and both cost less to implement and run than maintaining the legacy system.

The recession, however, has not prompted him to seek out free solutions; he continues to pay for replacement solutions that have historically been paid-for solutions. He was only able to name two areas that use zero-cost services – namely an application that allows him to create PDF format documents from any application that has a print option, and the use of a free online video website (www.youtube.com) for training and research. He found YouTube to be particularly useful in that it helped him address some day-to-day IT issues without having to pay for consultation or maintenance from a third party. It also allowed him to judge the validity of a solution or recommendation via the popularity of the online videos and community comments that had been prompted by them.

He is, therefore, not a significant adopter of zero-cost services. He accepts that that there may be a steep learning curve associated with the adoption of any new IT service or product, but he admits that he will spend more time mastering a paid-for solution than a free one. He believes that, once a payment is made for a solution, he feels compelled to get the most out of it. He suggested that perhaps the cost makes it easier for the end user to see how much value the enterprise puts on the functionality supplied by the paid-for solution and the end user can then invest time accordingly. Zero-cost software and services do not have this type of universally understood quantifiable value.

He describes himself as being suspicious of the zero-cost solutions and said that he “can’t see how it would be as good” as a paid-for solution. Like the respondent in interview 4, he is concerned by the possibility of his information being exploited in some unforeseen way.

Interview 6

The sixth interview was with the manager of a mechanical services contractor that supplies and integrates heating and air conditioning infrastructure on behalf of third parties. The company has been operating since 1968 and at its peak employed over 100 people. Due to recessionary pressures in the construction sector, the enterprise has experience a profound contraction in its revenues and the headcount has been

reduced to 8 people. As such it now meets the criteria to be classed as a micro enterprise. Business expansion is part of his long-term goals.

The respondent describes himself as cautious regarding IT, and would describe the adoption of new IT software and services by the company as gradual and evolutionary. However, the profound contraction in revenues during the recession has been the overriding concern regarding the management of the IT function at the firm. In the absence of dedicated IT staff, advice and information on IT is regularly sought from knowledgeable family and friends. When considering a new solution, the reputation of the solution or the vendor is of critical importance to him.

There is a constant drive to minimise costs, not merely reduce them, and zero-cost software has been an important component in that. Email and calendaring services have been moved from an in-house solution to a third party that provides free services for small companies. This has eliminated the expenses associated with running in-house mail services, such as software licensing, electricity, and email server hardware upgrades. It has proven to be a strategic enabler too, in that he can manage his email and calendaring while traveling (via a smart phone) and feels that as a result of this his business is now more agile and responsive than before.

In common with respondent no. 5, his most significant improvements have been as a result of a lower-cost solution providing a better infrastructure than the more expensive solution that had been in place and as such this change was made primarily for cost-saving reasons, not solely strategic ones. He considers his investment in IT to be “on hold” until revenues improve, and like respondent no. 5, is aware of the deficiencies of their aging IT hardware and software, but does not feel that he is in a position to address them.

When adopting new IT solutions, he believes that the company’s needs are generally simple and they will target simple solutions to meet them. He finds that often business software can be “too broad”. While he may have had concerns previously, he is no longer wary of adopting zero-cost software; he is, however, always conscious of the

quality of the offering. He will pay for a better quality solution if he sees it as being of strategic value to the company or that it will ensure compatibility with his trading partners and customers. He would be aware of the risk of a “false economy” of spending time and effort in researching zero-cost solutions that ultimately may not meet the business requirements, when a paid-for solution that does meet business needs is available.

Interview 7

The seventh interview was with the owner/operator of a gourmet pizzeria, focussing mostly on a take-out/delivery service to a suburban catchment area and also providing a small eat-in area. The company had been in business for 15 months at the time of the interview and employs five people full-time and three people part-time. He considers business expansion to be one of his business goals.

The respondent describes himself as enthusiastic about IT, but “a bit of a luddite” and will seek expert help from friends when he needs third-party advice on general IT matters. While the product itself has no IT component, he sees IT as critical in advertising and selling his product. His preferred style of IT adoption is “set and forget” in that he will consciously improve his IT environment to meet the requirements of his business process and then not consider improvements until an opportunity to increase revenue becomes apparent. The two main IT components of his business process – point-of-sale and advertising – have attracted the most investment of any IT-related aspect of the enterprise in terms of each of time, interest and financial outlay. He considers every IT solution in terms of return on investment and does not adopt anything that does not directly assist in the generation of revenue – either directly through advertising or through a more efficient experience for his customers. On this basis, he has rejected optional enhancements such as online ordering, but is embracing SMS alerts and broadcasts from his point-of-sale system to notify customers of special offers and new products.

His chief concerns when adopting a new IT solution are ease-of-use, integration time and the quality of the support in the event of something going wrong. The reputation of the product or provider is very important to him and he will seek out other clients of the

vendor to see how the product has performed in real-world use. He is conscious of needing to make efforts to keep up with his competitors in terms of his technological capabilities.

He has focused his advertising presence on social media, but is not enthusiastic about it and is in the process of moving away from Facebook as his main advertising forum. He has a low opinion of social media in general and is reluctant to become invested in it where there is no guaranteed return on effort but he is aware of its prevalence in advertising. To meet the demands of the maintenance of the enterprise social media profile, he has contracted the management of his company's social media profile to a third party. This is a notable strategy in terms of this study in that he has adopted a zero-cost solution, but paid to maximise his returns and minimise disruption to his own responsibilities.

He has always paid for his IT solutions and it is important to him to implement simple-to-use solutions with reliable support. He is deeply mistrustful of zero-cost software and believes it is often duplicitous. He does not, therefore, target zero-cost solutions and does not use any in his enterprise without paying for additional associated services to manage them.

Interview 8

The eighth interview was with the manager of a professional photography firm that specializes in portraits and wedding photography. The company has been in business for eight years and employs two people. It is a family business and was once the primary source of income for one employee; however due to market pressures it has since become a part-time business for both partners. Despite this, the respondent considers enterprise expansion to be one of her business goals.

The respondent describes her approach to IT as "enthusiastic" and considers IT to be critical to the production, marketing and delivery of her product. Her adoption of IT is based around a core suite of utilities from a single vendor (Creative Suite by Adobe). She is quite comfortable with this dependency because the product is generally

considered in the industry to be the leader in photograph manipulation and enhancement solutions. She also uses a selection of utilities for value-add differentiators and in the administration of the enterprise. Her adoption of IT is driven by increased functionality, ease-of-use, the reputation of the solution or vendor, alignment with business goals, support, and cost. She considers support to be crucial for the components that affect the quality of the final product and would not choose a solution that did not have that support.

The business uses zero-cost solutions for non-critical functions, for example a free office suite and assorted desktop utilities for file compression, and also for the content management system of the company website. If those solutions were to become unavailable, she does not believe that they would have any trouble finding replacements, however would be unhappy about having to pay for functionality she previously had for free.

She is more comfortable with paid-for solutions on the grounds that she believes that the vendor has more of a vested interest in providing documentation and bug-fixes than would the provider of a zero-cost solution. She believes that paid-for solutions are generally easier to master because of the quality of the documentation and may be more tailored to business cases than zero-cost solutions. Her position is that they are not an IT firm and while complexity is to be expected in IT solutions, a quality product, quality support and quality documentation that is tailored to their business processes are key to streamlining the adoption of solutions. She finds that these attributes are more commonly found in paid-for software. As a company, seeking out zero-cost solutions for their business goals is not part of their strategy.

Interview 9

The ninth interview was with the owner/manager of a graphic design and visual communications company. The company provides business-to-business print and graphic design services, including brochures, pop-up stands and large advertising banners, plus branded online content. The company has been in business for seven years and employs four people.

They are heavily dependent on IT to deliver their products. The respondent describes himself as “quite interested” and “enthusiastic” about IT. He classifies their experience of adoption of IT as generally positive and credits developments in IT with making the business more efficient, more economical and leaner. He believes that IT has contributed significantly to the quality of their products. Like respondent in interview 9, their business process is heavily integrated with the functionality provided by a suite of graphical utilities from a single vendor (Create Suite by Adobe). He is conscious that they are locked in to a single vendor for their core business process and is unhappy about it, but is confident in the capabilities of the suite and in knowing that they have not compromised on quality for the sake of cost savings when delivering their core business products.

Their adoption of IT for business functions that are not met by Create Suite is driven by efforts to simplify their business process and to diversify their core offering with value-add services and products. In addition, they must maintain compatibility with the technology in use by trading partners and customers. It is critical from a branding position to be seen to be adopting the latest technology in an industry that is on the leading edge of visual media. He confesses to being frustrated by limitations in IT, especially when the difficulties he experiences are avoidable – old or unreliable software, old or underpowered hardware or poor service from a service provider. He will typically target the best quality solution for their business goal at the price point that they can afford and conduct extensive research and testing of a new product prior to adoption. He was not able to think of a single product that had not met their expectations and requirements after being adopted through this process. He will generally base his judgement on the quality of the product; the maturity or reputation of the supplying vendor is not necessarily a factor in his decision.

He has what could be termed an industry-specific reluctance to adopt zero-cost solutions. Perfect copies of digital content are easily made and the design industry is particularly exposed to accusations and possible litigation in this regard. He ensures that all third party content included in their product offerings and branding is properly licensed from the authorised license-holders. He is very wary of risking the reputation

of his business by adopting a zero-cost solution that may ultimately infringe on a third party's intellectual property. As a result, he does not seek out zero-cost solutions for his business goals and in fact actively avoids them. The only zero-cost solution in use at the time of the interview was the content management system for their company website, and he explained that there were already plans in progress to move to a more versatile paid-for solution that is tailored to their business needs.

Interview 10

The final interview was with the owner/manager of a dental practice that specialises in specific treatments. The practice has been in operation in Ireland since 2003, however prior to that the partners were in practice in the UK since 1986. He has observed the gradual introduction of IT to the dental industry over that period. The enterprise employs four people and the owner is not considering business expansion as part of his goals at this time.

The recession has had an impact on the dental industry. The respondent reports that revenues are down by between 40% and 60% for many practices and policy changes regarding social welfare/medical card payments have directly resulted in the closure of a number of surgeries that had been located in lower-income areas. In this environment, his strategy for IT adoption is to "keep his current systems running" i.e. the focus is on maintenance. When the market recovers, he will consider adopting more significant improvements to his environment.

A modern dental surgery can be heavily dependent upon IT for its operation. The respondent began the adoption of technological automation when based in the UK. In an attempt to soften the changes, he adopted a phased approach and prioritised the reception functions first. He experienced considerable resistance from staff arising from a lack of trust in the new systems. Work was often duplicated to ensure that the information was available, resulting in divergent data sets regarding patient management and significant confusion. Since then, he has experienced greater success in IT adoption when he has committed to implementing end-to-end processes.

The surgery has very specific IT requirements. The two practising dental surgeons target different aspects of dentistry. He attributes some of their stability in the face of considerable market pressures to the combination of specialisations. However, the requirements of each type of dentistry mean that a very particular integrated system is required. Much of this system goes unused, but it is one of only two such systems that are available in the Irish market that incorporates the necessary components for both specialisations. The integrated solution includes hardware and software, and while there are choices available within the environment, they can only choose between two possible vendors. Changing to another vendor would mean significant disruption to the practice.

The respondent describes himself as enthusiastic about technology, once it has proven its value and reliability. He described himself as mechanically minded and found the increasing abstraction of process from the physical machinery to be a source of frustration. In particular, he finds that the integrated solution means that if any component fails, the entire system is unusable. For example, in December of 2012, in spite of conscientious investment in stability and disaster recovery options, the surgery suffered a catastrophic failure of its IT infrastructure. It was several days before the system was operational again and despite having implemented a rigorous daily backup regime they experienced significant data loss. With the help of a company specialising in data recovery, they were eventually able to reconstruct the majority of their patient database. Until the database had been rebuilt they were without patient records and without integration to the other systems (e.g. the x-ray machine). Patients would show for appointments and the surgeon would have no idea what procedure was necessary, what work had previously been done and would have no way to associate x-rays with the patient records. The surgery suffered considerable loss of revenue during this time and the reputation of the business suffered. As of the time of this interview, he still had not received a satisfactory explanation from his vendor as to what had gone wrong, why the backups were not sufficient and, critically, how the same situation could be avoided in the future.

They have since implemented a more robust system, incorporating redundant components that can fail without critical loss of data. They have also implemented a different method of data backup. He is conscious that he has had to invest

considerably in these systems that, in themselves, do not contribute to increasing the revenue earned by the company. He is also conscious of the requirement for continued investment for no net benefit caused by the obsolescence of hardware and software. The failure of his systems has increased his sense of a loss of control of his technological infrastructure. He is, however, resigned to the fact that he cannot go back to doing business in a way that does not have a significant dependence on IT.

There is some scope inside and outside the integrated solution for the adoption of other IT solutions and strategies. When evaluating these solutions, the respondent will put them through an extensive trial within the business to ensure they are a good fit for his needs. Apart from the catastrophic failure in 2012, he finds that if something goes wrong, it is with the human management of the technology. In terms of reliability, it is his observation that “you only know something isn’t good enough when it fails and then generally you can’t do the job without it”.

He does not seek out zero-cost software and services for the enterprise. He bases his choice of solution on the recommendations of trusted third parties (e.g. expert friends and peers in the dental community) and none has recommended a zero-cost solution that he has seriously considered implementing. His only adoption of zero-cost services has been around their online presence i.e. the business website and social media, which, while important, is not part of his core product. He has found Facebook to be a particularly effective method of advertising – far superior to anything they have used prior to its adoption. The fact that Facebook is a zero-cost solution is not necessarily a factor in his adoption of it. Also, in a similar fashion to the respondent in interview 7, he has paid for a third party to supply and configure a zero-cost solution i.e. the content management system on his website to minimise the disruption to his own business responsibilities.

4.3 Analysis and Trends

4.3.1 The adoption of IT in Irish Micro-Enterprises

Perceptions of IT

The characteristic low employee count of the micro-enterprise implies that the decisions regarding the adoption of IT will be made by a small number of people. In the case of this study, all respondents were the sole decision maker in terms of IT, with the exception of one who shared responsibility with her business partner. These decision makers typically classed themselves as feeling positive about IT in general, saying that they were “enthusiastic” and “interested”, although in some cases that was qualified with a possible negative, for example “enthusiastic, but perhaps naïve” and “enthusiastic, but a luddite” (Figure 4.3). Comments from two respondents - “enthusiastic when the technology is proven” and “enthusiastic, but fearful when it goes wrong” - suggest that the overall lifecycle of the IT product is significant in the perception of IT as a whole. While the majority felt positive regarding IT, one respondent described himself as neutral regarding technology; another described himself as cautious.

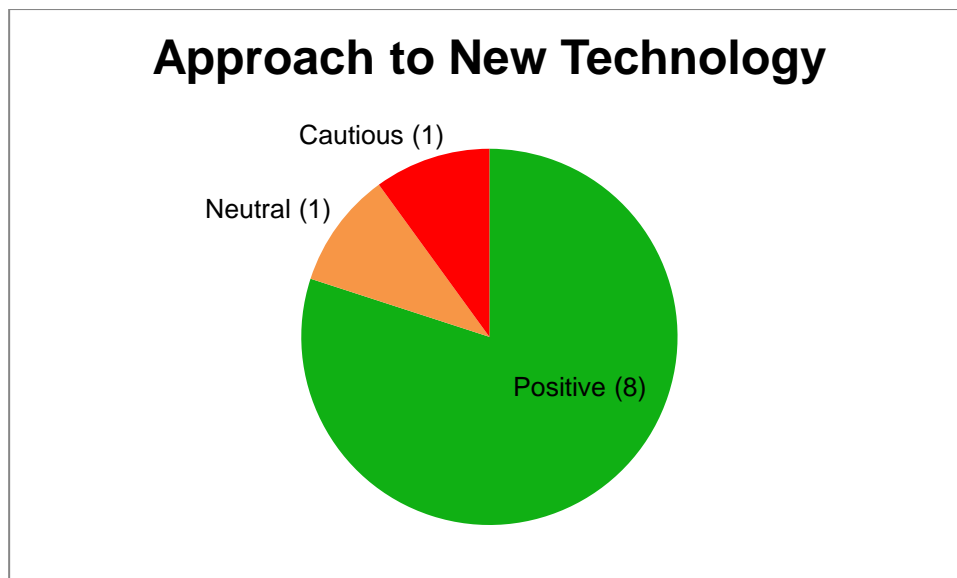


Figure 4.3. Respondents were asked “How would you describe your approach to new technology”. Their descriptive answers were then discretised into three distinct categories: Positive, Neutral and Cautious. Of the ten respondents, none suggested that their approach was negative.

Every respondent believed that the use of IT was an important or critical component of achieving their business goals and believe it to be a significant enabler in their

strategies (Figure 4.4. One respondent equated the significance of the development of the internet to the invention of the printing press. On the question of whether they generally considered their goals to be achievable through IT, once an business goal had been identified as having an IT component, seven said that yes. The human factor was notable in their responses, however, with two saying that if a problem arose it was related to the supplier or the end user, and one saying that “it is the people that make it work”. Of those that did not believe that their goals were not necessarily achievable through IT, one had a specific example of an expensive solution that was not able to meets his requirements, despite being marketed specifically for that requirement. Another respondent said that IT can be “complicated, too complicated”, which also shows the importance of the human component in the implementation of IT.

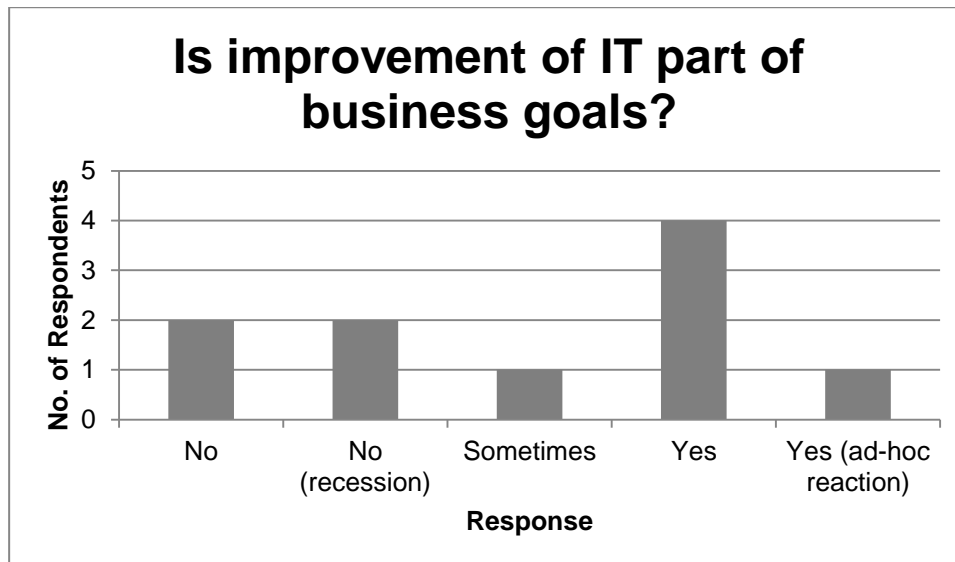


Figure 4.4. Respondents were asked “Do you consider IT products and services to be a component of achieving your business goals or processes?”. Their descriptive answers were then discretised into five distinct categories: (i) No, (ii) No, and specified that this is due to the recession, (iii) Sometimes, (iv) Yes, (v) Yes (ad-hoc reaction)

Eight out of ten respondents said that they generally included the improvement of their IT infrastructure in their business goals, with one expressing surprise that this was the case, saying that IT is so tightly integrated into his general business goals, that he does not consider it to be a separate area. Three said that improvements had been “put on hold” because of reduced revenues due to recessionary pressures. When all

respondents were asked whether they saw IT as distinct from their business goals, the answers were mixed. Six out of ten said that it was distinct while four said that it was not. Interestingly, two opposing answers gave similar expanded reasons. Two said “yes, but it is directly integrated into our business goals” and one said “no, the business process is heavily integrated with IT”. The second position was held by the respondent who cited “lack of control” as one of his frustrations with IT. The two types of response reflect very different perspectives on the role of IT in the enterprise. While all three described IT as an enabler in terms of business, the last respondent feels that his business process is governed by IT instead of supported by it.

Six of the ten respondents believed that IT software and solutions were improving in general, whereas four did not. Again, there were some similarities in reasoning behind both responses. One respondent who felt positively about the changes in IT said that things were more streamlined to specific business goals, whereas another respondent commented that there were fewer options in software, a “dumbing down” of the systems and reduced functionality. A further two respondents commented that they found it difficult to keep up with new developments, with one of which stating that he felt they weren’t in the market for IT at the moment. He is focused on maintaining their current infrastructure without introducing changes in order to minimise expenditure.

IT adoption

When asked which would come first, the business goal or the knowledge of IT, or whether they would class it as a mix, seven out of ten said that the business goal came first. Two respondents saw it as a mix. Of the two that claimed a mix, both see their core product as essentially “IT-free” and would receive most of their IT advice through friends. This suggests that these enterprises adopt IT products and services as in an ad-hoc manner and would expand their IT usage if and when they were made aware of a suitable new product. At the other end of this spectrum is the respondent that believed that sometimes the process was a mix. His business is entirely based in providing IT-based solutions and had stated that his adoption of IT is guided by formal and informal research completed by his staff as part of their general interests, suggesting that at this level of knowledge, a comparatively in-depth knowledge of IT can be the seed of new business goals.

When asked how they become aware of new IT products, services or solutions, six of the ten said that it was typically through word-of-mouth via friends or through their peer business community. Five of the ten said that it was the also case that when a business goal was identified, a vendor was engaged to meet that need. Four said that they employed the services of local experts – either internal staff, friends in the IT industry or their own informed research. One cited conferences and academic training as key areas where he would increase his awareness of products and solutions related to his enterprise. Nine of the ten said that they would investigate the business potential of a product or service that they knew was being used by a competitor or peer. The only respondent that did not follow this trend did not see the question as applying to his business, because he feels that he has no competitors or peers in Ireland due to the specialisation of the service he provides.

When asked to consider a recent adoption of a new IT product or service, three responded with implementations of enhancements to their marketing process, including website development. A further three responded with examples of an internal process enhancer, such as the adoption of VOIP or a third-party email service. Two responded with examples that were implemented to improve their product quality (for example proofing tools) and two responded with solutions targeting the end user experience (a new call management system and an online booking system). The interviewees were then asked what prompted them to take on that new product or service. Only two suggested that cost savings were a factor. In all cases, the respondents answered with specific business goals in mind, where a need had been identified in terms of the product quality, the company branding, the customer experience or the efficiency of the business process. Only one respondent explicitly said that his goal had been to increase revenue.

When asked what is important when a new product is considered for adoption, multiple factors were given by each respondent (Figure 4.5). Six responded that ease-of-use was a priority. Six responded that the reputation of the product or the supplier/vendor was crucial. Four reported that affordability was a factor. Three reported that support was important. With the exception of affordability, each of these is related to the

confidence the enterprise will have in terms of being able to maximise the value of the product. Just one respondent prioritised price or possible savings above other factors. His enterprise has undergone a profound reduction in headcount in the last six years, with over 90% of staff being made redundant over that time.

Having adopted the IT product or service, most people said that the IT products that they would consider to be a component of their core business would get more attention than ancillary products and services.

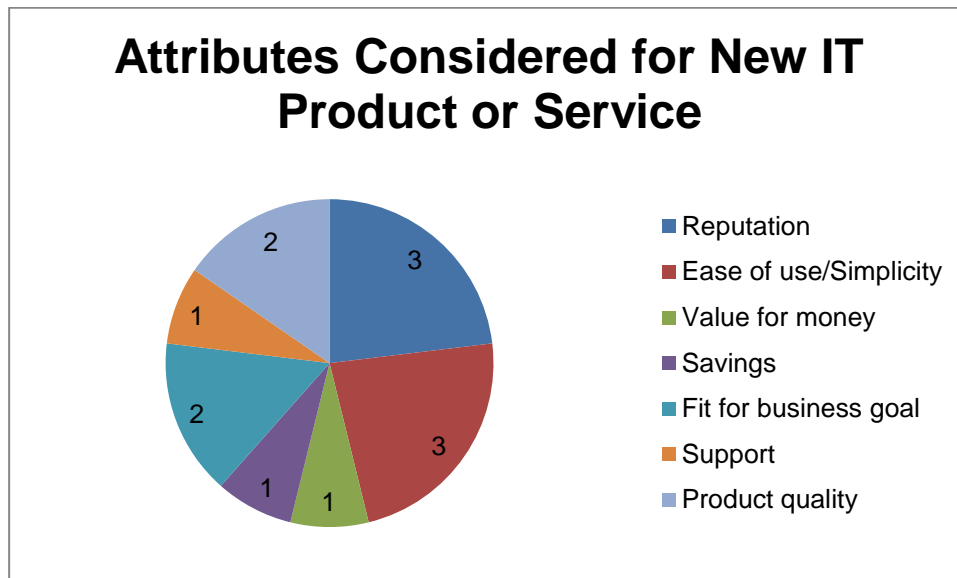


Figure 4.5. Respondents were asked “*What attributes do you consider when evaluating a new IT product or service*”. The most important attributes, in their view, were reputation (3), ease of use/simplicity (3), followed by “fit for business goal” (2) and product quality (2) and finally by value for money (1), Savings (1) and Support (1)

4.3.2 The adoption of Zero-Cost software and services in Irish Micro-Enterprises

Use of Zero-Cost Solutions

Every micro-enterprise in this study uses zero-cost software or services as part of their day-to-day business, however there are notable trends in where these solutions have been deployed. Also, three respondents could not readily name any product or service

in use in their business that would be classed as zero-cost without serious thought. It was only later in the interview that examples of zero-cost services that were in use in the enterprise were remembered. This is noteworthy, in that it may suggest that zero-cost services either provide a service that is of sufficient quality that its cost is not a factor, or it may be that services that are not paid-for solutions are not considered as being fully adopted by the company.

Eight use zero-cost solutions for advertising purposes of which seven are advertising through zero-cost social media services. Of these seven, however, two pay a third party for the maintenance of those components. This is interesting because the fact that the product is zero-cost does not necessarily mean that the business will not pay for the same solution. These businesses sought out a third party to manage these services in order to reduce the time and effort of staff. One respondent mentioned that a particular social media platform (Facebook) was a far more effective advertising method than anything they had used previously. A second respondent said that the loss of the use of Facebook as an advertising platform would be “a blow” to the company. These statements imply that a quality and effective product will be sought out regardless of its status of zero-cost or otherwise.

Five respondents use zero-cost email services, two of whom rely on the associated online collaboration tools and calendaring features of one of these products (Google Apps) in the management of their business process. Both of these respondents said that the adoption of Google Apps had been a very positive experience for the company, and that they felt their business was better organised and more agile as a result.

Three use VOIP (Skype) or instant messenger (WhatsApp/Viber) solutions. Two of these use these products specifically to contact customers. Two use desktop office applications (OpenOffice) and three use desktop applications which they describe as convenient, but not important to their job (CutePDF creator, Dropbox).

Of all these enterprises, the one that most actively uses free software is the IT software and service provider. He also uses a free database solution (PostgreSQL) in his products to reduce costs to his customers and increase his competitiveness. His enterprise uses the online email, calendaring and collaboration tools provided by Google Apps, uses free VOIP for communication between staff, and a free desktop solution for his offline office suite needs (OpenOffice). The company uses their own product in-house as part of their development strategy. As a result, his software costs are very low, while he has the highest level of IT skills available of all the enterprises. He mentioned one solution that he pays for – a software bug testing suite. He is very comfortable paying for this software because he believes the maturity and value of the product is unmatched with any zero-cost software. He believes his own product has been enhanced in terms of reliability and overall quality as a result of this purchase.

At the other end of the spectrum are the two sole traders that believe that their core product is essentially IT-free (the music teacher and the gym owner), but who also make significant use of zero-cost solutions. Lacking any formal in-house skills, they are reliant on third parties for advice and information regarding software and are among the five respondents that said that they actively seek out zero-cost software to manage their enterprise. Both mentioned that they don't consider IT to be their job and that ease of use was crucial. Significantly, however, they have both also paid for software for which zero-cost counterparts are available.

Perception of Zero-Cost Solutions

When the respondents were asked what caused them to choose a paid-for solution over a zero-cost one, a number of reasons were given. Six said that the quality of the paid-for offering was their chief concern. The owner of the graphic design firm said that he could not be seen by customers to be sacrificing the quality of his core product for the sake of cost. He said his customers and trading partners expected compatibility with Creative Suite by Adobe. Three of the remaining respondents said that they were not aware of a free alternative to the solutions they had adopted; with two of those admitting that it had not occurred to them that there may be free alternatives. The last respondent stated that he had been looking for a product that was tailored to his industry, and that product support was a factor in this.

When asked if there was a difference in their level of trust between zero-cost and paid-for solutions, five said that yes, there was a difference. Three of those five said that they were generally suspicious of zero-cost solutions. Another of those five said that he believed zero-cost solutions were typically inferior to paid-for ones. Of the three that said no, there was no difference, one said that he had believed so in the past, but zero-cost solutions are very common now. Of the last two, one was unsure, that she would expect different things of zero-cost versus paid-for products and so the type of trust was different. She did, however, state that she generally expected the documentation and support available for zero-cost services to be inferior to paid-for solutions. The final respondent said that the question was not valid, and that trust depended on the level of quality of and the availability of support for the product, regardless of the monetary cost.

When asked whether there was a time when paying for a product evoked a negative reaction, nine of the ten respondents had examples. Of these nine, seven ultimately declined to adopt the presented option, however six of those seven paid for another product that provided the necessary functionality at a lower price, with the remaining respondent meeting his requirements through a zero-cost solution. Two of the nine respondents had paid for the presented solution, but both felt that the vendor had used their position to charge for features that would not be used. When all ten respondents were asked about their thoughts on vendor lock-in, six said that they did not worry about it. One of these six said that vendor lock-in was a positive thing, and that choices are made on the basis of the relationship between the vendor and the client. Another (the music teacher) said that he made efforts to diversify his list of vendors and business goals so that he was not dependent on any particular one. Of the remainder of those that said that they did not worry about vendor lock-in, three said that they felt they had no choice or that vendor lock-in was “a necessary evil these days” and did not see the point in worrying about it. Of the four that said they do worry about it, two were as concerned about being locked-in to IT in general, rather than a specific vendor. One of the four that do worry, like one of the six that did not worry, felt that it was “a necessary evil”.

When asked whether they would be inclined to put the same effort into mastering paid-for software as zero-cost, seven of the ten respondents said that they would be more inclined to invest time in learning to fully use paid-for software compared to zero-cost. One respondent said that there was simply a greater emotional connection with paid-for software. Another said that they would feel compelled to get “their money’s worth” from a paid-for solution. A third said that they would expect a lower barrier to learning from paid-for software and that the support and documentation would ease the process. Another said that they would “expect more from paid-for software” and would spend more time finding that value in the product. One respondent stated that it was easier to judge the value that the enterprise puts on an IT investment if it has a monetary value associated with it, and would be easier to judge the effort that was expected of the staff and the importance of the product to the company as a result.

4.3.3 Discussion

It would appear that there are definite perceptions guiding the adoption or otherwise of zero-cost services. With the exception of the software and services company, there is a general belief that zero-cost software is inferior to paid-for software, unless it is backed by a solid reputation, either of the vendor (e.g. Google) or the product itself (Skype). Zero-cost products that are backed by a significant reputation, or that are accompanied by a trusted recommendation, are more likely to be adopted in micro-enterprises.

With the exception of the enterprise that had undergone a severe decrease since the start of the Irish recession in September 2008, there is little evidence that micro-enterprises have increased their interest in zero-cost software to combat recessionary pressures. The enterprises that have weathered the storm of shrinking markets seem to have done so without a significant change in purchasing strategy. When investment is made, paid-for solutions have generally been replaced by cheaper, better performing paid-for solutions that are a better fit for their current business needs. If a cheaper solution has not been made available, their current IT infrastructure is maintained almost regardless of its fit for their current business process.

Of the zero-cost solutions adopted, many are ubiquitous internet services that would be available to end user and business user alike – e.g. Facebook, Skype, YouTube and various free email providers. These are commodity products that can be supported by friends and family through their own experience of IT. There seems to be limited availability or awareness of zero-cost solutions tailored for business. There is a deep suspicion in place regarding zero-cost solutions if it is not apparent how the vendor benefits from providing the solution. Also, and fundamentally, micro-enterprises seem reluctant to expose themselves to risk by adopting products that are not supported through either support agreements with a vendor or through friends and family.

4.4 Conclusion

In this chapter, the data from the semi-structured interviews of the decision-makers of ten Irish micro-enterprises was presented. The defining features of the businesses were captured and differences and similarities between the companies were noted. The context of their business decisions was established by exploring their age, number of employees and their attitude to the supply of their product portfolio. Their attitude to business expansion was noted.

The role of IT in supporting these business goals was investigated, how that support is perceived, and where it is adding value. The perceptions of IT in each enterprise and what is considered important in terms of IT adoption was examined. The adoption level of zero-cost services in each enterprise was then queried, and the manner in which these services and software solutions are meeting business goals was explored. Finally, the general perception of zero-cost solutions in terms of their fit for business was studied. Trends and correlations were identified for further analysis.

Chapter 5 – Conclusions and Future Work

5.1 Introduction

The research topic is “IT Value in Irish Micro-Enterprises and the Adoption of Zero-Cost Services”. This topic was evaluated in terms of the following research questions:

- How is the adoption of IT products and services managed in Irish micro-enterprises?
- Are zero-cost services an attractive option in terms of minimising cost and maximising strategic alignment?

This topic was analysed through the use of the semi-structured interviews of the decision-makers in ten Irish micro-enterprises. This was done in order to identify the context in which IT decisions are made in an Irish micro-enterprise.

5.2 Findings

5.2.1 The Adoption of IT in the Irish Micro-enterprise

In terms of the question “How is the adoption of IT products and services managed in Irish micro-enterprises?”, the following trends were identified.

This study has found that Irish micro-enterprises can rely significantly on IT software and services to meet their business goals, even in circumstances where their core product is essentially IT-free. The type of adoption varies considerably from business to business. Some rely on IT for the advertising and sale of their product. Some use IT to improve their customers’ experience while others use IT to ensure the delivery of a quality product. Also, some leverage IT to diversify their product offerings to reduce their dependency on any one business area.

It was found that cost is not necessarily the primary concern for the micro-enterprise. Rather there is evidence of a strategy of pursuing low-risk adoption, either by evaluating solutions that are recommended by peers or by seeking out known-brand and high-quality offerings.

It was found that in the absence of internal IT expertise, ease-of-use and business fit were crucial to the adoption of IT products and services.

5.2.2 The Adoption and Perception of Zero-Cost Software and Solutions

In terms of the question “Are zero-cost services an attractive option in terms of minimising cost and maximising strategic alignment?”, the following trends were found.

The use of zero-cost services is prevalent throughout the micro-enterprise sector. While a significant proportion of the interviewees stated that they would deliberately seek out zero-cost solutions to achieve their business goals, a notable spread was found across the enterprises in terms of level of adoption and also how critical these zero-cost services are to the business process. Some of the enterprises adopt zero-cost services in an organic and ad-hoc way, without much strategic thought. The solutions used in this manner are typically low in complexity and of limited functionality, and could generally be replaced with another solution without significant disruption. It may be that zero-cost services are in a state of perfect competition, where differentiation is necessary but difficult given the acceptable level of complexity.

Other enterprises have fundamentally integrated zero-cost solutions into their core business processes through incorporation with their product and/or in-house and business-to-business information needs. Where this occurs, however, there are generally significant IT skills in place or the company is under extreme pressure to minimise costs.

It was found that there is generally a reluctance to adopt zero-cost services on the grounds that the motives under which the zero-cost service is provided are not clear or well understood. There is a fear that by adopting a zero-cost service, the micro-enterprise may be exposed to unforeseen exploitation of their position and/or dependence. In addition, a number of respondents stated that they believed that a

zero-cost solution would or “must” be inferior in some way. Three stated that it had not occurred to them to consider zero-cost software for specific goals.

For the best-received zero-cost solutions that had been adopted across the micro-enterprises, the zero-cost status was not necessarily a factor. Rather, the emphasis was on their reputation and effectiveness when compared to similar paid-for solutions. This was particularly the case for the use of Facebook for advertising purposes and Google Apps for email and collaboration.

It was found that the zero-cost aspect of some solutions was not necessarily seen as an advantage, and that it was more beneficial for the company to reap the benefits of the zero cost solution by paying a third party to implement it, bringing expertise and support into the equation. There is a suggestion that by paying for something, the value of that solution and its strategic importance can be better understood within the enterprise. Typically, paid-for solutions attract more effort by staff to master them than zero-cost solutions.

In general, it was found that there is a low expectation of quality of zero-cost solutions and that there may not be a sufficient fit to the business process that is already in place. Decision makers are reluctant to trust a zero-cost solutions provider and staff found it difficult to quantify the value placed on the investment by the company. Lastly, there was a general lack of awareness of zero-cost solutions outside of the common social networking solutions that would also typically be used by private individuals.

5.2.3 Notable Trends and Generalizability

The ten micro-enterprises can be grouped into five distinct groups according to their strategic use of IT. The first group consists of the jewellery maker and the dentist. Both of these enterprises are reliant on a sole vendor for the delivery of their product. Both feel that they have a lack of choice in how their implementation is handled. Both stated that innovations are prompted almost exclusively by the vendor and that there is limited scope for diversification both inside and outside this relationship. Their use of zero-cost services has been almost entirely in the area of advertising.

The second group consists of the guitarist and the gym owner/personal trainer. Both of these interviewees see their product as something that is essentially IT-free and do not believe that IT can significantly improve that core offering – that, in the end, the product delivery is completed through a one-on-one relationship with the customer. Both of these enterprises aggressively target free solutions to minimise costs. Both have paid for software that they see as adding value to their product portfolio or customer experience, but this has been the exception rather than the rule.

The third group consists of the manager of the games equipment retailer and the mechanical services contractor. Both of these enterprises have survived a significant reduction in revenue since the onset of the recession. Both consider IT to be an important enabler in their business process but both consider their IT investment to be “on hold” until the market recovers. Both confessed to maintaining aging IT kit for longer than they believed was wise in an effort to cut costs. They have both made significant changes to their IT environment in recent years, with one adopting the free Google Apps solution for his messaging needs, and the other overhauling his office and mobile phone infrastructure. In both cases, the impetus for change was the availability of a lower-cost solution that provided a better experience for staff and customers than the previous, more costly solution. A notable difference between the two enterprises is that the adopter of the zero-cost service stated that he had access to IT experts within the family, while the other manager said that he made efforts to research things himself but believed himself to be “naïve” regarding technology. This ties in with the previously stated trend of confidence in the solution being a crucial aspect of adoption, and that this confidence is generally sourced from support being available through friends, co-workers or support contracts.

The fourth group consists of the photography enterprise, the gourmet pizzeria and the graphic design company. All three targeted paid-for solutions that they felt would reflect positively on the company. For each business, it was crucial that the adopted solution work reliably and would help maintain the quality of the product. In this regard, their focus was on quality paid-for solutions that could be relied upon, either through the popularity and reputation of the supplying vendor or through support contracts.

The fifth group consists of the final micro-enterprise – the software house. This enterprise aggressively seeks out zero-cost solutions for their business goals, both in terms of internal use and also to enhance their product offering. Through the internal skills of the company and confidence in the capability of zero-cost solutions, this enterprise has been able to almost entirely remove paid-for software from their business process. This is not, however, an absolute position; the manager has paid for an IT solution that improves the quality of his product and he has absolutely no reservations regarding that.

These groupings reflect five different exposures to IT in the micro-enterprise, and provide a comprehensive template for further study in this area.

5.3 Limitations and Further Study

This study was limited in scope by both time and the methodology adopted. A sample of ten micro-enterprises selected for a context-sensitive study through semi-structured interview is appropriate to identify trends in the adoption of IT in Irish micro-enterprises; however there are a number of areas that have not been addressed. For example, although attempts have been made to limit the effects, implicit throughout this study is an assumption that zero-cost services are in fact suitable for the business processes of Irish micro-enterprises. This study has not addressed that area. However, now that the trends have been identified, there is scope for a survey-based study to be conducted over a much larger group in order to identify what zero-cost software solutions are in use and also whether there is any correlation between the level of adoption and perceived success of the enterprise. Through a study of this nature, recommendations may be made regarding the adoption and support of zero-cost services as part of a public or private strategic initiative for an “IT Therapy” approach for micro-enterprises.

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Appendices

Appendix A – Interview Questions

Section 1 - IT strategy and process in a micro enterprise

What is your business?

What service or product do you provide?

How long have you been in business?

How many people are employed in your enterprise?

Is business expansion part of your business goals?

Who makes the decisions regarding IT in your company?

Do you make use of family or friends in the management and administration of the IT components of your business? If so, under what circumstances?

How would you describe your approach to new technology?

Would you describe yourself as cautious regarding technology?, fearful?, enthusiastic?, ambivalent?, neutral?, disillusioned?

Do you consider IT products and services to be a component of achieving your business goals or process? If so, would you say it is an important or critical component?

Do you include the improvement of your IT environment and services in your business goals?

Is it distinct from other components of your business process?

Can you think of examples of when you have adopted a new IT product or service?

What prompted you to take on that new IT product or service?

What is important to you when choosing a new IT product or service?

How do you evaluate an IT company or service prior to adopting it?

What attributes do you consider when evaluating a new IT product or service?

Would size, age or reputation of the supplying company be a factor?

What else might prompt you to take on a particular IT product or service? Ease of use? Upkeep?, Ubiquity?, 'Value for Money?'

How does adopting a new product or service make you feel?

Does this feeling last? If not, when does it change?

When do you upgrade an IT service, product or asset?

What would cause you/has caused you to drop an IT service or product?

Do you generally expect your goals to be achievable through IT, once that goal is identified as having an IT component?

Do you consider there to be legitimate or acceptable difficulties in the adoption of IT to achieve your goals? If so, what are they (e.g. complexity, cost, third party delays)?

Do you evaluate IT options differently depending on the goal?

Would you invest more/less time/money in an IT product or service, depending on the business goal?

Would you be more likely to adopt an IT product or service if you found out a competitor or peer was using that product or service?

Do you see any differences in the quality or standard of IT products depending on whether it is targeted at your business versus your personal life?

Are you ever frustrated by IT products or services? If so, does that affect your decisions regarding further adoption of IT? Can you give examples?

Section 2 – Free Software

Do you use free (zero financial cost) software or services? Do you have an example?

If so, are you currently using free services for components that are core to your business?

If that free service became unavailable or was discontinued, do you think you would have any difficulty finding an equivalent service?

Do you deliberately seek out zero cost services to achieve your business goals?

Have you paid for IT software or services? Do you have an example?

If so, what, in that case, caused you to choose a paid service or product?

Have you considered a free service, only to move to a priced one? If so, why?

Can you think of an example when paying for a product or service seemed unpalatable? What, in that case, made the idea of paying for that product so negative?

Have you moved away from a free solution to a paid one? If so, what made you move? Did you have any concerns?

Have you moved from a paid solution to a free one? If so, what made you move? Did you have any concerns?

Have you considered how the free software/service provider earns profit through the provision of free solutions?

Is there any difference in your level of trust in a product, depending on the monetary charge associated with that product?

Are you more, less or similarly inclined to master paid-for products and services as free?

Have you expanded your business process as a direct result of being made aware of a free service?

If so, was this area somewhere you had consciously considered moving in the past?

Section 3 - Final thoughts

What would you say drives your decisions regarding the adoption of IT products and services?

Have I.T. products and services opened up previously unachievable opportunities to you?

Has there been a time when business growth has occurred directly because of opportunities or innovations in IT services or software?

Which comes first - the knowledge of IT, or the business goal? Do you have an example?

Where do you hear about IT products and services?

When adopting a new IT product/service, are you concerned about vendor lock-in?

Would you have an exit strategy?

Have you any concerns about the evolution of IT products with regard to businesses like your own?

How would you describe the impact that Information Technology has on your business process?

After this interview, are you more or less likely to seek out zero cost software for your business, or is your position unchanged?

Appendix B – Application for the Approval of the Ethics Committee

Information Sheet – Employer

Researcher: Simon Barrett

This dissertation is to be submitted to the school of computer science and statistics of Trinity College Dublin, University of Dublin, in partial fulfilment of the requirements for the degree of Masters of Science in the Management of Information Systems (MSc. MIS).

Background:

Information technology (I.T.) has become ubiquitous in business. While the evaluation and adoption of I.T. in medium and large enterprises has been addressed in research, there has been little work addressing the adoption of I.T. in micro enterprises. This research project intends to address this, with specific consideration of the decision making process with regard to the adoption of zero cost I.T. products and services.

Procedure:

This research will be conducted by semi-structured interview of key decision makers in Irish micro enterprises.

Declarations of Conflicts of Interest:

I, Simon Barrett, declare that no conflicts of interest have been identified in the proposed research or procedure.

Participation:

You were selected to participate as a key decision maker in an Irish micro enterprise. Participation is entirely voluntary. The participant may withdraw at any time and for any reason without penalty. Participants may omit or withdraw individual responses without penalty.

The interview will consist of a series of questions relating to I.T. adoption in your business. It is expected that each participant will be interviewed once and that each interview will take less than 1 hour. The interview will be recorded on an audio recording device for further analysis by the researcher. The participant can opt out of recording at any time. No recordings will be made available to anyone other than the researcher/research team, nor will any such recordings be replayed in any public presentation of research.

The anonymity of participants and third parties will be preserved in analysis, publication and presentation of resulting data and findings. In the extremely unlikely event that illicit activity is reported I will be obliged to report it to appropriate authorities.

I confirm that I will (where relevant):

- Familiarize myself with the Data Protection Act and the College Good Research Practice guidelines http://www.tcd.ie/info_compliance/dp/legislation.php;
- Tell participants that any recordings, e.g. audio/video/photographs, will not be identifiable unless prior written permission has been given. I will obtain permission for specific reuse (in papers, talks, etc.)
- Provide participants with an information sheet (or web-page for web-based experiments) that describes the main procedures (a copy of the information sheet must be included with this application)
- Obtain informed consent for participation
- Should the research be observational, ask participants for their consent to be observed
- Tell participants that their participation is voluntary
- Tell participants that they may withdraw at any time and for any reason without penalty
- Give participants the option of omitting questions they do not wish to answer if a questionnaire is used
- Tell participants that their data will be treated with full confidentiality and that, if published, it will not be identified as theirs
- On request, debrief participants at the end of their participation (i.e. give them a brief explanation of the study)
- Verify that participants are 18 years or older and competent to supply consent.
- If the study involves participants viewing video displays then I will verify that they understand that if they or anyone in their family has a history of epilepsy then the participant is proceeding at their own risk

-
- Declare any potential conflict of interest to participants.
 - Inform participants that in the extremely unlikely event that illicit activity is reported to me during the study I will be obliged to report it to appropriate authorities.
 - Act in accordance with the information provided (i.e. if I tell participants I will not do something, then I will not do it).

Signed:

Date:

.....

Lead Researcher/student in case of project work

Information Sheet – Participant

Researcher: Simon Barrett

This dissertation is to be submitted to the school of computer science and statistics of Trinity College Dublin, University of Dublin, in partial fulfilment of the requirements for the degree of Masters of Science in the Management of Information Systems (MSc. MIS).

Background:

Information technology (I.T.) has become ubiquitous in business. While the evaluation and adoption of I.T. in medium and large enterprises has been addressed in research, there has been little work addressing the adoption of I.T. in micro enterprises. This research project intends to address this, with specific consideration of the decision making process with regard to the adoption of zero cost I.T. products and services.

Procedure:

This research will be conducted by semi-structured interview of key decision makers in Irish micro enterprises.

Declarations of Conflicts of Interest:

I, Simon Barrett, declare that no conflicts of interest have been identified in the proposed research or procedure.

Participation:

You were selected to participate as a key decision maker in an Irish micro enterprise. Participation is entirely voluntary. The participant may withdraw at any time and for any reason without penalty. Participants may omit or withdraw individual responses without penalty.

The interview will consist of a series of questions relating to I.T. adoption in your business. It is expected that each participant will be interviewed once and that each interview will take less than 1 hour. The interview will be recorded on an audio recording device for further analysis by the researcher. The participant can opt out of recording at any time. No recordings will be made available to anyone other than the researcher/research team, nor will any such recordings be replayed in any public presentation of research.

The anonymity of participants and third parties will be preserved in analysis, publication and presentation of resulting data and findings. In the extremely unlikely event that illicit activity is reported I will be obliged to report it to appropriate authorities.

I confirm that I will (where relevant):

- Familiarize myself with the Data Protection Act and the College Good Research Practice guidelines http://www.tcd.ie/info_compliance/dp/legislation.php;
- Tell participants that any recordings, e.g. audio/video/photographs, will not be identifiable unless prior written permission has been given. I will obtain permission for specific reuse (in papers, talks, etc.)
- Provide participants with an information sheet (or web-page for web-based experiments) that describes the main procedures (a copy of the information sheet must be included with this application)
- Obtain informed consent for participation
- Should the research be observational, ask participants for their consent to be observed
- Tell participants that their participation is voluntary
- Tell participants that they may withdraw at any time and for any reason without penalty
- Give participants the option of omitting questions they do not wish to answer if a questionnaire is used

-
- Tell participants that their data will be treated with full confidentiality and that, if published, it will not be identified as theirs
 - On request, debrief participants at the end of their participation (i.e. give them a brief explanation of the study)
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Signed:

Date:

.....
Lead Researcher/student in case of project work

Informed Consent Form - Employer

Researcher:

Simon Barrett

Background of Research:

Information technology (I.T.) has become ubiquitous in business. While the evaluation and adoption of I.T. in medium and large enterprises has been addressed in research, there has been little work addressing the adoption of I.T. in micro enterprises. This research project intends to address this, with specific consideration of the decision making process with regard to the adoption of zero cost I.T. products and services.

Procedures of this study:

This research will be conducted by semi-structured interview of key decision makers in Irish micro enterprises. Each interview is expected to be less than 1 hour. No extraordinary risks to you have been identified in your participation.

Publication:

The results of this research will be included in a dissertation to be submitted to the school of computer science and statistics of Trinity College Dublin, University of Dublin, in partial fulfilment of the requirements for the degree of Masters of Science in the Management of Information Systems (MSc. MIS). Individual results will be aggregated anonymously and research reported on aggregate results.

DECLARATION:

I am 18 years or older and am competent to provide consent.

I have read, or had read to me, a document providing information about this research and this consent form. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.

I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.

I understand that if I make illicit activities known, these will be reported to appropriate authorities.

I understand that I may stop electronic recordings at any time, and that I may at any time, even subsequent to my participation have such recordings destroyed (except in situations such as above).

I understand that, subject to the constraints above, no recordings will be replayed in any public forum or made available to any audience other than the current researchers/research team.

I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.

I understand that I may refuse to answer any question and that I may withdraw at any time without penalty.

I understand that my participation is fully anonymous and that no personal details about me will be recorded.

<If the research involves viewing materials via a computer monitor> I understand that if I or anyone in my family has a history of epilepsy then I am proceeding at my own risk.

I have received a copy of this agreement.

EMPLOYER'S NAME:

EMPLOYER'S SIGNATURE:

Date:

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

RESEARCHERS CONTACT DETAILS:

INVESTIGATOR'S SIGNATURE:

Date:

Informed Consent Form – Participant

Researcher:

Simon Barrett

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I have received a copy of this agreement.

PARTICIPANT'S NAME:

PARTICIPANT'S SIGNATURE:

Date:

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

RESEARCHERS CONTACT DETAILS:

INVESTIGATOR'S SIGNATURE:

Date: