

# OpenAIR@RGU

# The Open Access Institutional Repository at Robert Gordon University

http://openair.rgu.ac.uk

**Citation Details** 

# Citation for the version of the work held in 'OpenAIR@RGU':

AQUILINA, R., 2014. IT strategizing of small firms in Malta: a grounded theory approach. Available from *OpenAIR@RGU*. [online]. Available from: http://openair.rgu.ac.uk

#### Copyright

Items in 'OpenAIR@RGU', Robert Gordon University Open Access Institutional Repository, are protected by copyright and intellectual property law. If you believe that any material held in 'OpenAIR@RGU' infringes copyright, please contact <u>openair-help@rgu.ac.uk</u> with details. The item will be removed from the repository while the claim is investigated.

# IT Strategizing of Small Firms in Malta A Grounded Theory Approach

**Ronald Aquilina** 

A thesis submitted in partial fulfillment of the requirements of the Robert Gordon University for the degree of Doctor of Business Administration

June 2014

# Acknowledgements

I would like to thank my supervisors Professor Heather Fulford and Professor Peter Strachan for their continuous support and encouragement throughout my journey to complete this study. Above all, my principal supervisor Professor Heather Fulford provided me with excellent guidance, especially through her rigorous supervision of this research.

A special thank you goes to Dr. Alexander Rizzo, a graduate of Robert Gordon University, who was my inspiration to commence this research and stood always by my side throughout the endeavours of this doctoral study. I would also like to thank Mr. Joseph Cutajar for his assistance. I am also grateful to the research participants, as without them this research study would not have materialised. I am especially indebted to my Principal Mr. Charles Theuma and the Faculty Head Ms. Alessandra Theuma of St.Martin's Institute of Higher Education, the academic institution where I work, for their encouragement and support.

Most of all, I acknowledge the love, patience, motivation and continuous support of my wife Angela, and my children David and Sarah.

# Contents

Chapter	One	1
1. Intr	roduction	1
1.1.	Background to the Research	1
1.2.	The Research Problem and Identifying Gaps in Literature	5
1.3.	The Purpose Statement	6
1.4.	The Research Question, Aims and Objectives	8
1.5.	Structure of the Thesis	9
Chapter	Two	13
2. Lite	erature Review: IT-Business Strategy in Small Firms	13
2.1.	Chapter Overview and Literature Map	13
2.2.	The Diverse Nature of Organisational Strategy	15
2.2	.1 Strategy Formation in Small Firms	17
2.2	.2 Strategic Approaches to Managing IT	19
2.3	IT Adoption in Small Firms	21
2.3	.1 Adoption of E-Business in Small Firms	25
2.3	.2 Knowledge-Based View of IT Adoption in Small Firms	
2.3	.3 Owner-Manager's Influence on IT Adoption	
2.4	IT Alignment	36
2.4	.1 Alignment Dimensions	40
2.4	.2 Levels of Alignment	41
2.4	.3 Alignment Process Models	42
2.4	.4 IT Strategic Alignment in Small Firms	43
2.4	.5 IT Alignment with Business Processes in Small Firms	47
2.5	IT Alignment Challenges	49
2.6	Conclusion to the Chapter	51
Chapter	Three	53
3: Resea	rch Methodology - A Grounded Theory Approach	53
3.1	Introduction	53
3.2	Selecting Methodology of Inquiry: A Grounded Theory Approach	54
3.3	Philosophical Assumptions and Research Paradigms Adopted	57
3.4	Grounded Theory Research Method Applied	65
3.5	Grounded Theory Method: Data Collection	69
3.5	.1 Grounded Theory Cycle	70
3.5	.2 Sampling in Grounded Theory	71

3.6	Res	earch Method: Managing Data	75
3.6	5.1	Qualitative Data Analysis Tools and Techniques	76
3.6.2 Data Management		Data Management Strategy	79
3.7	Gro	ounded Theory Method: Data Analysis	
3.7	7.1	Emerging Categories	
3.7	7.2	Coding Strategy	
3.7	7.3	Coding Paradigm: Conditional Matrix	
3.7	3.7.4 Theoretical Integration		
3.8	Stra	ategies for Quality in Research	
3.9	Ana	alysing Ethical Considerations	92
3.10	C	Conclusion to the Chapter	94
Chapter	r Fou	r	95
4. Sn	nall F	irms' IT Adoption Behaviour – Emergent Concepts	95
4.1	Ove	erview and Aims of Chapter	95
4.2	Coi	nstructivist Application in this Research Study	97
4.3	Spe	cifying Categories, Sub-Categories, Properties and Dimensions	
4.3	3.1	Contextual Conditions Category	102
4.3	3.2	Actions and Reactions Category	112
4.3	3.3	Consequences and Outcomes Category	117
4.4	Coi	nsolidating the structural model towards IT Alignment	125
Chapter	r Five		128
5. Ev	aluat	ing Firms within IT Alignment Equilibrium States	
5.1	Ove	erview and Aims of Chapter	
5.2	IT .	Alignment Equilibrium States	
5.2	2.1	Adaptation Alignment State	131
5.2	2.2	Anticipation Alignment State	131
5.2	2.3	Synchronization Alignment State	
5.2	2.4	Collaboration Alignment State	
5.2	2.5	Remarks on Alignment States	
5.3	Ana	alytical Tools for Data Analysis	
5.4	Firi	ns in Adaptation Alignment State	135
5.5	Firi	ns in Anticipation Alignment State	158
5.6	Firı	ns in Synchronization Alignment State	
5.7	5.7 Firms in Collaboration Alignment State		
5.8	Точ	wards Studying Alignment Process Over Time	190
Chapter	r Six		193

6. Ev	/aluat	ting Alignment Process Over Time	
6.1	Ov	erview and Aims of Chapter	
6.2	6.2 Mapping Firms' Processes Over Time		
6.3	6.3 IT Alignment Behaviour: A Drifting Trajectory		
6.4	6.4 IT Alignment Behaviour: A Consolidating Trajectory		
6.5	6.5 IT Alignment Behaviour: A Surfing Trajectory		
6.6	6.6 IT Alignment Behaviour: A Fulfilling Trajectory		
6.7	6.7 Synopsis of Research Outcomes		
Chapter	r Sev	en	
7. Sy	7. Synopsis of Findings, Conclusions and Implications		
7.1	7.1 Introduction		
7.2	Syr	opsis of Findings	
7.2	2.1	Objective 1: Evaluation of Emerging Constructs	
7.2	2.2	Objective 2: Assessment of IT Alignment Equilibrium States	
7.2	2.3	Objective 3: Common Alignment Patterns in IT Adoption Behaviore	viour .241
7.3	Co	nclusions	
7.4	Imj	plications for Stakeholders	
7.4	4.1	Implications for Academics and Researchers	
7.4	4.2	Implications for Owner-Managers	
7.4	4.3	Implications for Outsourcers	
7.4	4.4	Implications for Policy-Makers and Private Institutions	
7.5	Lin	nitations and Recommendations for Future Development	
7.5	5.1	Transferability	
7.5	5.2	Confirmability	
7.5	5.3	Dependability	
7.5	5.4	Credibility	
7.5	5.5	Recommendations for Future Research Directions	
Referen	ices a	and Bibliography	
Append	lix 1.	Details of Small Firms That Participated in Research Study.	
Append	lix 2.	Interview Guidelines	
Append	lix 3.	Covering Letter to Participants	
Append	lix 4.	Full Set of Constructs Using MAXQDA	
Append	lix 5.	Dimensions With Corresponding Occurrences	
Append	lix 6.	Proposition Statements for IT Alignment Patterns	
Append	lix 7.	Prior Research	
Append	lix 8.	Turnitin Certificate	

# List of Figures

Figure 2.1 Literature Map	14
Figure 2.2: A Knowledge-Based View of Strategic Integration Between Business and IT	31
Figure 2.3: IT/Business Alignment model	37
Figure 2.4: MIT90 model	44
Figure 2.5: IS mapped into focus-dominance model	44
Figure 2.6: MIT90 model embedded in the Focus-dominance model	45
Figure 3.1: Framework for Design	59
Figure 3.2: Grounded Theory Method applied for Data Analysis	70
Figure 3.3: Sampling Strategy	72
Figure 3.4: MAXQDA Screen Dump	78
Figure 3.5 MAXQDA Screendump of a Memo used in this Research	80
Figure 3.6: Sample of In-Vivo Coding in MAXQDA used in this research	82
Figure 3.7 Screen Dump of On-going Grounded Theory Research using MAXQDA	83
Figure 4.1: A Framework for Small Firm Business-IT Alignment	99
Figure 4.2: Framework for IT Strategizing in Small Firms	101
Figure 4.3 Different Cycle stages of Context, Actions and Consequences	126
Figure 5.1: IT Alignment Equilibrium States	129
Figure 5.2: Code Matrix Browser - Contextual Conditions in Adaptation State	136
Figure 5.3: Code Matrix Browser - Action/Reactions in Adaptation State	149
Figure 5.4: Code Matrix Browser – Consequences/Outcomes in Adaptation State	153
Figure 5.5: Code Matrix Browser - Contextual Conditions in Anticipation State	159
Figure 5.6: Actions & Reactions - in Anticipation State	164
Figure 5.7: Code Matrix Browser - Consequences & Outcomes in Anticipation State	166
Figure 5.8: - Code Matrix Browser - Contextual Conditions - in Synchronization State	168
Figure 5.9: Code Matrix Browser- Actions & Reactions - in Synchronization State	173
Figure 5.10: Code Matrix Browser– Consequences/Outcomes in Synchronization State	176
Figure 5.11: Code Matrix Browser - Contextual Conditions in Collaboration State	179
Figure 5.12: Code Matrix Browser _ Actions & Reactions – in Collaboration State	183
Figure 5.13: Code Matrix Browser – Consequences/Outcomes in Collaboration State	186
Figure 6.1: Firms with an ADAPTATION Alignment end-state	199
Figure 6.2: Firms with an ANTICIPATION Alignment End State	200
Figure 6.3: Firms with a SYNCHRONIZATION Alignment End State	201
Figure 6.4: Firms with a COLLABORATION Alignment End State	202
Figure 6.5: Drifting IT Alignment Pattern	203
Figure 6.6: Consolidating IT Alignment Pattern	204
Figure 6.7: Surfing IT Alignment Pattern	204
Figure 6.8: Fulfilling IT Alignment Pattern	204
Figure 6.9: Drifting Trajectory Map	207
Figure 6.10 Consolidating Trajectory Map	213
Figure 6.11 Surfing Trajectory Map	218
Figure 6.12 Fulfilling Trajectory Map	224
Figure 7.1 Business-IT Alignment Patterns	241

# List of Tables

Table 2.1: Summary of key ICT attributes of E-Business:	27
Table 5.1: Firms grouped by Alignment State	
Table 5.2: Main Attributes of Alignment Equilibrium States	
Table 6.1: Firms by IT Alignment Pattern	
Table 6.2: IT Alignment behaviour - Drifting Trajectory	
Table 6.3: IT Alignment Behaviour - Consolidating Trajectory	
Table 6.4: IT Alignment behaviour - Surfing Trajectory	
Table 6.5: IT Alignment Behaviour - Fulfilment Trajectory	

### Abstract

The contribution of small firms towards the creation of economic value in a country's Gross Domestic Product, employment and innovation is widely acknowledged. Relatively little is known on how small firms are adopting IT strategically to acheive business-IT alignment and how alignment changes over time. This study examines from a dynamic perspective IT adoption actions undertaken by owner-managers, in relation to business-IT alignment in small firms in the island state of Malta. To attain its research objectives, the methodological stance adopted in this research study is that of grounded theory. Moving away from a deductive approach, this study embraces a constructivist approach using a combination of inductive and abductive thought. No fewer than thirty-one in-depth interviews are conducted with owner-managers to observe alignment patterns of IT adoption behaviour in their respective small firms operating in Malta and employing up to 49 employees. Four business-IT alignment equilibrium states are identified, serving as markers to map out the common IT alignment paths that each firm pursued, not necessarily in linear form, during their operational years. A substantive model, which identifies four distinct IT alignment patterns, denotes each common path that a group of firms took in their movement from one alignment equilibrium state to another, throughout their life-cycle stages. This study has substantive application and comprises several implications for the development of IT adoption behaviour when small firms endeavour to strategically align business with IT. It provides policy-makers, academic researchers and small firms' owner-managers with a theoretical framework that can provide them with factors that can predict the kind of alignment patterns that are likely to occur. Findings indicate that the quality of IT related technological solutions that are taken up by each small firm are reliant on the owner-manager's characteristics that focus mainly on the knowledge of internal IT expertise and the project management capabilities to manage IT outsourcers. Given that few studies have been conducted to study and establish patterns of IT alignment in small firms, this research provides an important contribution to knowledge and to the existing academic literature.

**Keywords:** Grounded Theory; Small Firm; IT Alignment; IT Knowledge; Strategic Behaviour; IT Adoption; Process; Outsourcing.

# **Chapter One**

## 1. Introduction

## 1.1. Background to the Research

The contribution of small firms towards the creation of economic value in a country's Gross Domestic Product, employment and innovation is widely acknowledged. The European Commission's Small Business Act Fact Sheet (2012) has indicated no fewer than 29,638 small firms operating in Malta in 2011: 95.1% employ with fewer than 10 full-time employees and the rest between 10 to 49 full-time employees. Malta is a small island, geographically located in the middle of the Mediterranean and the smallest member state of the European Union. Malta's economy is essentially a small business economy whereby its SME sector is dominated by micro-firms which exceed the EU average. The European Commission Recommendation relating to the definition of micro and small enterprises (Commission Recommendation 2003/361/EC) specifies that micro enterprises employ up to 9 full-time employees whereas small firms employ between 10 to 49 full-time employees. These small firms that are operating in Malta provide over 43% of total employment, 53% of the economy's value added and 56% of private sector employment in Malta.

The Maltese Government's policy efforts are directed continuously towards supporting small firms in their endeavours to survive and grow. This is apparent in the National Reform Programs such as Malta's National Strategic Reference Frameworks (2007-2013) and the Malta Government's Vision (2015), which relieve small firms from administrative burden. These programmes encourage entrepreneurs, innovators and small business people to invest in Information Technology (IT). The national education system has also been restructured to provide more emphasis on IT education. The Training Aided Framework (TAF) program administered by the Malta Employment Training Corporation (ETC) and the E-Business Development Grant Scheme (ERDF) launched by Malta Enterprise are other schemes launched in line with EU policy to support SMEs. The Vision (2015) document, which was launched by the Maltese Government in March 2010, emphasizes the importance of providing the appropriate resources and support to small firms. This document provides direction to Government Institutions and Constituted Bodies to effectively launch and sustain SMEs to develop ideas. In particular, this document highlights some weaknesses which are hindering

SMEs from being effective in their business activities such as lack of entrepreneurial culture, inadequate initiatives relating to research and development, out-dated equipment and minor corporate investment, a weak business support system and a low education level by EU standards. The Malta Chamber of Commerce and the Malta Information Technology Agency (MITA) are also coordinating various initiatives which promote lifelong learning in the area of Information Communications Technology (ICT) and SME support. The Malta Government's Budget for 2012 also grants a significant amount of funds to support SMEs and to assist them in their job and wealth creation.

Notwithstanding these initiatives, information relating to how small firms are adopting IT strategically in Malta is scarce. Before proceeding further, as this research study focuses on the concept of IT adoption, it is best to draw from the relevant literature on the various definitions of IT and Information Systems (IS). McNurlin, Sprague and Bui (2009) contend that during the past 50 years, by managing and operating IT to change the way they work, firms have brought changes to the information field – first known as data processing, later as management information system and now called IT. Various authors such as Avison and Fitzgerald (2008); Laudon and Laudon (2013) define IS as a set of interrelated components that combine the technologies, people, data and business processes to enhance organisational performance. Turban et al., (2008 p.17) claim that IT, which refers to the technological side of an information system, includes the hardware, software, databases, networks and other electronic devices. Avison and Torkzadeh (2009) also claim that whereas IT can be viewed as a subset of IS, IT is concerned with the study, design, implementation of computer-based IS and the inclusion of hardware such as computers, operating systems, servers and networks. This latter definition of IT fits well within this study. In this study, IT is used to refer to the technologies such as IT infrastructure including networking; the business processes that are embedded within the enterprise systems that are implemented, the users that capture the data and the management that oversees the IT function.

Literature relating to how small firms endeavour to attain alignment and how to link IT with business strategy is limited (Cragg, King and Hussin 2002; Chan and Reich, 2007). Alignment definitions have been postulated in the academic literature in various ways. Henderson and Venkatraman (1993) state that alignment is the degree of fit and integration among business strategy, IT strategy, business infrastructure and IT infrastructure. Reich and Benbasat (2000 p. 82) define alignment as "*aligning the* 

relationship between the business and IT infrastructure domain in order to take advantage of IT opportunities and capabilities". Luftman (2000 p.2) defines alignment as "applying Information Technology (IT) in an appropriate and timely way, in harmony with business strategies, goals and needs". Also, Chan and Reich (2007 p. 297) define alignment from three perspectives: linking the business plan and IT plan; ensuring congruence between the business strategy and the IT strategy; and examining the fit between business needs and information system priorities. These definitions are based on a number of implicit assumptions. Firstly, it is assumed that business strategies result from a business plan and that realised strategies are the outcome of planned strategies. Alignment is assumed to exist if a set of IT strategies are adequately developed and implemented to support business strategies. The second assumption is based on the premise that IT and business strategies can be aligned to attain an end-state alignment. During recent years, various researchers, such as Maes et al., (2000); Ciborra (2000); Chan and Reich (2007) advocate that alignment should be evaluated from a dynamic rather than a static perspective. It is widely acknowledged in the business strategy literature that strategies are rarely implemented as planned because they represent decisions that evolve to reflect changes in the organisational procedures and in the environment (Mintzberg 1978). Such rationale seems to imply that alignment is a dynamic process that emerges to adapt to changes that unfold. In this respect, Benbya and McKelvey (2006, p. 287) attempted to resolve the alignment issue from a dynamic perspective by suggesting that

"alignment is a continuous coevolutionary process that reconciles top down 'rational designs' and bottom-up 'emergent processes' of consciously and coherently interrelating all components of the Business/IS relationship at three levels of analysis (strategic, operational and individual) in order to contribute to an organization's performance over time."

This definition addresses most of the alignment criticisms brought up by Maes et al., (2000), Ciborra (2000), and Chan and Reich (2007). Similarly, Campbell (2007) provides a generic direction, as explicated by one of his focus group participants, for the attainment of alignment from a dynamic perspective without being prescriptive by advocating that business and IT should work together to reach a common objective. The definition of alignment, that is adopted in this research study, closely matches the latter definition because this study looks into patterns of IT adoption strategic

behaviour, whether planned or improvised, which may lead to alignment between business and IT. This study focuses on businesses employing fewer than 50 employees and operating in the manufacturing, wholesale/retail and services sectors in Malta which provide for 11%, 38% and 51% of small firm employment respectively. Indeed, each firm's on-going alignment between business and IT is a spinoff of the various IT projects that are implemented.

The concept of business strategy has been widely applied in management research by various researchers, who generated divergent definitions ranging from Chandler's (1962) strategy as a deliberate plan of action; Glueck's (1980) integrated strategic plan to achieve objectives; Porter's (1980) cost leadership, differentiation and focus generic strategies; Prahalad and Hamel's (1989) strategic intent; Porter's (1996) strategy as a unique and valuable strategic position rooted in systems and activities; Miles and Snow's (1978) strategic topologies and Mintzberg's (1978) strategy as a pattern. Despite the plethora of research conducted to understand and define business strategy in different contextual conditions, most small business research could not explain how strategy was being undertaken in small firms.

Contrary to their larger counterparts, research relating to strategy making in small firms is scarce (O'Regan and Ghobadian 2000). Rather than adopting a formal plan, small firms would devise strategy in an infrequent, unstructured, sporadic, improvisational and intuitive way, due to their limitations in resources, such as human, financial and administrative expertise (Woods and Joyce 2003; Kraus et al., 2007; Kohtamki, Kautonen and Kraus 2008; Rizzo 2011).

It is apparent that this rationale is in line with Mintzberg's (1978 p. 935) definition of strategy as "*a pattern in a stream of decisions*" that steers an organisation towards the development of internal procedures and alignment with the environment. This definition has been labelled as an *umbrella* strategy whereby the broad strategic outlines are deliberate, whereas the details are allowed to evolve as events unfold (Mintzberg, Ahlstrand and Lampel 2009). Consequently, strategy seems to be a mixture of both the intended plan and the emergent actions that embody patterns of decisions taken at organisational level. Also, Orlikowski (2000) and Ciborra (2001) present a non-functionalistic perspective of organisational change and IS innovation and challenge the view that change and innovation are the result of effective formal

planning, designing and executing activities. Rather, these authors contend, that most changes and innovative uses related to new technologies emerge from the unplanned, situated action of the organisation's participants as they are confronted with new circumstances. Therefore, rather than studying streams of decisions taken at organisational level, one should focus on the actions of participants as these tend to represent the traces that explain the realised strategy. Curran and Blackburn's (2001) contend that using positivist approaches would not suffice to explain the actions that are undertaken by owner-managers of small firms. In fact, this research study has evaluated the owner-managers' actions by adopting a non-positivist stance, using a grounded theory methodology. It is expected that this assessment of the owner-managers' actions will lead to the mapping of alignment patterns between business and IT.

#### **1.2.** The Research Problem and Identifying Gaps in Literature

The alignment of IT strategy and other business domains including business strategy and organisation structure have been under researched in small firms (Kobe, 2007). In particular, any research that was undertaken on IT alignment by small firms focused on the enablers and inhibitors of alignment and tended to ignore the change processes that lead to alignment between IT and business strategy (Smaczny 2001; Sabherwal and Chan 2001; Chan and Reich 2007; Levy, Powell and Yetton 2011). What is challenging to small firms is the extent to which a relatively fixed IT structure can be aligned with an ever changing business strategy that is influenced by a dynamic environment (Galliers 2004). The process of aligning IT with business strategy appears to be ambiguous as most firms do not seem to understand alignment (Avison et al., 2004). Tallon (2008) claims that the difficulty to measure both IT alignment and business strategy stems from their unobservable nature. Therefore, the research problem addresses the extent to which small firms, through their interaction between enablers and inhibitors and the corresponding IT adoption change processes, are achieving alignment between IT and business strategy.

Information relating to how small firms are reaping the benefits through Information IT adoption is scarce. Literature is also limited on how small firms endeavour to attain alignment both at strategic level and at process level over time and how to link IT with business strategy (Cragg, King and Hussin, 2002; Chan and Reich 2007; Tallon 2008).

The literature provides little insight as to how small firms' IT adoption behavioural patterns lead to the attainment of alignment between business and IT. Limitations that emanate from the literature entail:

- Most research studies relating to IT alignment with business strategy tend to be prescriptive. Such studies are based on deductive theories with pre-established patterns and hypothesis testing. For example, it is posited that deploying IT as an enabler with formalised strategic plans will lead to ongoing alignment between IT and business objectives (Chan 2002; Chan and Reich 2007).
- A restricted quantity of inductive studies that have been undertaken so far may render the issue of usability and generalizability relating to the outcomes of these studies difficult to endorse, leading to inconclusive results.
- Most research studies have ignored the interactions between enablers and inhibitors that contribute towards IT adoption. These variables are essential to consider if IT alignment is to be evaluated as a process over time (Luftman and Brier 1999; Luftman 2003; Rathnam, Johnsen and Wen 2005).

It is apparent that most of the existing literature on IT alignment tended to ignore the contextual conditions that shape small firm environments. Extending the list of enablers and inhibitors by incorporating contextual conditions will undoubtedly provide rich insights that will contribute towards the development of substantive mid-range theories. Mid-range theory refers to theory that is concrete, adaptable to a wide range of practice and easy to use (Kolcaba 2001). It is expected that these mid-range theories will lead to a better understanding how small firms adopt IT to attain alignment between business strategy and IT. This research study will endeavour to reduce some of the gaps identified in the literature by seeking patterns commonly adopted by small firms over time, to attain various levels of alignment between IT and business strategy.

#### 1.3. The Purpose Statement

The purpose of this qualitative research is to study and map patterns of alignment between business strategy and IT adoption in small firms operating in Malta. The methodological stance that has been adopted in this research study is that of grounded theory. This approach adopted in this study is in line with research developments in recent years, where grounded theory is being used as a methodology using the interpretative approach to undertake management research (Goulding 2002; Urquhart, Lehmann, and Myers 2010). In order to encompass the contextual conditions of these small firms, this research study adopts a constructivist approach using a combination of inductive and abductive thought (Reichertz 2007). Such an approach is suitable to generate a framework of IT strategic behaviour from the data that emanate from the area of enquiry. Whereas induction is utilised initially to examine the grounded data that derive from the initial cases, abduction considers the various possible explanations for the grounded data through the constant comparison analysis and by discovering a new rule which has not as yet emerged by logical rules. Such an approach moves towards the creation of an abstract conceptual framework. On applying this approach, the process of IT adoption behaviour leading to alignment, is likened to the process of heartbeat monitoring. This research method would also allow an explicatory means of the propositions that would emerge from evaluation of the data collected (Birks and Mills 2011).

Grounded theory is renowned for eliciting rich insights and comprehending the intricacies of organisational behaviour and activities leading to the construction of reality that is grounded in data (Flick 2009). No fewer than 31 small firms were researched over a 3 year period (2010 – 2012), using observations, interpretative and qualitative in-depth interviews with owner-managers and transcribing the digital recordings. For this study, convenience sampling was initially carried out to identify early participants, followed by purposeful and eventually theoretical sampling. Gathering data from each participating firm's website also contributed to the secondary data. This research study centred around the motivations and actions of the owner-manager, in line with Curran and Blackburn's contention (2001, p.5) who state that *"much small business research, for example, concentrates on the motivations and actions of just one person, the entrepreneur or owner-manager"*. MAXQDA was used as a qualitative data analysis software application in order to exploit the mapping capabilities that resulted from the coding and analysis of the large volume of data gathered.

The position taken in this research study is one of an anti-positivist orientation including Charmaz's (2006) approach towards the constructivist stance. Such a stance implies: that the researcher's own views which impact on the interpretivist and reflexive modes adopted in the study will mould the substance of the research (Denzin

and Lincoln 2008); that the adoption of the rigourous constant comparative analysis method provides consistency towards objectivity (Fernandez 2004); that any theories which are generated represent a construction of reality of a complex world as envisaged by the researcher's lens (Charmaz 2006). Initially, a typology of business-IT alignment equilibrium states was identified. Each state was used as a signpost and served as a basis to map out the IT alignment patterns that firms pursued over time. The common paths led to the identification of a number of trajectories explaining how and why IT alignment impacted on each firm's level of information systems' integration. The beneficiaries of this research study comprise: the academic and research community, local Government institutions and constituted bodies, private stakeholders and the small firms, particularly the owner-managers or their senior managers. It is expected that these beneficiaries will gain a better understanding of the contextual conditions required for firms to position themselves in any of the IT alignment equilibrium states that are identified in this study. Also, these beneficiaries may observe the firms' IT adoption behaviour by following any of the possible IT alignment patterns labelled in this study. In this respect, firms may be directed towards changing their current alignment equilibrium state by following an IT alignment pattern that will be in congruence with their contextual conditions.

#### 1.4. The Research Question, Aims and Objectives

The emphasis of this research is to study process by evaluating the ongoing interactions of constructs relating to IT adoption in small firms. These interactions result from the dynamic elements that unfold from the IT activities that contribute towards the attainment of different IT/Business alignment states. Gurd (2008), Charmaz (2009), Birks and Mills (2011), Urquhart and Fernandez (2013) advocate the use of grounded theory as the ideal method to deal with process. Indeed, this research followed Corbin and Strauss's (2008) approach of grounded theory which suits the researcher's deep involvement in the area under study, having worked for several years as software developer and IT Manager in medium-sized enterprises. The researcher's practical interests have influenced the realisation of the research question, which was also subject to fine-tuning during the various stages of the research process. Also consistent with Flick's (2009) claim relating to the formulation of the research question, the focus is on what will be studied, rather than on crafting specific questions for in-depth interviews.

The research question that directed this study and the corresponding aims and objectives can be expressed as follows:

#### How do small firms in Malta align IT adoption with business strategies?

The aims of the research are to explore how small firms align IT adoption with business strategies and to evaluate how IT alignment changes over time.

The objectives for this research study are as follows:

- 1. To identify and critically evaluate a reference set of constructs that act as antecedents to IT adoption behaviour in small firms.
- 2. To establish an analytical framework for assessing alignment states beween business objectives and IT attained by small firms.
- 3. To critically assess possible relationships between the business-IT alignment states and to seek common patterns of IT alignment undertaken by small firms.

## 1.5. Structure of the Thesis

This chapter sets out the scene by providing an overview of the research study. It addresses the research problem that results from reviewing the literature and detects gaps which the research study seeks to address. The purpose statement, the research question and the research objectives are also formulated. This chapter also emphasizes the impact and contribution of the study on potential beneficiaries such as the academic and research community, local Government institutions and constituted bodies, private stakeholders and the small firms, particularly the owner-managers or their senior managers.

Chapter 2 grounds firmly the research problem in the alignment between IT and business strategy with a literature review that is illustrated with a literature map as illustrated in figure 2.1. The timing of the literature review when undertaking a qualitative study, particularly within the grounded theory methodology, has been a matter of contention and often a misunderstood aspect among grounded theorists for over 40 years. Reviewing the literature prior to undertaking research has stimulated most of this debate. Glaser (1992) insists on postponing the literature review until the data analysis is completed so as not to enter the research study with any

preconceived ideas and avoid polluting the findings. However, Charmaz (2006), Urquhart (2007), and Corbin and Strauss (2008) assert that the researcher would do well to access the literature before embarking on a research topic, as this would provide an indication of the current knowledge and bonds the researcher with the research. In this research study, a preliminary literature review prior to the commencement of the research was undertaken. Reviewing the literature was also an on-going process throughout the data collection phase so as to enhance the researcher's theoretical sensitivity towards the substantive area of enquiry. However, the researcher also intensified the literature review after data collection was saturated so as to compare the findings with the theoretical frameworks generated.

In this second chapter, a comprehensive literature review is undertaken on three main classifications, namely, the diverse nature of strategy, the IT adoption in small firms and the IT alignment challenges. The first classification focuses on the traditional definitions of strategy which are based mainly on deliberate planning, the ten strategic schools as explicated by Mintzberg, Ahlstrand and Lampel's (2009) particularly the planning school, the entrepreneurial school and others which encapsulate the diverse viewpoints on business strategy by various researchers. This classification considers also the strategic approaches to IT and draws on the classical literature such as Porter (1980), Porter and Millar (1985), Earl (1987, 1989, 1997), Scott Morton (1991) dealing with the importance of planning for effective business changes and using IT as an enabler to support these proposed changes.

The second classification relates to IT adoption in small firms, where critical success factors that are enabling or hindering IT adoption and use within the contextual conditions, are considered. In particular, the literature review adopts a resource-based view of the firm by analysing the use of knowledge in small firms. Of greater significance is the owner-manager's influence on IT adoption, whereby the literature demonstrates that the quality of IT related technological solutions that are deployed in small firms is reliant on the background, mind-set, managerial competencies and IT knowledge of the owner-manager. Also within the IT adoption classification, alignment between business and IT is defined, various alignment levels are outlined and alignment process levels are evaluated. At this stage, the literature assesses IT alignment both at the strategic level and at business process level which impact on strategic gains and operational efficiency respectively.

Chapter 2 concludes with the alignment challenges put forward particularly by Ciborra (2000), whereby it is argued that the alignment models that emanate from the literature by various researchers do not reflect the real world. Consequently, it is claimed that managers would be unable to utilise these models, as they do not fit in the dynamic world that business organisations operate in.

Chapter 3 elucidates the methodological underpinning of the inquiry and assesses the approaches, methodologies and methods used to tackle the research question based on the research problem and objectives. The initial part of this chapter evaluates briefly a number of methodologies such as phenomenology, ethnography and case studies alongside with grounded theory and provides the justification for the uptake of Grounded Theory methodology in this area of inquiry. This is followed by a discussion on the various philosophical assumptions in terms of ontology, epistemology, axiology, rhetorical and methodological elements to explore factors that impact on the behavioural patterns in IT utilisation adopted by small firms. Of similar importance is the consideration of research paradigms or philosophical world views in terms of postpositivist, constructivist, advocacy/participatory and pragmatic stances that are selected to fulfil the objectives of this study. This is followed by the justification primarily to adopt a constructivist approach within the grounded theory method and later supplemented by a discussion on process, which is fundamental to assess the various IT/Business alignment states attained over time by small firms participating in this research study. The discussion ensues with a detailed account on sampling strategies adopted, collection, management and analysis of data, followed by strategies to enhance the quality of this research study. This chapter closes with a discussion on the analysis of ethical issues that are handled in this research study.

Chapters 4, 5 and 6 present the research findings, with each chapter embodying a distinctive level contributing towards the total research outcome relating to the area of enquiry. A three stage approach was undertaken to achieve the objective of mapping the small firms' IT alignment process over time. The first stage entailed specifying the constructs as demonstrated in Appendix 4, within a hierarchical structure, based on the three main categories of contextual conditions, actions/reactions, and consequences/outcomes (subject of chapter 4). An intense conceptual representation of these constructs, an identification of the relationships and an evaluation of the interrelationships between these emerging concepts within each level of the hierarchical structure were carried out. The second phase of this approach comprised

the conceptual evaluation of these constructs which resulted in the identification of a typology of four alignment equilibrium states (subject of chapter 5). Each firm was placed within one of the four identified typological states, namely the Adaptation, Anticipation, Synchronization and Collaboration equilibrium states. These alignment states which are represented in figure 5.1 denote the alignment state that each firm has reached when its owner-manager was interviewed. The third stage of this approach utilised the identified IT alignment states as signposts to map out the IT adoption behaviour leading to IT alignment patterns that firms pursued over time (subject of chapter 6). Each pattern denotes the common path that a group of firms took in their movement from one alignment equilibrium state to another, throughout its life-cycle stages. Four different IT alignment patterns emerge from the study, namely, bell-shaped, v-shaped, double bell-shaped and scalloped-shaped corresponding to the Drifting, Consolidating, Surfing and Fulfilling trajectories respectively, which are shown graphically in figures 6.5 to 6.8. Each distinct shape denotes the line of 'best fit' for a cluster of small firms. Each representation allows an observer to 'walk-through' the alignment signposts and observe the firms' actions relating to their IT adoption behaviour.

Chapter 7 provides a synopsis of the research findings including observations, conclusions and the implications of the findings on researchers, policy makers, constituted bodies, various stakeholders and small business owners. In particular, this chapter assesses the research study in relation to the research problem and the primary objectives. It also highlights the study's contribution to knowledge and provides recommendations how these findings may be used to assist small firms to improve their alignment levels between IT and business strategy. It also reviews the research study's weaknesses and limitations as well as recommendations for further research that the findings may attract.

# **Chapter Two**

# 2. Literature Review: IT-Business Strategy in Small Firms

## 2.1. Chapter Overview and Literature Map

The introductory chapter has directed the research study towards outlining the research question and the corresponding research objectives. The aims of the research are to explore how small firms align IT adoption with business strategies and to evaluate how IT alignment changes over time.

The use of the literature to undertake research within the grounded theory methodology has been a matter of contention and often misunderstood aspect among grounded theorists for over 40 years. Whereas Glaser (1992) insists on postponing the literature review until the data analysis is completed so that the researcher will not undertake the research study with any preconceived ideas, Corbin and Strauss (2008) assert that the researcher would do well to access the literature before embarking on a research topic, as this would provide an indication of the extent of current knowledge that would have been carried out in the field. Similarly, other researchers such as Charmaz (2006) and Urguhart (2007, 2013) support the view that researchers would do well to conduct a preliminary literature review so as to orient the researcher to the field of study. In particular, Urquhart (2013) posits that understanding the role of the literature in grounded theory method is a pre-requisite for developing satisfactory grounded theories. In this research study, the researcher, as advocated by Corbin and Strauss (2008), undertook a preliminary literature review prior to the commencement of the research. Reviewing the literature in this study was an on-going process throughout the data collection stage so as to enhance the researcher's theoretical sensitivity towards the substantive area of enquiry. However, the researcher intensified the literature review after data collection was saturated so as to compare the findings within the theoretical frameworks generated.

The literature map in Figure 2.1 shows the literature themes that will be reviewed in this chapter.



Figure 2.1 Literature Map

The present chapter focuses on three main themes, namely, the diverse nature of strategy, IT adoption in small firms and the IT alignment challenges. The first theme centres on the traditional definitions of strategy which are based mainly on deliberate planning, the ten strategic schools as explicated by Mintzberg, Ahlstrand and Lampel (2009) particularly the planning school, the entrepreneurial school and others which encapsulate the diverse viewpoints on business strategy by various researchers. A sub-stream of this main theme evaluates how, if at all, small firms are strategizing their IT projects and considers the application of an umbrella strategy in small firms (Mintzberg, Ahlstrand and Lampel, 2009), whereby the broad strategic outlines are deliberate, whereas the other actions that are undertaken are allowed to emerge as

events unfold. The second sub-stream considers the strategic approaches to IT. It draws on the classical literature such as Porter (1980), Porter and Millar (1985), Earl (1987, 1989, 1997), Scott Morton (1991) dealing with planning for effective business changes and using IT as an enabler to support these proposed changes. Consequently, linking IT planning with business strategy became widely debated between management practitioners and IT researchers.

The second theme relates to IT adoption in small firms where critical success factors that are enabling or hindering IT adoption within the contextual conditions are considered. In particular, the literature review adopts a resource-based view of IT implementation in small firms by analysing the use of knowledge and by understanding how business and IT capabilities are built up. Of greater significance is the owner-manager's influence on IT adoption, whereby the literature demonstrates that the quality of IT solutions deployed in small firms is reliant on the background, mind-set, managerial competencies and IT knowledge of the owner-manager. Also within the IT adoption theme, strategic alignment between business and IT is defined, various alignment levels are outlined and alignment process levels are evaluated. Then the literature assesses alignment at the strategic level and at operational levels which impact on operational efficiencies and strategic gains that small firms may attain.

Chapter 2 concludes with the third theme relating to alignment challenges put forward particularly by Ciborra (2001), in which it is argued that the alignment models that emanate from the literature by various researchers, do not reflect the real world. Consequently, it is claimed that managers would be unable to utilise these models, as they do not fit in the dynamic world that business organisations operate in.

#### 2.2. The Diverse Nature of Organisational Strategy

The concept of business strategy has been widely applied in management research by various researchers. Before proceeding further, it is essential to clarify the differences that exist between corporate and business strategies and how they are used within the small firm context in this research study. Whereas corporate strategy relates to the company-wide game plan for managing a set of businesses, business strategy comprises the action for managing one specific line of business (Thompson, Strickland and Gamble 2007). Corporate strategy comprises initiatives that the multibusiness companies use to establish business positions in different industries and to utilise

cross-business synergies so as to turn them into competitive advantage. However, business strategy relates to the actions and approaches that are crafted to strengthen organisational performance in a single line of business. In the instance of the single-business company, which was the case for each small firm that participated in this study, the two levels of the strategy-making hierarchy – the corporate and the business – merge into one level, namely, the business strategy that is co-ordinated by the owner-manager (Thompson, Strickland and Gamble 2007 p. 39).

Various researchers generated divergent definitions on strategy. Some of these stances on strategy entail the following: Chandler's (1962) strategy as a deliberate plan of action; Glueck's (1980) integrated strategic plan to achieve objectives; Porter's (1980) cost leadership, differentiation and focus generic strategies; Prahalad and Hamel's (1989) strategic intent; Porter's (1996) strategy as a unique and valuable strategic position rooted in systems and activities; Kaplan and Norton's (2000) strategic mapping; Thompson, Strickland and Gamble's (2005) strategic planning, design and implementation; Miles and Snow's (1978) strategic topologies and Mintzberg's (1978) strategy as a pattern. It seems likely that Mintzberg, Ahlstrand and Lampel's (2009) formulation of the ten strategy schools such as the planning school, the entrepreneurial school and the learning school embody the different viewpoints that have emerged by the various researchers on business strategy.

At this stage it is important to clarify the relationships between business strategy, business objectives and business plans. Various authors such as Chaffey (2009); Avison and Torkzadeh (2009); McNurlin, Sprague and Bui (2009); Boddy (2011) contend that business strategy is concerned with deciding what business a firm should be in, where it wants to be and how it is going to get there. These decisions will lead a firm to set objectives by defining what needs to be done in order to accomplish the business strategy (Avison and Torkzadeh 2009). Objectives give focus to tasks and provide a reference point for other decisions and criteria against which to measure performance (Boddy 2011). Objectives should be clearly defined and doable in the form of a business plan (Avison and Torkzadeh 2009). A business plan clarifies direction, motivates employees, uses resources efficiently and strengthens control by measuring progress against targets (Boddy 2011).

Despite the plethora of research conducted to understand and define business strategy in different contextual conditions, most small business research does not explain how strategy was being undertaken in small firms. Curran and Blackburn's (2001 p. 44) advocate that the adoption of positivist approaches in such studies does not provide the predictive power because researchers are not giving adequate attention to the key person in the small firm, namely, the owner-manager. Consequently, these authors recommend that researchers should evaluate the decisions and actions taken by owner-managers so as to understand the difficulties that are encountered in their IT adoption behaviour. The term owner-manager represents the individual who owns or manages the activities that are undertaken in the firm and embodies both the entrepreneur and the owner-manager (Walker et al., 2007). The owner-manager of the firm is the catalyst that determines the firm's ethos, controls the financial resources, recruits and selects employees, and above all, directs and drives IT adoption (Fillis, Johansson and Wagner, 2003).

#### 2.2.1 Strategy Formation in Small Firms

Contrary to their larger counterparts, research relating to strategy making in small firms is scarce (O'Regan and Ghobadian 2000). Rather than adopting a formal plan, small firms tend to devise strategy in an improvisational way, sometimes acting and thinking on the spur of the moment, at other times intuitively (Woods and Joyce 2003; Rizzo 2011). In a similar vein, Kraus et al., (2007) claim strategic formal plans are mostly missing in small firms and when owner managers tend to develop formal plans and other planning instruments they do so in an infrequent, unstructured, sporadic and intuitive way, due to their limitations in resources, such as human, financial and administrative expertise. These authors maintain that the real entrepreneurs maximize their limited time resources by focusing on operational and sales activities. However, these authors emphasize the importance for small firms of focusing on corporate goals, especially during times of business turbulence and acknowledge strategy as a future investment. Kohtamaki, Koutonen and Kraus (2008) contend that those small firms that engage themselves in strategic planning tend to have a better understanding of their business and its wider environment; to maximize their resources and to exploit current and new opportunities. Kraus, Harms and Schwarz (2006) claim that notwithstanding that strategic planning has been researched substantially in small firms (see for example Delmar and Shane 2003; Gibson and Cassar 2005), research evidence on the relationship between strategic planning and small firm performance

tends to be contradictory. Kraus, Harms and Schwarz (2008) found a positive correlation in small firms between strategic planning and firm performance, whereas Schulte (2008) found a very weak relationship between planning and performance in other firms.

That the IT-Strategy discourse was not reflecting the real world of managers and what was happening in business organisations was brought to the forefront by Knights, Noble and Wilmott (1997). These authors claim that the implementation of strategy of most business organisations has followed the traditional planning mode, adopting a hierarchical approach which demarcates the deliberate strategy from the realised strategy. This mode of rationale emanates from Chandler's (1962 p.13) definition of strategy as the "determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals". Mintzberg (1978) reacts to this traditional approach by claiming that such definitions are incomplete as organisational strategies are not always the result of rational planning but rather strategies emerge in response to the unfolding events. Mintzberg (1978 p. 935) places emphasis on the realised strategy and defines strategy as 'a pattern in a stream of decisions' that steers an organisation towards the development of internal procedures and alignment with the environment. It is noteworthy how Mintzberg (2007) drew from Simon's (1957) stimulus to define strategy as patterns which are formed by actions occurring in organisations. Mintzberg claims that rather than studying streams of decisions taken at organisational level, one should focus on the actions as these tend to represent the traces that explicate the realised strategy. Therefore, this definition paved the way for undertaking a non-positivist stance in this research study by adopting a grounded theory methodology to study the actions undertaken by the owner-managers in relation to their IT adoption behaviour leading to IT alignment with business strategy in their respective small firms. Despite contending that emergent strategies tend to be more successful and more appropriate than planned strategies, Mintzberg, Ahlstrand and Lampel (2009) strive to strike a balance between the two. They claim that whereas total dependence on emergent strategies may indicate that organisations lack control over their activities, adhering to deliberate strategies may hinder learning because there is no room for experimentation and innovation. They suggest that real-world strategies require a mixture of control while nurturing learning.

In light of the above arguments, two issues stand out when one evaluates the actions relating to IT adoption in small firms. Mintzberg, Ahlstrand and Lampel (2009 p. 208) advocate an *umbrella* strategy whereby the broad strategic outlines are deliberate, whereas the details are allowed to evolve as events unfold. This reaffirms the contention that strategy is a mixture of both the intended plan and the emergent actions that embody patterns of decisions taken at organisational level. Many intended strategies fail to materialise, not because of any shortcomings in strategic implementation processes but rather due to the volatility of the environment where the plan is to be executed (Mintzberg 2007). Orlikowski (2000) and Ciborra (2001) present a non-functionalistic perspective of organisational change and IS innovation and challenge the view that change and innovation are the result of effective formal planning, designing and executing activities. Rather, these authors contend, that most changes and innovative uses related to new technologies emerge from the unplanned, situated action of the organisation's participants as they are confronted with new circumstances. Also various longitudinal studies have demonstrated that organisations do tend to change their strategic behaviour over time and to adapt to the unfolding events (Mintzberg 1978). This is reminiscent of small firms' behaviour where their flatter structure allows them to be flexible to cope instantaneously with the environment's dynamic elements.

#### 2.2.2 Strategic Approaches to Managing IT

The literature on business studies and IT has emphasised the importance of planning for effective business changes and the use IT as an enabler to support these proposed changes. The focus on linking IT planning with business strategy was predominant among management practitioners and IT researchers (Knights, Noble and Wilmott 1997). Business organisations have to craft meticulously their business strategies and then devise plans for information systems to be aligned with those business objectives (Scott Morton and Allen 1994). Rather than incorporating IT in the organisation's strategy planning approaches, IT planning is merely used to fulfil the requests that emanate from the grassroots of the organisation (Porter and Millar 1985).

The IT-business strategy discourse started gathering momentum in the early eighties, with the widely accepted idea focusing on business strategy preceding IT plans. Various IT frameworks have been shaped to assist business executives and IT professionals in identifying the strategic innovations that arose from ICTs and

subsequently, align IT with corporate objectives. IT frameworks such as Porter's (1980) five forces of industry competition, and Porter and Millar's (1985) value chain and industry variations in information intensity were influential in linking plans for new IT projects with business strategy with the objective of providing the firms with sustainable competitive advantage. However, the issue that IT projects may be reactive to business strategy may preclude businesses from exploiting innovative projects that could only be viable if IT systems are meshed proactively with business systems. To resolve this limitation, Earl (1987) crafts awareness, opportunity and positioning structures to assist senior managers with the evaluation of IT projects implementation within the strategic management and planning process. The awareness frameworks assist top management in assessing the impact of the implementation of IT projects in their businesses, whereas firms use the opportunity frameworks to identify IT strategic applications. The positioning frameworks provide guidelines for firms how to manage the IT function. Small firms apply the awareness models by utilising Porter's generic strategies and Porter and Millar's information intensity matrix; and the opportunity frameworks by engaging Porter's five forces of industry competition and value chain models (Levy and Powell 2000). Furthermore, Earl (1989) proposes the utilisation of a three step methodology for information systems planning to exploit the capabilities of IT at the early stages of crafting business strategy. The three steps entail the alignment of IT objectives with business strategic objectives; coupling plans for future IT projects with the current IT infrastructure and the engagement in proactive thinking so that businesses reap the benefits of innovative ideas which may generate new business strategies. The notion that these IT frameworks could lead firms to attain competitive advantage was challenged because it was becoming evident that IT strategic applications could be replicated by other firms operating in the same sector (Scott Morton 1991). Furthermore, IT strategic applications are more the outcome of users' experiences in transaction processing systems rather than the top-down planning approach that is promoted by management (Ciborra 1997).

The result of these critiques induced the Massachusetts Institute of Technology (MIT) research programme in the 1990s to devise a roadmap whereby IT could be instrumental in enabling firms to become flatter and leaner. Hammer (1990) promotes the utilisation of IT as an enabler for business processes that stem from Business Process Re-engineering. Hamel and Prahalad (1994) recommend that rather than

crafting a business strategic plan, firms should consider business strategy as the future intent of how the business will undertake its tasks so as to embody any business threats and opportunities that emanate from IT in the strategy-making process. That the IT function in most firms struggles to craft the Strategic Information Systems Plan (SISP) was brought to the forefront by Earl (1997). The author claims that these difficulties, which are the result of incomplete business plans and strategies, unfamiliarity with IT capabilities, the inability to cope with the turbulent business environment, IT projects implementation failures and the lack of top management support to IT, may contribute towards a state of misalignment between IT and business strategy. Earl (1997) reiterates that in order to exploit the benefits that may accrue from information as a business resource, it is essential to integrate business strategy and IT strategies into one unit. In a similar vein, Doherty and Fulford (2006) also advocate meticulous alignment of the Strategic Information System Plan with the information security policy so as to ascertain the successful deployment of IT projects.

#### 2.3 IT Adoption in Small Firms

One of the well-known IT adoption models relating to technology acceptance and use is the technology acceptance model (TAM), developed by Davis in 1986. TAM has proven to be a useful model in helping to explain and predict how users react to IT when it is implemented in their respective firms (Legris, Ingham and Collerette, 2003). This model assumes that two main factors determine the users' acceptance of IT, namely, perceived usefulness (PU) and perceived ease of use (PEOU), eliminating subjective norms and normative beliefs (Pai and Huang 2011). Whereas PU is defined as the degree to which a person believes that using a particular system would enhance one's performance, PEOU refers to the degree to which a person believes that using a particular system would be free from effort (Davies 1989). TAM also provides a basis with which one's actual usage of IT is induced implicitly or explicitly by the user's behavioural intentions, attitude, perceived usefulness, and perceived ease of use (Davies, Bagozzi and Warshaw 1989). Five external variables that may influence the user's perception to accept the technology include the computer's selfefficacy, the knowledge of the search domain, the relevance, the terminology and the screen design (Hong et al., 2002). Other external variables which may impact on the user's perception comprise the institutional factor, the social factor and the individual factor (Lewis, Agarwal and Sambamurthy 2003). TAM has evolved over time leading to revisions by various researchers to enhance its interpretation and predictable

abilities. The extensions over the original model comprise social influence (subjective norm, voluntariness, and image), cognitive instrumental processes (job relevance, output quality, and result demonstrability) and experience. This new model, which is named TAM2, was tested in both voluntary and mandatory settings whereby the results explained 60 percent of user adoption (Venkatesh and Davis 2000).

Of significance is a study conducted by Igbaria et al., in 1997 among 358 users in small firms in New Zealand to test the TAM by examining the hypothesized relationships among various constructs. These constructs comprise interorganizational factors, extraorganizational factors, perceived usefulness, perceived ease of use and system usage. The results pertaining to this study show that perceived ease of use is an overriding factor that is impacting on perceived usefulness and system usage. Also, perceived usefulness is a dominant element on system usage. The findings also indicate that external factors, such as management support and external support, influence both perceived ease of use and perceived usefulness.

Notwithstanding that TAM has been successfully tested across a wide range of computing technologies, organisational settings and user populations, it has been highly criticised (Hasan and Ahmed 2007). One of the major criticisms for adopting TAM to predict user acceptance of the technology is that in most studies TAM measures the variance in self-reported use rather than accounting for actual data usage (Chuttur 2009). Self-reported use data tends to be subjective and is, therefore, regarded as unreliable in measuring actual system use (Legris, Ingham and Collerette 2003; Yousafzai, Foxall and Pallister, 2007). Furthermore several studies on TAM such as Selim (2003), Lee, Cheung and Chen (2005), Pituch and Lee (2006), Gradon, Alshare and Kwan (2005), Ndubisi (2006), and Saade, Nebebe and Tan (2007) use students as participants in controlled settings and consequently, results obtained from these research studies cannot be generalised to the real world. Indeed, various researchers contend that students' motivations may vary such as improving grades and obtaining rewards (Legris, Ingham and Collerette 2003; Lee, Kozar and Larsen 2003; Yousafzai, Foxall and Pallister, 2007). Furthermore, very few studies have been undertaken to test TAM within the voluntary use of systems, given that in real life situations most firms mandate users to use the IT available (Yousafzai, Foxall and Pallister, 2007). Finally, Bagozzi (2007) contends that there exists a poor theoretical relationship that was compiled among the different constructs within TAM. For

example, the author questions the theoretical relationship between intentional-actual use link and queries whether behaviour can be considered as an ultimate goal. Despite these criticisms, the TAM continues to be a very popular model for explaining and predicting use of IT (Pai and Huang 2011).

Various researchers have acknowledged the importance of utilising IT effectively in small firms. Whereas Waters (2000) considers IT as a pre-requisite for small firms to attain operational efficiencies, Chong (2004) acknowledges the role of IT as an enabler in small firms by ameliorating the efficacy of transaction processes, by changing existing business models and by improving communication among employees. Where customer and competitive forces are strong, small firms tend to use IT in reactive mode so as to be able to support business objectives (Gale and Abraham, 2005). Similarly, Mehrtens, Cragg and Mills (2001) identify organisational zest, perceived willingness and environmental readiness emanating from competitors and customers as the main drivers that drive the uptake of IT in small firms. The successful uptake of IT is also dependent on the firm's size, sector, awareness and perception of benefits, import and export of trading activities, and above all customers' demands (Maitland and Van Dongen, 2002; Beckinsale, Levy and Powell, 2006). Daniel and Grimshaw (2002) reiterate that IT is no longer an option for small firms but an essential if they are to garner the immediate benefits that will accrue from the uptake of basic IT projects.

Small firm characteristics embody the firm's organisational readiness to adopt IT in order to attain its business objectives; external pressures that emanate from suppliers, customers and competitors; the firm's organisational structure; its size; the sector in which it is undertaking its operations; its status and the level of information intensity (Beckinsale and Levy 2004). All these characteristics, particularly the business size, and the level of information intensity will determine the level of IT uptake (Manueli, Latu and Koh 2007). These authors contend that small firms that deal with vast amounts of information will have the propensity to utilize IT solutions to improve operational efficiencies and the attainment of competitive advantage. Conversely, small firms will have to adapt to IT deployment given their limitations relating to size, resources, finance, structures and their lack of awareness and knowledge to consider IT strategically (Wymer and Regan, 2005; MacGregor and Vrazalic, 2005; Beckinsale and Ram, 2006).

Several researchers have recognised the need to understand and explore the critical factors that are enabling or hindering IT adoption and use within the contextual conditions of small firms (Harindranath, Dyerson and Barnes, 2009). The early adoption of IT in small firms tends to be uncoordinated, sporadic, improvised and unsystematic (eCIC 2005). Small firms are satisfied with their IT investments, notwithstanding their concern about the cost of IT investments and their scepticism about the business benefits that may be reaped from IT adoption (Dyerson, Harindranath and Barnes, 2009). It is noteworthy that most small firms, even those that are experiencing gradual growth in their organisational performance, deploy Information Systems without any strategic planning whatsoever and any operational planning that occurs is focused on improving operational efficiencies (Levy and Powell 2000; Lee, 2001; Baard and Van Den Berg, 2004). However, other researchers such as (Kyobe 2004; Love, Irani and Edwards 2005) claim that small firms that are automating solely what is being done manually and are utilising information to make effective decisions, are experiencing a number of benefits related to operational efficiency gains. Rather than constructing a strategic business model and adopting business process re-engineering with IT deployed as an enabler to create competitive advantage, most small firms tend to implement IT technologies spasmodically depending extensively on media hype and competitive pressures (Taylor and Murphy 2004). Other studies such as those conducted by (Naylor and Williams 1994; Poon, 2000; Aragón-Sánchez and Sánchez-Martin 2005) found evidence that small firms do undertake some form of alignment between IT and business strategy by deploying IT leading to enhanced business competitiveness and improved strategically. organisational performance.

In a study conducted among micro-firms, Jones et al., (2009) show their scepticism relating to the owner-manager's ability to exploit IT and consequently, they compiled a classification of inhibitors that are precluding owner-managers from unlocking the maximum potential of IT. These inhibitors comprise the firm's lack of understanding, awareness and confidence relating to IT issues, financial limitations, firm size and location, lack of IT expertise, time constraints, fear of the technology, concern over security and the inability to implement IT based solutions on information, advice and support.

Small firms, particularly micro-sized classifications, lack the motivation, energy and sometimes the knowledge to unlock the potential that may arise from the deployment

of IT projects (Schlenker and Crocker 2003). However, in a study conducted by Grandon and Pearson (2004), some SMEs do acknowledge the importance of the strategic value which stems from aligned IT projects and claim that such linkage will lead them to enhanced decision-making by evaluating timely and accurate information. Similarly, Levy, Powell and Worrall (2005) claim that SME's investment decisions in IT are influenced by the firms' strategic intent.

Despite the SMEs' opportunities to attain competitive advantage by undertaking strategic decisions in terms of innovation, operational efficiency gains, marketing, excellent product/service quality and enhanced customer service, Pavic et al., (2007) assert that most SMEs lack the capabilities to make effective decisions relating to the strategic utilisation of the technology. The shortcomings in capabilities stem from the owner-managers' sceptical attitudes towards the deployment of the technology and also the lack of basic IT knowledge to evaluate prospective IT projects which may serve as enablers to fulfil the business objectives. Other researchers (Pool et al., 2006; Harindranath, Dyerson and Barnes, 2009) found evidence that notwithstanding that small firms generally exhibit a positive attitude towards IT deployment, they are reluctant to cope with IT changes and therefore, fail to acknowledge the strategic potential that may emanate from IT. This reluctance to embrace IT may be the result of perceiving the technology to be costly when embarking on IT adoption (Wymer and Regan's 2005). In most small firms, the skill and enthusiasm of the owner-manager make up for the lack of managerial capabilities and other scant resources to drive the business forward (Dyerson, Harindranath and Barnes, 2009). Most small firms lack the managerial skills to emulate larger firms in the implementation of IT projects, both strategically and operationally (Caldeira and Ward, 2002). However, Seyal and Rahman (2012) contend that small firms are adopting IT applications because the cost of software packages is decreasing and they are readily available for use.

#### 2.3.1 Adoption of E-Business in Small Firms

During the past decade, the intensity of internet technologies has led several researchers to discuss and evaluate IT adoption relating to e-business applications deployed by small firms. This section reviews various considerations relating to this topic by these researchers. The widespread use of PCs in the 1980s has undoubtedly contributed towards IT usage in small firms (Cragg, King and Hussin 2002). As has been argued under the IT adoption section, small firms tend to implement IT to gain

operational and administrative efficiencies. However, it is apparent that since the emergence of e-business technologies, small firms are not exploiting sufficiently the benefits that may accrue from the implementation of e-business (Jones, et al., 2009). Eriksson and Hultman (2005) claim that small firms are cautious when they evaluate the possibilities of IT adoption, particularly in e-commerce projects, and consequently, the launching of IT projects tends to be gradual and evolutionary. This is in line with Bharadwaj and Soni (2007) who claim that some small firms may downplay the strategic importance of e-business. Benefits accruing from the implementation of e-business applications include the penetration of new markets and enhanced communication with suppliers and customers (Kaynack, Tatoglu and Kula 2005). Small firms are experiencing similar constraints such as lack of available skills, finance and time to adopt e-business applications as in the previous IT internal applications deployment (Fink and Disterer 2006).

Oliveira and Martins (2010) claim that the technological, organisational and environmental (TOE) contexts are crucial if e-business applications are to be deployed among firms. The technological context embodies not only the firm's technological infrastructure and IT resources to deploy e-business applications (Pan and Jang 2008), but also the firm's ability to integrate all the various activities that encompass the value chain (Al-Qirim 2007). From an organisational perspective, small firms may be able to exploit e-business applications better than larger firms because e-business warrants close collaboration with customers which is easily attainable within small firms (Lee and Xia 2006). Perceived benefits that firms may reap through the implementation of e-business applications lead to by-products in e-business technologies such as improvements in products, services and internal processes (Koellinger, 2008). The environmental context is fundamental in the uptake of ebusiness technologies among firms (Oliveira and Martins 2010). Several researchers such as Battisti et al., (2007) and Al-Qirim (2007) assert the importance of pressures arising from competitors which forces firms to deploy e-business solutions. In a similar vein, Gibbs, Sequeira and White (2007) identify e-business attributes such as those stemming from the owner-manager, the organisation, the external environment, the social networks and most importantly the government's role in providing vision, national policies and the support infrastructure that are necessary for the successful deployment of e-business applications. Table 2.1 depicts the Gibbs, Sequeira and White (2007) model and offers insights for researchers to assess and evaluate the qualitative data that emanate from research on firms adopting e-business solutions.

Key Attributes	Measures (Distinctive Characteristics)
Government role	National policies; vision; strategies and support programmes; taxes and tariffs; regulatory frameworks; subsidies; support infrastructure etc.
Environmental attributes	Business environment; suppliers; buyers; competitors; security: peace and stability
Owner/Managerial attributes	Key decision-makers (top management) support and attitude; perceived benefits; computer literacy; assertiveness; perceived control; mistrust of ICT industry; lack of time; age and cultural background; ICT and business qualifications; skills and experience
Organisational attributes	Organisational readiness; business size, sector, type, status; ICT expertise; customer-supplier/dependency; business structural sophistication (simple/ complex); information intensity; access to financial support and other resources
Adoption attributes	Perceived usefulness (PU); perceived ease of use (PEOU)
Social Networks	Network type; size; effects, externalities; density

Table 2.1: Summary of key ICT attributes of E-Business:Adapted from Gibbs, Sequeira and White (2007)

In an important study conducted by Dyerson, Harindranath and Barnes (2009) among SMEs in the UK, they found evidence that SMEs are not exploiting potential strategic options such as e-commerce. The authors contend that notwithstanding that firms are aware of consumer interest in e-commerce applications, firms are not managing effectively the e-commerce applications. In fact, most SMEs are using the internet only to inform customers about their products or services rather than to receive or place orders for their products or services from their customers or with their suppliers respectively. In this study, it appears that the most critical barrier to implement e-commerce effectively is persuading customers to switch to e-commerce. Other barriers that impacted negatively on the slow uptake of e-commerce reported in this study relate to the lack of expertise and skills at firm level, resulting in on-line orders forming less than 6% of the total sales. However, despite the fact that most SMEs view consultants as a potential problem, it was reported in this study that SMEs had to utilise consultants anyway, reflecting the firms' lack of expertise and skills.

During the past decade, business organisations have been responding to the unpredictable and turbulent business environment by adopting business strategies such as the implementation of supply chain management, capitalising on the availability of internet technologies (Chong et al., 2009a). Supply chain management which entails integrating the business activities relating to merchandising, production and distribution among suppliers, manufacturers, wholesalers, retailers and customers, affords many benefits to these businesses (Khang et al., 2010). These benefits which comprise improved supplier relationships, adopting just-in-time

inventory approaches, enhanced customer services and above all producing at the least cost, have led small firms to focus on collaborative supply chain management (Kioses et al., 2007; Chong et al., 2009b). The supply chain members using e-collaboration tools within internet technologies will not only be able to integrate the business processes along the value chain but also will endeavour to work together to attain common goals (Chong et al., 2009b).

SMEs have not taken up Supply Chain Management systems, notwithstanding the benefits that will accrue from the deployment of e-collaboration tools. During the evolution stage, Gunasekaran et al., (2009) assert that most SMEs do not visualise the benefits that may be reaped from e-collaboration tools such as e-procurement, possibly because the knowledge component relating to IT adoption is lacking. Chan, Chong and Zhou (2012) assert that most SMEs are more focused on technological and organisational factors rather than the environmental elements that may impact on these firms. The next section will, therefore, deal with an important component of IT adoption, namely, small firms' knowledge maximization, which is a predominant theme in this research study.

#### 2.3.2 Knowledge-Based View of IT Adoption in Small Firms

The knowledge component among small firms is considered to be crucial in determining alignment that are attained by small firms between business and IT. Behesti (2004) claims that small firms that hold IT knowledge, have the advantage of being able to unlock the potential of IT, leading to improvements in operational efficiencies, contributing to gradual business growth and integrating the marketing processes with marketing strategies. Similarly, Brown and Hagel (2003) assert that when tacit knowledge of IT, which forms part of the firms' other competencies, is held by firms, IT could be used as an enabler to leverage strategic alignment by interacting with business strategies. Also, the social and intellectual dimensions of alignment based on shared domain knowledge and communication between business executives and IT personnel have been brought to the forefront by Reich and Benbasat (2000). However, Chao and Chandra (2012) assert that the business value that is expected to accrue through the investment in IT does not materialise due to the lack of coherence between IT and business strategy.
It is beneficial to draw from the resource-based literature to evaluate the effect of the owner-manager's knowledge of IT adoption in small firms. Literature studies relating to the use of knowledge and IT competencies in small firms tend to adopt a resourcebased view of the firm. Various research studies undertaken by Caldiera and Ward (2003); Eikebrokk and Olsen (2007); Butler and Murphy, (2008); and Cragg, Caldeira and Ward (2011) have used the resource-based theory to evaluate IT competencies relating to skills and abilities in SMEs. It is claimed that knowledge resources represent a critical success factor that impacts on the firm's performance. The importance of knowledge resources as an asset is high for small firms because as Wiklund and Shepherd (2003) assert, owner-managers tend to rely on what they or their employees know, given the limitations in generic resources, such as size, expertise and finance that are reminiscent of small firms. Therefore, these authors argue that small firms that manifest a wide and profound range of knowledge will outpace other small firms, provided that they also exercise the entrepreneurial elements to attain their business objectives. Similarly, Caldeira and Ward (2003) have demonstrated the impact of IT knowledge, whether internal or external, that influences the successful deployment of IT projects in the firm. It is apparent from the latter studies that when information system knowledge is lacking in the firm, ownermanagers tend to farm out most of their IT projects and therefore they will have to develop competencies to manage outsourcers. These outsourcers will play a fundamental role by furnishing IT knowledge to their respective firms. Yli-Renko, Erkko and Sapienza (2001) emphasise also the importance of the firms' social capital or their capability to acquire and manage knowledge that stems from external sources. These authors argue that social-capital is instrumental in providing owner-managers with the opportunities to access vast amounts of information and sift that information to capture what is essential in order to achieve their strategic objectives. Ravasi and Turati (2005) advocate that owner-managers should endeavour to keep abreast of the various technological platforms so that deployment of IT projects would strengthen the strategic alignment between business and IT.

The resource-based view has also been used to assess the impact of IT knowledge as a strategic resource (Santhanam and Hartono 2003). The resource-based theory postulates that a firm's profitability is dependent on the firm's tangible and non-tangible assets that will potentially lead to competitive advantage, especially if these assets are unique and therefore, cannot be replicated (Melville, Kraemer and Gurbaxani 2004; Wade and Hulland 2004). IT resources such as accounting software, office automation tools such as word processing and spreadsheets and the use of email do not contribute towards the creation of competitive advantage as these processes could be easily replicated (Chao and Chandra 2012).

The owner-manager's tacit IT knowledge, which would have been learnt over the years through hands-on experience or through education, is undoubtedly a non-replicated capability by other small firms, when viewed from a resource-based perspective (Wong and Radcliffe 2000). It is also argued by authors such as Chaston, Badger and Sadler-Smith (2001) that it is somewhat difficult to render tacit knowledge explicit. Therefore, given the small firms' limited resources, the owner-manager's knowledge of IT could be exploited to achieve strategic alignment between business and IT by using IT as an enabler to support the business processes, leading to enhanced organisational performance.

From a resource-based perspective, it is essential that small firms will utilise their knowledge-based resources to create business processes that would be difficult to imitate, thereby creating competitive advantage. In a study of 192 small firms, Edelman, Brush and Manolova (2005) found evidence that most small firms experienced high alignment solely because they were able to align their business and IT strategies to their resource profiles. Similarly, Kearnes and Sabherwal (2007) emphasize the importance of propagating knowledge management, particularly knowledge relating to IT issues among key managers. The authors contend that this dissemination of knowledge leads to effective communication and cooperation between business and IT executives in the crafting of business-IT projects. This IT/Business partnership also leads to an amelioration of alignment between IT and business strategy (Chao and Chandra, 2012). Tallon (2008) advocates that applying the resource-based view to scrutinise alignment at the process-level rather than at the firm level will contribute towards a deeper understanding of how IT is being used to support and enable business strategies. This author contends that process-level alignment provides grounds for competitive advantage as these processes are very difficult to understand and therefore hard for competitors to replicate. The importance of quality in IT projects, particularly in planning and implementation, has been emphasised also by Kearnes and Sabherwal (2007). These authors contend that this quality exemplifies the knowledge dimension which nurtures the linkage between the business and IT strategic alignment.

In order that alignment between business and IT occurs at firm level, it is fundamental that business and IT managers engage themselves in knowledge integration (Kearnes and Sabherwal 2007). This knowledge integration between the business and IT functions will only materialise if managers that represent both functions hold a solid base of shared domain knowledge (Reich and Benbasat 2000) and mutual knowledge (Cramton 2001). In a similar vein, Bassellier, Reich and Benbasat (2001) contend that business managers can hasten the knowledge integration process if they are knowledgeable about IT issues. Figure 2.6 depicts Kearnes and Sabherwal's (2007) knowledge-based model of strategic integration between business and IT.



# Figure 2.2: A Knowledge-Based View of Strategic Integration Between Business and IT – Adopted from Kearnes & Sabherwal (2007)

Knowledge integration which embodies the linkage between business and IT knowledge cements the strategic alignment between the IT and business objectives (Reich and Benbasat 2000). Kearnes and Sabherwal (2007) reiterate that business managers and IT staff should collaborate in crafting the IT and business planning. This partnership will utilise the knowledge integration processes that emanate from both business and IT domains leading to new knowledge integration outcomes. This linkage between business and IT domains will strengthen the business-IT strategic alignment. In essence, Reich and Benbasat (2000 p. 86) have explained this bondage between

the business and IT domains as "shared domain knowledge" and defined it as "the ability of IT and business executives, at a deep level, to understand and be able to participate in the other's key processes and to respect each other's unique contribution and challenge".

Kearnes and Sabherwal (2007) assert that top management's appreciation and knowledge of IT may contribute towards the identification of innovative opportunities and the acknowledgement of IT's strategic potential. However, the impact of IT managers' knowledge of business processes on strategic alignment is not so obvious. The authors claim that as postulated in the knowledge-based theory of the firm, business managers that are knowledgeable about IT will utilise any IT resources that are available within the firm in the formulation of business plans. Firms that place knowledge management high on the agenda are more likely to become knowledgeable on IT issues, leading to a betterment of the business-IT strategic alignment process. Teo and Ang (2000) postulate also that when top management integrates business knowledge with IT knowledge, the implementation of IT projects tends to be successful, as certain problems relating to implementation can be anticipated. Conversely, when top management is not knowledgeable about IT issues, alignment between IT and business would be low because innovative opportunities could not be identified (The Register\_KPMG 2000). Kearnes and Sabherwal (2007) emphasize that top management should continuously capture IT knowledge so as to evaluate the various possibilities whereby IT could be utilised so as to maximize its effects on the business. These authors affirm that, in the age of internet technologies, top management have to keep abreast of IT developments so as to strengthen the business-IT alignment. Chao and Chandra (2012) reiterate that from a knowledgebased view, the owner-manager's IT knowledge is impacting positively on the firm's capability to adopt IT solutions and to differentiate it from other small firms, thereby creating a competitive advantage on other firms in the same sector.

This section has drawn from the resource-based literature by assessing the impact of the small firm's knowledge component which is considered a critical success factor to determine the satisfactory alignment levels between business and IT that are attained by small firms. The knowledge component is a fundamental theme in this research study as it is a prerequisite towards unlocking the potential of IT adoption and determines the different alignment equilibrium states that have been identified in this research study. In particular, the owner-managers' level of IT expertise, coupled with their project management competencies to deal with IT outsourcers will be reviewed in the next section so as to assess their influence in successfully implementing IT projects.

### 2.3.3 Owner-Manager's Influence on IT Adoption

The quality of IT-related technological solutions that are deployed in small firms is heavily reliant on the background, mind-set, managerial competencies and IT knowledge of the owner-manager (Aguilina and Fulford 2011; Beckinsale, Ram and Theodorakopoulos 2011). Most small firms do not possess the expected internal range of know-how and managerial skills that are usually found in large firms. The ownermanager's character traits such as age, attitudes, skills, experience and interest coupled with the inability to handle and trust IT outsourcers are considered critical factors that impact on the successful deployment of IT projects (Turan and Urkmez 2010). Owner-managers often act as key players to make decisions relating to planning, purchasing and IT adoption (Scupola 2006). The owner-manager that is greatly motivated and entrepreneurial with the propensity to take risks tends to be a successful IT adopter (Beckinsale and Levy 2004). Similarly, the owner-manager's ability to perceive the overt and covert benefits that may accrue by exploiting IT effectively could lead to the successful implementation and increased up-take of IT projects (Bharati and Chadbury 2006). In a study conducted among SMEs by Mpofu, Milne and Watkins-Mathys (2009), it was found that SMEs adopt IT applications based on the owner-manager's readiness to improve business planning and communication leading to enhanced business efficiency. The authors also identify that the adoption of email systems as well as on-line marketing and advertising are crucial to the effective functioning of small firms. Most owner-managers that are administering small firms are reluctant to allocate time and their limited financial resources to invest in IT and related technological solutions because they are unable to visualise the tangible and intangible benefits that may be reaped from IT adoption (Lockett and Brown 2000).

Whereas the owner-manager's accumulated knowledge on IT issues is a critical prerequisite to drive IT adoption, the most significant driver to invest in IT stems from the owner-manager's perception on what the overall benefit will be (Simpson and Docherty 2004, Beckinsale and Levy 2004). The perceived benefits of IT adoption as envisaged by the owner-manager often exemplify enhancing business and operational efficiency; the tapping of new markets and grasping new opportunities (Beckinsale and

Ram 2006). Also, the organisational structure and culture, the quality of IT expertise, the control and planning structures, the users' participation and involvement in IT projects, the management of vendors and outsourcers and above all the owner-manager's commitment to adopt IT have all been named as critical success factors in implementing IT solutions (Jeffcoate, Chappell and Feindt 2002). Also any complex IT adoption that is undertaken to exploit the benefits of IT solutions is contingent on the owner-manager's competence to evaluate the feasibility of IT projects and the ability to deploy successfully these IT solutions. In addition, owner-managers that possess the necessary IT skills and internal IT expertise, coupled with the other entrepreneurial characteristics such as risk-taking, being innovative and creative will very often tend to adopt IT solutions (Beckinsale, Ram and Theodorakopoulos 2011).

Research that was undertaken by the Small Business Forum (2006) found evidence that small firms are not utilising IT effectively. Several researchers such as (Kalakota and Robinson 2000; Caldeira and Ward 2002; Fillis, Johansson and Wagner 2003; Jones, Beynon-Davies and Muir 2003; Wymer and Regan 2005; Turan and Urkmez 2010) contend that small firms are often inhibited by limitations in terms of financial resources, the lack of expertise to implement IT projects, the inability of ownermanagers to assess the feasibility of IT solutions and the shortage of skills that preclude owner-managers from acknowledging the positive impact that IT may contribute towards the achievement of business goals. The level of IT adoption to undertake innovative technological solutions with the objective to further the firm's growth also depends on the owner-manager's readiness to administer the firm only as a lifestyle business (Hodson and Whitelock 2003). Most small firms that opt to pursue the strategy of a lifestyle business for their firm, tend to slow down the rate of IT adoption (Fillis and Wagner 2005). The importance of the owner-manager's knowledge and the perception of IT knowledge play a crucial role in deciding whether a firm will adopt IT to fulfil the strategic business objectives (Lee and Runge 2001). Similarly, the lack of the owner-managers' IT knowledge and other IT expertise may hinder the firm from exploiting the strategic use of IT because they cannot fathom the strategic outcomes of IT on the business (Kyobe 2004). Conversely, owner-managers whose attitudes are positive towards the deployment of IT projects tend to utilize IT more effectively to meet business objectives (Hussin, King and Cragg 2002; Ndubisi and Jantan 2003). MacGregor and Vrazalic (2005) found evidence that most ownermanagers of small firms lacked the capability or were not enthusiastic to adopt advanced usage of IT projects. Furthermore, Manueli, Latu and Koh (2007) contend that the age and experience of the owner-manager may impact on the uptake of IT in small firms. These authors affirm that the relatively young owner-managers who represent the second generation business owners are more prone to adopt IT than their first generation counterparts, possibly because the former have more computer awareness and are less likely to resist IT implementation changes.

Business strategies that are espoused by small firms tend to impact on the usage level of IT. For example, Lesjak and Lynn (2000) found evidence that owner-managers influenced the business strategies adopted by small firms. These authors assert that owner-managers that lack IT knowledge and other IT expertise within the firm tend to regard the IT function as secondary to the business and to exploit IT only to gain operational efficiencies, by adopting a low-cost strategy. Conversely, the authors found that owner-managers that identified IT as fundamental to attain the business objectives as spelt out in their firms' strategy are more likely to utilise management information to make effective decisions and to reap any benefits that may emanate from such a stance. Similarly, Levy, Powell and Yetton (2011) also found evidence that small firms' investment in IT projects is dependent on the strategic focus and market positioning adopted by the owner-managers to achieve the firm's strategic objectives. The owner's IT knowledge also impacts directly on the internet use in small firms. Levenburg (2005) claims that small firms whose owner-managers lack IT knowledge and IT expertise within the firm tend to use the internet in its basic form such as sourcing new suppliers and the use of email.

These studies reaffirm the position that the owner-manager's IT knowledge and the firm's IT expertise will impact on the uptake of IT in small firms. In particular, the owner's lack of IT knowledge may contribute towards using basic IT tools and avoid the adoption of sophisticated IT solutions (Chao and Chandra 2012). Conversely, when the owner-manager is conversant with IT and possesses adequate IT knowledge, firms tend to go for sophisticated and sometimes complex IT projects (Santahanam and Hartono 2003). Similarly, Chao and Chandra (2012) claim that there is a positive impact of the owner-manager's IT knowledge capabilities on the firm's strategic alignment between business and IT. The authors contend that the owner-manager's IT knowledge is a critical resource and acknowledge it as a capability which cannot be communicated and transferred to other firms easily since most of the knowledge is tacit and is manifested in the IT processes that are embedded in the various IT projects that are adopted at firm level.

The influence of owner-managers' social networks cannot be ignored as they often play a fundamental role in enabling or inhibiting IT adoption in small firms (Beckinsale and Ram, 2006). Cultural philosophies, beliefs and values linked to investment may impact on whether IT innovative projects are taken up. Through social networking, owner-managers of small firms will be able to share and exchange their business experience and technical knowledge in areas relating to resource limitations that may hinder IT adoption (Gray 2006). It is noteworthy that the use of internet technologies particularly those of email and website connectivity can assist owner-managers of small firms to come together from a business and social perspective in virtual mode without feeling the need of frequent physical meetings (Gray, 2006). Manueli, Latu and Koh (2007) claim also that owner-managers of small firms tend to act as opinion leaders whether to adopt IT or not when they are networking with their peers. Similarly, government and private sector representatives often act as intermediaries to explain to owner-managers, the benefits that may accrue from the uptake of IT in small firms (Gibbs, Sequeira and White 2007).

This section has focused on the main protagonist of this research study, namely, the owner-manager. The owner-manager's background, mind-set, managerial competencies, IT knowledge, attitude towards IT coupled with the ability to manage IT outsourcers are considered as critical factors that will not only influence the deployment of IT projects but will also impact on the quality of alignment relating to the level of system integration attained by the small firms. The alignment dimension is also fundamental to this research study as a typology of alignment equilibrium states has been identified to serve as signposts for mapping small firms' IT adoption behaviour over time. Therefore, it is within this scenario that the IT issues in the alignment literature have been reviewed.

## 2.4 IT Alignment

Following the contrasting findings by Brynolfson (1993) and Hitt & Brynolfson (1996) relating to the productivity paradox whereby the benefits that were expected to be realised by the substantial investments in IT did not materialize, researchers have focused their attention on strategic alignment. Similarly, most company executives, IT practitioners and management researchers have identified the alignment between IT and business strategy as a major concern (Luftman, Kempaiah and Nash 2005). This integration between IT and business strategy serves as a catalyst to reap the

maximum value from the deployment of IT (Henderson and Venkatraman 1993; Chan 2002). It has been claimed that firms gain when IT is used as an enabler to stimulate and support business strategy (Broadbent and Weill 1993).

Earlier studies that were undertaken on alignment have been represented in various forms such as supporting corporate strategies with IT plans; linking IT projects with the business plan; evaluating the fit between the business objectives and the IT requirements; and ensuring congruence between IT and business strategy (Chan and Reich 2007). As a result, a number of alignment conceptualizations relating to terms, definitions, dimensions, levels, measurements, static models, process models and antecedents have been used by researchers.

During the past decade, the outcome of IT alignment leading to a better business performance has been evidenced empirically and through case studies (see de Leede, Looise and Alders, 2002; Irani 2002; Kearnes and Lederer 2003). Business organisations that adopt some form of alignment tend to focus more on the strategic use of IT with the consequence that they experience improved business performance. Sabherwal, Hirschheim and Goles (2003) present an IT/Business dynamic alignment model as shown in Fig 2.3.



Figure 2.3: IT/Business Alignment model - Adapted from Sabheral, Hirschheim & Goles's (2003)

It examines how alignment may evolve over time using a punctuated equilibrium model embodying long periods of evolutionary change interrupted by short periods of rapid revolutionary change. Once a business organisation attains alignment, in an ever-changing environment, it is not uncommon to conduct business strategy changes so as to cope with events as they unfold. Under such circumstances, firms experience a period of instability until alignment between IT and business strategy is attained.

This model encompasses most of the original concepts of the Strategic Alignment Model as originated by Henderson and Venkatraman (1993) but also adds additional information. Henderson and Venkatraman (1993) who base their model on the dynamic nature of strategic fit, advocate that effective alignment of business and IT strategies could occur through the incorporation of the four domains of strategic choice that constitute the strategic alignment model. Whereas Avison et al. (2004) demonstrate that the original Strategic Alignment Model has conceptual and practical value, Burn and Szeto (2000) are sceptical about the model's applicability as they argue that the assumptions of the model may not always be valid in the various business scenarios. Various researchers (MacDonald 1991, Luftman, Lewis and Oldach 1993; Sabherwal, Hirschheim and Goles 2003; Avison et al. (2004) have extended the Strategic Alignment Model. In particular, Avison et al. (2004) craft a template for managers to attain strategic alignment. They recommend that after past projects are evaluated to determine the alignment that was attained, new alignment perspectives are formulated to implement future strategic changes.

The original Strategic Alignment Model's domains comprise business strategy, organisational infrastructure or business processes, IT strategy and information systems infrastructure or information systems processes as against Sabherwal, Hirschheim and Goles's (2003) domains of business strategy, business structure, IT strategy and information systems structure. They both acknowledge the importance of IT to sustain and mould business policy. Whereas Henderson and Venkatraman (1993) talk about strategic fit or integration, Sabherwal, Hirschheim and Goles's (2003) focus on alignment and classify these dimensions into strategic alignment, business alignment, structural alignment and IS alignment. These authors also evaluated corporate and business level strategies by using Miles and Snow's (1978) typology of prospectors, defenders and analysers. Croteau and Bergeron (2001) have adopted the Miles and Snow typology in their research study to assess the alignment levels

reached in organisations by evaluating the linkage between strategic endeavours, technological implementation projects and business operational effectiveness. These authors claim that whereas defender and reactor business organisations did not experience this linkage, businesses could improve their organisational performance by utilising IT within the prospectors or analysers business strategies. Businesses that adopt analyser strategies should encourage staff to keep abreast of IT by pursuing educational courses specific to IT, by reading IT journals and by taking part in the activities of professional institutes. Chan, Sabherwal and Thatcher (2006) found evidence in their study that the level of alignment attained within the organisation depends on the type of business strategy adopted by the organisation.

The phenomenon of alignment has been referred to as fit or integration (Henderson and Venkatraman, 1993), linkage (Reich and Benbasat, 1996), bridge (Ciborra, 1997), harmony (Luftman, 2000) and fusion (Smaczny, 2001). In the MIS literature, although the term alignment is predominantly used, the other terms are sometimes used interchangeably with alignment. It is noteworthy that Maes et al., (2000) did not propose an overall definition of alignment but seem to utilise the term "*strategic alignment*" to embody the four domains of alignment in the Henderson and Venkatraman's (1993) strategic alignment model. Environmental instability, which leads to uncertainty in the way organisations should tackle change, has a substantial impact on the alignment activities that are undertaken between business and IT strategies (Tallon and Pinsonneault 2011). In times of environmental turbulence, organisations tend to require more information and therefore a higher alignment activity occurs between business and IT strategies so as to be able to take effective decisions (Choe 2003).

Alignment definitions have been postulated in the academic literature in various ways. Reich and Benbasat (1996, p. 56) define alignment as "the degree to which the information technology mission, objectives and plans support and are supported by the business mission, objectives and plans". Sauer and Yetton (1997) claim that the IT function should mimic the management of the business, if IT alignment is to be attained. Luftman (2000 p.2) defines alignment as "applying Information Technology (*IT*) in an appropriate and timely way, in harmony with business strategies, goals and needs". McKeen and Smith (2003) posit that strategic alignment between IT and business occurs when there is harmony between information systems and the organisation's goals and when they support each other. Reich and Benbasat (2000 p. 82) came up with a refined definition over their previous one and define alignment as *"aligning the relationship between the business and IT infrastructure domain in order to take advantage of IT opportunities and capabilities"*. Levy, Powell and Yetton (2001 p.108) also define alignment as *"the process of developing fit among the key internal activities within an organisation and between the internal fit and the external context"*. Other researchers endeavour to define alignment in more simplistic terms so that the message that is conveyed is very clear, rather than providing academic definitions which tend to be more specific by referring to mission statements, strategies, plans and structures. For example, Campbell (2007) provides a generic direction, as explicated by one of his focus group participants for the attainment of alignment without being prescriptive by advocating that business and IT should work together to reach a common objective.

### 2.4.1 Alignment Dimensions

It appears in the literature that various researchers attempt to explain alignment from a dimensional perspective. The focus is on strategic, intellectual, structural, social and cultural dimensions. The main proponents of the intellectual dimensions, Reich and Benbasat (2000) refer to alignment as to the degree to which formal business and IT plans are formulated in business organisations. Chan and Reich (2007) refer also to this type of alignment as strategic alignment. The influence of structural dimension on alignment which represents the degree of structural fit between business and IT has been brought to the forefront by Chan (2002). The author claims that the success of this structural fit is dependent on the centralisation/decentralisation of IT services and infrastructure, the reporting relationships between the business and IT executives and the utilisation of IT staff. Reich and Benbasat (2000) emphasise also the social dimension of alignment which refers to the understanding and commitment towards the attainment of business objectives between business and IT executives. Similarly, Campbell (2005) advocates that organisations should tackle issues relating to communication barriers between business and IT, attitudes and perceptions of management towards IT, shared domain of knowledge and IT to be perceived as a service culture and leadership.

Finally, Chan (2002) claims that IS planning should be culturally feasible within the organisational structure if alignment is to receive the necessary support in order to

attain business objectives. CIO Insight Staff (2004) claim that if top management endeavours to position alignment as a cultural phenomenon within their business organisation, IT staff should be encouraged to nurture their soft skills so as to be able to communicate effectively by speaking the same language with their business executives. Similarly, Tallon (2003) stresses the need for a cultural change in the managers' mind-set by co-operating and promoting shared networks.

### 2.4.2 Levels of Alignment

Various researchers assert that alignment between IT and business strategy will be effective, if it is represented at all levels of the organisation such as the organisational level (Chan and Reich, 2007), system level (Campbell, 2005) and the individual level (Tan and Gallupe 2006). Also, Jenkin and Chan (2006) evaluate alignment at the project level whereby the project's outcomes are in harmony with the project's goals and IT strategy. Furthermore, Tan and Gallupe (2006) adopt a cognitive approach to alignment by advocating a shared cognition between business and IT executives leading to a higher attainment of alignment between business and IT. It appears that this cognitive approach bears similarity with Reich and Benbasat's (2000) social and intellectual dimension approach which is based on shared domain knowledge. That the alignment process should be extended beyond the internal precincts of the organisation is also encouraged by Galliers (2004) by addressing the external challenges that emanate from the organisation's on-going relationship with its suppliers and customers. Similarly, Sledgianowski and Luftman (2005) claim that the organisation's supply chains of suppliers and customers can only be reached effectively if alignment extends beyond the organisation's internal structures.

The various levels of alignment measured in terms of the quality of IT expertise, whether internal or external, against the management of business processes at all levels of the organisation are also a recurrent theme of this research study. Also, the focus on IT alignment as a process rather than an end-state is evaluated in the next section. Alignment as a process is fundamental in this research study as it focuses on one of the objectives by seeking IT alignment patterns over time, whereby small firms move from one alignment state to another.

#### 2.4.3 Alignment Process Models

The issue of how to align a relatively fixed IT structure with an ever changing business strategy that is influenced by a dynamic environment has been brought to the forefront by Galliers (2004). Early studies on alignment have acknowledged alignment as a process rather than an end state (see MacDonald, 1991; Baets, 1992; Powell, 1992; Broadbent and Weill 1993; Henderson and Venkatraman 1993; Papp, 1999; Rondinelli, Rosen and Drori 2001). Street, Gallupe and Reich (2010) also contend that predicting patterns of alignment could be identified by evaluating IT adoption behaviour undertaken by firms over time - a main theme of this study. Sabherwal, Hirscheim and Goles (2003) scrutinized the alignment process in traditional contextual conditions and found that IT alignment processes, which form an array of patterns over time, approximate to the punctuated equilibrium model. This model demonstrates how business organisations experience long periods of relative stability that are characterised by evolutionary change coupled with interruptions of short periods of rapid revolutionary change. This model also shows that during periods of stability, IT may not be adequately aligned with business objectives. However, the authors also claim that it is through these changes that organisations endeavour to align IT with business objectives and prevent them from being derailed by misalignment. Similarly, Peppard and Breu (2003), conscious that knowledge relating to how the alignment process evolves over time was scant, propose a co-evolutionary model which embodies how IT strategies coevolve with business strategies over time, where despite being separate entities, each entity is shaped and shapes each other.

It is also significant that maturity theories such as Luftman's (2003) Strategic Alignment Model assert that alignment matures over time as IT planning processes are continuously fine-tuned to adapt to changes in business processes. Chan (2002) stresses that formalised business strategies pave the way for on-going alignment to reach the organisation fit between business and IT. However, Chan (2002) also found evidence that informal and flexible organisational structures create a climate, where alignment can thrive to achieve integration between business and IT strategies. Rondinelli, Rosen and Drori (2001) also suggest that business organisations would do well to manage alignment by focusing on the four major organisational components namely, business strategy, organisational structures, management processes and market penetration plans.

#### 2.4.4 IT Strategic Alignment in Small Firms

The alignment of IT strategy and other business domains including business strategy and organisation structure have been under researched in small firms (Kobe 2007). In particular, much of the research that has been undertaken focused on the enablers and inhibitors of alignment and tended to ignore the change processes that lead to alignment between IT and business objectives (Smaczny, 2001; Sabherwal and Chan, 2001; Chan and Reich 2007; Levy, Powell and Yetton 2011). Consequently, the process of aligning IT with business strategy appears to be problematic as most firms do not seem to understand alignment (Avison et al., 2004). Most small firms embark on computerization by automating what is being done manually with the objective of reducing costs and improving operational efficiency, with some firms then adopting sophisticated Information Systems projects to create business value (Levy, Powell and Yetton 2011). To attain this latter objective, small firms require an Information Systems strategy that is continually being adjusted and aligned to their business strategy.

The benefits that accrue from aligning IT to business strategy are widely acknowledged as for example there have been assertions that alignment is seen to contribute significantly towards organisational performance (see Chan, Sabherwal and Thatcher 2006; Raymond and Bergeron 2008; Tallon 2008). Contrary to the large firms, any IT development that is undertaken by small firms leans towards benefits that may be reaped from operational efficiencies and any IT investment that occurs is usually unplanned, sporadic and incremental (Levy, Powell and Yetton 2011). Also these authors contend that the contextual conditions such as the size of the firm, the restricted financial and human resources and the lack of management competencies and IT expertise contribute towards mistrusting completely their IT outsourcers. Levy, Powell and Yetton (2011), in their study of 27 SMEs (only three firms employed more than 49 employees) evaluated the different paths to alignment that these firms undertook by combining the MIT90s (Scott Morton 1991) and the focus-dominance model (Levy, Powell and Yetton 2001). Figure 2.4 depicts the MIT90s model. Levy Powell and Yetton (2001) claim that SMEs' selection of IT applications is functionally dependent on their location in the focus-dominance model as indicated by its strategic focus and market positioning. Strategic focus implies cost reduction as opposed to value-added whereas market positioning denotes few customers as against many customers.







These authors designed four competitive quadrants within the focus-dominance model to map the different paths of alignment between the small firm's strategic IT investment and its strategic context. Figure 2.5 depicts the four quadrants of the focus dominance model, namely, control, collaboration, coordination and positioning.

ordination			Innovation
ord Processing counting istomer Databases		Word Processing Accounting Electronic business	
rengths Improved internal communication Improved customer care Increased operational effectiveness	<ul> <li>Weaknesses</li> <li>Internal focus</li> <li>Limited integration with business strategy</li> </ul>	<ul> <li>Strengths</li> <li>IT based strategic leadership</li> <li>External Focus</li> <li>Changes in business processes</li> <li>Changes in employer profile</li> <li>Innovative CEO with IS knowledge</li> </ul>	<ul> <li>Weaknesses</li> <li>Cost</li> <li>Limited flexibility due to resource constraints</li> </ul>
ord Processing counting		Word Processing Accounting MRP EDI	
rengths Control Cost reduction Simple systems	<ul> <li>Weaknesses</li> <li>Operational focus</li> <li>Internal focus</li> <li>No link with business strategy</li> </ul>	<ul> <li>Strengths</li> <li>Reactive to business strategy</li> <li>Improved customer relations</li> <li>External focus</li> <li>Limited customer power</li> </ul>	<ul> <li>Weaknesses</li> <li>Customers may determine IS requirements</li> <li>Cost</li> <li>Limited systems flexibility</li> </ul>
iency			Collaboration
	Ardination profination prof Processing counting istomer Databases rengths Improved internal communication Improved customer care Increased operational effectiveness prof Processing counting rengths Control Cost reduction Simple systems	wrdination         brd Processing         counting         istomer Databases         rengths         Improved internal         communication         Improved customer         care         Increased operational         effectiveness    ord Processing counting rengths Control Cost reduction Simple systems  weaknesses • Operational focus • Internal focus • Operational focus • No link with business strategy  iency	ord Processing counting istomer Databases       Weaknesses       Word Processing Accounting Electronic business         rengths Improved internal communication Improved customer care Increased operational effectiveness       Weaknesses • Internal focus • Limited integration with business strategy       Strengths • IT based strategic leadership • External Focus • Changes in business processes • Changes in employer profile • Innovative CEO with IS knowledge         ord Processing counting       Weaknesses • Operational focus • Internal focus • No link with business strategy       Word Processing • Changes in employer profile • Innovative CEO with IS knowledge         rengths Control Cost reduction Simple systems       Weaknesses • Operational focus • No link with business strategy       Word Processing Accounting         iency       Weaknesses • Operational focus • No link with business strategy       • Reactive to business strategy

Strategic focus

Figure 2.5: IS mapped into focus-dominance model

Adapted from Levy, Powell, and Yetton 2001 pp. 136-137

Levy, Powell and Yetton (2011) embedded the MIT90 model in the Focus-dominance model as depicted in Figure 2.6. The control or efficiency quadrant is based on cost minimisation whereby the usage of basic IT projects is undertaken solely to look for internal process improvement through the utilisation of office automation tools such as word processing and spreadsheet, and the deployment of accounting spreadsheets to manage expenditure and income. Given that the focus is on day-to-day operations, IT investment is regarded as a cost of conducting business in which IT provides limited business value. Within the control quadrant, small firms do not feel the need to attain any alignment, given that the new IT systems are implemented and deployed within the current organisational structure. Levy Powell and Yetton (2011) claim that small firms' behaviour in the control quadrant is typical of those owner-managers who are only concerned with controlling operations and consolidating their activities without planning any business growth. Consequently, there is no requirement for any changes in any roles and skills because the current IT infrastructure will be able to support the new management processes.





- adapted from Levy, Powell, and Yetton 2011 pp. 111

It is significant that high customer dominance may coerce small firms to take up such basic IT investments. The increase in the number of customers places the onus on the small firm to invest in a database which will be able to hold all the customers' information. As a consequence, the remit of the coordination guadrant, while still focusing on cost control, endeavours to enhance and retain the customer relationship by investing in a network solution so as to integrate all the functional areas of the firm with the database that holds customers' information. Other attributes relating to this coordination quadrant entail the deployment of a website as a virtual showroom to promote the products and services of the firm and the extensive use of email to communicate with customers. Levy Powell and Yetton, (2011) found evidence that owner-managers, through their business endeavours in this quadrant, envisage business growth. However, in this co-ordination quadrant the dominant path is that new management processes necessitate the uptake of new IT investment which in turn instigates changes in the organisational structure. Notwithstanding the changes and processes that emanate from the co-ordination quadrant, no changes in roles and skills are envisaged because it is the owner-manager's IT knowledge that usually drives the new uptake of IT adoption and the IT investment that is undertaken does not require any new technology demands from a resource perspective.

New management processes are developed to integrate the value-chain activities of the small firm. In particular, the integration of Material Requirements Planning with their suppliers, inventory, production planning and recording, accounting and product delivery contribute towards value creation in the collaboration quadrant. Small firms are able to communicate frequently with their customers, through the extensive use of Electronic Data Interchange. However, the pressure that customers exert on small firms may result in firms adopting a reactive strategy to meet customer demands. In this collaboration quadrant, strategy dominates the path of alignment as it impacts on new technology investments followed by a change in management processes. Even in this quadrant, Levy Powell and Yetton, (2011) claim that changes in technology and management processes do not require any changes in roles and skills.

The positioning or innovation quadrant seeks to elicit changes in business processes which are a result of the owner-manager's mind-set to grasp opportunities based on IT-centred strategic leadership. The integration of IT with business strategy will result in creating strategic value to the firm that emanates from the direct impact of IT on business strategy as well as utilising IT as an enabler to fulfil the firm's business strategy. The integration between IT and business strategies is at an advanced stage as both internal and external factors are considered. Consequently, this integration presupposes the importance of investing, sometimes substantially, in IT and the flexibility of adapting to changes as they unfold.

The contingent model as developed by Levy, Powell and Yetton (2011) claim that the small firm will select different paths of alignment depending on where it is positioned within the focus-dominance model, and on the firm's characteristics relating to the level of technology, roles and skills, and management processes which may impact on the strategy and structure of the firm. This model confirms earlier findings by Hussin, King and Cragg (2002) and Spanos, Prastacos and Poulymenakou (2002) that the benefits that accrue from IT investment are dependent on the alignment attained between business and IT. This model also claims that most firms invest in IT solely to support operations and existing management processes. These small firms adopt a low-cost approach and therefore are unlikely to utilise IT strategically. However, those firms that are reaping the benefits from sophisticated IT solutions tend to achieve alignment on the basis of the owner-manager's direction to integrate IT with business strategy.

### 2.4.5 IT Alignment with Business Processes in Small Firms

During recent years, a number of researchers such as Cragg, Tagliavini & Mills (2007) and Tallon (2008) have gone beyond the dominant firm-level alignment paradigm and adopted a process-oriented approach on the alignment between IT and business strategy. Notwithstanding that strategic alignment between IT and business strategy continues to be a continuous challenge among small firms, few studies have been undertaken at the functional or operational level (Cragg, Tagliavini and Mills 2007). Functional alignment stems from the fit between business infrastructure and IT infrastructure as demonstrated in the Henderson and Venkatraman (1993) model. This interest in evaluating IT alignment with business processes stems from the evidence that was found indicating that SMEs tend to focus on operational alignment rather than on alignment at a strategic level (Levy, Powell and Yetton 2001).

The alignment that can be achieved between strategy and structure has created considerable interest among IS researchers. In particular, Sabherwal and Chan (2001), and Chan, Sabherwal and Thatcher (2006) found evidence that IT alignment is

a pre-requisite for business success and impacted positively on organisational performance. However, further studies such as those conducted by Rai, Patnayakuni and Seth (2006) assess alignment at the operational level whereby they demonstrate that when IT is aligned with the supply chain operations, firms experience improved business performance. Bergeron, Raymond and Rivard (2004) attempted to assess beyond strategic alignment when evaluating firms but only one firm out of six that were reviewed, attempted alignment at the operational level. There is conflicting evidence as to the level of alignment attained among small firms. For example, Levy, Powell and Yetton (2001) provide evidence that small firms did not register any IT alignment with their business strategy and tended to look at IT investment as a cost with their main objective being to seek efficiency improvements in their day-to-day operations. However, other researchers such as Cragg, King and Hussin (2002) provide evidence that many SMEs have attained high levels of alignment between business and IT strategy leading to enhanced organisational performance. Also Ismail and King (2005) report high levels of alignment at the operational level when they evaluated SMEs that implemented accounting information systems, leading to a positive alignment relationship between IT and business performance.

Cragg, Tagliavini and Mills (2007) confirm earlier findings by other researchers that SMEs tend to focus on operational alignment rather than strategic alignment, implying that operational processes leading to efficiency gains are more important than strategic alignment within the SME environment. Tallon (2008) claims that the complexity of both alignment and business strategy arises from the difficulty to measure them due to their unobservable nature. Tallon (2008) endeavours to create a paradigm shift by ignoring alignment at the strategic level and focusing instead on evaluating and assessing alignment at the process level. Tallon (2008) uses the primary activities of Porter's (1985) value chain to assess whether alignment is creating business value and finds a positive correlation between the two. This author claims that given that business strategy is fragmented into a series of activities (Porter, 1996) such a variety of processes will presuppose that some processes may be more important than others. Therefore, it is not easy to have a tight fit or alignment amongst all the processes that embody all the business strategies within the firm. Consequently, Tallon (2008) advocates the importance for each firm to identify its key processes that are supporting the business strategy and then evaluate if alignment is being attained at the process level.

48

An evaluation and examination at the process level could also generate rich insights as to why benefits are accrued when particular processes are activated and not others. For example Sabherwal and Chan (2001) and Chan, Sabherwal and Thatcher (2006) claim that those firms that focus on cost reductions and are driven solely by operational efficiencies, are not reaping the benefits of alignment, because a processlevel stance to assess whether alignment is weak or tight would not have been attempted. Therefore, various researchers (see Carr, 2003; Luftman, Kempaiah and Nash, 2005) claim that evaluating IT at the process-level can provide deep insights on how the firm will generate more business value.

## 2.5 IT Alignment Challenges

Ciborra (1997) hails as historic that in 1990's, various research programmes on strategic alignment endeavoured to demonstrate the linkage between business strategy and IT planning by drawing the imaginary line between these two entities. In particular, Broadbent and Weill's (1993) research paper on strategic alignment in the Australian banking industry aimed to evaluate business practices that were being used to align IT with business objectives. In this research paper, the authors devised a strategic alignment model claiming that business and information strategy alignment will be an on-going challenge which has to be settled by both business and IT managers. It is significant that in a further paper by Broadbent et al., (1996) the phrase 'strategic alignment' was omitted completely and the authors shifted their focus to linking business strategy with IT infrastructure. Similarly, Henderson and Venkatraman's (1993) strategic alignment'.

Various scholars (Orlikowski 1996; Ciborra 1997, 2001; Sauer and Burn 1997; Kearnes and Lederer 2000; Levy et al., 2001) claim that alignment is an on-going process and therefore there are instances whereby it is difficult to identify important phenomena. Most of these authors advocate that alignment is not always appropriate, necessary and practical to undertake. The arguments related to this scepticism comprise: that research on strategic alignment cannot occur if business strategy is not known or is in process; that strategic alignment is a journey and not an end-state; that alignment research tends to be mechanistic and fails to encapsulate the events and actions as they unfold; that static alignment is not suitable for a business strategy that is continuously changing due to external challenges that are impacting on the business

organisation; that communication barriers may hinder the clear expression of the strategic objectives, thereby rendering it impossible to have effective alignment between business and IT; and that IT should continuously challenge business strategy to maximize the innovative opportunities that may arise out of such a stance, rather than be a follower of strategy.

It is against this scenario that Ciborra (1997) commenced his inquiry on the feasibility of strategic alignment adopted by business organisations. Ciborra (2001 p.29) acknowledged the research undertaken by various researchers on strategic alignment but argued that:

"Those researchers, made multiple abstractions out of the muddling-through and drifting. They idealised tinkering and called it strategy; idealised technology as a controllable set of means and called it IT; granted to these concepts existence and essence, transformed them into boxes and traced a line between them. Then, they started the difficult journey back to the real world, and found difficulties in measuring 'the strength of the line' or formulating prescriptions that would be followed by practitioners when walking along the line on the field of practice".

Ciborra (2001) views IT as a social rather than a scientific discipline. In particular, the author attributes the successful alignment of IT applications more to tinkering than to conscious alignment. Contrary to other scholars, who took management strategy and technology for granted, Ciborra (2001) looks at these elements as problematic. He contended that technology is continuously drifting, as it is exposed to various forms of improvisations and to numerous adaptations as events unfold. Ciborra (2000) reiterates that the alignment models that emanate from the literature by various researchers do not reflect the real world. Consequently, managers would be unable to utilise these models, as they do not fit in the dynamic world that business organisations operate in.

As an alternative path to this mode of thinking which focuses on general models based on rationally calculated action, planning and the visualisation of successful outcomes, Ciborra (2001 p.29) advocates that "we can observe phenomena such as: plans that keep being diverted, surprises that arise constantly, frequent adaptations and opportunistic adjustments that must be carried out on the spur of the moment. Planning may be espoused but circumstances may compel managers to improvise". The author proposes that organisations should divert their thinking from the abstract terms of strategy and alignment of systems and instead engage themselves in a new language that embodies terms of '*caring*', 'hospitality' and 'cultivation' of technology. Ciborra's research shows that, contrary to planned alignment, the actual alignment that is exemplified by the action that takes place on a day-to-day basis, entails a great amount of caring by all the personnel that are participants in the design, implementation and use of IT infrastructures. Ciborra (2001 p.30) explains this caring as follows: "'it is just familiarity, intimacy and continuous commitment, from the initial needs analysis through the construction of the infrastructure, training the users, introducing the systems and applications into practice, modifying them as new practice emerges and so on". The concept of care embodies the elements of perception, circumspection and understanding of the processes that occur in the day-to-day activities in the firm. Technology is continuously undergoing change and tends to be highly ambiguous. Consequently, organisations have to cope with this technological ambiguousness by embracing and hospitalizing this new technology which is continuously emerging. The dynamic interaction and the intricacies of the relationship between strategy and technology embody the concept of cultivation. Ciborra (1997) claims that current technology, which is the sum of accumulated technology over time, caters not only for the current strategic objectives but has the potential to accommodate some of the businesses' futuristic objectives. Cultivation shapes technology that is at variance with rational planning to build a technical system.

## 2.6 Conclusion to the Chapter

This chapter discussed three main themes in the literature as illustrated in the literature map in figure 2.1, namely, the diverse nature of strategy, IT adoption and IT alignment challenges facing small firms. The first theme which focused on the strategy dimension revealed that most business research could not explain how strategy was being undertaken in small firms. Of significance is Mintzberg, Ahlstrand and Lampel's (2009) labelling strategy as an umbrella whereby the broad strategic outlines are deliberate, whereas details relating to strategy in action are allowed to evolve as events unfold. The latter point is important because it tallies with Mintzberg's (1978) earlier definition of strategy as a *"pattern in a stream of decisions"* and directs this research study to focus on the actions undertaken by the owner-managers of small firms. The literature review revealed that studies relating to how small firms endeavour to link IT with business studies are limited. Therefore, the second theme of this

literature review focused on IT adoption. In particular, the literature review adopted a resource-based view of the firm by assessing the impact of knowledge on IT adoption. Also the issue relating to the owner-manager's influence on IT adoption was also reviewed, as various researchers gave importance to this protagonist who is the prime decision-maker where strategy and IT adoption are concerned. Of similar importance is the discussion on alignment between business and IT, and the various alignment levels that could be attained from a strategic and operational perspective. The literature review provided little insight on how small firms' IT alignment patterns lead to various levels of information systems integration. This was partly because most of the research studies tended to be prescriptive and based mainly on deductive studies with pre-established patterns and hypothesis testing. Finally, this review evaluated the challenges put forward by researchers such as Ciborra (2001), Kearnes and Leaderer (2000), Levy, Powell and Yetton (2001) whereby it is argued that alignment models, which are mostly presented as static models, do not reflect the real world and therefore do not fit with the unplanned situations that unfold in the dynamic environment that small firms operate in.

The gaps identified in this literature review in relation to this research study consisted mainly of: (1) the restricted quantity of inductive studies relating to IT adoption behaviour (2) the lack of focus on process that leads to a better understanding of firms' alignment movements (3) the constructs' list relating to IT adoption excludes the contextual conditions where small firms operate and (4) the alignment models are mostly static. All these gaps that emanated from this literature review have directed this research study: (1) to extend the list of constructs relating to IT adoption behaviour by incorporating the contextual conditions and evaluate their interrelationships (2) to seek common characteristics pertaining to the identification of alignment states and (3) to map IT alignment patterns over time. In order to reduce these gaps, this research study will focus primarily on the owner-managers' actions relating to IT adoption leading to alignment between business and IT by following a grounded theory methodology. This research methodology and how it relates to this research study will be discussed in chapter 3.

# **Chapter Three**

# 3: Research Methodology - A Grounded Theory Approach

## 3.1 Introduction

This chapter outlines the methodological underpinning of the inquiry and assesses the approaches, methodologies and methods used to tackle the research questions. The purpose of this research is to study patterns of IT adoption strategic behaviour of small firms in Malta. The objectives of this research seek:

- 1. To identify and critically evaluate a reference set of constructs that act as antecedents to IT adoption behaviour in small firms.
- 2. To establish an analytical framework for assessing alignment states beween business objectives and IT attained by small firms.
- 3. To critically assess possible relationships between the business-IT alignment states and to seek common patterns of IT alignment undertaken by small firms.

The initial part of this chapter evaluates briefly a number of methodologies such as phenomenology, ethnography, case studies alongside grounded theory and provides the justification for the uptake of Grounded Theory methodology in this area of inquiry. This is followed by a discussion of the various philosophical assumptions in terms of ontology, epistemology, axiology, rhetorical and methodological elements to explore factors that impact on the behavioural patterns in IT utilisation adopted by small firms. The research paradigms or philosophical world views in terms of postpositivist, constructivist, advocacy/participatory and pragmatic stances that are selected to fulfil the objectives of this study are also considered. This is followed by the justification to adopt primarily a constructivist approach within the grounded theory method and supplemented with a discussion of process, which is fundamental to assess the various IT/Business alignment states attained over time by small firms participating in this research study. Also information relating to the researcher's background and how this impacts on the research study are evaluated. The discussion ensues with a detailed account of sampling strategies adopted, data collection, management and analysis followed by strategies used to enhance quality in this research study. This chapter closes with a discussion of the analysis of ethical issues relating to this research study.

## 3.2 Selecting Methodology of Inquiry: A Grounded Theory Approach

The methodological stance that has been adopted in this research study is grounded theory. This is a qualitative method that develops theory from observation, embodying a structure that is both flexible and rigorous (Glaser and Strauss 1967). The various epistemological viewpoints, albeit conflicting, that were practiced by grounded theorists during the past four decades have contributed towards applying grounded theory in various forms.

The origins of grounded theory can be traced to Glaser and Strauss who after publishing *Awareness of Dying* in 1965 articulated their ideas in their next book *The Discovery of Grounded Theory* in 1967. Glaser defines grounded theory as:

"a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area" (Glaser 1992 p.16).

Grounded Theory is cited as probably the most commonly used and acclaimed international qualitative method, exceeding ethnography (Morse et al., 2009; Bryant and Charmaz 2007). Research studies have emerged, contributing towards a genealogy of grounded theory. Key authors predominantly Glaser (1978 and 1998), Strauss and Corbin (1990 and 1998), Locke (2001), Bryant (2002), Goulding (2002), Charmaz (2000, 2006), Clarke (2005) and Corbin and Strauss (2008) followed by Glaser (2001, 2005) steered the path and adoption of grounded theory towards innovative methodological platforms. The second generation grounded theorists filled in the methodical gaps relating to the ontological and epistemological viewpoints that were created by the originators of grounded theory (Birks and Mills, 2011).

The outcome of Glaser and Strauss's collaboration for more than a decade, where they taught together at the University of California, San Francisco (UCSF), was the emergence of grounded theory as a research methodology. This emergent phenomenon stemmed from different theoretical orientations that each one of them brought to UCSF. Glaser's formative background in positivism took place at Columbia University where he undertook his training in inductive methods to quantitative evaluation under the direction of Lazarsfield and his guidance in sociological theory by Merton (Covan 2007). Strauss's background developed at the University of Chicago

where his studies were ingrained in symbolic interaction, pragmatist philosophy and Mead's social psychology.

Glaser and Strauss have shifted their attention from the quantitative canon to qualitative analysis. They have claimed that their method which was organised, systematic and rigorous, could be adopted to develop theories from research studies that are grounded in data (Charmaz, 2009). They articulated guidelines how to undertake qualitative research and how to analyse the data gathered during the research (Charmaz 2006).

Glaser and Strauss (1967) contend that the analysis which stems from the data corresponds to the interpretive approach, leading to inductive discoveries. This signifies a partial digression from relying totally on positivism (Charmaz 2006). The concept of discovery is fundamental in grounded theory methodology. Rather than relying on testing hypothesis statements from existing theories, Glaser and Strauss moved towards constructing new theories which are intrinsically grounded in data.

There is evidence that managers are more likely to endorse findings that derive from qualitative research rather than the traditional quantitative survey measurements as the primary source of data collection (Shankar and Goulding 2000). In fact, the approach adopted in this research study is in line with these research developments, where grounded theory is being used as a methodology using the interpretative approach to undertake management research (Goulding 2002).

The objectives, as articulated in the introduction, influenced the type of research method that was to be taken up in this study. In particular, the emphasis to look for small firms' IT alignment patterns operating in a small island economy was an important factor. Of similar importance was to evaluate how these patterns of IT adoption behaviour are impacting on the various IT/Business alignment states attained throughout the years by these firms.

In order to encompass the contextual conditions of these small firms it was felt that an inductive approach, rather than a hypothetical-deductive method to the study, would be more suitable to generate a framework of IT strategic behaviour from the data that emanated from the area of enquiry. A hypothetical-deductive method was deemed to be inadequate as the conceptual framework and hypothesis are compiled in advance

from extant literature and tested for their validity, without embodying the various contextual conditions. Also, this research study centres on the motivations and actions of the owner-manager. This is in line with Curran and Blackburn (2001 p.5) who acknowledge the owner-manager as the most important person in the firm. They also reiterate that researchers will be able to interpret the owner-manager's motivations and objectives by studying real-life business owners rather than assuming what they do.

Given that the research study focuses on small firms' IT adoption behaviour over time and the alignment patterns that stem from this behaviour, it is felt that quantitative techniques would be inadequate to observe and measure these dynamic processes. The use of case studies that would usually comprise one or more cases is also discarded as any sample sizes used would not have been sufficient to compile the possible typological groupings of IT alignment patterns followed by small firms. The use of another possible method, namely, ethnography, with its emphasis on participant behaviour is also found to be wanting as owner-managers are renowned for being very busy people, experiencing considerable time constraints and detesting any intrusion in their daily operational activities (Curran and Blackburn 2001 p. 60).

The adoption of a phenomenological approach is also found to be at variance with the research objectives that are set for this study. Phenomenological analysis has been used in organisational *research 'to develop an understanding of complex issues that may not be immediately implicit in surface responses*' (Goulding 2005 p. 301). Phenomenology enquiry focuses on the participants' conscious experience, rather than the covert elements of that experience which are essential to extract rich insights from the participants' subconscious levels (Goulding 2002). Another drawback related to the phenomenological approach is that sampling is purposeful given that participants are only selected if they have gone through the experience of the phenomena under study. Such an approach would hinder participants from viewing holistically the whole spectrum relating to the research area of study.

Grounded theory is deemed to be an attractive methodology for this research study because information relating to the area of study is scant. The justification for adopting grounded theory methodology in this research study results from its unambiguous emergent characteristics, encompassing a series of systematic and iterative steps for

56

collecting, coding, analysing qualitative data, theoretical sampling, memo writing, and conceptual properties and category generation, leading to theory construction (Charmaz 2006).

The applicability of grounded theory in dealing with issues relating to business management provides various advantages which are not so common in other research methodologies. In particular, the grounded theory methodology has endowed the current researcher with a systematic methodology to tackle effectively any bias and prejudices (Glaser and Strauss 1967; Sarker et al., 2001; Urquhart, 2001). Given that the phenomena that emerge are particular to the contextual conditions where the study is taking place, any knowledge that is accumulated through the researcher's previous experiences could not be utilised as the events that are unfolding are unique and do not fit any previous theoretical framework (Fernandez, Lehmann and Underwood 2002). Other benefits that accrue through the application of grounded theory in this study are the following: grounded theory emphasises the construction and generation of theory (Glaser and Strauss 1967; Charmaz, 2006) and strengthens triangulation, which is ingrained in the iterative process of comparative analysis between codes and categories (Fernandez 2004). Most importantly, while grounded theory acknowledges extant theory, it focuses effectively on emerging phenomena (Lehmann 2001; Urquhart 2001). Grounded theory is renowned for eliciting rich insights and comprehending the intricacies of organisational behaviour and activities leading to the construction of reality that is grounded in data (Flick, 2009). Grounded Theory which is exploratory in nature, is, therefore, considered to be an appropriate qualitative methodology to spawn emergent conceptualisations into integrated patterns that emerge from the data collected throughout the research study (Corbin and Strauss 2008). Additionally, grounded theory has the potential to develop a welldefined and parsimonious model which is valuable and relevant within the substantive area of study (Partington 2000).

## 3.3 Philosophical Assumptions and Research Paradigms Adopted

Qualitative research embodies various philosophical and often contrasting assumptions that the researcher needs to make before embarking on a qualitative study. These assumptions direct the researcher to select qualitative research in terms of ontology which reflects the nature of reality; epistomology which denotes knowledge claims; axiology which symbolises values-laden research; rhetorical which represents the language used in research and finally the methodological assumption which signifies the research process (Creswell, 2007).

These philosophical assumptions will impact directly or indirectly on the researcher's thoughts about how legitimate a level of knowledge can be attained through the selection of a research framework that will also embody philosophical world views or research paradigms, selected strategies of inquiry such as a qualitative strategy using grounded theory methodology and specific research methods such as the grounded theory method. Figure 3.1 illustrates the framework for research design interconnecting philosophical assumptions, research paradigms, inquiry strategies and research methods.

Notwithstanding that most of the assumptions that direct the methodological approaches, selected strategies and research methods are often unstated in management studies, demonstrating methodological congruence in the research design by articulating and justifying the philosophical underpinnings will enhance the quality of the research that is undertaken (Nelson, 2007). The researcher evaluates the philosophical position by reflecting what is believed to be true about the nature of reality. The many roles that a researcher may hold will impact and influence the methodological approach that is selected for the research study.

Several studies have assessed the various research approaches, their inferences and infuences on the type of research design and methods undertaken (Neuman 2000; Guba and Lincoln 2005; Creswell 2007; Denzin and Lincoln 2008; Tedlie and Tashkkori 2009). Four different world views or research paradigms are considered: postpostivism, constructivism, advocacy/participatory and pragmatism. These research paradigms are evaluated for their relevance to this research study.



Figure 3.1: Framework for Design

#### Interconnecting Philosophical Assumptions, Research Paradigms, Strategies of Inquiries and Research Methods

The postpostivist worldview, which is also called the positivist/postpositivist, represents the traditional form of research whereby these assumptions are more conducive to quantitative research than qualitative research. The postpositivist approach is based on the scientific method whereby the researcher commences with a theory, collects data that either accepts or rejects the theory, and then undertakes the necessary revisions before other tests are carried out. The postpositivist research paradigm is not compatible with the grounded theory method used in this study, as rather than testing hypothesis statements from existing theories, grounded theory moves towards constructing new theories which are intrinsically grounded in data. Social constructivism affords a different philosophical perspective to postpositivist approaches, claiming various knowledge assumptions when individuals endeavour to provide subjective interpretations of the world that they are living in (Neuman 2000 and Crotty 1998). Social constructivism is conducive to the qualitative research approach because constructivists regard knowledge as socially constructed by accepting the various viewpoints of the participants and the researcher; by analysing participants' actions looking at tacit cues; by undertaking interpretations for the participants' meanings and by endeavouring to grasp the logic behind their actions and omissions within and outside the social structures. This approach fits well within this research study as it adopts Charmaz's (2006) constructivist perspective within the grounded theory methodology.

The advocacy/participatory approach is seen as an alternative to postpostivist and constructivist research paradigms focussing on social justice issues (Creswell 2007). As this research study does not focus on issues relating to social justice, this approach was discarded in this study.

The pragmatic world view, which stems from the work of Pierce, James, Mead and Dewey (Cherryholmes 1992), derives from actions, situations and consequences of inquiry rather than the antecedent conditions which are embodied in postpositivism. Thus, pragmatism focuses on the research problem without being bound to any one system of philosophy and reality. Consequently, researchers tend to select the methods and procedures that fit within their research requirement (Creswell 2007). This study utilises some of the pragmatist views within Strauss and Corbin's (1998) *Conditional and Consequential Matrix* and Charmaz's (2006) constructivist approach which is rooted in pragmatism.

Grounded theory embodies various orientations, encompassing diverse knowledge claims relating to different research implementation strategies (Bryant and Charmaz, 2007). The position taken in this study is one of an anti-positivist orientation. Such a stance comprises: (1) that the researcher's own views which impact on the interpretivist and reflexive modes adopted in the study will mould the substance of the research (Denzin and Lincoln 2008); (2) that the adoption of the rigorous constant comparative analysis method provides consistency towards objectivity (Fernandez

2004); (3) that any theories which are generated represent a construction of reality of a complex world as envisaged by the researcher's lens (Charmaz 2006).

The uptake of grounded theory for this research has been influenced by the lack of reviews in the literature relating to the implementation of IT applications in business organisations (Fernandez, Lehmann and Underwood 2002) and the disregard for the motivations and decisions of the owner manager in running the business as the key person of the firm (Curran and Blackburn 2001). Such perspectives may lead to emerging phenomena for which new propositions are required to be constructed, given that existent theories are scant or are not grounded in data.

Given that the focus of this study is on the diverse IT alignment patterns followed by small firms, it was felt that the selected research method could not rely on theoretical underpinnings that were uncovered by the literature. Fernandez, Lehmann and Underwood (2002) posit that such emerging phenomena relating to the interaction between the people, technology and organisations necessitate a qualitative mode of study. The research paradigm adopted for this study is governed by the stance assumed in the epistemological, ontological and methodological underpinnings (Guba and Lincoln 1994). The grounded theory method of enguiry that has been selected leans more towards the interpretivist stance in its ontological and methodological position. This study followed Charmaz's (2006) guidelines to spell out clearly the philosophical approach, the specific rationale of enquiry and the adopted, albeit flexible, procedures, when the researcher undertakes a grounded theory study. Therefore, in this study, this interpretivist approach is exemplified by the philosophical viewpoints of pragmatism and constructivism. Glaser's inductivism and Strauss's symbolic interactionism also formed part of the epistemological and methodological underpinnings within the research strategy that was implemented. Also of significance are Glaser's epistemological assumptions which are rooted in positivism and the underpinnings of coding and of concepts that emanate from the on-going comparison of relationships between categories. The constant comparison method was implemented throughout the study leading to the construction of dimensions, properties, codes and categories. This continuous comparative analysis contributes towards the development of propositions which form the basis of the emergent theory in this research study (Birks and Mills 2011). This study also places its focus on Strauss and Corbin's (2008) Conditional Matrix and on process, relating to the

identification of IT alignment patterns that develop over time. But as the research progressed, it became evident that this research was adhering to the constructivist philosophy.

Thirty-one small firms were researched using in-depth interviews with ownermanagers. Three owner-managers directed the researcher to interview their respective senior manager who was responsible to drive the IT function in their firm. These three owner-managers felt that their senior-managers would be in a better position to explain the IT adoption strategic behaviour that was developing in their respective firm. The indepth interviews were digitally recorded and transcribed by the researcher.

A sample of small Maltese firms relating to manufacturing, services, wholesale and retail services were selected on their relevance to the study. Grounded theory's handling of sampling does not follow the procedure of calculating the sample size as is reminiscent in quantitative studies. A sampling policy was implemented to seek for significant cases that are prolific in meaning and content. Convenience sampling was initially carried out by identifying early participants. The initial data collection and analysis led to the discovery of diverse properties and valuable avenues of enquiry leading to purposeful sampling (Gurd 2008). Further samples of informants were utilised to contribute towards theoretical sampling according to the relevance that emanates from the emergent categories until no new properties emerged (Flick 2009).

As has already been mentioned, this research study has adopted Charmaz's (2006) approach towards a constructivist stance. Charmaz's (2006) perspective to grounded theory draws from some useful methods that Glaser stated (Glaser and Strauss 1967; Glaser 1978). Charmaz (2006, 2009) claims that constructivist grounded theory, which is rooted in pragmatism and relativist epistemology, assumes multiple realities and multiple viewpoints of these realities. The researcher's values, positions and actions impinge on the interpretations and construction of categories that stem from the interaction between the researcher and participants.

Charmaz (2006) asserts that the constant comparative method and the researcher's interaction with the participants and their environment are fundamental constituents of the grounded theory method. The first pillar comprises the constant comparison method which denotes that the researcher undertakes the on-going comparison

between data, codes and categories. Charmaz (2006 p. 179) states that "enlisting grounded theory in a contemporary more reflexive mode, keep you interacting with your data and emerging ideas". This is reflected in the second pillar in the form of interaction which relates to the researcher's on-going interpretation and reflexive research practice of the world, viewpoints, the environment, their participants' standpoints and the emerging concepts. It is significant that Charmaz (2006) unties the constructivist approach from its objectivist base and this is attained by the researcher embarking into interpretative and reflexive modes attained during the continuous process of initial coding to the creation of memos throughout the finished product.

Constructivists observe and analyse data from a problematic, relativistic, situated and partial perspective. They regard generalisations as partial because these are tied to the situational factors, in terms of time, positions, actions and interactions where the study is undertaken. Charmaz (2005, 2006) claims that constructivists endeavour to obtain intimate knowledge and focus their observation on the overt actions and covert meanings of their participants. Constructivists strive to extract relationships between their emerging concepts through their interpretations and analysis of data and aspire to generate theory that is credible, original and useful. She reassesses her position with regards to the research process and claims that rather than focusing solely on the research participants, the researcher has to acknowledge her own viewpoints and attitudes, and embrace new standpoints. Charmaz (2009 p. 129) calls this process *"turning back (which) prompts us to examine how we construct and reconstruct reality"*.

Charmaz (2006) asserts that the researchers' subjectivity is reflected in their viewpoints, backgrounds, positions, contextual conditions and interactions. Researchers create value from the participants' statements by engaging themselves in reflexivity throughout the data analysis process. Clarke (2005) reinforces this situational analysis argument by advocating the importance of the researcher holding different viewpoints of the situation that is unfolding and asserting that these viewpoints may be at variance with the participants' opinions and beliefs. Notwithstanding that these attributes are external to the researcher and the emergent processes are the outcome of the grounded theory method, it is through the researcher's construction of emerging themes that the model is constructed. Charmaz (2006, p.178) affirms that *"we can view grounded data as products of emergent* 

processes that occur through interaction. Researchers construct their respective products from the fabric of the interactions, both witnessed and lived"

The emphasis of this research is to study process by evaluating the on-going interactions of features relating to IT alignment in small firms. Such a reflection on process would enable the researcher to evaluate the interactions that occur over time in response to the dynamic elements that unfold within the activities that contribute towards the different IT/Business alignment states. Various researchers such as Gurd (2008); Charmaz (2009); Birks and Mills (2011); Urguhart and Fernandez (2013) claim that grounded theory is the appropriate method to study process. Whereas Glaser (1978) promotes process as a possible feature of grounded theory, Charmaz (2006) states that process is fundamental to grounded theory because it enables the identification of relationships between concepts during the analysis stage. Corbin and Strauss (2008, p. 96) also emphasize process in their grounded theory method and define its diagnostic schema as an "on-going action/interaction/emotion taken in response to situations, or problems". Corbin and Strauss (2008) craft strategies for researchers so that they would be able to extract concepts within categories, leading to the construction and generation of theory. These authors claim that this process of integration emerges recursively over time until saturation of categories occurs through theoretical sampling. Creswell (2007) also emphasises that theory is generated from the data that participants in the study provide when they recall their experiences of the processes that they undergo.

The constructivist approach embodies also the researcher's theoretical sensitivity whereby the researcher's personal values, multiple viewpoints, biases, positions and actions reflect the level of discernment in the substantive area of enquiry. The researcher's theoretical sensitiveness stems from the intellectual background, the practical experience relating to the area of research and the exposure to the theoretical literature. It is through this theoretical sensitivity that constructivists will be able to extract intimate knowledge and focus on the overt actions and the covert meanings of their participants (Charmaz 2005, 2006).

The current researcher's academic and practical work experience nurtured a passion for this research topic. The researcher worked as an IT software developer implementing Enterprise Resource Planning systems in medium organisations for over
30 years. This brought him in contact with top management, vendors, outsourcers and users and with the various functional areas of the business organisation. The researcher's other role as lecturer in Information Systems and tutor for IT projects for over 9 years in a tertiary educational institution provided exposure to the academic world of Information Systems.

The researcher's first degree in Economics, his Master in Business Administration and the occasional consultancy project that was undertaken with small firms: these formed the researcher's viewpoints in this research project. The researcher's desire to explore how small firms, in particular, owner-managers were utilising IT to attain their business objectives over time stemmed from all this background. That is why the constructivist approach was embraced as a methodology which fitted with the position of the researcher. The many hats that the researcher wears definitely had an impact on the way the world was viewed.

## 3.4 Grounded Theory Research Method Applied

The strategies that were used in this research study to generate data in grounded theory comprised working directly with owner-managers by undertaking face-to-face interviews, compiling field notes and memos, generating data from each small firm's corresponding website to check for consistencies with the interview data. The focus of this research study is on small businesses that are operating in Malta, a small island state that is geographically located in the middle of the Mediterranean and the smallest member state of the European Union. Malta has a population of 417,617 inhabitants (NSO, 2011). The European Commission's Small Business Act Fact Sheet (2012) has indicated 29,638 small firms operating in Malta in 2011: 95.1% employ fewer than 10 full-time employees and the rest between 10 to 49 full-time employees. These small firms provide 56% of private sector employment and over 43% of total employment in Malta. They also contribute 53% to Malta's economy's value added. Small businesses in Malta are renowned for furnishing the business community with much needed entrepreneural skills, thereby introducing innovative products and services to the market (Small Business Act 2012). Malta's economy is changing from an investment to an innovation oriented economy. The Global Competitive Index for 2011-2012 ranks Malta in the 51<sup>st</sup> position out of 142 countries, classifying Malta's economy as changing gradually from an investment to an innovation oriented economy (World Economic Forum, 2011).

As illustrated in Appendix 1, a total of 31 small firms that employ fewer than 50 employees were selected for this research for their relevance over a 3 year period. The small firms that were selected represent the following sectors: manufacturing - 22% of 29,638 small firms; wholesaler & retailer - 34%; services - 44%.

The researcher being Maltese and conversant with the culture and language of the island of Malta; its wide range of business sectors within a small area of 317 square kilometres made Malta an appropriate site for undertaking this research. The close proximity of small firms operating in this small island state provided specific circumstances whereby IT alignment patterns could be identified in terms of the contextual conditions, actions and the outcomes emanating from these reactions.

Grounded theory, through the application of interpretative and in-depth interviews, generates deep qualitative insights of the processes that stem from the proximity to the data that is collected during the interviewing process (Corbin and Strauss 2008). Intensive qualitative interviewing fits perfectly well with the grounded theory paradigm as they are both open-ended yet directed, shaped yet emergent, and paced yet unrestricted (Charmaz 2006 p. 28). Birks and Mills (2011) claim that the interviewing technique has been the primary mechanism used in grounded theory research to generate data, as exemplified by the numerous studies that have been conducted using this technique. The researcher was attracted to undertake interpretative, indepth and face-to-face interviews so as to analyse the processes and the patterns of IT alignment with business objectives. In preparing for each interview, the researcher always had the interview guidelines at hand so as to ensure continuity in the interviewing process. The interview guidelines, as illustrated in Appendix 2, comprised points relating to firm history, firm structure, strategy, IT function in the firm, business and IT users, communication and IT education/knowledge. Participants were also notified with a purpose statement in a covering letter that spelt out the objectives of this research study. A copy of the covering letter can be found in Appendix 3.

This research study adopted Rubin and Rubin's (2005) approach of responsive interviewing, whereby the researcher selects interviewees that are knowledgeable about the research problem and listens intensely to what the respondent has to say. Rather than depending on pre-set and structured questions, the researcher unleashed themes and concepts from the interviewees by compiling further questions as the

66

interview progressed. The researcher also identified gaps in the interviewee's discourse and asked questions related to these omissions. Birks and Mills (2011) advocate the importance of flexibility when the researcher is conducting interviews in order to maximize the potential of generating data. These authors acknowledge also that there will be variations in the way the interviewer asks questions between the interviews. The researcher has to adapt to the interviewee's characteristics and personal traits. In this study, dealing with owner-managers that were introvert demanded a bigger effort on the interviewer to extract data from the interviewees by resorting more to asking structured rather than unstructured questions. However, in line with Flick's (2009) method of interviewing, the first interviews were somewhat unstructured and partly open-ended followed by more structured and specific questions as the research unfolded.

In this study, the unstructured format that was adopted in the initial stages of the interview provided the interviewees with the opportunity to open up and talk about their experiences whereas the structured questions allowed the researcher to delve deeper into themes that were brought up previously by the interviewees. There were also instances whereby structured questions were constructed from the interview guidelines to supplement and support the unstructured guestions. This is in line with Curran and Blackburn's (2001) approach to ensure that the interview process progressed smoothly and avoided the pitfalls of encountering periods of silence during the interview. Birks and Mills (2011) suggest that a higher level of unstructured questions will probably generate more data during the interviewing process as the interviewees tend to open up more. In line with Corbin and Strauss (2008), the researcher performed the role of co-ordinator and facilitator during the interviewing process rather than playing a passive role. The researcher has also adopted Charmaz's (2006) interpretative constructivist approach which is most appropriate for in-depth interviews. The interpretative constructivist paradigm enables the researcher to adapt to unexpected research events as they unfold during the interview process. This paradigm can only be applied, provided the researcher is knowledgeable enough to direct interviewees to enter into reflective mode during the interviewing process.

In line with the responsive interviewing model, the researcher's focus was to treat the interviewees with respect, to adhere to ethical responsibilities and to build a relationship with the interviewee based on empathy and trust. This is in line with Rubin

and Rubin's (2005) interviewing approach whereby issues relating to accessing ownermanagers for interviewing, communicating and understanding their language and culture, presenting oneself as an academic undertaking research, gaining trust and establishing rapport were utilised in this research study. All these characteristics proved vital during the interviewing process as most interviewees were prepared to talk and share their experiences. Because of the researcher's IT background and experiences, there was an element of awareness as to what type of questions would be asked in order not to let any biases pollute the questioning.

The researcher tried as much as possible to gain the trust of the interviewee before even the formal interview started. The interviewer provided the background of his work and academic experiences to the interviewee. The interviewer also explained the ethical obligations of reporting the interviews fairly and accurately and of adhering to the anonymity and confidentiality clauses as articulated in the covering letter. This background and experience provided the researcher with the necessary confidence to enter the interviewing scene with a serene and composed mind. The researcher also tried to relax so as to create an environment leading to a reflective and insightful interview. This scenario proved to be very useful as the researcher managed to elicit rich insights from most interviewees and a sound relationship developed as the interview progressed. During the interview, the researcher endeavoured to focus his attention on what the interviewee was saying, attempting to look out for opportunities for follow up questions so as to obtain a detailed understanding of the interviewee's experiences.

Owner-managers are renowned for being busy people and can be very reluctant to give away their precious time to researchers (Curran and Blackburn 2001 p. 60). Once the owner-manager agreed to participate in this research study, the researcher phoned each participant to arrange a suitable time for an interview, to ensure that the interview would take place in a quiet setting and to inform them that the interview would take no longer than one hour. In practice, most interviews lasted between 60 minutes and 75 minutes.

All the interviews were digitally recorded in this research study. The researcher noted, however, that once the digital recorder was switched off at the end of the interview, some very interesting conversations took place which sometimes lasted for a further

hour. In these circumstances, the researcher also took field notes. It was evident that most owner-managers forgot all about their time constraints, once they were given the opportunity to discuss issues relating to their business.

All the interviews were subsequently transcribed entirely by the researcher. Although the transcribing process proved to be a lengthy and time-consuming exercise, the time used was well spent. The researcher claims that the transcribing process proved to be the catalyst whereby through the continuous listening of the recordings, concepts emerged and interrelationships between categories were examined.

## 3.5 Grounded Theory Method: Data Collection

The strategies for data collection entailed the gathering of primary data together with secondary data. The primary data was collected by conducting face-to-face interviews with the owner-manager of the firm, by taking field notes as the researcher undertook further discussions when the digital recording was switched off and through observations when the owner-manager afforded the researcher the opportunity to tour the premises. The term owner-manager is used to denote the most important person who is managing the small firm by taking decisions. The owner-manager of the business was likely to be knowledgeable about the firm's strategy (Aragon-Sanchez and Sanchez-Marin 2005).

Observation provided a better insight and understanding of the phenomena under study. Touring the premises helped the researcher to understand more the owner's discourse that would have emanated during the interview process. Also of significance were the observations that the researcher made in relation to certificates of accreditation and other materials that were exhibited. The researcher's IT background and the consultancy experience with small firms proved to serve as a solid basis not only to discuss issues that required clarification from the owner-manager but also to understand more the issues related to the phenomenon under study. In such circumstances, the researcher took field notes and compiled memos. These memos were incorporated into the grounded theory method and into the model that was emerging.

All the 31 firms directed the researcher to their website. Each small firm's website contributed to the secondary data of the study and provided additional means of

understanding and interpreting the motivations and actions of owner-managers. The researcher created memos from each firm's website and integrated them into the grounded theory study. The inclusion of this secondary data in the coding process fits within the grounded theory research technique, as in the words of Glaser (1998 p.8) *"all is data"*. The website data proved to be part of the triangulation mode to check for consistencies that were spelt out by the interviewees during the interview. Any other data that was created outside the interview, such as memos, provided additional information that contributed towards the understanding of the phenomena under study.

# 3.5.1 Grounded Theory Cycle

The grounded theory cycle of data collection, coding, constant comparative analysis, category identification within the convenience, purposeful and theoretical sampling leading to theoretical saturation and theoretical integration is shown in Figure 3.2.



Figure 3.2: Grounded Theory Method applied for Data Analysis

The level of conceptual output that stems from each cog is also shown in Figure 3.2. The three cogs are represented under 3 levels namely: (1) initial coding leading to coding of transcribed data that emanates from the first wave of convenience (3) interviews) and purposeful (12 interviews) sampling, adopting the constant comparison analysis to identify and compile a hierarchy of categories. At this stage, the level of concepts generated tends to be low. (2) Intermediate coding is attained by adopting theoretical sampling (16 interviews) which emanates from the gaps that are identified under level one when the constant comparative analysis is undertaken. To undertake theoretical saturation, the researcher has to be theoretically sensitive. Charmaz (2006) reiterates that the researchers' theoretical sensitivity is enhanced through the theoretical and practical knowledge that they have, whilst exercising their ability to detach themselves from the acquired knowledge so as not to influence their findings. It is at this stage that the research study will be approaching theoretical saturation. (3) The third stage encompasses theoretical integration whereby the researcher develops an explanatory framework relating to the theoretical interconnection within and between categories.

#### 3.5.2 Sampling in Grounded Theory

Grounded Theory's approach to sampling does not follow the statistical random techniques that are usually adopted to represent the general population. Therefore, in grounded theory rather than establishing a minimum sample size, grounded theory researchers strive for theoretical saturation which occurs when it becomes evident that the same matters are being continuously mentioned and no new codes, properties or theoretical insights emerge within categories from the data that are being collected during the interview process. The constant comparison of incident with incident is the vehicle that drives grounded theory's data analysis and enables theoretical sampling until the stage whereby data gathering stops (Urguhart and Fernandez 2013). Glaser and Strauss (1967) have labelled such a stage in the grounded theory process as "saturation point". The sampling strategy that developed throughout this research study is depicted in Figure 3.3 and comprised three different phases, namely, convenience, purposeful and theoretical sampling, with each phase sometimes overlapping with the other. In this research study, it was not possible to predict the number of interviews that would be required before saturation of categories would be attained. Initially, convenience sampling was adopted to identify early participants, leading to uncovering diversity in properties. Further interviews were undertaken

through purposeful sampling and theoretical sampling until no new theoretical insights emerged. Rubin and Rubin (2005 p. 68) state that it is not necessary to have a significant number of interviewees, as long as the researcher is capable to present a complete picture of the respondents' diverse views. In a similar vein, Bryant and Charmaz (2007) whilst not specifying a sample size for attaining theoretical saturation, emphasize the importance of capturing the diverse views of a wide spectrum of



Figure 3.3: Sampling Strategy

participants during the interview process. Stern (2007) asserts also that although it is not possible to predict the sample size for a grounded theory study beforehand, she argues that when she conducted grounded theory studies, the number of interviews usually stood between 20 and 30 interviews to approach or reach theoretical saturation. Creswell (2007) also quotes the same numbers for researchers to achieve theoretical saturation. Charmaz (2006) also claims that the sample size may be very small for grounded theory studies but she emphasizes that researchers should watch against achieving saturation of categories too early because of the lack of depth used by the researcher in the interview process. This would lead to categories not being fully developed and saturated leading to an under-developed theory.

The first phase of the sampling plan comprised convenience sampling whereby 3 initial participants that were well known to the researcher were selected to participate in this

research study. These small firms that embodied the manufacturing, services, and wholesale/retail sectors had 11, 47 and 4 employees respectively. These participants were knowledgeable about the strategic and operational activities of their respective businesses and keen to participate in this research study. These initial interviews proved fundamental to the researcher for a number of reasons. The attributes that emerged from these interviews served as an overview of the entire trajectory. The scope and primary constituents of the overall process were identified. Although the initial codes confirmed the specific themes that are reminiscent of small firms, a number of outstanding features emerged. However, the interview guidelines which were used as prompts during these initial interviews were enhanced.

During the initial stages of each interview, the first questions were somewhat unstructured relating to the firm's history, structure, strategy and the adoption of IT using the prompts where necessary as per Appendix 2. As the interview progressed, structured questions were asked relating to themes that were brought up previously by the interviewee or to new themes which were still needed to be discovered. The researcher followed Charmaz's (2006) guidelines whereby data gathering, constant comparison and analysis were conducted simultaneously after each interview. Each interview was audio recorded and lasted over 2 hours inclusive of discussions which were held after the digital recorder was switched off plus the touring of the premises, when this was afforded by the respective owner-manager.

The use of MAXQDA as a qualitative data analysis software application was instrumental in exploiting the capabilities of *in vivo* coding which will be explained further on. This initial set of interviews not only revealed as many categories as possible but also provided insights relating to the dimensions and properties within these categories. The initial set of 3 convenience samples contributed towards the identification of a set of categories pertaining to this research study. At this point, the next sampling strategy, as defined by Morse (2007), comprised purposeful sampling whereby 12 further participants were included in this study. The objective of purposeful sampling was two-fold: to confirm and strengthen the categories that were already identified during the convenience sampling stage and to expand the array of categories that had already emerged until it appeared that saturation of categories was attained. Hood (2007) advocates that purposeful sampling does not focus on theoretical issues given that new categories are still emerging and therefore differs

from theoretical sampling. Purposeful sampling has one major constraint in that it does not provide direction as there is no specific focus on the dimensions and properties that are required to be collected. Locke (2001 p.81) encourages the use of purposeful sampling whereby participants who are selected on the basis of their knowledge would be able to contribute towards rich insights on the phenomena under study. During the purposeful sampling phase, dimensions and properties are also populated within their respective categories and the inter-relationships between the categories set-up. The focus on specificity which allows the researcher to extract more data relating to dimensions and properties, is catered for in the third stage of the sampling strategy, namely, theoretical sampling.

The participants' details for this purposeful sampling stage were obtained from Made in Malta – The Business Directory for 2009-2010 published by Malta Enterprise. Malta Enterprise is the Malta Government's exclusive agency for providing support to small and medium enterprises that are set up in Malta. The business directory provided information on these businesses relating to type of business structure and activities, size and contact details. The strategy for selecting these enterprises was based on a wide spread of business attributes so as to encompass various small businesses with diverse characteristics as much as possible. Appendix 1 provides the list of small firms that participated in this study.

The third stage of the sampling strategy comprised theoretical sampling whereby 16 business participants took part in another wave of interviews. Even in this phase, the participants' details were obtained from the Made in Malta – Business Directory 2009-2010. The delineation as to when purposeful sampling ended and theoretical sampling started was not exact as some overlapping between the two strategies did occur. In theoretical sampling, the researcher strives to obtain more relevant information from the forthcoming interviews by focusing on themes that would have emerged from the constant comparison method of analysing data (Birks and Mills 2011).

Theoretical sampling allows the researcher to extract more data relating to the properties of a category or to the relationships that may occur between categories (Corbin and Strauss 2008). At this point, the researcher undertakes a strategic decision whereby participants are selected specifically to furnish the researcher with data relating to the gaps that would have been identified during the constant

comparative analysis of data (Morse 2007). Small firms were selected that appeared to have the required characteristics to fill these gaps. Glaser and Strauss (1967 p.45) define theoretical sampling as *"the process of data collection for generating theory whereby the analyst jointly collects codes, and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it <i>emerges"*. Charmaz (2006) claims that benefits will accrue from theoretical sampling once the concepts within categories and the inter-relationships between categories will start to emerge and develop. Birks and Mills (2011) reiterate that theoretical sampling should be exercised from the very first interview, given that the constant comparative analysis would have been implemented at that early stage to identify clues and gaps that need to be followed in subsequent interviews. This explains why overlapping occurs between purposeful and theoretical sampling. Corbin and Strauss (2008) also advocate that the researcher should as much as possible apply theoretical sampling at the early stages of the research study and follow the clues that emerge during the constant comparative analysis of data.

Although the interviews with these participants began with open-ended questions with the objective to examine whether the interviewee could add value to the underdeveloped properties or concepts or categories and their relationships, the questions that followed were more structured. As the researcher continued to interview owner-managers in the theoretical sampling stage, it became evident that the same matters were being continuously mentioned. This is in line with Rubin and Rubin's (2005) contention that once the interviewees are not contributing more information relating to the categories and their relationships that were developed, it was at that point that the researcher decided to discontinue the interviews having approached *"saturation point"* (Glaser and Strauss 1967). After having concluded 31 interviews, it was evident that no new insights were emerging.

# 3.6 Research Method: Managing Data

The grounded theory approach necessitates the meticulous application of the method if the theory that emerges is to be considered as a quality end product (Birks and Mills 2011). To ensure a rigorous process and demonstrate quality in the research study that is being undertaken, it is fundamental that a data management strategy is formulated. Whereas Creswell (2007) advocates that the researcher adopts a customised and flexible approach when qualitative research is conducted, it is critical that the data management plan will be in place. In this research study, the researcher endeavoured to manage the data collected, to maintain an audit trail and to demonstrate the procedural logic so as to ensure that validity principles are ingrained in the research process design. An effective data management system dictated that data had to be processed as soon as possible after collection and classified in a logical way. Data have also to be stored in a secure way and have to be easily accessible, especially when analysis of data is being carried out. Security of data implies taking backups as frequently as possible to mitigate the risk of data loss due to a virus or system failure. Occasionally, the backup data would have to be restored onto another PC so as to ensure that the backups of data are reliable. As part of the grounded theory method, both primary and secondary data collected, were processed in the same manner to ensure consistency and to be able to adopt the constant comparison method of analysis.

#### 3.6.1 Qualitative Data Analysis Tools and Techniques

Before embarking on this research study, the researcher was resolute to record digitally the interviews so as to focus on what the interviewees were saying. The researcher may be distracted if taking field notes only occurred during the interview. By recording the interview, the researcher could listen attentively to the interviewee and could also refer to each interviewee's verbatim quotes in order to substantiate the coding themes that emerge and to support the final theory. Data collection was primarily carried out by audio recording all the interviews using a digital recorder. This is contrary to Glaser's (1998) advice not to tape the interviews, as he claimed that recording interviews is inefficient, reduces the researcher's focus on category delineation and generates a vast amount of unnecessary data. However, Curran and Blackburn (2001 p. 85) claim that "all face-to-face interviews should be taped. Not only does this provide a record of the interview but enables interviewer performance to be monitored and coding to be undertaken later". The researcher noted also that once the digital recorder was switched off at the end of the interview, some very interesting conversations took place which sometimes lasted for a further hour. In these circumstances, the researcher also took field notes. It was evident that most ownermanagers forgot all about their time constraints, once they were given the opportunity to discuss issues relating to their business.

After digitally recording each interview, the researcher undertook the transcribing process. Transcribing is the outcome of listening to the MP3 version of the entire interview and convert into text using a wordprocessor. Glaser (1998) claims that transcribing is a time-wasting activity because the researcher would be collecting clutter. However, Charmaz (2006) contends that full interview transcriptions will afford the researcher a deep understanding of the mind-set of what was being described by the owner-manager, even if at face value, it would seem that parts of the discourse are not directly related to the phenomena under study. Transcribing the entire interviews may generate new research questions which result from the coding and analysis processes.

Audio digital interview files were uploaded onto the transcriptions software program called F4. F4 uses a foot-pedal, which has a USB connection and controls the replay of the recording by just pressing or releasing the pedal. The use of headphones enabled also the researcher to focus on the listening and the keying in of what was said during the interview. The transcripts were keyed in within the F4 software and saved in rich text format. Transcription was a time-consuming exercise, as all the interviews were transcribed entirely by the researcher. However, this was definitely not time wasted as the continuous listening and replays of the interviews continued to resonate in the researcher's mind and assisted the researcher to analyse better what was being said by the interviewee. Given that the Maltese are bi-lingual, most of the interviewees communicated in both languages i.e. English and Maltese, interchanging periodically between the two. As the researcher is fluent in both languages, there were no difficulties to transcribe all the entire interviews in English.

Each transcript was then uploaded onto MAXQDA, which is a qualitative data analysis software package used for storing, analysing and managing data. Although the researcher did undertake a thorough review of other qualitative data analysis packages such as Atlas.ti, N-vivo and NUDIST, the structure of MAXQDA was found to be clear, simple and versatile. MAXQDA is utilised as the main qualitative data analysis tool to code, to undertake the constant comparative analysis and to craft memos. In this research study, the researcher endeavoured as much as possible to code immediately after each interview while the mind was still fresh so as to come up with precise coding and to identify the gaps in the properties and dimensions within the established categories. These gaps served as input to the subsequent interviews by

probing relevant questions. MAXQDA assists researchers to evaluate and interpret systematically textual data. In particular, its main screen embodies 4 windows representing a quadrant structure of document group, coding/category system, text browser and the retrieved segment window. Figure 3.4 depicts an example of MAXQDA used in this research study, showing the four windows. MAXQDA fits within the analysis framework that is essential when a grounded theory study is carried out. Of significance was the MAXQDA exposure that was provided initially by Corbin and Strauss's (2008) preface and the extensive practical examples given in their book "Basics of Qualitative Research'. The researcher was also exposed to some more positive comments on MAXQDA by Flick (2009 p. 367).



#### Figure 3.4: MAXQDA Screen Dump Representing the 4 Segments: Document, Browser, Coding and Retrieved Segments used in this Research

MAXQDA has the advantage to collate into one single project file all transcribed interviews of the research study allowing the constant comparison of codes and the switching between one interview and the others. Another important aspect is the coding structure, whereby the affordance of up to 10 sub-coding classifications makes

it an ideal tool to deal with properties and dimensions. Birks and Mills (2011) claim that software programs are essential as they enable the researcher to structure and to store qualitative data in such a way as to assist him to search systematically for codes to generate concepts.

#### 3.6.2 Data Management Strategy

To manage the data collected from each interview, the researcher adhered to the following procedure. Phase 1 entailed the importation of the text-file in rich text format corresponding to each interview, uploaded onto the document group window and saved into one MAXQDA file. In the next phase, the researcher analysed the data within each text-file so as to form concepts by creating codes transforming them into common themes and linking them to their respective category within a cluster of categories. At this stage, the researcher structured the axial coding process as formulated by Corbin and Strauss (2008) whereby the category framework was classified into context, actions and reactions, outcomes and consequences.

The third phase comprised the formulation of memos. The importance of integrating memos into the study cannot be disputed. Memo writing is crucial in grounded theory research as the researcher captures thoughts, feelings and insights into the data, which are subsequently integrated into the study (Lempert 2007). Through memoing, the researcher endeavours to extract meaning from the data collected and by engaging in a process of attributing meaning to that data with the objective to develop concepts which are fundamental for the generation of theory (Birks and Mills 2011). Memoing enables the researcher to experiment with the data by seeking ideas using intuition and without taking any risks to commit oneself to one's thoughts in relation to the phenomena under study (Clarke 2005; Corbin and Strauss 2008). Memos also serve as working documents whereby the researcher may revisit them when the researcher is in the process of analysing complex processes (Corbin and Strauss 2008; Charmaz 2006; Goulding 2002). The researcher has adhered to all these memoing principles by creating memo documents after each interview which led to self-talk and to capture the insights and feelings that were still fresh after an interview is undertaken. These documents served the researcher in good stead when analysis to check for interrelationships between existing categories generated further memos. This analysis was conducted to confirm categories or to formulate new ones and to relate structure with process. Figure 3.5 illustrates a screen dump showing a memo

and the corresponding categories. The final phase entailed the continuous comparison of the new textual data with the existing codes or in the absence of an existing code, the formulation of a new code within the MAXQDA coding structure. Of significance, is the fourth quadrant, the Text Retrieved Segment, which proved to be extremely useful to compare text with other text that pertained to the same code. This process proved to be an effective method to mitigate the risk of polluting the research study with the researcher's pre-conceived ideas.



Figure 3.5 MAXQDA Screendump of a Memo used in this Research

The four phases were applied for every new transcript that was created for each interview that was undertaken. The researcher ensured that backups of the single project file which encompassed all the uploaded transcripts were taken regularly so as to reduce the risk of data loss and system failure. Occasionally the backup data were restored onto another PC so as to ascertain that backups of data were being carried out successfully.

# 3.7 Grounded Theory Method: Data Analysis

Birks and Mills (2011) advocate that the data analysis should be continuously focused on the area of inquiry given that large amounts of data are generated due to the inductive process applied within grounded theory. In order not to create confusion of terms, the researcher adopts a hierarchical structure whereby a category will embody a number of codes and each code may encompass a number of properties and each property may hold a number of dimensions. The researcher analyses incidents that are extracted from the interviewee's discourse and any field notes that are compiled throughout the interviewing process in order to generate concepts, codes and categories. As explained by Birks and Mills (2011 p.89), the language that was communicated by grounded theorists such as Glaser (1978; 1992), Strauss (1987) and Strauss and Corbin (1998) created confusion "*until you realise that the terms 'concepts'*, *'codes' and 'categories' generally mean the same or similar things"*. Holloway (2008) defines a concept as the labelling of a descriptive idea, by attributing meaning to it. Codes are a form of labels that researchers attribute to similar conceptual occurrences that are experienced by the participants within the research study. Then groups of codes are classified together to be represented by a higher level of concept forming a category.

#### 3.7.1 Emerging Categories

*In vivo* coding was applied to the first 8 interviews leading to the development of the first set of categories. Through *in vivo* coding, the researcher uses and preserves the participant's words in the coding itself to capture a wider concept in the data (Birks and Mills 2011, p. 174). *In vivo* coding assists the researcher to understand deeply the participant's working environment, the covert meanings and actions, and the overt statements (Charmaz 2006 p.56). During this stage, the researcher used *in vivo* coding whereby each interview was analysed by selecting all important incidents from the interviewee's discourse. The process of uploading the 8 transcripts and generating in-vivo codes for each interview proved to be very time-consuming. Fig 3.6 depicts a sample of in-vivo codes using MAXQDA.



Figure 3.6: Sample of In-Vivo Coding in MAXQDA used in this research

Viewing figure 3.6, the coding system embodies a list of text from each of the 8 interviews that reflect the important themes and incidents from the participants' discourse. The *in vivo* exercise was undertaken under two stages. MAXQDA was used to capture the *in vivo* codes for the first 3 interviews which formed part of the convenience sample. This entailed three lists of words, phrases or sentences that represented the themes in the transcript. All the themes within the three lists were compared with each other and a frequency table which depicted common themes between the lists, was drawn up. This exercise provided an early indication of the emerging categories and the respective *in vivo* codes within each category. Another 5 interviews out of the 10 interviews that formed part of purposeful sampling were subjected to the same rigorous exercise of in vivo coding. These 5 lists of in vivo codes were compared with original frequency table that was compiled for the first 3 interviews. Existing *in vivo* codes were confirmed under a category or new in vivo codes were set up, depending on the text that was being examined. Also new subcategories emerged at this stage.

When it appeared that a solid structure of conceptual categories with their corresponding codes was constructed, the *in vivo* process was stopped to give way to a more understandable coding convention. Several *in vivo* codes emerged from each transcript. In fact this process generated 594 *in vivo* codes. So after the *in vivo* coding

exercise was completed, the researcher created meaningful concepts from the code segments. These concepts were created by grouping the codes together, and placing them into meaningful categories. At this stage, the process of axial coding as advocated by Corbin and Strauss (2008) by grouping the category framework into context, actions and reactions, and consequences and outcomes was adopted as shown in Figure 3.7. Colour coding was also used for each classification: green for contextual conditions, red for actions and reactions, and blue for consequences and outcomes. For a structure depicting the full set of categories and coding framework, refer to Appendix 4. After having established the conceptual category structure, coded segments were analysed from each subsequent transcript. This meant, the other 23 transcripts were analysed and linked to the respective category. Such a process which entailed the constant comparative analysis of data sets ensured that adequate validation was being undertaken. This process precluded the researcher from polluting the study with the researcher's pre-conceived ideas.



Figure 3.7 Screen Dump of On-going Grounded Theory Research using MAXQDA

Throughout this process, the properties and dimensions were also developed, when necessary, for the existing codes. Also the use of memos was applied throughout the research study to explain further the meanings that emerged from the theoretical relationships that emerged between categories. The researcher also adopted throughout this study the constant comparison of incident-to-incident for every transcript loaded onto MAXQDA leading to the confirmation of existing codes or the creation of new codes. This iterative process entailed comparing future incidents from the subsequent transcripts with existing incidents, codes are then compared with these codes and groups of codes, and then placed within their respective categories. Then categories are compared with the other categories. This constant comparative analysis of data also resulted in generating new data by undertaking further interviews under the theoretical sampling mode and the creation of high-level categories that embody deep meaning. Advanced MAXQDA tools, particularly the Code Relations Browser and the Code Matrix Browser, which have also been used in this research study, provided a frequency count tool whereby a tally of references was made for each dimension. These references, which denoted the extracts that were stated by the owner-managers during the interviewing process, were grouped for commonality and converted into themes within each named dimension in the Code Matrix Browser. The number of occurrences for each dimension in descending count sequence is depicted in Appendix 5. The occurrences relating to each dimension such as the 'IT dependency on Outsourcing', the 'analysis of business data, the 'level of effective decisions and the level of information system integration' proved to be important drivers for firms to align IT with business strategy.

The researcher, in line with Reichertz's (2007) claim to generate high quality concepts and discard the qualitative descriptive account, adopted a combination of inductive and abductive thought. Whereas induction is defined as "*a type of reasoning that begins with study of a range of individual cases and extrapolates patterns from them to form a conceptual category*" (Charmaz 2006, p.188); abduction is defined as "*a type of reasoning that begins by examining data and after scrutiny of these data, entertains all possible explanations for the observed data, and then forms hypothesis to confirm or disconfirm until the researcher arrives at the most plausible interpretation of the observed data*" (Bryant and Charmaz 2007, p. 603). Reichertz (2007 p. 219) asserts that when applying the abduction process, the researcher discovers "*something unintelligible in the data*" and rather than adhering to the conventional way of reasoning things out, discovers a new rule that has not as yet emerged by logical rules. Therefore, this iterative process is the vehicle that drives the researcher to identify the gaps and holes relating to the substantive area of enquiry and then apply theoretical sampling to fill these gaps.

#### 3.7.2 Coding Strategy

Initial coding which embodies the first step in theory analysis is used to analyse transcripts, fragment the data, comparing incident with incident, labelling phenomena by creating codes, comparing codes with codes and category with category, leading to the identification of conceptual possibilities. During this interrogation process, the researcher is continuously being reflexive. For Glaser and Strauss (1967), intermediate coding, which is the next progressive step after initial coding, embodies the integration of categories and their intrinsic codes, properties and dimensions. For Charmaz (2006), *'focused coding'* is a similar process to intermediate coding in which the codes generated from initial coding provide direction to generate a higher-level of conceptual abstraction. During this research study, in line with the rationale of grounded theory, unforeseen ideas cropped up and emerged during this focused stage which emanated from the comparison of data to data and from the generation of more memos. Notwithstanding that the structure of the categories was already set up, the interrelationships between them warranted further analysis.

Another coding technique is axial coding, which follows open or initial coding. Axial coding which is the most developed form of intermediate coding is defined by Strauss and Corbin (1990) as an activity that revolves around the axis of a category linking categories to subcategories and their respective properties and dimensions, identifying patterns between them and relating structure to process. Whereas initial coding tends to fragment data into distinct codes, Strauss and Corbin's (1990) axial coding assists the researcher to link relationships on a conceptual level between categories and aims to restore data together again into a coherent whole. Strauss and Corbin (1998 p.125) advocate that this process of restoring data at a conceptual level is arrived at by asking questions about the phenomena under study such as when, where, why and how. In order to answer these questions within the axial coding strategy, it is essential to formulate a coding paradigm as explicated by Strauss and Corbin (1998). Their coding paradigm is rooted in symbolic interactionism and embodies a structure of actions/interactions. It is significant that despite creating his own theoretical codes

which were extracted from a wide assortment of coding families, Glaser (1998) accuses Strauss and Corbin's coding paradigm as being a pre-set template and therefore, concludes that the researcher tends to force the data. Kelle (2005) asserts that as both of these coding paradigms provide the researcher with a predetermined mind-set prior to conducting the research study, Glaser's criticism appears to be unjustified. However, Kelle (2005) recommends that the researchers should enter into their research studies without any predetermined hypothesis but utilising their existing knowledge and experience.

#### 3.7.3 Coding Paradigm: Conditional Matrix

The method that has been applied in this research is Strauss and Corbin's (1998) Conditional and Consequential Matrix which represents the structural conditions, comprises a series of magnifying concentric and interconnected circles with labels that protrude from the individual, group and organisation to the community, region, nation and global world. The outer circle usually epitomises the macro impacts whereas the inner circles exemplify the actions and outcomes of behaviour (Goulding 2002). Creswell (2007) asserts that the matrix assists the researcher to interrelate the micro and macro conditions influencing the phenomena, whereas Dey (2007) claims that the conditional matrix adds conceptual depth to the analysis. Similarly, Locke (2001 p.77) recommends that the researcher has to be aware of structural conditions not only at micro levels but also at much broader social levels as the latter may impact on the studied phenomena. Also, according to Hildenbrand (2007) the main objective is to assist the researchers in their analysis to go beyond the micro contextual conditions and move towards the broader conditions and outcomes. It is noteworthy that Charmaz (2006 p. 118) advocates that the conditional matrix can assist researchers to take theoretical sampling decisions as well as offering a mechanism to construct theory.

Adopting Strauss and Corbin's (1998) coding paradigm, which strengthened the relationship of structure to process, is in sync with the researcher's philosophical and methodological position that the researcher has taken in this research study. The *Conditional and Consequential matrix* assisted the researcher to analyse data for its contextual conditions within the substantive area of enquiry. Clarke (2009) asserts that any actions pertaining to the phenomena under study tends to be situational and is placed at the crux of the matrix. The matrix aids the researcher to understand the

complexity of life and the various ways that persons react to events as they unfold through the action, interaction and emotional responses (Corbin 2009). These responses to events are placed in the centre of the matrix and are positioned within the broader political, economic and social context in which events occur.

Notwithstanding the positive reviews relating to the implementation of the conditional and consequential matrix in grounded theory research, Charmaz (2006 p.119) admonishes that the matrix is a technique which should be applied meticulously, provided that the "*emerging analysis indicates that mapping conditions, contexts and consequences in this way fits your data*" as otherwise the data and analysis may follow a pre-determined direction. In fact, the conditional matrix was applied as a methodological technique in this research study when it became evident that the main axis of the contextual conditions, the actions and interactions, and the outcomes and consequences contributed towards the development of the emerging conceptual categories.

The emphasis of this research study is to study process by evaluating the on-going interactions of constructs relating to IT adoption in small firms. Figure 4.2 depicts the conditional matrix categories and the corresponding subcategories, properties and dimensions that emanated from this research study. In this study, process in data is represented by a series of actions and outcomes, which are embodied within these categories, in response to the dynamic situations that unfold from the IT adoption activities undertaken by the firms. This research study followed Corbin and Strauss's (2008 p. 98) contention that the conceptualization of process is determined by the content of the data and the researcher's interpretation of these. The conditional matrix proved to be the catalyst whereby the interrelationships between categories contributed towards identifying the gaps in the data collected. This process also contributed towards the development of focused memos. At this stage, such an iterative process led the researcher to adopt theoretical sampling and coding within the axis of context, actions and consequences until theoretical saturation was attained.

#### 3.7.4 Theoretical Integration

Theoretical integration is regarded as the final stage of the grounded theory method whereby the researcher develops an explanatory framework relating to the theoretical interconnectivities within and between categories. The high-level conceptual abstraction that is attained through grounded theory assists the researcher to explain profoundly the theoretical integration that emerges from the area of enquiry. Theory has been defined as a group of concepts that relate to each other through logical patterns of connectivity (Birks and Mills 2011 p. 113). Furthermore, Glaser and Strauss (1967) claim that theory derives explanatory or predictive ability. Corbin and Strauss (2008) emphasize the explanatory power that is attained when conducting grounded theory studies. Similarly, Charmaz (2006) also claims that the constructivist researcher enhances the understanding of the phenomena under study when a grounded theory study is undertaken. However, Bryant (2009) asserts that grounded theory studies need not be speculative and universally applicable as most grounded theory studies are dependant and therefore controlled by the contextual conditions, where the research studies occur, implying that these theories necessitate further research development to reach the level of formal theory.

The focus of this research study is one of substantive grounded theory rather than formal grounded theory. Formal grounded theory tends to encompass a number of substantive areas of enquiry, resulting in complexities to generate concepts. Birks and Mills (2011 p. 156) reiterate that very often the implementation of a study represents a particular phenomenon within the contextual conditions among a coherent group of individuals and therefore relates to a substantive area of enquiry. Glaser and Strauss (1967) also claim that research tends to be substantive if it is undertaken to understand a phenomenon within clearly defined contextual conditions. The one substantive area of enquiry in this research study is the IT alignment patterns that emanate from the small firms' IT adoption practices that are undertaken on a day-to-day basis.

Theoretical integration is attained through an in-depth analysis to reach, as far as possible, the utmost conceptual level. Theoretical integration necessitates the application of various analytical methods such as the identification of core categories, codes, their corresponding properties and dimensions, the theoretical saturation of major categories and the compilation of a substantial number of analytical and reflective memos. The researcher has adhered to these analytical strategies in this research study. As part of the advanced coding, the researcher used the theoretical coding as advocated by Corbin and Strauss (2008) by applying the axial framework of context, action/reactions and consequences/outcomes and as indicated under the

coding paradigm section. It is to be noted that as grounded theory processes are not linear, some overlapping did occur between the various levels of coding. Consequently, the researcher had to revert to the basic theoretical sampling and coding activities, when required, so as to ensure that the theory that was being constructed remained grounded in the data collected.

## 3.8 Strategies for Quality in Research

In order to ensure that the research outcomes that emanate from a qualitative study are credible, it is essential that the researcher must exhibit rigour when research is undertaken. Birks and Mills (2011) consider the concept of quality to be equivalent to rigour, thereby, advocating that the researcher must ensure that there is sufficient control of the processes that are being used to explain all the factors that are impacting on the research outcomes. Various grounded theorists adopted various criteria to ensure quality in the research that is carried out. Strauss and Corbin's (1990 and 1998) prescriptive directions relating to the conditional/consequential matrix and the implementation of axial coding within this matrix have contributed towards ascertaining rigour when undertaking grounded theory studies without restraining the creativity that is crucial for constructing good quality grounded theory. Douglas (2004 p. 60) lists the criteria for conducting good quality grounded theory research delineating the guidelines of validity and reliability; the precepts of trustworthiness and consistency of findings attained through the various levels of conceptual abstractions and the saturation of the thematic categories; the transferability of the theory to various situations within the substantive area; the credibility that emanates from the richness of the data collected; the researcher's qualities in being analytical, neutral towards the findings and empathetic towards the participants; and finally authentication by maintaining an audit trail which is traceable to the raw data.

Birks and Mills (2011) advocate that the researcher should possess experiential knowledge in the substantive area of enquiry, methodological congruence and approach by explicating the personal philosophical position adopted throughout the research study, and the procedural position by maintaining an audit trail, managing the data and resources and demonstrating procedural logic. Charmaz (2006) lists four criteria for good quality research as being credibility, which represents the sound logic towards the research outcomes; originality, which offers new insights to the study; resonance, which portrays profoundness in meaning for those who will adopt the

89

theory and usefulness which may be relevant in terms of contribution to knowledge development and practical applicability. Charmaz (2006) also claims that originality and credibility enhances resonance and usefulness. Glaser (1978) postulates that a grounded theory functions if the theory can explain what has happened, what is happening and predict what will happen within the substantive area of enquiry. Creswell (2007) emphasises the researcher's commitment to engage into good quality enquiry by undertaking a time-consuming exercise in data analysis by filtering the vast amounts of data collected to the salient categories pertaining to the research study. Bryant (2002) stresses also that the quality of the researcher's knowledge of the phenomena under study will impact on the quality of the research outcome. Similarly, Strauss and Corbin (1998) posit that to attain quality in research, the researcher should have an analytical mind, think in an abstractive way, be capable to acknowledge bias and be able to attribute meaning to the words and actions of participants. This discussion on the prominent features relating to quality in research led the researcher to focus on the collection of raw data, the management of data, the analysis and interpretation of data and the impact of the researcher's influence relating to the accumulated academic and practical work experience on the substantive area of enquiry to ensure quality.

The strategies that have been used in this research study to generate data in grounded theory comprised the application of in-depth interviews with ownermanagers. Also the researcher compiled field notes and memos and generated data from the small firm's corresponding website to check for consistencies with the participants' discourse. This served as a method for triangulation. These participants were sought to provide rich insights, relating to the adoption of IT over time in their respective firms, by implementing a sampling strategy which comprised convenience sampling, purposeful sampling and theoretical sampling. Interviews were initially unstructured leading to more structure as the interviews unfolded. The ownermanagers' participation in this research study was crucial as they were most knowledgeable to provide information relating to the substantive area of enquiry. The iterative process for collecting, coding, analysing qualitative data, theoretical sampling, memo writing and the development of conceptual categories led to theoretical saturation and theory construction. Theoretical sampling proved to be fundamental to ensure that categories would eventually be saturated by applying the constant comparative analysis.

An effective data management strategy was implemented so as to ensure that a rigorous process would be applied to demonstrate quality in this research study. All interviews were audio recorded. The data was then transcribed by the researcher and converted into analysable text using MAXQDA. These transcripts were uploaded into one MAXQDA project file, which also included memos as the research progressed. The transcripts contained over 120,000 words of text. The MAXQDA package also provided the researcher with the opportunity to facilitate the continuous comparative analysis of data. Security of data was in place as backups were taken as frequently as possible to mitigate the risk against data loss. Occasionally the backup data will be restored onto another PC to ensure that the backup was being implemented successfully. Also, each small firm's website contributed to the secondary data of the study and the details were held in a separate database.

The collection, analysis and the interpretation of data were on-going throughout this research study. In vivo coding was applied to the first 8 interviews leading to the development of the first set of categories based on the participants' words in the coding itself. The rigorous framework of initial or open coding, the intermediate coding which comprised focused coding and axial coding; and theoretical coding which formed part of the advanced coding leading to theoretical integration was applied throughout the study. This framework enabled the researcher to fine-tune and strengthen the categories that were emerging from the data analysis. This analysis was also supported by memos when necessary. Quoting from the participants' discourse served as a basis to substantiate arguments brought forward by the researcher in the upcoming chapters 4 5 and 6. MAXQDA has also provided the researcher to hold an audit trail whereby any quotes used from the transcribed text could be referenced to the small firm interview number and the link to where the researcher attached the text to a corresponding category. The MAXQDA's fourth segment i.e. the Text Retrieved Segment, displays all text from all the interviews pertaining to a given code and a corresponding category. A MAXQDA reader is freely available to access the project file comprising all the transcripts of the interviews, categories, codes, properties and dimensions.

In line with Charmaz's (2006) constructivist philosophy, the more knowledge and professional interviewing skills the researcher has about the area of enquiry, the better

the quality of the research outcomes. The reasoning for such a stance stems from the fact that the researcher will be in a better position to extract intimate knowledge and focus on the overt and covert meanings of the participants. To some extent, the quality of the constructed theory depends on the researcher's own insights and knowledge which will fundamentally impact on the final research outcomes. The current researcher was well placed to conduct this research study due to his accumulated knowledge relating to the academic and practical work experience on the substantive area of enquiry.

# 3.9 Analysing Ethical Considerations

Any research process will exemplify ethical issues relating to voluntary participation, confidentiality, anonymity and privacy (Nachmias and Nachmias 1996). Similarly, Creswell (2007 p. 44) spells out the ethical issues that should be considered, namely, seeking the participants' consent, avoiding the paradox of deception by not harming the participant, maintaining confidentiality and protecting the anonymity of the participants and the corresponding organisation. The participants in this study were either the owner-managers or the three senior managers representing the owners. The ethical issues for either the owner-manager or the senior manager were identical. Other than the convenience sampling, which comprised the three initial participants of this research that were well known to the researcher, the other owner-managers accepted, through informed consent, to participate in this research. They accepted to be interviewed and were prepared to provide their valuable time, which is considered to be one of their limited resources (Curran and Blackburn 2001). An interview covering letter as per Appendix 2 was sent to each prospective interviewee by email, requesting them to be interviewed. The covering letter also divulged the objectives of this research study. The covering letter duly signed by the current researcher was presented to the interviewee before the commencement of the interview. Conditions relating to confidentiality and anonymity were also explained to each interviewee. Participants were guaranteed complete confidentiality as measures were adopted not to reveal the identity of the participant or organisation.

Small businesses operate in close proximity in the small island of Malta. This renders the issues of confidentiality and anonymity crucial, as any disclosure of information relating to their respective business may harm the participant or their organisation. This is in line with Bryman's (2008) view that communicating the purpose of the study is not enough and any research that has the possibility to harm participants or organisations is not acceptable. The researcher adhered throughout this study, to a number of ethical principles as articulated in the research ethics guidelines of the Social Research Association (SRA). These entailed the following four main areas:

1. Researcher should avoid harming participants. As indicated earlier on, this issue is crucial as the disclosure of any behaviour by any respective firm may harm the participant and the organisation by undermining their competitiveness. Two important issues emerged from each interview. First, it was made clear that the primary objective of this research study focused on the IT activities of the small firm over time and therefore divulging confidential information about products and services was not necessary for this study. Also this study was not interested in individual patterns, but rather on a cluster of patterns whereby a four-typology-trajectory based model was constructed, proposing four trajectories across the identified IT alignment equilibrium states that firms may pass through over time. Therefore any descriptions of IT adoption and utilisation were generalised in this model.

2. Researcher should obtain informed consent. It is essential that participants' consent is freely given and is based on understanding the objectives and outcomes of the research undertaken. An interview covering letter as per Appendix 2, which articulated the objectives of this research study, was sent to each prospective interviewee by email, requesting each participant to be interviewed or not to accept the invitation. Around 18% accepted to participate in this research study. Once a prospective interviewee accepted to be interviewed, the researcher made contact to fix an appointment for the interview and explained once again the objectives and conditions of the research study and confirming the informed consent. In particular, the aspect of digitally recording the interview was brought up again prior to conducting the interview. Some prospective participants objected to this mode of interviewing and therefore were excluded from this study. The covering letter duly signed by the current researcher was presented to the interviewee before the commencement of the interview. Conditions relating to confidentiality and anonymity were also explained to each interviewee.

3. Researcher should ensure anonymity. The current researcher also ensured to protect the participant's anonymity. Notwithstanding that through personal interviewing, the participant was identifiable by the researcher, measures were taken

to guarantee anonymity. Company names were assigned numbers and data were split into recognizable information. The generation of concepts stemmed from average evidence rather than individual incidents. Through the confidentiality clause, the researcher bound himself to exercise the moral and professional obligation not to divulge individual information and not to use the data against the participant's interest.

4. Researcher should maintain confidentiality of records. It is essential that data should be backed up, stored safely and access is limited and controlled. As has been mentioned under the data management section, the implementation of a data management strategy guaranteed that data was backed up successfully and access control was in place. The data input was undertaken using the personal computer of the current researcher and no data was forwarded to third parties.

# 3.10 Conclusion to the Chapter

This chapter has assessed the approaches, methodologies and methods used to tackle the research questions based on the research problem and objectives. Arguments were brought forward justifying the uptake of Grounded Theory methodology in this research study. This was followed by the justification primarily to adopt a constructivist approach within the grounded theory method and later supplemented by a discussion on process, which is fundamental to assess the various IT/Business alignment patterns that are followed by small firms participating in this research study. The discussion ensued with a detailed account on sampling strategies adopted, collection, management and analysis of data, followed by strategies to enhance the quality of this research study. This chapter closed with a discussion on the analysis of ethical issues that are handled in this research study. The following chapters 4, 5 and 6 will present and assess the research findings, with each chapter embodying a distinctive level contributing towards the total research outcome relating to the area of enquiry.

# **Chapter Four**

# 4. Small Firms' IT Adoption Behaviour – Emergent Concepts

# 4.1 Overview and Aims of Chapter

This chapter provides an overview of the constructs that emerged from this research study relating to small firms' IT adoption behaviour. These constructs, which are placed within a hierarchical structure embodying categories, subcategories, properties and dimensions, emerged from the data that were collected from the interview data. These constructs, which are used in the subsequent typological studies, serve as a solid base towards the formulation of the identification of IT alignment equilibrium states and the firms' IT alignment patterns over time. The identification of IT alignment equilibrium states will be discussed in detail in Chapter 5. This will be followed by an in-depth analysis in chapter 6 explaining how each firm's IT adoption behaviour changed over time, grouping the common alignment pathways which small firms pursued as they progressed from one alignment state to another.

The structure was built within the Strauss and Corbin's (1998) Conditional and Consequential Matrix which comprises three categories, namely, contextual conditions, actions and reactions, and consequences and outcomes. The compilation of constructs is a fundamental pre-requisite when grounded theory is applied. An inductive approach of creating constructs was undertaken in order to include the contextual conditions where these small firms were conducting their IT adoption. The emergence of these constructs from the data gathered from the interviews proved to be suitable to generate this framework. Despite its generalizability constraints, the inductive approach was preferred to the deductive approach where constructs are predefined or compiled in advance prior to conducting the research study, ending up with confirming or disproving learning which is already there. Therefore, this research study, in line with Reichertz's (2007) claim to generate high quality concepts, adopted a combination of inductive and abductive thought. In this research study, corresponding to Charmaz's (2006) claim, the inductive thought was applied by analysing the data that emerged from each participant's interview leading to the extrapolation of patterns to form the categories and the corresponding sub-categories. The adoption of the abduction thought was undertaken by utilizing Charmaz's (2006) constructivist perspective within the grounded theory methodology of enquiry as

discussed in Chapter 3. The rationale of the constructivist perspective, as applied in this research study shall be further explained. Also Strauss and Corbin's (1998) *Conditional and Consequential Matrix* has been applied in this research study. This matrix, which represents the structural conditions, comprises a series of magnifying concentric and interconnected circles with labels that protrude from the individual, group and organisation to the community, region, nation and global world. Consequently, the analysis conducted in this study goes beyond the micro contextual conditions and moves towards the firms' broader conditions and outcomes. Whereas the inner circles exemplify the actions and outcomes of behaviour, the outer circle epitomises the macro conditions that impact on the firms' IT adoption behaviour (Goulding 2002). The matrix has paved the way for this research study to interrelate the micro and macro conditions influencing the phenomena, thereby adding conceptual depth to the analysis (Creswell 2007).

The next analytical stage, which covers a conceptual representation of the constructs and an identification of the interrelationships between these emerging concepts within each level of the hierarchical structure, will be discussed in detail in this chapter. This grounded theory research study based on 31 small firms operating in Malta provides a framework for compiling the constructs relating to small firms' IT adoption behaviour. These emergent concepts, which are denoted as constructs, are placed within a structure embodying three categories, fifteen discrete sub-categories, and various properties and dimensions linking them to unify the various patterns of IT strategizing among these small firms. These three categories which comprise the contextual conditions, actions and reactions, outcomes and consequences, are rooted in Strauss and Corbin's (1998) coding paradigm of the 'Conditional and Consequential Matrix'.

Emphasis was placed on the owner-managers of the firms in this research study, given that they serve as the catalyst that determines the firms' ethos, control the financial resources, recruit and select employees, and above all, may be influential in directing IT adoption. Initial coding which is the first step in theory analysis was used in analysing transcripts, fragmenting the data, labelling phenomena by creating codes, comparing codes with codes and category with category, leading to the identification of conceptual possibilities. The constant comparison method was implemented in this study leading to the construction of categories, subcategories, properties and dimensions.

# 4.2 Constructivist Application in this Research Study

As already stated in the Research Methodology chapter (chapter 3), the position taken in this research study is one of an anti-positivist orientation, focusing on applying Charmaz's (2006) constructivist's perspective, but using an abductive approach within the grounded theory method. The constructivist approach places a great deal of emphasis on the researcher's background and knowledge prior to undertaking the research study. As advocated by various researchers such as Corbin and Strauss (2008), Charmaz (2006), and Urquhart (2007), the researcher undertook a preliminary review prior to the commencement of this research study. The researcher's practical work experience and academic background proved instrumental to the researcher to deign initial questions, followed by compiling further questions to the participants as the interview progresses.

In this research study, the researcher delved into what was really happening in the real world of small firms, by uncovering and understanding the covert, as well as paying attention to the overt, when in-depth interviews were conducted with the participants. This is in line with Charmaz's (2006 p.130) constructivist approach whereby she states that,

'A constructivist approach means more than looking at how individuals view their situations. It not only theorizes the interpretive work that research participants do, but also acknowledges that the resulting theory is an interpretation. The theory depends on the researcher's view; it does not and cannot stand outside of it. Granted, different researchers may come up with similar ideas, although how they render them theoretically may differ'.

Grounded theorists utilise the recursive logic of abduction to examine and fine-tune the emergence of categories by interpreting creatively the studied phenomena (Charmaz 2006). Reichertz (2007 p. 219) asserts that when applying the abduction process, the researcher discovers *'something unintelligible in the data'* and rather than adhering to the conventional way of reasoning things out, discovers a new rule that has not as yet emerged by logical rules. In this research study, this iterative process proved to be the vehicle that drove the researcher to identify the gaps relating to the area of enquiry, and then apply theoretical sampling to fill those gaps.

# 4.3 Specifying Categories, Sub-Categories, Properties and Dimensions

This grounded theory research study based on 31 small firms operating in Malta provides a framework for compiling the constructs relating to small firms' IT adoption behaviour. The emergent constructs relating to small firms' IT adoption behaviour are placed within a hierarchical structure comprising a top-down approach linking categories, subcategories, properties and dimensions to each other. As stated by Birks and Mills (2011), the language used by various grounded theorists has been somewhat confusing as there tends to be some overlapping between these terms. In order to eliminate any misconceptions about these terms and how they relate to each other, it is pertinent to come up with definitions and how they have been applied in this research study. Corbin and Strauss (2008 p. 159) define categories as "higher level concepts under which analysts group lower level concepts according to shared properties". In this research study, a subcategory is labelled as a medium-to-high concept but always linked to a category. Charmaz (2006) defines properties as characteristics or components of an object or action. Properties are linked to a corresponding sub-category. Dimensions, which represent variations within properties, provide specificity and range to concepts in this research study.

The wide range of components used relating to dimensions, properties, subcategories and categories have enriched the analysis by grouping data from the in-depth interviews undertaken with owner-managers of small firms. This corresponds to Locke's (2001) claim that the more pieces a category possesses, in terms of subcategories, properties and dimensions, the more theoretically profound the analysis will be. All these components that have been populated with data in this research study represent multiple signposts which assist the researcher to view the concepts that emerged from the data analysis holistically.

The hierarchical structure, as illustrated in Figure 4.1, comprises three categories and fifteen sub-categories denoting the various patterns of IT strategizing among these small firms. These three categories which comprise the contextual conditions, actions and reactions, consequences and outcomes, are rooted in Strauss and Corbin's (1998) coding paradigm of the *'Conditional and Consequential Matrix'*. Context portrays the set of conditions in which situations relating to IT adoption arise and to which owner-managers respond through their actions and interactions. As a result,

these previous actions bring about consequences which represent the outcomes of these actions or of responses to events. Therefore, whereas the outcomes are the result of actions in response to IT adoption, the consequences answer the questions about what happened as a result of those actions. Consequences may in turn trigger changes in the contextual conditions. Wheras Figure 4.1 simplifies the complex interaction between context and process, Corbin and Strauss (2008 p. 98) contend "not all process is developmental or progressive. It can be chaotic. It can move upward for a while, and then turn downward or it may proceed circularly". The conditional matrix which represents the structural conditions and strengthens the relationship of structure to process, proved crucial in this research study as it interrelated the micro and macro conditions influencing the phenomena within the area of enquiry (Creswell 2007). In effect, the conditional matrix was applied as a methodological technique in this research study when it became evident that the main axis of the contextual conditions, the actions and interactions, and the outcomes and consequences contributed towards the development of the emerging conceptual categories.



Figure 4.1: A Framework for Small Firm Business-IT Alignment

These relationships and their interactions are depicted in Figure 4.1 Two subcategories corresponding to the contextual conditions and actions/reactions categories respectively, which are shaded in Figure 4.1, form the basis towards understanding the dynamic process that determines the various IT and business alignment equilibrium states attained over time. The shaded subcategories comprise the owner-manager's characteristics, particularly the knowledge dimension of business and IT, and the management of the outsourcing relationship between the owner-manager and the outsourcer. These two subcategories are impacting on the firms' business development, restructuring level and the drivers of IT adoption which lead to the attainment of business-IT alignment. Figure 4.2 expands on Figure 4.1 where properties and dimensions are linked to their corresponding sub-categories and categories.

Advanced MAXQDA tools, particularly the Code Relations Browser and the Code Matrix Browser, have been used in this research study to contribute towards having a reference count for each dimension and their corresponding properties. The number of references demonstrates the importance of that particular property or dimension cited by the participants of this research study. The following sections detail the descriptions of the categories, subcategories, properties and dimensions, as provided by the participants.


Figure 4.2: Framework for IT Strategizing in Small Firms

## 4.3.1 Contextual Conditions Category

The 'contextual conditions' category is fundamental to this research study because it provides a deep understanding of each small firm's environmental characteristics in which it was operating. The 'contextual conditions' category as depicted in Figure 4.2 in diagram form or Appendix 4 in schema form, delineates 5 sub-categories relating to structure, owner-manager characteristics, internal factors, external challenges and IT usage within the small firms. The 'owner-manager characteristics' is the most prominent sub-category as the owner-manager's knowledge, mind-set, management style, risk orientation and attitude towards IT adoption impact on how the internal factors and the external challenges are managed in order to attain business objectives through the effective levels of IT utilisation.

## 4.3.1.2 Structure Subcategory

The structure subcategory focuses on properties relating to the 'business setup' (80 references), 'nature of business' (73 references), 'strategy' (63 references) and 'IT setup' (54 references). The number of years that the 31 small firms have been in operation is crucial to trace the identified IT/Business alignment equilibrium states attained over time. At the time of the research study, 2 firms had been in operation for less than 10 years, 12 firms between 10 and 20 years, 10 firms between 21 and 40 years, and 2 firms for over 40 years.

The number of current employees for each corresponding firm, as demonstrated in Appendix 1, is dependent more on the level of business operations that occur within the firm rather than the number of years that the firm has been trading. The type and nature of business of these 31 firms are also illustrated in Appendix 1. Out of these 31 firms, 13 are in the services industry, 4 firms are in the wholesale/retail sector, 6 firms are purely in the retail sector while 6 other firms are in the manufacturing sector, with 3 of them offering retail services as well. 19 out of 31 owner-managers started operating on a part-time basis, usually on their own, from home. These owner-managers were all previously in employment with other business organisations, whereby most of them gained valuable experience which was to serve them in good stead when they opted to embark on their entrepreneurial career. It seems that all of these 19 owner-managers initially evidenced cautiousness, given that they commenced their entrepreneurial desires on a part-time basis from home. The extent to which these

small firms developed and grew over a period of time is analysed under the business growth section. Seven firms, which have been in operation for over 30 years, have a strong family tradition of entrepreneurship.

The 'strategy' property component within the 'structure' subcategory revealed some very interesting findings. The majority of small firms do lack long-term, strategic vision because as one owner-manager puts it *"We cannot think beyond one year"*. Another owner-manager claimed that despite not having any strategic plan *"we do think about the future"*. In fact, the majority of these firms lack an articulated strategic plan. However, there is evidence that these owner-managers have shown readiness to engage their firms in some form of planning process.

These owner-managers tend to look at strategy as an aggregation of a number of projects such as implementing ISO9000 to contribute towards the establishment of quality standards. These projects are then transformed into business objectives and targets to be attained. However, what these owner-managers plan, albeit in the short-term, actually represents a number of initiatives which are the result of improvisation. This is in line with the literature on small firms, where their strategic behaviour tends to be partly-deliberate and partly-emergent. The strategy dimension tends to follow Mintzberg's (2008) umbrella approach, where small firms' broad strategic outlines are deliberate, whereas the details that emerge reflect the actions that owner-managers take to address the events as they unfold. Consequently, it seems that most small firms devise their business strategy in an improvisational way, acting and thinking on the spur of the moment. Plans tend to be infrequent, unstructured, and sporadic and executed in an intuitive way, representing the omnipresent volatility of the environment.

There is also strong evidence that strategy, albeit not written, is embedded in the mind of the owner-manager. The lack of strategic planning is illustrated in the content displayed on the home page of their website. The majority of websites reflect the historical setup of each respective firm which is complemented with information relating to the products and services on offer by each firm. As most of these websites do not demonstrate any mission statement, business direction to the firms' stakeholders seems to be lacking. Any strategic behaviour formed by the various actions undertaken on a day-to-day basis represents strategy as patterns which explain the realised strategy. However, the business operations that are undertaken by the 6 firms that display their mission statement on their respective website do reflect the strategic intent and business focus of each respective firm.

The IT infrastructure is dependent upon the business setup, the nature of the business activities and most importantly, the strategic behaviour of the firm. Most firms adopt client-server technology, using a decentralised mode of computing. In addition, separate servers are utilised by most firms (20) to accommodate mail and other applications respectively. Other firms (2) that use only one server host a number of virtual machines within that one server. Whereas, other firms (6) use one of their PCs as a glorified server using Local Area Network (LAN) technology, 3 firms use standalone PCs, sometimes resulting in keying in duplicated data.

## 4.3.1.3 Owner-Manager Characteristics Subcategory

The quality of IT solutions deployed in small firms is reliant on the owner-manager' characteristics. These vital properties comprise the 'mind-set' (55 references), 'knowledge' (58 references), 'risk orientation' (21 references), 'management style' (31 references) and most importantly, the 'attitude towards IT' (56 references) of the owner-manager.

The owner-managers of most of the small firms in this research study have been given prominence, as they are usually the protagonists, given that they are continuously managing the activities that are carried out in their respective firm (Walker et al., 2007). Almost most owner-managers in this research study served as catalysts in their respective firms to determine the firm's ethos, to control the financial resources, to recruit and select employees, and most importantly to direct and drive IT adoption (Fillis, Johansson and Wagner, 2004). But the qualitative level of IT adoption leading to the attainment of a satisfactory level of system integration is dependent on whether the owner-managers are able to perceive the overt and covert benefits that may accrue from the implementation and increased uptake of IT solutions (Bharati and Chabburry, 2006). In fact, this research study reveals the importance of the owner-managers' knowledge and their perception of how knowledgeable they are about IT in the determination of adopting IT effectively to attain the firm's objectives. It is apparent that those firms whose owner-managers exhibited a positive attitude towards IT

tended to utilize IT more effectively. It is striking that the owner-managers' attitude towards IT, coupled with project managerial skills, proved to be crucial for a substantial number of firms in attaining alignment with business objectives, even in the absence of internal IT expertise. This is because, most of these owner-managers managed to exploit the outsourcers' provision of IT solutions which were in conformity with their firm's strategic objectives.

The mind-set of the owner-managers was a prime determinant as to the quality of IT adoption taken up by their respective firm. The owner-managers' mind-set varied from positioning the IT function highly within the firm, to placing the IT function as secondary to the business; from endeavouring to keep abreast of IT, to being apprehensive about how to deploy IT solutions; and from managing effectively any outsourcing arrangements that they enter into with software/hardware vendors, to letting their outsourcers behave opportunistically. Of significance was the owner-managers' background, their educational background, their previous work experiences prior to embarking on entrepreneurship, and their management style which impacted on the way IT was adopted either through a deliberate plan or through serendipity.

It is paradoxical that notwithstanding that most owner-managers exhibit a broadly positive attitude towards IT adoption, the extent of system integration attained by each respective firm varied and was dependent on their level of IT knowledge or on their management competence to manage effectively their outsourcers. In fact, this research study reaffirms the position that the owner-manager's IT knowledge and the firm's IT expertise, whether internal or external, will impact on the uptake of IT deployment in these small firms. It seems that the absence of sophisticated IT solutions and the uptake of basic IT office automation tools was the result of the owner-manager's lack of IT awareness (Chao and Chandric, 2012).

#### 4.3.1.4 Internal Factors Subcategory

The internal factors subcategory of the small firm focuses on three important properties, the 'communication' property between 'business and IT' (6 References), the 'resources' of the firm property, comprising 'family assistance' (17 References), 'time' (12 References), 'human resources' (60 References), 'finance' (17 References),

'training' (45 References) 'IT expertise' (90 References) and the 'employees' adaptation to IT' (18 References).

It is evident that the 'business-IT communication' property is fundamental for those firms that are adopting strategy as a top-down approach or when the firm allows for the business and IT capabilities to be weighed equally. Those owner-managers, who adopted this teamwork approach between business and IT, reaped the benefits of collaboration. In such circumstances, it seems that the business and IT staff very often manage to speak the same language. Also those owner-managers who adopted this approach of collaboration managed to organise regular meetings between business and IT staff or outsourcers, which led to a better understanding of each other's business and IT needs.

A number of firms in this study, namely 8, avail themselves of family assistance especially to provide a helping hand to computer operations. The call for family assistance seems to stem from the perception of not having enough human resources to cope with the IT function. It is apparent that whenever there are routine tasks to be carried out in the firm, such as updating the accounting package with purchases and sales transactions, or serving the firm remotely to troubleshoot any issues which crop up from time to time, the family assistance that is meted out to the owner-manager is that of total commitment. Also where family assistance is needed because there is a serious lack of IT expertise, such assistance is usually provided.

The 'time' element is crucial, for most small firms, especially when the employment levels within the firm are very low. Given that these firms strive continuously to remain competitive, they tend to survive because they endeavour to do more with fewer resources. Consequently, because of this time constraint, owner-managers and their employees either tend to discard certain business processes or else owner-managers end up working substantially long hours to cope with the work-load. It is apparent that the time element is haunting most of the owner-managers in this research study. Most owner-managers feel that IT adoption, irrespective of whether they are using basic IT office automation tools or sophisticated IT solutions, demands a great deal of their time, which may be at the expense of the firm's core activities. Consequently, owner-managers seem to justify their claim that it is beneficial for the firm for IT to play a secondary role, given that they do not find time for IT training, or for keeping abreast of

technology. It is paradoxical that these owner-managers contend that their firm's workload seems never to subside, ignoring the fact that IT adoption of a number of business processes may alleviate the specified workloads as updates of transactions would be carried out electronically. Also, what is intriguing is that a number of owner-managers justify their stance not to analyse business data because they cannot afford to allocate the time to do so, thereby precluding the firm from making effective decisions.

The 'human resources' component is also a crucial internal factor which is continuously cited by owner-managers as the limiting factor that precludes them from undertaking their operational activities in the most effective way. Most owner-managers claim that there are instances whereby they would have to curtail operations because of the lack of human resources that they cannot afford to have in their firm. They even contend that it is expensive to engage full-time IT administrators. However, those owner-managers who engage an IT administrator, namely 7 small firms in this research study, are at least reaping the benefits of having peace of mind as to how they are running their respective IT function. Some owner-managers also claim that there are instances whereby it is difficult to find the right people to employ. They also claim that fluctuations in demand for their products and services determine the level of human resources employee responsible for the IT function but usually one finds this role is embedded with the other tasks such as planning, purchasing and sales that the owner-manager has in the day-to-day running of the business.

The 'financial' aspect is considered to be crucial for most owner-managers when they administer their firms. When the firms do not enjoy a healthy cash flow, they seem justified not to adopt sophisticated IT projects and not to increase resources in their firm. Those firms that enjoy a healthy cash flow justify their lack of IT investments by claiming that they need to ensure that they have enough money to pay their employees and to continue business operations when the demand for their products and services plummets. However, it is also significant that a small number of owner-managers allocate funds for IT, both for human resources and infrastructural investments.

The 'training' property relating to IT is crucial for these small firms to exploit IT at application system level and at system integration level. It is evident in this study that most owner-managers who are prone to invest in application systems, mostly off-theshelf packages, are more likely to provide IT training to their staff. What is intriguing is that it is apparent that most of the training to employees of small firms tends to be introductory. Also, the training component is almost missing in basic IT office automation tools, with most owner-managers claiming that there is no need to train employees on these tools. These owner-managers' perception is that IT basic tools may be self-taught and any IT learning should be undertaken on a trial and error basis. These owner-managers contend that their employees are computer-literate, which may imply that the need for IT training would be considered a waste of time and money. It seems that most owner-managers do have the tendency to position technology in their workplace as if they have purchased an electronic gadget, such as a smartphone, whereby one will become conversant with it through trial and error. It is evident that by adopting such practices, these small firms are not unleashing the potential that can be reaped by adopting IT in their firms. It is striking that these ownermanagers emphasize the importance of working hard, but they are definitely not working smart, because they are underutilising IT, due to inadequate IT training being provided to their employees.

The 'training' component relating to IT is impacting on the level of IT expertise and on the IT adoption level taken up by these firms during the course of their business activities. The 'level of IT expertise' for the small firms in this research study varies from basic to medium to high. Those firms that had a medium to high level of internal IT expertise managed to use IT as an enabler in their uptake of IT projects to attain the strategic objectives of their respective firm. The lack of focus on IT, as a function within each firm, has also impacted on how these owner-managers managed their vendors when these owner-managers undertook IT outsourcing activities. The analysis of how these vendors were managed is carried out within the actions/reactions category. However, those firms that lacked internal IT expertise, but had excellent project management skills, were able to unlock the potential of outsourcers to furnish them with IT projects.

It is apparent that probably because technology has permeated throughout these firms, the majority of employees in the firms studied in this research do not resist technological change. Also employee non-resistance to technology is also reinforced whenever an appropriate and effective communication strategy is undertaken by the firm. It seems also that whenever there is a strong IT leadership in the firm, employees exceed management's expectations because these employees tend to embrace technology to use it to their advantage in their day-to-day activities at the place of work. Employees would be willing to co-operate notwithstanding that they would be aware that they would have to work differently, once IT systems are deployed in their firms. There are also instances whereby the owner-manager is so persuasive when IT projects are deployed in the firm, that the employees do not have much choice but to accept technological change. Where IT leadership is not strong, it is evident that employees do not receive the required support from their managers when, for example, difficulties crop up relating to how to use a particular process within a software package. Owner-managers, who are reluctant to exploit IT in their firms, adopt IT projects reactively resulting in systems fragmentation.

#### 4.3.1.5 External Challenges Subcategory

The 'External Challenges' sub-category focuses on the impact of 'customer demand' (13 references), 'supplier demands' (6 references); 'competitors' comprising competitive pressures (3 references); adopting IT systems due to the 'bandwagon effect' (5 references); and 'government funding' (13 references). It is apparent from the low number of references relating to the external challenges that are facing the firms in this research study, that most owner-managers are not pre-occupied by the external challenges facing their respective firm. It is evident that most firms are not being pressured to invest in IT because of customers' demands. Whenever suppliers demanded firms to invest in IT, it was in IT infrastructure so as to be able to furnish these firms with, for example, cargo transport software or insurance software. Also those firms that participated in government tenders had to have a number of application systems in place. However, only 3 owner-managers are aware that their competitors are driving them to invest more in IT. With regards to competitive pressures, it seems that most owner-managers are not preoccupied because they contend that their competitors are not exploiting IT application systems.

#### 4.3.1.6 IT Usage Subcategory

The 'IT usage' subcategory, which is fundamental to evaluate if a firm has a solid base to align its IT applications with its business objectives, is divided into two main properties, namely, the level of internal ' IT Adoption' and 'Web-Based applications'.

The 'IT Adoption' property encompasses five significant dimensions, namely, 'manual activities' (31 references), 'IT automation level' (66 references), 'IT working tool' (99 references), 'tailor-made/off-the-shelf packages' (55 references) and 'internet usage' (63 references). The 'web-based' applications property comprises three dimensions, namely, providing 'e-mail' details in website' (8 references), 'promoting company products' (31 references) and the uptake of 'electronic commerce' (14 references).

The IT infrastructure used by the small firms in this study varied from deploying standalone PCs to adopting a client-server technology. Although those firms that adopted stand-alone PCs tended to have fragmented systems, those firms that deployed a client-server technology did not always have fully integrated systems. All these small firms extensively use basic office automation, such as word processing, spreadsheet, e-mail and other internet communication technologies such as Skype and VPN for their day-to-day operational activities. Most of these firms also use wordprocessing as a tool to create forms which are used as control sheets and spreadsheets to experiment with *'what if'* simulations. What is striking is the emphasis which is accentuated by the highest number of references (99 references) in the 'Contextual Conditions' category, placed by owner-managers on adopting IT in their firms as a very important working tool. The issue here relates to the perception held by most owner-managers, that using IT as an office automation tool, may be a good substitute for not taking up sophisticated IT application systems.

As expected, those firms that experienced a high drop in the demand for goods and services curtailed the usage of IT application systems, especially where such IT usage entailed the payment of license fees for application systems and resorted to undertake manual activities. For example, transcribing questionnaires on paper because of the fear that data may be lost on hand-held computers or because these hand-held systems are not user-friendly, are some of the reasons cited for resorting to the manual mode of transcribing data. It is also apparent for a number of firms, albeit

small, to compile accounts manually or to replenish the inventory items without utilising the Material Requirements Planning module. Also, where employees tend to work nonstandard hours such as merchandisers, promoters or market research interviewers, payroll calculations are not computerised but are done manually.

The tendency to use office automation tools in order to create and store documents in digital and hardcopy formats is leading some of the firms in this research study towards applying IT as a glorified filing cabinet system, especially if the level of system integration is low. Also all of these firms make effective use of e-mail to communicate with their suppliers and customers and they all claim that the information that is generated through e-mail will very often lead these firms to make effective decisions.

The majority of these small firms have opted for tailor-made application systems from local software houses. These systems entail accounting packages, very often having an inventory module within the package, standard payroll systems, and handheld application systems relating to selling processes. All these firms have entered into some form of software maintenance agreement implying that they endeavoured to secure stability in their workplace, given that all software suppliers were local. The extent to which these firms managed to secure this stability by managing their outsourcers effectively is discussed in the outsourcing subcategory within the 'Actions/Reactions' category. Other firms opted to purchase renowned off-the-shelf foreign accounting packages without entering into any maintenance agreements. The perception of most of these owner-managers is that such accounting packages have been on the market for over two decades and therefore well-proven. Also these owner-managers contend that these accounting packages are user-friendly and therefore, there is no need for maintenance support.

Most firms in this research study are not particularly enthusiastic about any positive outcomes that their respective websites may have on their business performance. Notwithstanding that there is evidence that these firms believe that it is paramount to have a website presence, most of these websites reflect a virtual showroom displaying information relating to products and services. Also, these firms tend to display contact details in the form of email addresses and telephone numbers. A detailed analysis of the websites pertaining to these firms revealed that the contents displayed contain mostly static information. It seems that unless these firms increase their range of

product categories or change their services, the contents of the website remain static for a very long time. It is apparent that most owner-managers have not embarked on e-commerce projects because most of their competitors have not done so. Some firms are providing their customers with a username and password so as to access their websites to place orders for these companies' products. Although such initiatives may indicate that these firms are seriously embarking on e-commerce projects, no single firm that offered the login facility to their customers had interfaced their database to have a fully integrated business-to-consumer application system. However, there is evidence that most owner-managers are enthusiastic about embarking on ecommerce projects sometime in the future. It seems that the fact that they have not done so is because most of their competitors have not invested in their e-commerce projects.

# 4.3.2 Actions and Reactions Category

The 'actions/reactions' category is crucial because it delineates the actions and reactions of the small firms in this research study to the properties and dimensions that stem from the 'contextual conditions' category. The 'actions/reactions' category, as depicted in Figure 4.2 and shown schematically in Appendix 4, portrays 7 sub-categories relating to 'internet communications technology', 'outsourcing', 'forced training', 'IT investment', 'IT projects deployment', 'business analysis' and 'IT operations'. It is striking that the outsourcing subcategory is considered to be one of the most crucial subcategories within the 'actions/reactions' category. The outsourcing sub-category encompasses the assessment of Information System Requirements by owner-managers, and the extent to which these managers are able to manage the outsourcers effectively.

## 4.3.2.1 Internet Communications Technologies Subcategories

The 'internet communications technologies' subcategory focuses on the properties relating to 'remote computing' (16 references), 'virtual organisation' (6 references) and 'social media' (7 references). It is apparent, from the references quoted alongside each property, that most of the owner-managers are not giving much importance to some of the specified properties that emerge from internet communication technologies.

It seems that the virtual organization concept was utilised by few firms whenever the firms' suppliers had an extranet with these firms and when these suppliers operated overseas. Remote computing was also exercised by some of these firms so as to be served by their outsourcers in their day-to-day issues that crop up within these firms. Some owner-managers also access their servers remotely to retrieve data that are resident in their firms' databases. The references relating to social network sites, cited by owner-managers is probably low, because as already outlined in the website deployment section, the enthusiasm relating to the launching of e-commerce projects is still low. In fact, only 4 owner-managers, out of the 31 small firms that participated in their internet communications strategy. It is encouraging that these 4 owner-managers revealed that business potential exists through these social networking sites to enhance their business performance, especially when these social networking sites are linked to their website.

#### 4.3.2.2 Outsourcing Subcategory

The tendency to outsource activities relating to the IT function has become very common in small firms, especially when the skills to perform such IT activities in-house are lacking. It is evident in this research study that the majority of firms have outsourced most of their IT and system application requirements which are undertaken in addition to the other IT activities such as office automation tools. The number of citations, namely 49 references for 'assessing IS requirements' and 83 references for 'managing vendors', top the list within the actions/reactions category. It is apparent that when owner-managers undertake decisions about IT outsourcing, they tend to disregard costs relating to co-ordinating and monitoring their vendors because it is essential that these small firms have to control the outsourcer's behaviour. It seems that those owner-managers that had managerial competencies and low-to-medium IT expertise managed to have an effective outsourcing arrangement. Notwithstanding that most owner-managers feel capable of initially assessing their information system requirements and communicate them to their outsourcers, it appears that they encounter difficulties when managing outsourcers after the system is implemented. Such a situation can be explained by the fact that most firms lack the abilities to assess IT outsourcing projects for selection and any deployments that took place were more based on personal recommendations rather than the feasibility studies that such

projects warrant. However, it is evident that those outsourcers who were professional in their endeavours and consequently, did not behave opportunistically, managed to implement IT applications' systems effectively, even where the level of IT expertise at firm level was considered to be low.

### 4.3.2.3 Forced Training Subcategory

The 'forced training' subcategory is characterised by the low number of citations in its properties, namely, internal (4 references), manufacturers (4 references) and customers (3 references). The lack of emphasis on training by most of the owner-managers has already been highlighted under the 'training' dimension within the resources property. Only 4 owner-managers have given importance of developing their employees by providing them with time dedicated to IT training at the workplace to adapt to the rapid developments that emanate from IT. The pressure by customers on these small firms to adopt specified IT systems was negligible and therefore, the need to train employees on new IT tools was not felt necessary by the other owner-managers. Another 4 firms are forced by their supplier to undertake training for their employees on software applications such as those relating to cargo transport and insurance application systems.

#### 4.3.2.4 IT Investment Subcategory

The IT investment sub-category comprises two dimensions which relate to 'exploiting government funds' (6 references) and 'infrastructure systems' (49 references). Most of the owner-managers were aware that the Malta Government was offering a  $\in$ 25,000 grant to small firms if they were to invest a similar amount in IT projects. What is striking is that all the owner-managers of these small firms either found the amount of  $\in$ 25,000 too expensive for their firm to incur, or else were put off by the amount of government bureaucracy and provisions that such applications entail, such as the condition of a time window to implement an IT project. The only exception was one owner-manager who contended that the IT investment that was to be provided via the government fund will be undertaken anyway, notwithstanding that not much thought has been given as to how to exploit this IT investment within the specified time window imposed.

Most owner-managers seem to be obsessed with investing continuously in IT infrastructure particularly in servers, PCs, laptops, PDAs etc. Where IT expertise is lacking or is not sought outside the firm, most owner-managers embark on investing in IT infrastructure, based on whims rather than on sound professional advice. It is paradoxical that the majority of these firms do not even employ a full-time IT administrator and so, it is not surprising that complaints relating to bad system response times have been cited regularly by most owner-managers. It seems that the recipe for fixing such deficiencies is by investing in new servers. However, where owner-managers had the necessary IT expertise and there was an element of IT leadership or management competencies, decisions relating to IT investment were sound. One owner-manager was particularly perturbed by the fact that technology is changing so fast that he feels that his firm cannot keep abreast of the latest technologies and consequently, he is discouraged to invest in IT infrastructure regularly.

#### 4.3.2.5 IT Projects Deployment Subcategory

The IT projects deployment subcategory focuses on the thinking and actions that take place in the owner-managers minds when they embark on implementing IT projects. This subcategory comprises the following properties: 'improvisation' (15 references) 'short-term plans' (12 references), 'formal-plans' (62 references) and 'bottom-up plans' (3 references). There is evidence that the majority of these small firms do not engage in any form of written business plans. It is striking that most of the owner-managers have described their future plans, albeit not written, whether in the short-term or longterm. However, most of the owner-managers contend that they continuously react on a day-to-day basis to events where IT adoption is concerned. This is in line with Ciborra's (2001) view that most changes and innovation uses related to new technologies emerge from the unplanned, situated action of the organisation's participants as they are confronted with new circumstances. It is also apparent that the small firms' flatter structure will afford them to be flexible to cope with the technological changes that occur. Two small firms are crafting a 5 year strategic plan which will incorporate also any IT projects which would serve as enablers to attain their business objectives. Where there was a strong presence of IT expertise in the firm, but without any IT representation at top management or board level, there existed the possibility

for the firm to adopt a bottom-up approach after discussions on possible IT adoption projects take place between the IT and business key executives.

#### 4.3.2.6 Business Analysis Subcategory

The 'business analysis' subcategory (71 references) is fundamental to this research study because it indicates how owner-managers are utilising IT adoption in their respective firms. 10 firms, out of the total complement of 31 small firms, are not analysing business data that result from their IT application systems. These 10 firms engage in IT activities only as a reaction to events as they occur on a day-to-day basis. It seems that the lack of business data analysis may be impacting negatively on these small firms leading to underutilisation of resources, both human and non-human, to attain their business objectives. Also it appears that most owner-managers are precluding themselves from making effective decisions, because they are not evaluating data. These owner-managers are more likely to be accomplishing routine tasks, rather than adopting a thinking role to exercise their conceptual and analytical abilities in their organisation. More importantly, as most of these 10 firms are not experiencing a cash flow problem, they are reluctant to undertake any form of business analysis, because the need to make effective decisions is not felt.

It is apparent that the other 21 firms are focusing their business analysis on sales data, especially if the business turnover is substantial. A small number of businesses, especially manufacturing companies seem to concentrate their energies on how to produce their products at the least cost possible so that they will be able to maximize their profits. It is evident that most owner-managers take a personal interest in monitoring sales data. They carry out continuous analysis of purchases and sales and also compare current data with the previous year's data. What is intriguing, however, is that those firms that are not updating their management accounts at the end of each month may be contradicting their claim that they are making effective decisions from analysing data. Other explanations can be cited as to why this phenomenon of not carrying out proper business analysis is present in some of these firms. First, it appears that the accounting function is not properly managed and any accounting activities are undertaken solely to fulfil regulatory and statutory requirements.

historical and therefore, any problems which crop up during the day-to-day activities of the firm would be hard to detect and resolve.

# 4.3.2.7 IT Operations Subcategory

The 'IT Operations' subcategory represents the actions and reactions of these small firms towards the monitoring, controlling and tracing of raw materials or products that they import, manufacture or sell through the exploitation of IT application systems in order to attain business objectives. The properties relating to the 'IT operations' subcategory entail the 'goods monitoring' (21 references), 'transaction traceability' (26 references), 'customer monitoring' (6 references), 'supplier monitoring' (2 references) and 'controlling costs' (8 references).

It is evident that most of the firms place their emphasis on what happens inside the firm in terms of monitoring and controlling the transactions that are generated throughout the day-to-day business processes. Most owner-managers place their emphasis on inventory control and endeavour to account for traceability through computer-based transactions. It is apparent that those firms which had an adequate level of system integration within their firm managed to reap the benefits of the traceability facilities afforded by the IT application systems. Conversely, those firms, which had a number of fragmented application systems, experienced the most discrepancies between the physical inventories and the computer records. Also those firms that utilised their accounting packages effectively tended to control their suppliers and customers by monitoring their creditors and debtors respectively. However, only 5 firms were using the application systems to control their operation costs through better inventory control.

# 4.3.3 Consequences and Outcomes Category

The 'Consequences/Outcomes' Category provides a deep understanding on the impact of IT adoption in these small firms and to what extent IT is being used as an enabler and being aligned to attain the strategic objectives. This category is classified under three subcategories, namely, 'business development', 'restructuring' and 'IT adoption – Drivers and Inhibitors'.

#### 4.3.3.1 Business Development Subcategory

The 'business development' subcategory focuses on the impact of IT adoption on three main properties, namely, the firms' 'operation efficiency levels', 'growth level' and 'IT cost'. The overall perception of owner-managers relating to the attainment of 'productivity' levels (72 references) is positive. Most owner-managers affirm that as their firms have managed to undertake more tasks in less time with the usage of basic IT office automation tools, they contend that IT is adding value to their business. Most firms have reported higher productivity levels through IT adoption. However, this does not necessarily mean that they are maximizing their other resources such as time and staff utilization. The level of system integration attained by each firm is influencing positively the productivity levels. Some owner-managers claim that with the utilization of IT, their firm is accomplishing more business activities with their present 'staff levels' (16 references). With regards to 'time utilization' (3 references), some firms believe that their firm needs more resources and therefore, more time to use IT in their firm.

The 'growth level' attained by some firms is significant. In fact, 12 firms intend to invest in 'new business opportunities' (19 references) through the utilization of new technologies to attain their business objectives. Such initiatives comprise the launching of e-commerce websites to attract new customers, implementing web-based on-line ordering application systems and replacing PDAs with tablets. Other ownermanagers are opting for 'gradual business growth' (33 references) through the deployment of IT. Such initiatives relate to, for example, better inventory control through the effective utilization of Material Requirements Planning system; introducing technology gradually with the objective to expand their business activities; providing customers with the facility to remotely browse the firm's products, check stock availability and place orders over their website. Also other owner-managers are opting to consolidate their business activities. Therefore they are not venturing into investing in further technological projects, because they fear that they will incur more costs without the benefit of increasing sales turnover. Most owner-managers, despite emphasizing the importance of IT adoption to attain business objectives are very much concerned about 'costs relating to maintenance' (4 references) and 'other IT costs' (20 references). In fact, a small number of owner-managers also complained about what they consider to be the high amounts they had to pay for IT maintenance tasks.

#### 4.3.3.2 Restructuring Subcategory

The restructuring subcategory encompasses two fundamental properties, namely, the 'external risk' which is brought about by the firms' dependency on 'IT outsourcing' (114 references) and the business process changes which are a consequence of IT adoption. These 'process changes' comprise those business processes which are 'strategy driven' (18 references), 're-engineered processes' (21 references) and 'inefficient business processes' (15 references). These inefficient processes are mainly the result of fragmented information systems which usually create duplication of data input.

The firms' dependency on IT outsourcing is undoubtedly on the minds of most of the owner-managers of these small firms. This 'IT outsourcing' property is cited no fewer than 114 times, even because IT outsourcing may be considered as an external risk to the firm. This is especially so, if the outsourcing arrangement is not managed professionally. It is evident that most firms are relying mostly on external IT support to undertake IT projects. The usage of IT office automation tools is not sufficient to cater for these IT projects. Those firms, which had a low level of internal IT expertise and also project management skills, failed to professionally evaluate the IT projects before decisions were made, to opt for outsourcing. Also such firms that exhibited these characteristics tended to underestimate the tasks related to the co-ordination and monitoring of the outsourcing arrangements that were entered into. It is apparent that these owner-managers were more susceptible to the outsourcers' opportunistic behaviour than those firms which had an adequate level of internal IT expertise and project management competencies. Such opportunistic behaviour sometimes led to owner-managers feeling very insecure when information systems break down, because they felt that their firms were not adequately supported by the outsourcers. The lack of professional technical support agreements in the form of Service Level Agreements may have also contributed to the dissatisfaction and insecurity that owner-managers may feel when they undertake IT projects. However, the element of trust between the firms' representatives and the outsourcers was considered to be of higher relevance for a successful outsourcing arrangement, rather than any articulated and tight Service Level Agreement. Conversely, those firms that exhibited an adequate level of IT internal expertise and project management abilities managed to attain a satisfactory level of IT adoption leading to, in most circumstances, system integration.

Those firms which experienced positive impacts through the implementation of IT outsourced projects tended to acknowledge IT adoption as an enabler to meet their business objectives. It seems that when small firms possess the required project management capabilities coupled with an appropriate level of IT expertise, owner-managers perceive that the value that is created through the implementation of IT projects is high. Also, under such circumstances, owner managers do feel in control to deal with IT outsourcers when IT issues crop up, particularly those related to information systems. It is evident that the majority of firms in this research study lack the competence to assess and select IT outsourced projects from a possible number of outsourcers. Any IT projects that were outsourced were more the result of personal recommendations, rather than any professional evaluation of projects that such investments warrant. However, 50% of firms that participated in this study were satisfied with the service meted out to them by their outsourcers, notwithstanding that these firms exhibited a low level of IT expertise. Such an outcome may indicate that a number of outsourcers were not taking advantage of the firms' lack of IT knowledge.

The 'process changes' property focuses on the business processes that were embraced as a result of the impact that IT adoption had on the firms that participated in this research study. Almost 50% of the firms in this research study have used IT as an enabler with the objective to align their business processes with strategic objectives. It is apparent that most of the strategy-driven or strategy-partnered initiatives with IT expertise, whether internal or external, normally leads to system integration, denoting a high alignment attainment between IT and business strategy. There are also instances whereby firms have strong internal IT expertise, but this expertise is not adequately represented at board level. In such circumstances, the IT function may show robust leadership because it understands the business processes. Under such situations, the IT function may tend to be proactive as IT staff will be the main driver that will shape the strategy-driven processes. Conversely, those firms which exhibit a strong internal IT expertise with a weak IT leadership tend to downplay the importance of innovation that will emanate from new IT initiatives which may drive strategic processes.

The 're-engineered processes' focused on specific business processes pertaining to the firm, rather than re-engineering all the business processes. These re-engineered processes, such as on-line ordering processing which usually use IT for implementation, will very often pave the way to achieve a higher level of system integration and to strengthen the alignment between IT and business objectives.

The 'inefficient processes' are usually the result of systems that firms deploy in a fragmented way. Also, inefficient processes stem from the lack of networking PCs within the firm, leading to information systems being created in silos. For example, such system fragmentation, which leads to inefficient processes, is evident when information systems are used as a glorified filing cabinet whereby documents are stored in folders. But such processes lack the facility for fast information retrieval which is usually found in databases. Also, system fragmentation leads to inefficient processes because keying in data is duplicated to serve as a form of verification.

## 4.3.3.3 IT Adoption – Drivers and Inhibitors

The "IT Adoption – Drivers and Inhibitors" is a vital subcategory within the 'Consequences/Outcomes' category, as it sheds rich insights into how these firms have adopted IT to align it with business objectives. This sub-category has been classified under two main properties namely 'hindering IT exploitation' and 'unlocking IT potential'. The intensity of citations by owner-managers is strongest among the following two dimensions, namely, the 'IT knowledge gap' (54 references) and the 'level of Information System integration' (105 references).

'The 'hindering IT exploitation' property incorporates important dimensions such as 'IT knowledge gap' (54 references), 'perception of high IT performance' (31 references), 'Untrained workforce' (14 references), 'level of website utilization' (35 references), 'IT driven project'" (17 references), "reverting to manual systems" (3 references), 'IT process curtailment' (8 references), 'data loss risk' (43 references), 'IT implementation procrastination' (16 references) and 'IT adoption – doubts and fear' (17 references).

The 'unlocking IT potential'" property encompasses important dimensions such as 'information sharing' (19 references), the "level of information system integration' (105 references), the 'level of accurate and timely information' (17 references), the 'Level of effective business decisions' (25 references) and 'perceived intangible benefits' (12 references).

#### 4.3.3.3.1 Hindering IT Exploitation

Those owner-managers who exhibit a low level of IT expertise are unable to exploit IT technologies, and any IT knowledge that they have gained is through hands-on experience or self-tuition. Most of these owner-managers are either not knowledgeable about IT issues or they have not even attempted to reinforce their firms' IT expertise by engaging or investing in human resources with IT skills. The lack of IT knowledge has also hindered these owner-managers from professionally managing any outsourcing arrangements which these firms entered into with the vendors. Consequently, these firms tend to adapt to events as they evolve on a day-to-day basis, without aligning their IT tasks with business objectives. Under such circumstances, there is not enough understanding between the IT and business domains. Any effective IT deployment that occurs is due more to serendipity rather to any form of planning, leading to system fragmentation.

It appears that these owner-managers are reluctant to make further investments in IT because they doubt the benefits that may accrue from these new technological solutions However, those owner-managers that, although lacking in IT expertise, managed to engage outsourcers who were professional in their endeavours, did succeed in aligning their IT projects with business objectives, leading to system integration. It is striking that the owner-managers' overall perception relating to IT adoption is favourable. They do consider IT as the vehicle that drives their firm towards better organisational performance which occurs through better productivity, effective business process restructuring and improved quality of service to their customers. It is paradoxical that most of these firms have not engaged a full-time IT specialist or administrator to lead the IT function. Most firms are underutilising basic office automation tools because of insufficient staff training, especially in areas relating to document management, order processing, sales recording and accounting. Also, most of the firms are not exploiting the potential of business to consumer possibilities to improve their sales performance and any attempts at utilising websites was to create a marketing presence, as if they had a virtual showroom. Any website development that emerged was unstructured and in most cases, the interfacing with the back-end database was lacking. This perception of high IT performance seems to stem from the owner-managers' lack of knowledge and naivety as to the impact which IT adoption may have on their firms. It seems that this perception of high IT

performance in these firms is precluding these owner-managers to take up IT projects at an earlier stage, thereby missing the benefits which may accrue through early adoption of IT projects.

Firms which have a strong presence of internal IT expertise, but where the IT function is not represented at board level, usually adopt a bottom-up approach of implementing IT projects. Under such circumstances, it is apparent that some business benefits fail to be realised because IT personnel may not understand the business. Also, these IT initiatives may not be directly linked to the strategic objectives, resulting in fragmented information systems. Conversely, where the firm has IT dominance, but IT personnel understand the business strategy.

When small firms experience a sharp drop in product demand, owner-managers tend to curtail IT processes such as discontinuing the usage of a Material Requirements Planning system which was under a maintenance fee agreement in order to cut costs. It is paradoxical that despite the perception of high IT performance exhibited by most owner-managers, most of their employees are not being trained on IT. Given that the majority of these firms have outsourced most of their IT function, it seems that the owner-managers have shifted the burden of acquiring IT knowledge onto the outsourcers. Consequently, the IT training component is missing in most firms. Also a real risk of data loss is prevalent in most firms. Some owner-managers were conspicuous by their silence when this topic was brought up for discussion. It seems that the majority of data backup methods used by these small firms are mostly outdated, such as using external hard-drives rather than sophisticated data-backup media and not taking off-site backups.

#### 4.3.3.3.2 Unlocking IT Potential

The 'level of information system integration' dimension has attracted 104 citations from the owner-managers participating in this research study. It is apparent that this dimension is a fundamental pre-requisite in determining the extent of IT alignment attained against the business objectives. Wherever owner-managers were in control of managing the business processes of their firm and applying information system solutions by utilising their internal IT expertise or managing effectively their outsourcers, the level of system integration attained seems to be high. In such circumstances, there seems to be a joint IT-Business planning partnership whereby business and IT are strategizing together by allowing for IT and business capabilities to be weighed equally. All firms that are utilizing IT in this mode are experiencing a sense of harmony and security in the way IT is applied in their firm. This sense of security seems to stem from the fact that system integration guarantees these firms avoid duplication of data, share information among users leading to effective decisionmaking and control their business processes better. Also, it seems that some firms that lacked internal IT expertise managed to strategize together with their IT outsourcers by having a mutual understanding of business processes and information systems, leading also to a high level of system integration. Such an outcome may imply that if the firm has adequate management competencies to manage the outsourcing arrangement and the IT outsourcers deliver what is agreed upon without engaging themselves into opportunistic behaviour, the benefits of aligning IT with business objectives can be attained as well.

Those firms which focus mainly on strategic issues without incorporating IT at the strategic thinking level are also gaining a satisfactory level of Information System integration by drawing on their internal expertise or by engaging professional IT outsourcers. In either case, IT is used as an enabler to achieve business objectives. Also, an adequate level of information system integration is attained whenever firms experience dominant internal IT resources or persuasive IT outsourcers.

The level of accurate and timely information is dependent on whether the firm is updating data on a real time basis within an integrated information system. The majority of owner-managers claim that in most cases the level of data captured is accurate, even when fragmented systems are present. The issue of timeliness of data arises either because there are limitations of time and resources to key in data, or else, the information systems are designed in such a way that the capturing of data tends to be cumbersome. It is not uncommon to find the use of spreadsheets as a working tool with data being continuously extracted from the corporate database or the various databases, if fragmented information systems abound. Most owner-managers contend that data are analysed for effective decision-making, notwithstanding that they are resident in these fragmented databases. Under such circumstances, the issue of data accuracy remains, given that duplication of data is resident in these fragmented systems. Decisions made by owner-managers seem to be more effective where firms

implemented a Business Intelligence system. Business Intelligence systems assist these firms to clean, filter and transform data, which are extracted from databases, into visual representations leading owner-managers or their most senior managers to make valuable decisions, such as increasing productivity by utilising fewer employees for the same output; establishing the best product mix for assembly work and manning the retail shop in peak periods of business activity, such as, Christmas time, by analysing sales data during the same period of the previous year.

Those owner-managers who can perceive the intangible benefits that may accrue from IT adoption tend to exhibit readiness to invest in IT sophisticated solutions such as Enterprise Resource Planning systems and Business Intelligence systems. However, owner-managers, who lack a satisfactory level of IT awareness, are reluctant to undertake investments in IT enterprise systems and in e-commerce projects. Unless they visualise the benefits that may be reaped from these IT investments, they tend to procrastinate when deciding to take up further IT investments.

# 4.4 Consolidating the structural model towards IT Alignment

As indicated in section 4.1, the constructs that stemmed from this research study relating to IT adoption were placed in a hierarchical structure shown in Appendix 4. The structure is also illustrated diagrammatically in Figure 4.1 depicting its main components, whereas Figure 4.2 emphasises categories, subcategories, properties and dimensions that were placed within the Strauss and Corbin's (1998) *Conditional and Consequential Matrix*. The three pillars of this structure, namely, the contextual conditions, the actions/reactions and consequences/outcomes, which represented the main categories, were evaluated in detail in this chapter. A discussion on the intense conceptual representation of the constructs as specified in this hierarchical structure ensued, leading to the identification of the relationships and interrelationships between the emerging concepts.

Also, as has already been noted in section 4.3, one of the crucial pre-requisites of this research study is the emphasis to study process within the area of enquiry. It is in this light that this research study followed Corbin and Strauss's (2008) recommendations by analysing data for process and by evaluating the interactions relating to IT adoption in small firms that occur over time within the categorical structure based on contextual conditions, actions and reactions, and consequences and outcomes. Figure 4.3

illustrates the different cycle that each firm passes through. Each cycle represents the contextual conditions that trigger the firms' strategic actions and reactions which then influence the outcomes and consequences. These three constructs: context, actions and consequences influence, shape and are shaped by each other, to such an extent that the issue of reverse causality is prevalent where the outcomes activate further actions, reactions, consequences and context.

Such rationale is in line with grounded theorists such as Charmaz (2006), Corbin and Strauss (2008) who contend that categories tend to react and interact with each other without following a linear path. It is evident that owner-managers provided various descriptions relating to the contextual conditions, the actions and reactions, and the consequences on the various subcategories, properties and dimensions. These descriptions echoed not only the previous and current IT adoption behaviours but also any future IT solutions that may be undertaken by these firms.



#### Figure 4.3 Different Cycle stages of Context, Actions and Consequences

Also, as indicated in section 4.1, the analysis of this thesis follows a second stage divided into two sub-stages. The first sub-stage focuses on the identification of IT alignment equilibrium states which are derived from analysing the firms' IT adoption behaviour. Firms participating in this research study are grouped within a specified

alignment equilibrium state. This will be discussed in chapter 5. This discussion represents a snapshot of alignments states, out of the possible identified alignment states that each firm had, when the owner-managers provided their descriptions throughout the interviews held for the purpose of this research study. The second substage focuses on the identification of firms' IT alignment patterns which emerge from their IT adoption behaviour over time. This evaluation is discussed in chapter 6. IT adoption behaviour shaped by contextual conditions, actions and consequences will be assessed so as to seek common IT alignment paths that these firms followed as they progressed from one alignment state to another.

# **Chapter Five**

# 5. Evaluating Firms within IT Alignment Equilibrium States

# 5.1 Overview and Aims of Chapter

The identified constructs that stemmed from this research study relating to IT adoption behaviour in small firms were placed within a hierarchical structure embodying categories, subcategories, properties and dimensions. When the constructs were analysed for their relationships and their interactions in the previous chapter, it was shown that most of the contextual conditions triggered the firms' strategic actions and reactions which then influenced the outcomes and consequences.

The framework for small firm business-IT alignment as depicted in figure 4.1 gains in significance. Two subcategories, namely, the owner-manager's characteristics particularly the knowledge dimension of business and IT, and the management of the outsourcing relationship between the owner-manager and the outsourcers are seen to impact on the firms' business development, restructuring level and the drivers/inhibitors of IT adoption. These two subcategories lead to the attainment of business-IT alignment equilibrium states.

The aims of this chapter are twofold. First, the result of the intense conceptual evaluation carried out in Chapter 4 paves the way for the identification of a typology of IT alignment equilibrium states. Secondly, a brief discussion is conducted in section 5.2 and detailed discussions in subsequent sections on how the constructs of the owner-managers' IT knowledge in conjunction with the management of the outsourcing function influences the diverse IT/business alignment equilibrium states that firms manage to attain throughout their years in operation.

# 5.2 IT Alignment Equilibrium States

Following the extensive analysis undertaken on the three categories and fifteen subcategories linking them to the various IT strategizing behaviours of the small firms participating in this study, four alignment states have been identified signifying all the different IT alignment equilibrium states that the firms could possibly adopt over time. This typology of IT alignment equilibrium states are labelled as Adaptation (ADA), Anticipation (ANT), Synchronization (SYN) and Collaboration (COL). Figure 5.1 depicts these four possible equilibrium states of IT alignment with business objectives attained by the 31 small firms that participated in this research study. These states are dependent on the quality of IT expertise used and the extent of integrated business processes that were managed by the firms to achieve alignment. Firms were grouped within a specified alignment equilibrium state out of the identified four alignment positions. This equilibrium position denoted the alignment state that each firm had when the owner-managers provided their descriptions throughout the interviews held for the purpose of this research study.



## Figure 5.1: IT Alignment Equilibrium States

Figure 5.1, which is represented in the form of a grid, provides a basis of comparison of IT alignment equilibrium states in terms of two principal dimensions, namely,

integrated business processes and quality of IT expertise. Integrated business processes are usually embedded in enterprise systems which represent all the information that flows through the firm's value-chain activities. These activities are transformed into business processes and relate to the supply chain information, logistics information, customer information financial and accounting information and human resource information. The high quality of IT expertise, which is mostly provided by the IT outsourcers through the implementation of software packages in the firms, ensures that business processes are fully integrated.

The grid, in figure 5.1, demonstrates the four levels of IT alignment equilibrium states attained by the firms in the study. The higher the level of integrated business processes, the higher will be the quality of IT expertise utilised to attain alignment between IT and business objectives. The Adaptation alignment equilibrium state represents a low level of integrated business processes and a low quality of IT expertise. The Anticipation alignment equilibrium state denotes a middle level of integrated business processes and middle-to-high quality of IT expertise. The Synchronization alignment equilibrium state denotes a high level of integrated business processes and a middle level of IT expertise. Finally, the Collaboration alignment equilibrium state signifies a high level of integrated business integration coupled with a high level of IT expertise.

The quality of IT related technological solutions that are implemented in small firms are reliant on the owner-manager's characteristics. These vital properties comprise the owner-manager's mind-set, knowledge, risk orientation, management style and most importantly, the attitude towards IT. The qualitative level of IT adoption leading to the attainment of a satisfactory level of system integration is dependent on whether the owner-managers are able to perceive the overt and covert benefits that may accrue from the implementation and increased uptake of IT solutions. Those owner-managers that exhibited a positive attitude towards IT coupled with project managerial skills proved to be crucial for those firms that attained alignment with business objectives, even in the absence of internal IT expertise. Possibly, most of these owner-managers managed to exploit the outsourcers' provision of IT solutions which were in conformity with their firm's strategic objectives. The extent of system integration attained by each respective firm varied and was dependent on their level of IT awareness or on their

management competence to manage effectively their outsourcers. Conversely, the absence of sophisticated IT solutions and the uptake of only basic IT office automation tools were the result of the owner-manager's lack of IT awareness and the way IT was managed.

# 5.2.1 Adaptation Alignment State

The adaptation (ADA) alignment state embodies a group of 10 firms that lack adequate internal IT expertise and are also not served professionally by their outsourcers in their uptake of technological solutions. This group of firms tend to react to events as they unfold ending up with business and IT strategies being separate and distinct from each other. This divergence is the result of a number of characteristics that leads to this ADA alignment state. Most importantly, these characteristics entail: IT does not understand the business processes; the business does not understand the IT function; the IT function does not have a direct link to the business objectives; the level of IT internal expertise is generally low; the IT outsourcing function is not serving the firm efficiently; and the outsourcing function is badly managed by the small firm. Any IT deployment that occurs within the firm may tend to be effective more due to serendipity rather than to any form of strategic top-down approach. This group of firms adopt IT systems that are frequently misaligned with their business objectives and most often fragmented. The focus seems to be more on the day-to-day operations. Any IT investment that is undertaken is regarded as a cost of conducting business in which these owner-managers perceive that IT provides limited business value. Also these firms are mostly concerned with seeking efficiency improvements in their day-today operations, controlling the business operations and specific business processes, thereby focusing more on operational alignment rather than alignment at strategic level.

## 5.2.2 Anticipation Alignment State

The anticipation (ANT) alignment state represents a group of 6 firms whereby there is a strong IT dominance within each firm. This IT dominance is usually internal to the firm and is so strong that there are instances in which IT drives and shapes the strategy of the firm. It may be argued that such a stance may prove dangerous as sometimes IT projects tend to be undertaken in a sporadic way and may not be linked to strategy. The IT function will be demonstrating a strong IT leadership at the expense of an owner-manager who lacks IT knowledge and who feels that the IT function is uncontrollable. In such circumstances, the business benefits that are expected to accrue may fail to be realised because the IT systems that are implemented are fragmented. Conversely, the IT function may be pro-active and persuasive to the extent that it serves as the vehicle to drive and shape strategy. Hence, under such circumstances, the owner-manager is persuaded to adopt IT projects, sometimes even sophisticated IT solutions, leading to some form of system integration.

## 5.2.3 Synchronization Alignment State

The synchronization (SYN) alignment state embodies a group of 8 firms whereby owner-managers tend to grasp opportunities based on IT centred leadership. This SYN state encapsulates the integration of IT with business strategic objectives resulting very often in creating strategic value to the firm. This strategic value emanates from the direct linkage of IT with business strategy as well as utilising IT as an enabler to attain the firm's strategic objectives. In this SYN state, the ownermanagers' positive attitude towards IT contributes towards the deployment of sophisticated IT solutions.

To utilize IT as an enabler presupposes an adequate level of IT expertise. It is significant that most of the firms that are classified under the SYN group did not have satisfactory levels of internal IT expertise. However, the firms' management competencies more than compensated for their lack of internal IT expertise by engaging successfully outsourcers that understood the firms' strategic objectives. The owner-managers of this SYN group focused primarily on their strategic objectives. Also owner-managers have shown their capabilities to articulate the Information System requirements to their outsourcers. These firms worked out carefully their business strategies and then managed to engage outsourcers to work out plans for information systems. In such a SYN state, the IT function, which is mostly represented by the outsourcers, will most often understand the firms' business processes, leading to Information Systems' integration. In this scenario, most of the IT solutions that are provided by the outsourcers tend to be technically sound leading the firms to reap the benefits of computerisation through the alignment attained between business and IT.

## 5.2.4 Collaboration Alignment State

The Collaboration (COL) alignment state represents a group of 7 firms whereby the owner-managers, in collaboration with their IT partners, tend to strategize together. This model does away with focusing on business strategy first and then let IT play a secondary role. Rather than missing out on innovation, this collaboration between business and IT at the firms' senior management level, epitomises a business and IT partnership in which business and IT capabilities are weighed equally. For such a partnership to be effective, two fundamental elements relating to two types of knowledge must be continuously present, namely, a high level of knowledge relating to business processes coupled with a focus on innovation and a similar high level of IT knowledge.

The knowledge on business processes is mostly internal to the firm. This knowledge leads the owner-manager to spearhead the firm's strategy, setting clear the firms' goals so as to communicate with the IT function that will enable that plan. IT expertise, which represents the second element of this business-IT collaboration, could be either internal or external. In most of the firms pertaining to the COL group, IT expertise tends to be external due to the firms' limitations relating to resources and to the inability to keep abreast of technology.

It is significant that all the 7 firms within the COL group managed to attain a high level of system integration even though IT application systems were provided externally to these firms. Both the business and IT functions managed to craft plans together leading to a satisfactory fit between business objectives and IT. Most Information Systems provided by these outsourcers denoted 'best practice' in the firm's industry sector, especially, where Enterprise Resource Planning systems were deployed. Both the business and IT functions learned from each other by strategizing together. The attainment of system integration provided firms with optimizing their current business processes at both strategic and operational level, leading them also to consider innovative IT projects.

#### 5.2.5 Remarks on Alignment States

The identification of the four possible states represents a Business/IT alignment equilibrium that each firm was experiencing when the owner-managers provided their

descriptions during the interviews held for this research study. In a sense, this is similar to a snapshot which embodies the current alignment state between business and IT of each small firm. For the purpose of the analysis in this chapter, the 31 small firms are classified under each of these ADA, ANT, SYN and COL states, reflecting their most recent behaviour relating to IT alignment.

# 5.3 Analytical Tools for Data Analysis

This analysis assesses the thematic concepts that emerge under each alignment state, evaluating the contextual conditions, the actions and reactions adopted by the small firms and looking at the possible outcomes that emanated from these contextual conditions and reactions. The analytical instrument used for the purpose of this analysis is MAXQDA's two primary tools for text analysis. The first tool entails the Code Matrix Browser which compiles a thematic exercise by charting active texts against active codes, representing these relationships in square symbolic forms, on those small firms selected within each alignment state. The output of such an exercise is the illustration of the intensity of occurrence for each code that is conceptualised from the transcribed data that is resident in the MAXQDA database as shown in Figure 5.2 and the following figures depicting the Code Matrix Browser screen for each of the 3 categories. In each figure, only the selected firms and their corresponding codes are activated. These firms are denoted by the numbers on the 'X' axis which represent each small firm that lies within the alignment state being analysed, whereas the 'Y' axis embodies the subcategories and their respective properties. Each category is being shown separately for each alignment state.

The *Code Matrix Browser* displays areas of intensity for the various codes that are represented by the coloured blue/red square symbols. The code matrix browser denotes the intensity of each square by indicating how many times a code has been referenced by each respective participant and allocating a weighting score from 1 to 6, the smallest blue square a value of 1, whereas the largest red square implies a high coding intensity of 6. For example, in figure 5.2, 5 brown ellipses enclose the various squares providing focus for analysis.

The other analytical mode which represents the second important tool for evaluating data is *the Retrieved Text Segments* which extracts the texts corresponding to the activated codes and the activated small firms that belong to an identified alignment

state. In such circumstances, the focus is only on the retrieved text segments corresponding to the codes and the selected small firms, scrutinizing and focusing on the retrieved text and discarding all the other text which may distract the researcher from conducting a proper analysis.

# 5.4 Firms in Adaptation Alignment State

The adaptation (ADA) alignment state embodies the current IT alignment behaviour of 10 of the 31 small firms that are analysed in this study. This state implies that basically these 10 firms lacked adequate internal IT expertise. They were continuously reacting to IT issues that cropped up leading to the divergence of business and IT strategies, being separate and distinct from each other. This divergence stemmed from the fact that business did not understand adequately IT, the level of internal expertise was generally low and the IT outsourcing that was undertaken was badly managed by the owner-managers. Most of these factors contributed towards the fragmentation of Information systems.

Figure 5.2 denotes the contextual conditions for those firms that lie within the Adaptation (ADA) state depicting 5 brown ellipses. Each ellipse provides focus, where the intensity of the relationship is highest between the activated codes and the identified ADA small firms. Ellipse 1 denotes the subcategory 'structure' which focuses on properties relating to the 'business setup', 'nature of business', 'strategy' and 'IT setup'. All the firms of the ADA group have been trading for several years: 3 firms have been operating between 12 and 19 years, 5 firms have been in operation between 20 and 30 years, whereas 2 firms have been trading for over 40 years. The number of current employees for each corresponding firm as demonstrated in Table 5.1 is more dependent on the level of business operations that occur within the firm rather than the number of years that the firm has been in operation.



Figure 5.2: Code Matrix Browser - Contextual Conditions in Adaptation State

The type and nature of these 10 firms that lie within the ADA state are illustrated in Table 5.1 as follows: 4 of these firms are in the services industry; 2 firms are in the retail sector; one firm is in the manufacturing cum retail sector; whereas 3 other firms are in the manufacturing/retail, retail cum service and wholesale/retail respectively. It is significant that 7 of the 10 owner-managers commenced their operations on a part-time basis from home, usually working on their own. All these owner-managers were previously in employment, whereby they garnered valuable work experience before
they started venturing on their own. All the 7 firms that have been operating for more than 10 years, had their employment levels ranging from 2 to 7 employees and

No.	Туре	Nature of Business	Years	Employees	IT Expertise	Outsourcing	System Integration	Alignment State
14	Manufacturer/Retail	Ceramics	30	3	Low	No outsourcing	Low	Adaptation
4	Manufacturing	Electro_Plating	18	3	Basic	Badly Managed	Low	Adaptation
3	Retail	AirConditioners	12	2	Nil	Badly Managed	Low	Adaptation
16	Retail	Wines & Spirits	41	48	Low	Badly Managed	Low	Adaptation
21	Retail cum Service	Security Systems	23	40	Low	Badly Managed	Low	Adaptation
24	Services	Cargo Transporters	110	25	IS Graduate	Fairly Managed	Medium	Adaptation
8	Services	Market Research	12	4	Low	Badly Managed	Low	Adaptation
22	Services	Medical Clinic Services	26	5	Low	Badly Managed	low	Adaptation
12	Services	Quality Assurance	20	7	Basic	No outsourcing	Low	Adaptation
13	Wholesale/Retail	Candles Importation	21	6	Sef Taught	Fairly Managed	Low	Adaptation
7	Retail cum Service	Networking Components & IT support	13	14	High	Well-Managed	High	Anticipation
2	Services	Cargo Transporters	22	47	IT Manager	Well-Managed	Medium-High	Anticipation
9	Services	IT Support	5	6	Self Taught	Well-Managed	Medium to High	Anticipation
17	Wholesaler/Retail	Wines & Spirits	125	48	IT Graduate	Well-Managed	High	Anticipation
18	Services	Property Investment	10	5	A Level	Fairly Managed	Low	Anticipation
15	Sevices	Cargo Transporters	13	12	Low	Fairly Managed	Medium	Anticipation
10	Services	Insurance Brokers	36	48	Medium	Well-Managed	High	Collaboration
19	Retail	Power Control Systems	25	14	Low	Well-Managed	High	Collaboration
23	Manufacturing	Cable Manufacturing	12	22	High	Well-Managed	High	Collaboration
1	Manufacturing	PC Assembly & Network Equipment	21	11	IS Graduate	Well-Managed	High	Collaboration
31	Retail	Sweet Shop	15	7	Medium	Well-Managed	High	Collaboration
28	Retail	Toners & Printer Cartridges	25	3	Medium	Well-Managed	High	Collaboration
30	Services	Architectural Services	16	12	Low	Well-Managed	High	Collaboration
29	Retail	Home Furnishings	16	8	Low	Well-Managed	High	Synchronisation
20	Manufacturing	Paints	32	28	Low	Well-Managed	Medium	Synchronization
11	Retail	Bathroom & Fireplaces	30	8	Self Taught	Well-Managed	Medium	Synchronization
26	Services	English Teaching for Foreigners	10	10	Medium	Well-Managed	Medium	Synchronization
25	Services	IT Software Development & Training	17	15	High	Well-Managed	High	Synchronization
27	Services	Restaurant	4	8	Medium	Well-Managed	Medium	Synchronization
6	Wholesaler/Retailer	Construction Material	35	20	Basic	Well-Managed	Medium	Synchronization
5	Wholesaler/Retailer	Salon Services	25	25	Semi Basic	Well-Managed	Medim	Synchronization

Table 5.1: Firms grouped by Alignment State

exercised a flat management structure. It seems that all these 7 owner-managers demonstrated cautiousness initially, given that they started their operations on a part-time basis from home. For example, the owner-manager of firm 13 imports fragranced candles and distributes them to various retailers; another owner-manager, denoted as firm 12, is providing quality assurance services to other business organisations; another owner-manager, denoted as firm 14, manufactures ceramics and the owner-manager, denoted as firm 4, provides electro-plating services. All these owner-

managers commenced their operations from home. The owner-manager of firm 8, who is a specialist in market-research, had to start from scratch and attempt entrepreneurship after having lost his job. But even in this case, the entrepreneurship adventure started from home.

The 'strategy' property component within the 'structure' sub-category revealed some very interesting findings. Most small firms that fall within the ADA alignment state adopt a strategy of consolidation in the business activities that they are undertaking. There is also evidence that strategy, albeit not written, is embedded in the mind of the owner-manager. In fact, the majority of these firms do lack long-term strategic vision. They tend to look at strategy as constituting of strategic adaptations to events as they unfold due to the dynamic business environment that they are operating in. Consequently, it seems that these small firms devise their plans in an improvisational way. For example, the owner-manager of firm 8, claimed that his strategic intent reflects what he always wanted to do 12 years down the line, namely, "I want to enter into carrying out research study and go for training on market research". Another owner-manager, denoted as firm 3, had also to retrench his operations by closing down his retail outlet and undertake air-conditioning installations because he was experiencing cash-flow problems with the bank due to a heavy drop in demand for the refrigeration components that he was selling. On the other hand, firm 16 adopted a gradual related diversification strategy over two decades spanning their activities from selling beverages to becoming an importer and seller of wine.

The business setup, the nature of business activities and most importantly the strategic behaviour did have some impact on the type of IT infrastructure that was set up by these firms. Basically, most of the firms (7) within the ADA alignment state used PCs on a stand-alone basis. This type of setup was influenced by the low level of internal IT expertise, inherent in these firms. The 3 other small firms, namely, firms 16, 21 and 24, adopted a client-server technology, using a decentralised mode of computing. These 3 firms also utilised separate servers to accommodate mail and other applications separately.

Ellipse 2 denotes the 'owner-manager characteristics' sub-category. The quality of ITrelated technological solutions that are deployed in small firms is reliant on the ownermanagers' characteristics. These fundamental properties comprise the ownermanagers' mind-set, their knowledge relating to business processes and being conversant with the benefits that may accrue through IT utilisation, their management style, their risk orientation and most importantly, their attitude towards IT adoption.

The mind-set and background of these 10 owner-managers of these small firms are reminiscent as to why they tend to adapt to the business activities that require IT adoption. It seems that most of these small firms are not placing IT on top of their business agenda. The focus of these owner-managers' mind-set varies from managing cash-flow problems to downplaying the role of IT in business, looking upon the IT function as secondary to the business, being obsessed with quality but doubting the capability of IT to enhance quality standards of business organisations; evaluating succession planning on reaching retirement age; being preoccupied continuously with competitors' activities; being concerned more about the increase in the number of employees rather than the effective utilisation of IT; being apprehensive how to computerise the amount of manual data which have been accumulating for a number of years and the emphasis on trading using traditional means rather than exploiting the usage of IT. It is also essential to understand the owner-managers' background, where they come from, their educational background, their previous work experiences prior to taking up entrepreneurship, their management style and their risk orientation. Consequently, these properties also impacted on their attitude towards IT adoption leading them to attain low to moderate levels of information system integration.

For example, the owner-manager of firm 4 is a qualified electrical engineering graduate, having several years' experience in manufacturing prior to taking up entrepreneurship on his own. He grasped any consultancy experiences that came his way relating to electroplating when he was an employee. He also managed to acquire Enterprise Resource Planning experience as a user which influenced him in taking up decisions relating to IT adoption in his firm. Given that he is operating in a very volatile market whereby there are big fluctuations in demand for his services, he is very cautious not to take any unnecessary risks such as not stocking any raw materials which have a shelf-life.

Another owner-manager, denoted as firm 12, who is a qualified micro-biologist by profession, is fascinated with providing consultancy related to quality assurance services to his customers but is sceptical about the effect of IT in this sector. He claims

that he is continuously focusing on quality standards and he strives to keep abreast of quality issues by reading related journals on quality. It is paradoxical that despite claiming that knowledge is power, he refrains from reading journals relating to IT.

Another owner-manager, denoted as firm 8, who is engaged in market research, becomes very reflective in the way he is operating. He is very cautious when he invests in the firm's infrastructure and other projects. He claims that he is not risk averse but very cautious how money is spent in the firm. He is obsessed about hearing a great deal about business failures and admits that he is afraid to take certain risks unless they are calculated. He claimed that *"entrepreneurs that do not have rich parents tend to be very cautious how to spend money"*. He did undertake investment in risky projects such as undertaking a hefty investment in 20 PDAs, but he was always aware that if the investment did not meet expectations, the business would still continue to operate. For example, this owner-manager invested in a photocopier after he was convinced that it was not viable anymore to farm out this service anymore. He regards the IT function as secondary to the business. The owner-manager comments:

*"I am helpless in IT. I hate it. This is not because I do not like change. I do not think that I, as a character am resistant to change. Unfortunately, I don't have time to read. I don't even like to read on matters relating to IT. I admit."* 

Two owner-managers denoted as firms 16 and 21, whose businesses have been in operation for several years, 23 and 40 years and employing 48 and 40 employees respectively, were extremely knowledgeable about their respective business processes, but they lacked any IT knowledge and experience. The owner-manager of firm 16 was reared in the family business that was set up by his father and consequently, he had the tendency to be sceptical about new ways of doing business, such as exploiting IT. The other owner-manager is an electrical engineer holding an HTD qualification, specialising in electrical power and installation of security cameras but seems at a loss when it comes to deploy IT in his firm, as he lacks any IT experience. These two owner-managers, albeit cautious about how to invest money in their firms, are not risk averse when they have to fork our money for IT hardware and infrastructure. Their major issue is how to invest in effective software and unlock the potential of application systems.

The attitude towards IT adoption exhibited by the owner-managers that fall within the ADA alignment equilibrium state does not really reflect the extent to which they are exploiting IT to attain their business objectives. This is because the level of system integration attained by 8 of these small firms is low, meaning that their systems are mostly fragmented. But it is paradoxical that most of them acknowledge the importance of IT and yet they are not utilising its potential because they lack the knowledge to do so. For example, the owner-manager of firm 3, who had to curtail operations, due to experiencing cash flow problems, claims that *"If the computer breaks down, I will have panic stations. Because it will be as if your mobile has broken down"*. This owner-manager is using mainly office automation tools such as word-processing, spread-sheet, internet and e-mail. He stopped using the inventory module, which formed part of the Enterprise Resource Planning system because he could not afford the maintenance fees.

The owner-manager of firm 8 would like very much to invest in IT. In fact, this is what he did when he invested in an off-the-shelf market research package. He claims that he invests in IT only when it is essential to do so. But then he unveils an attitude towards IT which is contradictory and negative. He reiterates: *"I cannot live without IT but I wish I could. I am not saying that I will be doing tasks manually…. I feel too much, insecure. I am too much dependent on IT but I cannot do otherwise".* 

The owner-manager of firm 21 is aware that the potential of IT is not being maximised at her firm and claims that she is certain that IT can be exploited better to render her firm to be more effective in her business endeavours. Also, the owner-manager of firm 16 acknowledges the importance of utilising IT to attain business objectives and claims that the business will deteriorate without the effective use of IT. However, this firm has managed to attain only a low-to-moderate level of system integration because the level of IT expertise is remarkably low.

It is also essential to evaluate the resources and core activities within the internal factors which are not only influencing the owner-manager's decisions but also the type of IT adoption within the firm. The resources are illustrated within ellipse 3. The resources of each firm within the ADA group focus on the 'family assistance' as an important resource of the firm, the 'time' component which is rarely sufficient to accomplish tasks, the number of 'human resources' employed within the firm, the

quality level of 'IT expertise' which is fundamental to deploy IT effectively, the 'finance' required to adopt IT and attain business objectives, and the 'training' component which is required to keep abreast of technology.

Three firms that fall within the ADA alignment state are assessed in terms of the family assistance that is provided to the owner-manager as the need arises. For example, the owner-manager of firm 12, despite having a complement of 7 employees is assisted by his two sons – one son takes care of the IT infrastructure. In fact, his father, the owner-manager, claims that *"my son who is a qualified IT infrastructure specialist occasionally takes a backup of our computers, even though he is not employed with the company"*. It seems that commitment is not really forthcoming from his son, as backups are not taken regularly and the PCs are not networked but used in standalone mode. His other son is an accountant and provides a helping hand only when he is requested to do so by his father.

The time element is crucial, for most small firms, especially when the employment levels within the firms are very low. Given that these firms would strive continuously to remain competitive, they endeavour to do more with fewer resources. Consequently, because of this time constraint, owner-managers and their employees either tend to discard certain business processes or else owner-managers would end up working substantial long hours to cope with the work-load. The time element for the ownermanager of firm 3 is a crucial factor, given that he has curtailed operations due to a heavy drop in demand for the company's products and services. He has not only downsized his employees from 7 to 2, but he has also reduced the amount of business processes such as credit control on his computer system because he is now operating on a 'cash and carry' basis. Consequently, he does not hold any debtors. The ownermanager of firm 8 contends that his employees do not have time to exploit the capabilities of their spreadsheet program because they do not have time to learn. Consequently, the owner-manager claims that that they are only using about 10% of the spreadsheet program potential. Similarly, the owner-manager of firm 13 claims that he is continuously faced with a backlog of two months of sales vouchers which he has to key in during weekends at his home so as to reconcile figures with his main information system. However, the owner-manager of firm 16, despite having 48 employees, claims that the lack of time is precluding him and the administrative staff to analyse sales data and to compile management accounts.

The human resources component is also a crucial internal factor which is continuously cited by owner-managers as the limiting factor that precludes them from undertaking their operational activities in the most effective way. Most owner-managers within this ADA alignment state claim that there are instances whereby they would have to curtail operations because of the lack of human resources that they cannot afford to employ in their firm. For example, the owner-manager for firm 4 is very cautious how to deploy human resources due to the fluctuations in demand for the services in electroplating that he is providing. Consequently, he is adopting the flexible-firm model as advocated by Atkinson (1984) whereby he employs 2 full-timers as core-employees and then he engages other employees on a project-basis when the demand for the electroplating services soars. Once the demand for such services dwindles, these peripheral employees are then disengaged. The owner-manager of firm 16 is complaining that he does not have enough human resources to compile management accounting on a monthly basis, despite the fact that the accounts section hosts no fewer than 8 employees. It appears that such a situation is precluding this firm to make effective decisions by analysing the firm's management accounts on a regular basis.

Although the financial aspect is considered to be crucial for most owner-managers when they administer their firms, what is important is the attitude towards how the owner-managers handle finance. For example, three owner-managers, namely, firms 3, 4 and 14 within the ADA group are experiencing cash flow problems because there has been a sharp drop in demand for their products and services during recent years. However, all the other firms in the ADA group are experiencing healthy cash flows. But what is intriguing is the owner-managers' attitude towards investment projects especially where employee training relating to IT is concerned. The owner-manager, of firm 8 always holds high cash liquidity. In fact, he claims that at any point in time, he has always enough money to pay his employees for the next two years. This ownermanager also contends that high liquidity gives him peace of mind. But what is intriguing is that where the IT training budget does not feature in this ADA group of firms. For example, the owner-manager of firm 8 only paid for introductory training on a complex package relating to market research. This owner-manager's concept of providing training to his employees leans towards going for introductory or basic training. Then it is expected that the employees will become proficient through practice. Notwithstanding that this owner-manager contends that the purchasing of this complex Market Research program was the best IT investment that he has undertaken in 12 years, no proper training was provided to his employees. After this so-called initial training was given to the 2 employees, only one employee was practising on this package. Also the license was for a single user which meant that at any point in time, only one user could use this Market Research program. It is paradoxical that despite the fact that this firm enjoys a healthy cash-flow and is involved in providing training to its clients on market research, it does not provide adequate training in IT to its employees. IT learning by trial and learning has been the norm in this firm and consequently, the IT learning curve has been a very long one over the 12-year period that this firm has been in operation.

Similarly, the owner-manager of firm 12 provides training to his clients on quality assurance but then he fails to train his employees even on IT basic tools. Two other owner-managers, namely firms 4 and 13, are using Sage as their main accounting package but they both learned to use this software package the hard way by experimenting on a trial and error basis, without having been exposed to training whatsoever. Also what is more intriguing is that all these firms are not giving importance to IT training, even though EU funds are available for such purposes.

Undoubtedly, this lack of training relating to IT is impacting on the level of IT expertise that each firm holds and consequently on the IT projects adopted by these firms during the course of their business activities. The level of IT expertise for this ADA group of 10 firms varies from low to basic. This lack of focus on IT as a function within each firm has also impacted on how these owner-managers managed their vendors when these owner-managers undertook IT outsourcing activities. The analysis of how these vendors were managed is carried out within the actions/reactions category. For example, the owner-manager of firm 8 claims that his IT expertise was accumulated through knowledge which he has gathered through the various experiences that evolved during the implementation of IT projects. This owner-manager has likened the usage of IT to the use of a calculator which is available to carry out mathematical calculations.

The 'IT usage' subcategory is divided into two main properties, namely, the level of internal 'IT adoption' and 'Web-Based applications'. The 'IT adoption' property which is encapsulated within ellipse 4 focuses on the dimensions relating to non-

computerised activities undertaken by the firm; the level of IT automation; the evaluation of IT as a working tool, the application systems that were adopted and the assessment of internet usage within each firm. The 'web-based applications' property which is encapsulated within ellipse 5, focuses on the web activities adopted by the small firms within this ADA group.

All these small firms within this ADA group extensively use basic office automation such as word processing, spreadsheet, e-mail and other internet communication technologies such as Skype and VPN for their day-to-day operational activities. Most of these firms use wordprocessing as a tool to create forms which are used as control sheets and spreadsheets to experiment with 'what if' simulations. For example, the owner-manager of firm 4 creates a production control sheet every time he initiates a production run so as to transcribe the batch number and the corresponding product code. This owner-manager then creates the invoice from the production sheet and subsequently, the invoice is keyed into the 'Sage' accounting package. Some of these firms also scan documents relating to production forms, delivery notes, goods received notes and invoices, print them and save these documents onto their computer. Where there is a high element of system fragmentation, it seems that the tendency to store these documents in digital mode and also use IT as a filing cabinet is practised by most of these firms. For example, the owner-manager of firm 4 has used wordprocessing and spreadsheet programmes to create ISO9000 documentation and then print all the documents for filing purposes. Similarly the owner-manager of firm 12 uses wordprocessing primarily to create and print all his documents relating to the quality standards that he creates for his customers. Therefore, the custom to file these documents in hard copy format is also practised by most of these firms, thereby implying that the fear of losing saved data and not being able to recover that data seem to haunt most of these owner-managers. These owner-managers assume that basic IT automation is obvious to them in the sense that they look at IT as a simple working tool whereby some of them such as the owner-manager of firm 8 regard an office automation tool as if it were a calculator. Most of these firms are underutilising these basic IT tools as they have not undergone any professional training.

It is striking that firms 8 and 13 make effective use of Personal Digital Assistants (PDAs). Whereas the owner-manager of firm 8 has invested in 20 PDAs to upload questionnaires when the firm undertakes market research, there is reluctance to use

these PDAs for long questionnaires as there is the uncertainty that data may be lost. This uncertainty stemmed from an error which occurred when the data was being transferred from the PDA onto the PC. Consequently, there are occasions where this owner-manager reverts to use paper questionnaires. Similarly, the owner-manager of firm 13 operates effectively a PDA system which is used by the firm's Sales Representative when he undertakes the preselling function to capture the orders for his company's products from his clients. This is how the owner-manager describes this process:

'The Salesreps capture the order and then the PDA is synched up with the PC. The PDA initially first issues a report of the captured sales, denoting the outlet, items ordered, date and time of order placed. There is also space for comments such as items discounted at 5%. There is also the barcode and the quantity ordered per item'.

Also all of these firms make effective use of e-mail to communicate with their suppliers and customers and they all claim that the information that is generated through e-mail will very often lead these firms to make effective decisions. However, the majority of firms of this ADA group complain that the e-mail system is inundated continuously with junk e-mails, giving an indication that these firms may not have invested in an adequate anti-virus and filter-spam software.

The accounting function is also not given the importance that it should be given. Six owner-managers are using an accounting package such as 'Sage' more as a recording tool to save purchases and sales transactions and to generate invoices rather than as a management tool which generates information for analytical purposes. For example, the owner-manager of firm 16 contends that the bespoke accounting system which his firm operates is not geared to carry out computerised procurement of raw materials and finished products based on a system of stock minimum levels. Instead he uses spreadsheets and admits that this mode of procurement is very time consuming. The other four firms generate manual invoices and then pass these documents over to their accountant who is generally employed on a part-time basis.

It is also noteworthy that all these small firms consider the internet a critical resource to carry out research on products or services, to evaluate their competitors' activities. The owner-manager of firm 4 acknowledges the importance of the internet as a major source of knowledge. In particular, this owner-manager undertakes patent research on the internet so as to ensure that any new patents that are generated by his firm are not already taken up. Similarly, the owner-manager of firm 12 acknowledges the importance of using the internet for research purposes but is sceptical about the reliability of data, especially when this data is presented free. This owner-manager reiterates that, for example, he has to pay for methodologies related to quality. There is also the tendency to use a spreadsheet to compile payroll, provided the number of employees is low. Also, a number of firms such as the owner-managers of firms 4, 8, 12 use PowerPoint software when they are required to do so in the course of their business activities. It is also striking that the owner-manager of firm 21, despite employing no fewer than 40 employees, still holds data relating to his 7000 clients on a spreadsheet. Also, he issues manual receipts in his retail shop and there is no interface between the 1000 items in stock and the items held in the retail shop.

Ellipse 5 denotes the effect of web-site deployment undertaken by the small firms within the ADA group. It seems that most small firms in this group are not particularly enthusiastic about any positive effects that their respective websites may have on their business performance. However, it is evident that most of these firms believe it is important that they should have a website presence, even though their websites are no more than a virtual showroom displaying information relating to products and services offered. It is striking that two of these firms, namely firms 8 and 14, do not have a website, except that they are listed in the yellow pages, despite the fact that they have been in operation for 12 years and 30 years respectively. However, firm 14 is utilising the social network Facebook to interact with prospective customers by regularly uploading ceramics images. Also three firms, namely 12, 14 and 21 do not update the website contents regularly despite the fact that they have the facility to do so. For example, the owner-manager of firm 21 listed the old projects relating to CCTV installations that they have implemented, complemented with photo shots of these projects. Also, most of these firms within this ADA group merely provide contact details comprising an email address and telephone numbers in order to generate enquiries from their prospective clients. It is striking that most of these firms have not implemented any e-commerce projects, even though the government of Malta has invited small firms to tap government funds for the deployment of such projects. It seems that firms will implement e-commerce projects, only if their competitors do so. However, the only exception within this ADA group is the owner-manager of firm 16, who has recently upgraded his firm's website by articulating the website requirements to a web-developer. In fact, this owner-manager is pleased with the launching of this new website and claims that:

'At the moment, our website is well positioned to promote us as a weddings and Parties establishment. Prospective customers can make a request for an appointment, they can request a quote, they can request a quote for our products for a party of 200 persons. The website also affords an interaction with the clients. The feedback is exceptionally good'.

This firm has upgraded their previous website, which resembled a business showroom, to an interactive website providing also on-line shopping with payment and home delivery facilities. This firm has also introduced links to social network sites such as Facebook and Twitter from their websites. But what is striking is that this online shop is not interfacing with their inventory database to check for stock availability when customers place orders for this firm's products. Such a situation may lead to missing product deliveries placed by their customers online, given that this firm operates also a brick and mortar outlet.

Figure 5.3 denotes the actions/reactions for those 10 small firms that lie within the ADA alignment state depicting 3 brown ellipses. Each ellipse provides focus, where the intensity of the relationship is highest between the activated codes and the identified ADA small firms.

Ellipse 1 focuses on a very important subcategory, namely, 'outsourcing' of the IT function comprising two crucial properties; 'assessing IS requirements' and 'managing vendors'. The tendency to outsource activities relating to the IT function has become very common in small firms, especially when the skills to perform such IT activities are lacking. All these firms register a low level of IT expertise which impacts on the way these firms articulate their information system requirements to the software developers and the extent to which they succeed in managing these outsourcing arrangements. These firms did not issue a 'Request for Proposal' when they decided to embark on the computerisation of a software development package such as accounting and market research. Consequently, these firms did not carry out any evaluation to select the most suitable package which would fit within the respective firm.



Figure 5.3: Code Matrix Browser - Action/Reactions in Adaptation State

Four firms, namely 4, 12, 13 and 21, bought the off-the-shelf Accounting package -SAGE - to perform the accounting functions relating to purchase ledger, sales ledger and general ledger; and also to generate invoices. What is striking is that none of these small firms undertook training provisions when they purchased this off-the-shelf package. It seems that these four firms thought that they could easily operate such an accounting package, using trial and error methods. For example, these four small firms have not entered into a maintenance agreement with their SAGE vendor supplier, probably because this accounting package has been on the market for over 2 decades and it has definitely proved its worth. The owner-manager of firm 4, who has gained information system experience relating to Enterprise Resource Planning systems in his previous employment in two manufacturing companies, believed that the SAGE software package would be adequate for his firm's accounting and inventory activities. This owner-manager also contended that he could easily handle this accounting package and therefore, he felt that there was no need for training.

It is evident that all the firms in the ADA group are outsourcing most of their IT activities because they do not hold IT expertise. However, the claim that they do not afford to employ an IT full-time employee is debatable for some of these firms. In fact, it is paradoxical that two firms, namely 16 and 21, despite having 40 and 48 employees respectively, did not employ a full-time professional IT employee with information system experience to cater for their respective firm's IT requirements. The tendency for vendors to behave opportunistically is normal whenever firms lack IT expertise. If professional IT specialists are employed with these firms, they may be able to safeguard their firms from any vendor opportunism.

Ellipse 2 focuses on a very important subcategory, namely, the thinking that ownermanagers undertake when they deploy IT projects. There is evidence that this ADA group of small firms do not engage themselves in some form of written business plans. It is striking that most of them have communicated their plans by specifying their intentions to outsourcers to use IT as an enabler to fulfil their business objectives. Given that the owner-managers' IT expertise within this group is generally low and judging from the way they have tackled the deployment of past IT projects, it remains to be seen to what extent these firms will be able to implement their intended IT projects effectively. This argument ties down with the concept of how these firms will be able to effectively manage the software/hardware vendors.

Two firms, namely 3 and 4, are not envisaging any IT investment as long as the demand for their products and services continue to dwindle. Similarly, firm 13 is satisfied with the amount of IT investment that it had undertaken so far, such as the utilisation of PDAs for the sales representatives and the deployment of the SAGE accounting package. As long as the business is liquid, it seems that this firm does not intend to undertake investment in IT except for linking all the PCs into a Local Area Network so that information will be shared among employees.

It is significant that a number of firms such as 8, 12, 16 and 22, intend to undertake some form of IT investment where information systems are concerned. For example,

the owner-manager of firm 8, who is focused on carrying out market research using a complex Market Research programme coupled with the utilisation of PDAs for conducting interviews with clients, intends to computerize the recruitment function of his business and to invest in an interactive website. Similarly, the owner-manager of firm 12, whose firm provides quality assurance services to corporate clients, intends to invest in technology to capture and record the quality processes so as to address the issue of being all the time transparent when providing quality services. This owner-manager intends to invest as well in bar-coding technology so as to reduce keying in errors when his employees undertake their day-to-day operations.

The owner-manager of firm 16 communicated his formal plans, albeit not written, about how he envisages his firm would be operating in the forthcoming three years. For example, this owner-manager would like his firm to be a force to be reckoned with where on-line sales are concerned. This owner-manager believes that "We want that in two to three years' time, we will be a force in selling on the net in Malta. So the only way to do this is to use IT to attain these objectives. This is the only way. We are going to invest a lot. It is a gamble. It is a big gamble. You have to try." This owner-manager also intends to go for central warehousing away from the two outlets which he manages. He believes that this logistical plan will only be effective if his firm has one integrated information system.

Ellipse 3 focuses on a very important sub-category, namely, 'business analyses'. Most firms within this ADA group do not evaluate valuable data that are resident in their computer systems. Also it appears that most owner-managers are precluding themselves from making effective decisions. These owner-managers, rather than adopting a thinking role to exercise their conceptual and analytical abilities in their organisation, are more likely to be performing operational tasks. Most of these firms are more interested in the business activities that they are undertaking on a day-to-day basis. For example, all the firms, except firm 24, do not undertake any form of business analysis. As a case in point, it is evident that undertaking business analysis is not a priority for the owner-manager of firm 8. In fact, this owner-manager accumulates the hard-copy invoices on a month-by-month basis and forwards them to his accountant to prepare the financial accounting statements. It is surprising that the compilation of management accounting is never undertaken, indicating prima facie, that this owner-manager has no clue as to whether his firm is performing successfully

or not. In fact, this is how this owner-manager explained this situation: 'If you were to ask me what the turnover was during the last quarter, I will tell you that I do not know. I don't like this. I know that I am liquid".

Similarly, it seems that firms such as 4, 12, 16 and 21 are reluctant to undertake any form of business analysis, because they are not experiencing cash flow problems. Under such circumstances, the need to make effective decisions does not exist. However, other explanations can be cited as to why this phenomenon of not carrying out business analysis is present in these firms. First, it appears that the accounting function is not properly managed and any accounting activities are undertaken solely to fulfil regulatory and statutory requirements. Secondly, the information that is emanating from these financial reports tends to be historical and therefore, any problems which crop up during the day-to-day activities of the firm would be hard to detect and resolve. For example, the owner-manager of firm 16, despite having 48 employees on his payroll, rarely finds the time to analyse product information relating to sales data. It seems that given this situation, this firm, in the majority of cases, makes decisions by the rule of thumb. Consequently, there are instances whereby this firm is missing sales because the procurement of products is erratic. It is intriguing that this firm, albeit having a computerised inventory system, does not apply the minimum level rule for re-ordering products. Any analysis that this firm undertakes is carried out on a historical basis to compare expenses and sales results obtained in the current year as against those of last year.

It is also intriguing that firm 21, which employs no fewer than 40 employees, does not carry out any data analysis on its 7000 active customers. The analysis that is undertaken in this firm relates more to fluctuations in the sale of products. However, at least one firm, namely firm 24, does carry out some form of analysis such as extracting data to compile the top ten clients for the month in terms of turnover, value added and volume. This firm also undertakes market analysis when it experiences high fluctuations in demand for the cargo transportation services that they offer to their customers. This firm also works on simulations, such as *'what if'* analysis to provide new cargo transport services which may be viable to prospective customers.

Figure 5.4 denotes the consequences and outcomes for the 10 firms that lie within the ADA alignment state depicting 5 brown ellipses. Ellipse 1 relates to the 'productivity'

dimension within the 'operations efficiency level' of the 'business development' subcategory. Ellipse 2 focuses on the external risk of depending entirely on 'outsourcing' most of their IT activities. Ellipse 3 focuses on the impact of IT expertise on these firms which are embodied in the three concepts of 'IT Knowledge Gap', 'the level of IT training' undertaken by the employees and the owner-managers' perception of 'high IT performance'. These 3 ellipses undoubtedly determine the level of system integration attained by these firms which is represented by ellipse 5. Finally, ellipse 4 focuses on the risk of data loss that most of these firms may experience due to the inadequate practices that are being adapted to backup data.



Figure 5.4: Code Matrix Browser – Consequences/Outcomes in Adaptation State

It appears that the 'productivity efficiency levels' (ellipse 1) and the 'level of system integration' (ellipse 5) attained by the firms in this ADA group depend on the extent by which owner-managers or their most senior managers managed to articulate the

information system requirements to the outsourcers and the extent by which these firms were able to manage effectively these outsourcers. The latter component which relates to these firms' dependency on these outsourcers may pose a major risk, if this outsourcing relationship is not managed effectively. The outsourcers' threat of opportunism may only be checked if the owner-manager's IT knowledge is adequate enough to control these outsourcers. Of similar importance is the dimension relating to the owner-managers' perception of high IT usage which seems contradictory especially when the systems adopted by these firms are fragmented. It is felt that evaluating the interfacing between these dimensions will provide a deeper insight as to the effectiveness of IT adoption in these firms.

All the owner-managers within the ADA group contend that their firms have registered productivity gains at the operational level by using basic office automation tools. All small firms are extensively using basic IT such as word processing, spreadsheets, email and internet to undertake various tasks such as compiling reports, simulating *'what if'* situations to cost their products and services and also to liaise continuously with their suppliers and customers through the usage of email. All these firms acknowledge the potential of exploiting email to communicate effectively with their suppliers and customers.

It is evident that the majority of firms within the ADA group have outsourced a number of IT projects which are in addition to the other IT activities such as office automation tools that are undertaken. The only exception within this group is firm 14 whose ownermanager is being assisted by his daughter to use basic office automation tools. This firm has not entered into any IT outsourcing arrangement. It is apparent from this study that most of these firms have undergone some form of IT outsourcing for their IT and system application requirements, thereby relying on some form of external IT support. Most owner-managers in this group did not carry out any professional evaluations that such outsourcing decisions warrant. All these firms lack the required IT expertise to evaluate IT outsourcing projects and any outsourcing arrangements that are agreed upon are mostly the result of personal recommendations. Also, when making decisions about outsourcing arrangements, it appears that these owner-managers are underestimating the fact that they have to monitor the outsourcers' behaviour. These owner-managers also overlook the fact that co-ordinating the activities of the outsourcers comes at a cost. Therefore, it is not surprising that these owner-managers are very much concerned about their dependency on IT outsourcers to run their business because they lack the knowledge to do so. Notwithstanding that most ownermanagers believe that they are capable to specify the business information requirements to their outsourcers, it seems that most of them are encountering difficulties when they have to manage their outsourcers. Most owner-managers contend that they feel helpless when their information systems break down. Some of them feel that, in such situations, it seems as if they are losing control. Other ownermanagers contend that there are instances whereby they feel that outsourcers behave opportunistically, simply because the owner-managers would not be capable to speak the same technical language as that of the outsourcers. Some of the outsourcers' opportunism is leading to the owner-managers behaving in a very cautious manner, sometimes even procrastinating, when they are intending to embark on future IT projects.

The owner-manager for firm 8 contends that the driving force to outsource was mainly to try and gain operational efficiency so that most of the tasks that were being carried out manually or utilising basic office automation tools, such as word processing and spreadsheets would be computerised within an off-the-shelf package. This ownermanager, whose level of IT expertise is low, felt capable of articulating the requirements to a software supplier and consequently, managed to invest and implement a market research programme. The owner-manager has opted to invest in an off-the-shelf market research package costing approximately €25,000. This ownermanager has had a number of bad experiences when he tried to manage outsourcers who provided his firm with software solutions. It seems that this owner-manager was incapable to manage professionally these software vendors. For example, employee training proved inadequate on this software package. This owner-manager claimed that out of the available two employees, only one employee became conversant with this package, not through the introductory training provided by the software vendor, but through two years of practise and the undertaking of trial and error activities. Also, this owner-manager, because he looks at IT as a cost, felt that the maintenance fees for this package were excessive.

The 'IT Knowledge Gap' and the 'perception of high IT performance' held by the owner-managers are two major dimensions in determining the level of system integration attained by their respective firms, represented by ellipses 3 and 5

respectively. The owner-managers of the 10 firms within the ADA group exhibit a low level of IT expertise and any accumulated knowledge on IT is either self-taught or through hands-on experience. Most of these owner-managers are either not knowledgeable themselves about IT issues or they have not even attempted to reinforce their firms' IT expertise by engaging or investing in human resources with IT skills. The lack of IT knowledge has also hindered these owner-managers from professionally managing any outsourcing arrangements which these firms entered into with the vendors. For example, the owner-managers of firms 3, 4, 8, 12, 13, 16, 21 and 22 are all exploiting the basic IT office automation tools which are leading them to register some form of operational efficiency. It appears that these owner-managers are reluctant to take further investments in IT because they doubt the benefits that may accrue from these new technological solutions. Also, most of these owner-managers exhibit a high sense of insecurity, probably because they are continuously experiencing the fear of the unknown which is stemming from their ignorance on IT issues. Consequently, these owner-managers tend to procrastinate when they consider investing in any IT related project that may be beneficial to their firms.

Similarly, the owner-managers of firms 13 and 16 are sceptical about reaping the benefits of technology to reduce discrepancies at inventory level. In fact, both owner-managers contend that it is very difficult to reconcile the physical stock with computer records. Also the owner-manager of firm 21 is at a loss as to how to implement an IT solution that will integrate all the fragmented systems which are spread out throughout the firm. Even this owner-manager is very reflexive as to his firm's importance of enhancing its business performance through the effective exploitation of IT. In fact he states that "*I am not maximizing the potential of IT. I am sure that we can improve on the utilization of IT*".

Most of the owner-managers in this ADA group perceive that their respective firm's IT performance is high. It is paradoxical that none of these firms has engaged a full-time employee that will lead the IT function. This perception of high IT performance seems to stem from the owner-managers' lack of knowledge and naivety as to the impact which IT adoption may have on their firms. It seems that this perception of high IT performance in these firms is precluding these owner-managers to take up IT projects earlier, thereby missing the benefits that may accrue through early adoption of IT projects. It is evident that this lack of IT knowledge coupled with the perception of high

IT have contributed towards having highly fragmented IT systems in their firms. For example, the owner-managers of firms 4 and 12 seem satisfied with the level of computerisation attained by their respective firms. Primarily, both owner-managers are using information systems to store documents relating to quality standard procedures of their firm. It seems that both these firms are using computerisation as if they had a glorified filing cabinet. Similarly, the owner-manager of firm 13 is proud that his firm is providing facilities to his sales-representatives by using PDAs for their pre-selling functions with their clients. But then this owner-manager's high perception of IT usage is tarnished by his complaints that he is working long hours, probably because there is a high level of system fragmentation leading to duplication of data.

Also the owner-manager of firm 16 is proud that he was instrumental in articulating the information system requirements for an accounting and inventory system with the outsourcers. However, the high level of system fragmentation in IT applications belies the high perception of IT usage claimed by this owner-manager. It seems that this owner-manager was more interested in investing in servers and hosting them in a robust computer-room rather than having an integrated application system. It is also intriguing that the owner-manager of firm 21, whose knowledge and expertise of IT is low, claims that through the use of basic IT office automation tools, his firm is saving on costs and manpower, despite having duplication of data and the application systems used are fragmented. It is also ironic that the lack of IT knowledge and IT expertise, the distrust of IT outsourcers, the continuous aversion towards IT and the on-going feeling of insecurity that emanates primarily from the firm's external dependency on IT outsourcers and the high level of system fragmentation, exhibited by the owner-manager of firm 8, contrast with the high perception of IT usage in this firm. Surprisingly, this owner-manager claims that his clients are very impressed with the software that his firm uses to conduct market research activities. It is also paradoxical that this firm does not give prominence to IT training, despite the fact that this firm provides training to its clients on market research.

The high perception of IT usage by most of the owner-managers within this group contrasts sharply with the way they value their data which is resident on their servers or PCs. The risk of data loss which is exhibited in ellipse 4 is prevalent in most of these firms. For example, it is evident that firms 4, 8, 12 and 22 are not taking any data backups. Interestingly, the owner-managers' silence on this issue was conspicuous.

What is striking is that the owner-manager of firm 8 is very reflexive on this data backup issue claiming that he is having sleepless nights because he is not taking any data backups. He states that:

'For example, yesterday evening, I could not sleep. I was thinking that if an accident happens at the place of work and the building is demolished, what will happen to my data?'

On the other hand, firms 13 and 24 claim that they are taking data backups on external hard-drives and storing them offsite. It is also significant that almost all of these firms have never undertaken any recovery procedures to test the recovery of data backed up. It seems that the only firm within this ADA group that is taking data backup and restore somewhat seriously is firm 16, even though, data backups are not stored offsite. The owner-manage states that:

'We have a sophisticated backup system. We take 3 backups daily. We try these backups by actually carrying out data recovery procedures. We try it out in a real environment. It is checked. We restore data on a system which we do not use and we recover on it. We hold backups here but in different locations within the same building. We do not hold off-site backups. If there will be a fire, the possibility that we will have one or two backups available is there. As you are seeing the server room is sealed with a robust door made of iron.'

However, it seems that the risk that data may be lost due to a major catastrophe has not been considered by this owner-manager.

## 5.5 Firms in Anticipation Alignment State

The anticipation (ANT) alignment state represents a group of 6 firms whereby there is a strong IT dominance within each firm. This IT dominance is mostly internal to the firm and is so strong that there are instances in which IT drives and shapes the strategy of the firm. It may be argued that such an approach may prove somewhat risky as IT projects tend to be implemented without being linked to strategy. The IT function may not be represented at board or strategic level. What is more intriguing is the fact that the IT function is sometimes embodied in the same person that is running the firm, that is, the owner-manager himself.

Figure 5.5 represents the contextual conditions for those firms that lie within the ANT state depicting 4 brown ellipses. Each ellipse provides focus where the intensity of the

relationship is highest between the activated codes and the identified ANT small firms. Ellipse 1 denotes the subcategory 'structure' which focuses on properties relating to the 'business setup', 'nature of business', 'strategy' and 'IT setup'. Four of these ANT firms have been operating between 5 and 13 years, one firm has been in operation for 22 years, whereas another firm has been trading for over a century. The number of current employees for each corresponding firm as demonstrated in Table 5.1 is more dependent on the level of business operations that occur within the firm rather than the number of years that the firm has been in operation. Whereas five firms within the ANT group have employees ranging from 5 to 14, two firms have 47 and 48 employees respectively.



Figure 5.5: Code Matrix Browser - Contextual Conditions in Anticipation State

The type and nature of these 6 firms are illustrated in Table 5.1. Four of these firms are in the services industry; another firm is in the retail cum service whereas another

firm operates in the wholesale/retail sector. Two firms are in the same line of business, namely, cargo transporters, whereas the activities of the other firms range from property investments to wines and spirits. Two firms seem to have a strong IT dominance within their respective firm possibly because they provide IT support to their clients.

Most firms within the ANT group seem to be focused on a strategy of gradual growth and on seeking new business opportunities. For example, two firms, namely 2 and 15, that are operating in the cargo transportation sector are currently crafting their strategic plans, probably because it is a sector that is currently very dynamic from a business perspective. Also another firm, namely 18, that is operating in the property investment, is endeavouring to enter into related diversification business activities. Firm 17 had to divest one of its main business units related to photography because it could not adapt to the threats of digital photography. Consequently, this firm is intensifying its activities in the other business unit, namely, its wines and spirits sector. Finally, two firms 7 and 9 that are in the same line of business by providing IT support to clients are continuously seeking to diversify their service portfolio.

The business setup, the nature of business activities and most importantly the strategic behaviour did have some impact on the type of IT infrastructure that was set up by these firms. All the firms in this group use a client-server mode of IT operation. This type of setup is influenced by the dominant level of internal IT expertise that is prevalent within these firms. What is intriguing is that most of these firms tend to focus too much on the technological aspect rather than on application information systems.

Ellipse 2 represents the 'owner-manager characteristics' sub-category within the ANT alignment equilibrium state. There is evidence that the quality of IT-related technological solutions that were implemented by this ANT group of small firms depended on the owner-managers' characteristics relating to their mind-set, their background, their management style, their risk orientation and above all their attitude towards IT adoption.

It is apparent that there is a strong IT dominance permeating through this group of ANT firms. It seems that owner-managers are obsessed with IT, having all had previous work experiences with international companies based in Malta that provided

IT services to clients. Owner-managers of firms 7, 9, 15 and 18 have accumulated their IT knowledge through self-taught practices.

It is evident that some firms experience information systems' fragmentation, especially when the owner-managers implement projects which are IT-driven rather than led by strategy. It is plausible that these IT projects that are being implemented are not linked to the firms' strategic objectives. For example, the owner-manager of firm 18 has developed a stand-alone system relating to property investment but has not implemented it after six months of its completion. This was exactly a case of IT project first and strategy later. It is striking that notwithstanding that the 3 firms, namely 2, 15 and 17, do not have an IT executive being represented at board level, each of these three firms has an IT person that is spearheading each firm's respective IT function. For example, firm number 17 is a family-run business, which has been operating for over a century. The board of directors is composed of family members but the IT function is not represented at this level. It is paradoxical that this firm has employed an IT manager who, besides having several years of work experience relating to deployment of IT projects, holds also a post-graduate degree in Strategic IT systems. Probably because of his extensive knowledge in IT infrastructure and Information Systems, this IT manager is exhibiting a great deal of IT dominance on the ownermanagers of this firm. It is unfortunate that there are instances whereby any IT projects that this IT manager proposes to the CEO, who is one of the owners of this firm, may not be linked to the firm's strategy. Even though this IT manager is oblivious of his firm's strategy, there are instances whereby his vast IT knowledge is influencing the strategy that is being taken up by this firm. Similarly the commercial manager of firm 15 is spearheading his firm's IT projects. He seems enthusiastic about IT even though his expertise lies in logistics transport. Yet he is exhibiting IT dominance within the firm by influencing the owner-manager to invest in IT infrastructure and information systems that may not be tied to strategy.

Ellipse 3 focuses on the resources of the small firms that form part of the third subcategory, namely, the 'internal factors' of the small firms. The focus is on 'human resources', 'finance', 'training' and 'IT expertise', which are crucial for operational effectiveness of the small firm. It is apparent that the human resource component is a critical internal element, especially where IT tasks are concerned. It is ironic that despite the fact that there is an element of IT pro-activeness in all the initiatives that are carried out, the IT human resource component is limited when it is compared with the other functional areas of the firm. For example, firm 2, despite employing 47 employees has one IT employee, namely, the IT Manager, that undertakes any IT tasks. Also firm 17 employs 48 employees but has only an IT manager and a part-time IT administrator working 20 hours a week. All the other firms within this group do not engage any specialised IT personnel and so, they have their IT tasks, especially the administrative ones, spread out amongst their employees.

It seems that there are budget constraints when these firms endeavour to undertake investments in IT application systems. This is especially so when firms intend to take up sophisticated information systems such as an Enterprise Resource Planning system or a sales-force automation system using hand-held computers. However, where investments relating to IT infrastructure are undertaken, owner-managers tend to approve investments such as servers, probably because such investments are perceived to be tangible. IT training is not given the importance that it should within the ANT group. Training on application systems that are implemented in these firms tends to be introductory and any subsequent learning that takes place is self-taught. It is apparent that these firms are not allocating any funds relating to IT training. It is possible that the need for IT training is not felt by owner-managers where a bottom-up approach to implement IT projects is usually undertaken by these firms.

The level of IT expertise within the ANT group of firms is quite high. In fact, two firms have employed experienced IT managers, who are spearheading the IT function of their respective firms; two other firms are in the IT support business; whereas a number of IT initiatives are being undertaken in the other two firms. What is intriguing, however, is that the lack of on-going IT training may render the current IT expertise obsolete in the future. Also it is apparent that when the IT expertise is high such as that held by the two experienced IT managers, a great deal of IT pushing to implement IT projects is continuously taking place in these firms.

The 'IT adoption' property which is illustrated in ellipse 4 in figure 5.5 focuses on the level of IT automation, the evaluation of IT as a working tool, the type of application systems that are implemented and the assessment of internet usage within the firm. All the small firms within the ANT group extensively use basic office automation tools such as word processing, spreadsheets, emails and internet communication

technologies such as Skype and VPN. Also, all of these firms are using email technology to communicate with their suppliers and customers. An initiative taken by firm 9 used the email system to capture knowledge by forwarding to a predetermined email-address any worked–out solutions in response to their clients' problems. Instead of opting for an effective knowledge-based system, this firm used the IT tools available, such as, email, to manage this type of data that were stored from the day-to-day contacts with their clients. Also another firm is using basic IT automation tools such as wordprocessing and spreadsheets to document its business procedures, storing the documents in digital form and using IT as a filing cabinet. Another firm is extracting data from its corporate database onto its spreadsheets so that end-users could undertake simulation exercises on the data provided.

The use of internet is perceived by all owner-managers as a critical factor towards the attainment of their strategic objectives. The use of internet is undertaken to research new products and services that are continuously being launched in the market. However, the internet is still being underutilised by this group of firms as the utilisation of business-to-business and business-to-consumer applications remain low.

Figure 5.6 denotes the actions/reactions of the six small firms that are classified within the ANT alignment state. Ellipse 1 focusses on the 'remote computing' property whereby most firms access their servers from a remote location, either from home or from their clients' base. Through remote computing, IT staff or other designated employees within their respective firms are able to monitor and control their servers once a connection is carried out. The facility to use remote computing has also been found to be beneficial whenever key employees work from outside their respective firm. For example, the IT manager of firm 17 is continuously connecting remotely from home to undertake a number of IT operations, sometimes even during the odd hours of the night.

Ellipse 2 focuses on a very crucial sub-category, namely, 'outsourcing' most of the activities of the IT function, which encompasses two linked dimensions: 'assessing the Information System requirements' and 'managing vendors'. Most of these firms have managed to outsource their application systems, comprising the financial modules such as the purchase ledger, sales ledger and general ledger as well as the inventory control module. Because there was a strong element of IT expertise at firm level,

initially it seems that these application systems were enabling the firms' strategic objective in an integrated way. However, because the IT function was not represented at board level in most of these firms, any application systems that were outsourced tended to satisfy the specific operational processes that the software was intended for. Consequently, instead of ending up with integrated systems that are aligned with the strategic objectives, most of these firms deployed application systems that were fragmented. Most of these firms had IT key executives who were competent to specify the requirements analysis of any application system that had to be outsourced. Also, all the firms within the ANT group were capable of striking effective arrangements with hardware suppliers. Thus, at first glance, it is apparent that the IT function is being professionally handled. But because the IT function is not represented at board level, a push strategy is emerging especially where IT personnel have expertise in deploying application systems. For example, the IT function of firms 2 and 17 is being managed by two competent and experienced IT managers who tend to be persuasive with senior management. The IT manager of firm 2 has been able to assess the requirements of an application which was outsourced based on his firm's needs. This



Figure 5.6: Actions & Reactions - in Anticipation State

IT manager dealt directly with the software vendor and prepared a Request for Proposal document, which specified the firm's current business processes. This document was used as the basis for the outsourcer to develop the information system. The flaw in this approach is that there may be instances whereby this IT manager takes initiatives which may not be aligned with the strategic objectives of the firm, as these are not communicated by senior management.

Ellipse 3 denotes the 'IT infrastructure investment' undertaken by the group of firms that pertain to the ANT alignment state classification. It is apparent that there is an emphasis on hardware investment at the expense of software. All firms are investing regularly in client-server technology, thereby providing users with the facility to share data. However, it seems that most owner-managers do take pride that they are investing in new servers, probably because these are tangible objects.

Figure 5.7 denotes the consequences and outcomes of the 6 firms that lie within the ANT alignment state depicting 4 brown ellipses. Ellipse 1 relates to the 'productivity' dimension within the operations efficiency level of the business development subcategory. Ellipse 2 focuses on the external risk of depending entirely on 'outsourcing' most of their IT activities. Ellipse 3 focuses on the 'data backup and recovery' procedures adopted by these six firms and assesses whether the practices that are being used to backup data are adequate to ensure business continuity. Finally, the level of 'system integration' attained by these firms is represented by ellipse 4.

All six firms within the ANT alignment state undertook IT 'outsourcing' (ellipse 2) arrangements for their Enterprise Resource Planning systems, which comprised, mainly, the purchase ledger, sales ledger, general ledger and the inventory modules. Three firms opted for international off-the-shelf packages that had their vendors represented locally, whereas another two firms bought a similar off-the-shelf package which was developed by a Maltese software house. The other firm had outsourced a tailor-made application system, namely, a cargo transportation system, which was also developed by a local software house. It seems as if these outsourcing companies managed to persuade most of these firms to invest in software that would process their financials and assist them in controlling their inventory transactions.



Figure 5.7: Code Matrix Browser - Consequences & Outcomes in Anticipation State

As all these firms had an adequate level of technical IT expertise, it seems that all firms were coping satisfactorily with these outsourcing arrangements. Notwithstanding that all firms registered 'productivity' (ellipse 1) gains, it is apparent that these productivity increases occurred more through the usage of office automation tools such as spreadsheets and databases rather than through the uptake of sophisticated IT solutions. Also owner-managers believe that their firms are experiencing productivity gains because the investment that they undertook in new servers is providing their users with better response times and better email processing.

Most of these firms have also undertaken maintenance agreements with their hardware suppliers. Probably because most of these firms have an adequate level of

IT expertise, and management capabilities to handle software/hardware vendors, the risks that stem from depending mostly on IT outsourcing activities, are not felt. For example, the IT manager of firm 2 assessed the requirements for a cargo transport application, which was outsourced based on the firm's requirements. The IT manager dealt directly with the outsourcers and drew up a 'Request for Proposal' document, specifying the firm's current business processes. This document served as the basis for the outsourcer that was selected to develop the information system. The users of this firm were involved during the analysis and design of this information system. The outsourcer also used prototyping techniques to communicate with the users.

Another crucial element within the group of ANT firms is that they all take the process of data backups very seriously. Backups are taken daily and stored offsite by most firms. One firm, namely number 9, is using cloud computing where data are being backed up in Canada on a daily basis. Almost most of these firms do hold restore sessions of their data so as to ensure that their data are being backed up successfully. Given the adequate levels of IT expertise that are resident in these six firms, it is not surprising that data backup and recovery procedures are broadly in place.

## 5.6 Firms in Synchronization Alignment State

Figure 5.8 denotes the contextual conditions for those firms that lie within the Synchronization (SYN) state depicting 5 brown ellipses. Ellipse 1 denotes the subcategory 'structure' which focuses on properties relating to the 'business setup', 'nature of business', 'strategy' and 'IT setup'. Two of these SYN firms have been operating for 4 and 10 years respectively, four firms have been in operation between 16 and 30 years, whereas two firms have been trading for over 30 years. The type and nature of these 8 firms are illustrated in Table 5.1. Three of these firms are in the services industry; two firms are in the retail sector; one firm is in the manufacturing/retail; whereas two other firms are in the wholesale/retail sector. The employment level of these firms range from 8 to 28 employees and all these firms operate under a flat structure.



Figure 5.8: - Code Matrix Browser - Contextual Conditions - in Synchronization State

This group of 8 firms provides a very interesting set-up from a business perspective. There is a wide variety of sectors ranging from retailing hair products to home furnishings; wholesaling construction material to retailing modern bathrooms and fireplaces; manufacturing and retailing leading brands relating to paints; providing restaurant facilities; and from teaching English to foreign students to developing business solutions relating to Enterprise Resource Planning Systems and e-Commerce projects to corporate clients. Except for firm 4, all firms have been in operation for more than a decade.

The 'strategy' property component within the structure sub-category divulged some very interesting findings. Most small firms that fall within the SYN alignment state do adopt a strategy of gradual growth in the business activities that they are undertaking.

It is apparent that most of these firms have entered into related diversification business activities. For example, firm number 5 has invested in salon services besides importing hair products; firm number 11 has added fireplaces to its portfolio of modern bathrooms; firm number 20 added waterproofing techniques over and above its manufacturing of paints; firm number 27 has just passed its test as a start-up restaurant having managed to register a profit after 3 years in operation and is on the verge of opening another restaurant in another part of the island; and finally firm number 29 has opened another outlet in the same line of business, linking their two outlets together electronically to share information.

The business setup, the nature of business activities and most importantly the strategic behaviour did have some impact on the type of IT infrastructure that was set up by these firms. Basically, all the firms (8) within the SYN alignment state use a client-server mode of IT operation whereby they utilise separate servers to accommodate mail and other applications. It is apparent that this type of setup is influenced mostly by the level of IT expertise that is mostly emanating from the outsourcing arrangements that are prevalent within these firms.

Ellipse 2 signifies the 'owner-manager characteristics' sub-category within the SYN alignment equilibrium state. There is evidence that the quality of IT-related technological solutions that were implemented by this SYN group of small firms depended on the owner-managers' characteristics relating to their mind-set, their background, their management style, their risk orientation and above all their attitude towards IT adoption.

It is evident that this group of 8 firms provide very significant characteristics, when IT solutions are implemented in these firms. All the owner-managers' mind-set of this SYN group tend to grasp opportunities based on IT-centred leadership. It is apparent that all these owner-managers are focused and committed to the business activities that they are undertaking. For example, the owner-manager of firm 11 places a great deal of importance on preserving the goodwill of his firm, which is a family business. Also the owner-managers of firms 5 and 6, who are very enthusiastic about their business endeavours, believe immensely in exercising discipline in the way they undertake decisions. Above all, most of these owner-managers perform activities such as purchasing, sales, controlling finance and administering the day-to-day IT

assignments. It is also manifest that all these owner-managers are very persuasive in implementing change. But what is most noticeable is the owner-managers' extremely positive attitude towards IT adoption in their respective firm, despite their lack of internal IT expertise. All these owner-managers do acknowledge the importance of IT and contend that IT is fundamental for their firm if they are to sustain their organisation's performance.

All the firms within the SYN alignment state adopt a top-down approach with thinking strategy first and then using IT as an enabler to attain the firms' strategic objectives. It is paradoxical that the level of IT expertise is mostly low except for one firm within this group. Probably because they lack internal IT expertise, they have focused most of their thoughts on their firm's strategic objectives and then exercised their management capabilities to outsource IT solutions. The owner-manager of firm 25 is not only strong in IT knowledge himself, having graduated in Mathematics and Computing but his team is made up of IT graduates. His firm provides business solutions comprising mainly of Enterprise Resource Planning Systems and e-commerce projects. What is paradoxical in the mind-set of this owner manager is the fact that his motto is *"Make IT work for you and not you work for IT"*. One would have expected that this firm would have formed part of the ANT group, since it has a strong internal IT presence. But it is evident that this owner-manager, despite being proficient in IT, is adamant to provide the IT solution which fits the business. Put simply, he thinks strategy first and uses IT as an enabler later. He states:

'Because the CEO that is me, is an IT person and the CTO is an IT person as well. But nowadays we are changing that strategy has to come before IT. Because we were moving towards many directions. IT has grown so much, you have social media, cloud computing, which are all good to pass on to companies and to implement and to have solutions on them. But it has become too vast to handle nowadays. Technologies are changing rapidly. So we said we need to have our strategy. What would we want to offer and then we see what tools and technologies we use'.

These owner-managers have shown their capabilities in articulating the Information System requirements to their outsourcers. Consequently, these firms worked out their business strategies carefully and then managed to engage external outsourcers to work out plans for information systems in particular, to be aligned with these business objectives. In such a SYN state, the IT function is mostly represented by the outsourcers, who will most often understand the firms' business processes by providing technological solutions leading to Information Systems' integration. This SYN state encapsulates the integration of IT with business strategic objectives resulting very often in creating strategic value to the firm. Therefore, in this scenario, most of the IT solutions that are provided by the outsourcers tend to be technically sound enabling the firms to reap the benefits of computerisation through the satisfactory alignment levels attained between business and IT.

Ellipse 3 focuses on the 'resources' of the small firms that form part of the third subcategory, namely, the 'internal factors' of the small firms. The intensity in terms of dimensions centres on the 'human resources', 'training' and 'IT expertise'. It is evident that these firms are adopting a strategy of gradual growth and therefore, they are adjusting their employment levels according to the business projects that are implemented. What is intriguing, however, is that all firms, except for firm number 25, did not find it necessary to employ a full-time IT administrator. It is possible that because they lack internal IT expertise, they have opted to outsource all their IT activities and therefore, owner-managers feel that the onus of administering IT has shifted towards their outsourcers. Most of these firms have focused their thoughts on crafting strategy for their firm and used IT as an enabler by outsourcing off-the-shelf application systems. For most of these firms, the administrative part of IT is being dealt with on a part-time basis. Nevertheless, all the employees of these firms have undergone training on these application systems. It seems, however, that this introductory training was more the result of the outsourcers' initiatives rather than any requests that emanated from the owner-managers. The employees of firm 25 are very strong in IT expertise, obviously because they provide business solutions comprising mainly of Enterprise Resource Planning systems and e-commerce projects. It is significant that the owner-manager of this firm has exercised the culture of providing training time to his employees during working hours so that they endeavour to keep abreast of technology.

As represented by the code intensification relating to 'IT adoption' in ellipse 4, all the small firms within the SYN group extensively use enterprise systems, which are mostly integrated but complemented with basic office automation tools such as wordprocessing, spreadsheets and occasionally databases. Of significance is the extensive use of email to communicate with suppliers, customers and even internal users within the firms. These owner-managers do acknowledge that the information

that is being generated is assisting their firms to make effective decisions. It is also evident that the internet is being used extensively as a research tool to source out new products and to seek new suppliers. Also some firms do tend to use the internet to seek information relating to business activities that are undertaken by their competitors.

Ellipse 5 represents the impact of website deployment by the small firms within the SYN group. All these owner-managers are enthusiastic about having a web presence, even though most of these websites are no more than a virtual showroom displaying information relating to the products and services offered by these firms. It is evident that most of these firms are seriously considering entering into web2 technologies, whereby the websites would be more interactive and would provide their customers with more interactive facilities. It seems that most of these firms have not entered into more interactive websites, other than providing email information to prospective customers to contact these firms, because the firms' competitors are reluctant to do so.

Figure 5.9 denotes the actions/reactions of the 8 small firms that are classified within the SYN alignment state. Ellipse 1 focuses on a very crucial sub-category, namely, 'outsourcing' most of the activities of the IT function, which encompasses two linked dimensions: 'assessing the Information System Requirements' and 'managing vendors'. All these owner-managers have opted to outsource most of their IT requirements. It is apparent that these firms focused primarily on their business activities from a strategic perspective and then outsourced most of the IT function. All these owner-managers were capable, not only to communicate effectively the information system requirements with their outsourcers, but they all seemed satisfied with the services that were provided by their outsourcers.


#### Figure 5.9: Code Matrix Browser- Actions & Reactions - in Synchronization State

Also, most of these owner-managers have entered into satisfactory maintenance agreements with their outsourcers. It is evident that these owner-managers felt that their firms were experiencing a sense of security whenever IT projects are deployed in their firm. In addition, these outsourcing arrangements, especially where application systems were implemented, led to information systems being deployed in an integrated way. The reasons for reaching a high level of system integration may be twofold: the outsourcers did not behave opportunistically and the firms were able to manage these outsourcers in the most effective way. What is intriguing, however, is that the deployment of these application systems were mostly the result of personal recommendations emanating from their peers or friends. Consequently, these owner-managers did not undertake any evaluation or selection of other application systems, besides the one which was implemented in their firm. What is also striking is that most owner-managers felt fulfilled that they have been instrumental to suggest changes to the application systems after they were implemented.

All these owner managers feel that they are doing the right thing to outsource as they contend that otherwise they cannot keep abreast of the dynamic changes that stem

from technology. They claim that they do not have the resources and that they cannot afford to have a fully-fledged in-house IT function.

Ellipse 2 denotes the 'IT infrastructure investment' by the SYN group of firms. It is evident that these firms invested in client-server technology to accommodate primarily their application systems in order to provide adequate response times to their users but also to enable information to be shared in an integrated system environment. Also investments in separate servers were undertaken to handle mail and other IT operations.

Ellipse 3 focusses on a very crucial property, namely, 'formal plans' which is a notable characteristic of all the firms that form part of the SYN group. It is evident that some form of formal planning is being undertaken continuously before any IT projects are deployed in their firm. The maxim seems to be strategy first and then apply IT as an enabler to attain the strategic objectives as specified in their formal plans.

All the owner-managers in the SYN group discuss strategy at top management level but they do not delve deep into IT matters. It seems that most owner-managers heed the sound advice that is forthcoming from their outsourcers when they discuss IT projects implementation plans with them. Also most owner-managers within the SYN group are satisfied with this form of outsourcing arrangement as any formal planning that occurs, is not polluted with technological thinking first and then strategic plans are made to fit within that technology. For example, the owner-manager of firm 25, despite being also an IT graduate, is placing strategic thinking high on his agenda before applying any IT initiatives.

The firms that pertain to the SYN group undertake 'business analysis' of data continuously which is represented by ellipse 4. It is apparent that most of these owner-managers are analysing data which emanate mostly from their integrated application systems related to the sales that are currently generated and then compared to last year's data. For example, the owner manager of firm 6 claimed that without proper data analysis, he cannot make effective decisions to invest in projects relating to the construction industry. Also, the owner-manager of firm 29 analyses purchasing data of raw materials to negotiate better pricing with the suppliers and also to monitor costs so as to generate more profits.

Figure 5.10 represents the outcomes and consequences of the 8 firms that form part of the SYN alignment state depicting 6 ellipses. Whereas ellipse 1 focuses on the 'productivity' dimension within the 'operations efficiency level' property, ellipse 2 provides another dimension, namely, an indication that those firms have been experiencing 'gradual growth' throughout the period that they have been in operation. Both these dimensions lie within the 'Business Development' subcategory. The dimension relating to 'IT Dependency on Outsourcing' forms part of the 'Restructuring' subcategory and is represented by ellipse 3. The 'level of website utilisation' dimension denoted as ellipse 4, the 'level of system integration' depicted by ellipse 5 and 'the level of effective business decisions' dimension exhibited as ellipse 6 all form part of the 'IT Adoption – Drivers and Inhibitors' subcategory.

From an operational efficiency perspective, all the firms within the SYN alignment state have registered productivity gains. These productivity increases, denoted as ellipse 1, arose from the utilization of the integrated application systems. Also the adoption of office automation tools, such as spreadsheets, databases and wordprocessing including the use of email complemented the efficiency levels attained by each firm. For example, the owner-manager of firm number 5 included their products' expiry dates in their database, leading to making effective decisions when the replenishment of stock items was undertaken. It is also apparent that all these firms have been registering gradual growth (ellipse 2) throughout the years that they have been in operation.



Figure 5.10: Code Matrix Browser- Consequences/Outcomes in Synchronization State

This 'gradual growth' has, at times, impacted on the level of IT adoptions that are taken up by these firms. For example, the owner-manager of firm 5 considered the applicability of IT every time he diversified his firm's business activities. Also the owner-manager of firm 20 utilised the technology that was already deployed in his firm to accommodate the added business activity of waterproofing, which was an add-on to the paints section in his firm. Also firm 27, is on the verge of opening another restaurant after only 4 years of operation with the added advantage of reaping the benefits of transferring the same technology to be used in their second restaurant. Similarly, firm number 29 has during the past two years, added another retail shop also using the same technology and application system that were deployed in the first retail shop.

Ellipse 3 focuses on the 'IT Dependency on Outsourcing', which may prove to be an external risk to these firms, if the outsourcing arrangement is not managed professionally. All these firms did the right thing to outsource most of their IT function,

only after having focused on their business activities from a strategic perspective. Despite being satisfied with the outsourcing arrangements, some owner-managers commented that certain risks could not be prevented. For example, the owner-manager of firm 5 has been outsourcing IT application systems for over two decades. It is apparent that because the uptake of this outsourced application was the result of a personal recommendation from one of his friends, the outsourcer may not have behaved professionally. It transpired that the owner-manager became aware that his firm's tailor-made system was being sold to other firms. This is how this owner-manager expressed his frustrations:

'It is our system and we have ownership of our ideas. In fact, we were disappointed that our software company sold the software which contained our ideas to one of our competitors. I consider this to be very unfair. You can make the contract but they can make something different in the contract which will permit them to sell the software.'

It is evident that there was a lack of compliance with the contract by this outsourcer. It is possible that the use of clear and tight contracts may alleviate issues, relating to trust between the firms and their outsourcers. Also, the owner-manager of firm 11, who has outsourced the application system from a local software supplier, is aware that this application system is being used by other firms as well, even in the same sector. However, this owner-manager is not bothered about this potential risk because he believes that nowadays IT is a necessity and a tool which renders the firm more efficient. But this owner-manager claims that IT does not necessarily provide the firm with a competitive advantage. What is important is how business data that emanate from these application systems are analysed and how effective decisions are made to attain business objectives. Notwithstanding such risks, the SYN group used IT as an enabler by outsourcing mostly tailor-made systems from local software suppliers. In some cases, a number of firms such as firms 11 and 29 have had outsourcing arrangements for more than a decade. There is evidence that all these firms benefitted from achieving IT alignment with their business objectives.

Ellipse 4 represents the level of website utilisation of the firms that form part of the SYN group. The majority of these firms' websites reflect the historical setup of each respective firm and is complemented with information relating to the products and services on offer. Put simply, these websites do not exhibit any mission statement

which may provide direction to stakeholders. All these owner-managers are enthusiastic about having a web-site presence, even though most of these websites are no more than a virtual showroom. It is evident that most of these firms are considering seriously entering into web2 technologies, whereby the websites would be more interactive and would provide the customers with more interactive facilities. However, it seems that most of these firms have not entered into more interactive websites, other than providing email information to prospective customers to contact these firms, because the firms' competitors are reluctant to do so. For example, the owner-manager of firm 6 showed scepticism as to the benefits that may be reaped from sales that may be generated through the internet. It could be that this firm which was displaying construction material felt that it was more appropriate to exhibit these materials as if they were in a virtual showroom rather than provide on-line ordering and payment facilities to prospective customers. Also, the owner-manager of firm 11 that sells modern bathrooms and fire-places, felt confident that the website was generating more business revenue by providing colourful displays of their products including pricing information.

As already commented upon in section 5.2.3, the 8 firms that form part of the SYN group have managed to create strategic value to their firms by integrating IT with their strategic objectives. It is evident that the level of high system integration represented in ellipse 5 and the level of effective business decisions represented by ellipse 6 experienced by these firms contributed towards an adequate alignment level between IT and their strategic objectives. These effective decisions were mainly the result of analysing the data that were resident in these firms' integrated databases. It is apparent that firms such as 5, 11 and 20 reaped the benefits of system integration by, for example, analysing the data that emanated from Material Requirements Planning to make effective decisions relating to the procurement of raw materials.

### 5.7 Firms in Collaboration Alignment State

Figure 5.11 denotes the contextual conditions for those firms that lie within the Collaboration (COL) state depicting 5 brown ellipses. Ellipse 1 denotes the subcategory 'structure' which focuses on properties relating to the 'business setup', 'nature of business', 'strategy' and 'IT setup'. Three of these COL firms have been operating between 12 and 16 years, 3 firms have been in operation between 21 and 25 years, whereas another firm has been trading for over 30 years.



Figure 5.11: Code Matrix Browser - Contextual Conditions in Collaboration State

The type and nature of these 7 firms are illustrated in Table 5.1. Two of these firms are in the services industry; 3 firms are in the retail sector; whereas 2 other firms are in the manufacturing sector. The employment level of these firms varied as follows: 2 firms had 3 and 7 employees respectively; another 3 firms had between 11 and 14 employees, another firm had 22 employees, whereas another firm had 48 employees. All those firms that employed less than 23 employees operated under a flat structure. This group of 7 firms provide a very interesting set-up from a business perspective. There is a wide variety of sectors ranging from retailing toner and printer cartridges, power control systems and sweet shop; to manufacturing of cables, PC assembly and network equipment to providing insurance and architectural services.

The 'strategy' property component within the structure subcategory revealed some very interesting outcomes. The owner-managers of this COL group do tend to adopt a strategy of gradual growth in the business activities that they are undertaking. But it is apparent that behind this gradual growth in business processes integration and innovative activities, these owner-managers tend to place IT alongside their strategic plans. Put simply, these owner-managers are giving equal importance to the IT component to attain their business objectives.

These owner-managers in collaboration with their IT partners, whether internal or external, tend to strategize together. Rather than missing out on innovative opportunities, this collaboration between business and IT at the firms' senior management level, exemplifies a business and IT partnership whereby business and IT capabilities are weighed equally. For example, the owner-manager of firm 1 discusses plans regularly for business growth with his administrative manager who is an Information Systems graduate. Also, the owner-manager of firm 23 has partnered with his IT consultant to devise a system of least cost manufacturing for his manufacturing plant. Both the owner-manager of firm 19 and the Enterprise System provider liaised and consulted regularly to invest in innovative projects.

The business setup, the nature of business activities and most importantly the strategic behaviour impacted immensely on the type of IT infrastructure that was set up by these firms. Basically, all the firms (7) within the COL alignment state use a client-server mode of IT operation whereby they utilise separate servers to accommodate mail and other application systems. It is apparent that this type of setup is highly influenced by the level of IT expertise that is mostly emanating from the outsourcing arrangements that are prevalent within these firms.

Ellipse 2 represents the 'owner-manager characteristics' sub-category within the COL alignment equilibrium state. There is evidence that the quality of IT-related technological solutions that were implemented by this group of small firms depended on the owner-managers' characteristics relating to their mind-set, their background, their management style particularly when partnering with IT providers, their risk orientation and above all their attitude towards IT adoption. These owner-managers are placing continuous emphasis on the utilisation of IT when they seek to pursue innovative activities and to maximize the potential of business processes. This

utilisation of IT is being attained through the continuous collaboration between the owner-managers or their representatives and their IT providers.

It seems that the partnership between these firms and their IT providers is proving effective because two fundamental elements, namely, knowledge about business processes with a focus on innovation and knowledge relating to IT are continuously interacting when IT projects are implemented. The first type of knowledge is held by the owner-manager who will usually spearhead the firm's strategy. The ownermanager in conjunction with the IT specialists will furnish a roadmap that will exemplify the firm's current and future positions. Then, technological initiatives can be identified to fulfil the strategic objectives. The IT knowledge represents the second element of this business-IT collaboration. The IT expertise pertaining to the COL group of firms tends to be mostly external due to the firms' limitations relating to resources and to the inability to keep abreast of technology. For example, the owner-manager of firm 23, who had several years of manufacturing experience before he set up his own firm, contends that the excellent collaboration with his IT provider is leading the firm to produce more with fewer resources by exploiting IT. These excellent results are obtained by setting key performance indicators based on data analysis that are generated by the Enterprise System. Similarly, the owner-manager of firm 19 is continuously partnering with his IT provider and together, they regularly formulate effective measures such as the setting up of targets that are to be attained by their employees through the application of IT. This owner-manager admits that notwithstanding that his behaviour is at times somewhat flamboyant when he partners with his IT provider, this type of collaboration is proving to be effective as IT is being exploited in the most effective way.

Ellipse 3 focusses on the resources of the small firms that form part of the third subcategory, namely, the 'internal factors' that impact on IT adoption. The intensity in terms of coding centres on the human resources and IT expertise dimensions. It is apparent that there is an element of stability where human resources are concerned. Most owner-manages contend that an increase in employees will be considered if the outcome will lead to productivity by adopting IT projects. It is noteworthy that four of these firms employ an IT administrator to deal with the day-to-day IT operations. It seems that the engagement of IT outsourcers is proving these firms with supportive

resources to maximize their internal business processes and to attain a high level of system integration.

The 'IT adoption' property which is illustrated in ellipse 4 in figure 5.11 focuses on the level of IT automation, the evaluation of IT as a working tool, the type of application systems that are implemented and the assessment of internet usage within the firm. The 'web-based applications' property, which is encapsulated within ellipse 5, focuses on the web activities adopted by the small firms within the COL group. All these small firms extensively use enterprise systems, which are mostly integrated but complemented with basic office automation tools such as wordprocessing, spreadsheets and occasionally databases. Of significance is the extensive use of email to communicate with suppliers, customers and even internal users within the firms. It is also evident that the internet is being used extensively as a research tool to source out new products and to seek new suppliers. All these owner-managers are enthusiastic about having a web-site presence, even though most of these websites are no more than a virtual showroom displaying information relating to the products and services offered by these firms. For example, the owner-manager of firm 1 who is in the PC assembly business demonstrated the importance of not only having a website presence but to provide some added value to their customers. This is how he expressed himself:

'The website is a common one. It promotes the company and displays the company's products. The website has an intranet which is accessed by our registered users: our resellers and corporate clients. They have a login name and password. They check for stock availability in real time in our database; they place an order for our products; they commit the stock and these products are allocated in their account. Internally, the sales girl prepares the invoice manually (using a wordprocessor), the invoice is sent automatically to stores, and the products are then prepared to be collected by the customer. The website displays specifications of products including data sheets. The client, however, cannot pay for the products placed over the website. It is evident that most of these firms are seriously considering entering into web 2 technologies, whereby the websites would be more interactive and would provide the customers with more interactive facilities.'

Figure 5.12 denotes the actions/reactions of the 7 small firms that are classified within the COL alignment state. Ellipse 1 focusses on a very crucial sub-category, namely, 'outsourcing' most of the activities of the IT function, which encompasses two linked dimensions: 'assessing the Information System Requirements' and 'managing vendors'.



Figure 5.12: Code Matrix Browser \_ Actions & Reactions – in Collaboration State

Notwithstanding that IT services were provided mostly by external IT providers, all the 7 firms in this COL group have managed to attain a high degree of system integration. Rather than adopting a top-down approach with their IT providers, the owner-managers of these firms and their IT providers collaborated together to craft plans leading to a satisfactory fit between business and IT.

As the owner-manager of firm 1 stated:

The software house is reliable because they have industrial experience and have developed similar systems. The software house understands our business language. You can work hand-in-hand with them. They share ideas with you because they look at business from a different angle.

Also the owner-manager of firm 10, having over 25 years' experience in insurance services, discussed directly the information system requirements relating to insurance modules with the IT providers. The owner-manager of firm 23, having over 20 years' experience in Material Requirements Planning processes, discussed regularly the information system requirements with his IT provider. Most of these discussions led to

information systems being deployed in these respective firms and usually denoting best practices. All these IT projects are generally supported by Service Level Agreements, rendering a good feeling of whenever IT difficulties crop up. It seems that the owner-managers' knowledge on business processes coupled with the IT providers' expertise, who are mostly Information System Specialists, are contributing towards managing successfully together the IT function.

The owner-manager of firm 28 has used this collaboration model with his IT provider for over a decade to attain a high alignment state with the firm's strategic objectives. It was claimed by this owner-manager that his collaboration arrangement with the IT provider had recently turned sour. However, he is on the verge of engaging another IT provider with the intention to re-launch this collaboration model so that they will strategize together for any innovative opportunities that may crop up in the future.

Ellipse 2 denotes the 'IT investment infrastructure investment' by the COL group of firms. It is evident that these firms have invested in servers, sometimes using some form of replication, adopting a client-server technology to accommodate primarily their application systems in order to provide adequate response times to their users. These firms also invested in IT infrastructure to enable information to be shared in an integrated system environment. Also investments in separate servers were undertaken to handle mail and other IT operations.

Ellipse 3 focuses on the 'Short-term IT projects' and 'Formal Plans' properties within the 'IT Projects Deployment' sub-category. It is evident that most of the ownermanagers or their senior managers are in regular contact with their IT software and hardware providers, collaborating and strategizing together in order to maximize the firm's business processes and to identify innovative opportunities. For example, the managing director of firm 10 holds regular meetings with his IT providers to formulate plans together. Currently, they are working together on a new project. This is how the managing director expressed this valuable experience with his IT providers:

This is a relatively new project, in the sense that we started working on this a few weeks ago. This project is reflecting the business plan of the Group, practically. The Group's business plan is focussing on the personal clients. And in order to have an effective system to handle these personal clients, we have to have an integrated IT system. In this case, we have a 5 year business plan. So, we together with our IT providers, identify solutions relating to IT.

Also, the owner-manager of firm 19 is in continuous contact with his IT software providers. He claims that he has formulated his firm's 3 year business plan based on IT capabilities by partnering, collaborating and strategizing with his IT providers. Some of the components relating to this plan comprise market analysis, market segmentation, target market strategy, segment strategy, market needs, market trends, market growth and main competitors' data. Other firms such as firms 23, 30 and 31 did undertake short-term IT projects, in collaboration with IT providers, to maximize specific business processes pertaining to their firms. These projects deployed by these firms entailed "production efficiency system", "Computer Aided Design Project" and "bar-coding system for all inventory items" respectively.

Ellipse 4 focuses on the "transaction traceability" property within the 'IT operations' subcategory. The integration of information systems that are deployed in these firms often results in tracing transactions that are created throughout the firms' operational activities. For example, this is how firm 10 traces its transactions in the insurance business:

'Our IT system is linked to a user where posting of transactions are concerned. For every transaction that is created, we would know the user that created that transaction. All transactions are created from the Accounts Department that is independent from Operations. So if somebody posts a false premium, that transaction will be displayed on the screen in the Accounts Department.'

Firm 19 managed to identify two employees who were caught stealing raw materials by virtue of the integrated system deployed that had this transaction traceability capability. It is apparent, therefore, that most of the firms in the COL group are exercising better operational controls because they are reaping the benefits of deploying integrated information systems.

Figure 5.13 represents the consequences and outcomes of the 7 firms that form part of the COL alignment state depicting 7 ellipses. Whereas ellipse 1 focuses on the 'productivity' dimension within the operations efficiency level property, ellipse 2 provides another dimension, namely, an indication that those firms have been experiencing 'gradual growth' in their business activities.



Figure 5.13: Code Matrix Browser – Consequences/Outcomes in Collaboration State

Both these dimensions lie within the 'business development' subcategory. The dimension relating to 'IT dependency on outsourcing' forms part of the "restructuring" subcategory and is represented as ellipse 3. The dimensions relating to 'IT knowledge gap' and "perception of high IT performance" are represented within ellipse 4. The 'level of website utilisation' dimension denoted as ellipse 5, 'data loss risk' as represented by ellipse 6 and the 'level of system integration' depicted as ellipse 7 all form part of the 'IT adoption – drivers and inhibitors' subcategory.

From an operational efficiency perspective, all the firms within the COL alignment state have registered productivity gains. These productivity increases, denoted by ellipse 1, stemmed from the deployment of integrated information systems which focused mainly on the firms' core business processes. For example, the owner-manager of firm 1 claims that through the utilization of IT, his firm is producing more units in less time and with the same resources, thereby creating added value to the firm.

#### He states:

'The stock system is fundamental to our business. When we carry out the assembly operation to build up our PCs or notebooks, we check each part, test it and logs it in our Parts Tracker System. We do this because if the part is faulty, we will not use similar parts for assembling other PCs. We will then send these parts to ours supplier/s. We will not order that part-number again because the system will inform us that it is faulty. The Parts Tracker will inform me, who was the supplier, the invoice relating to that part and all other relevant information. The parts will be returned to the supplier. IT helps you to work with less people, do things in less time and be more efficient. All the information is at hand. The system helps me not to exceed the guarantee of the part, the minute I receive it in our stores.'

Similarly, the owner-manager of firm 23 is endeavouring to exploit continuously the technology to produce more with fewer resources. He contends that:

'We cannot operate without IT. For us, IT is very important, even though I am not that conversant with the technology. But the fact that I have good IT people around me. Now we are using the technology to trim our costs so that we will be efficient in its totality. The moment we consolidate this position, then we will look into the aspect of business growth. I would like to increase the client base overseas. I do not want to view big things but with the same employees I want to produce more.'

Also firm number 31 has registered productivity gains in its retail operations by implementing bar-coding on all the items that they are trading in. It is also apparent that all these firms have been registering gradual growth (ellipse 2) throughout the years that they have been in operation. This gradual growth has, at times, impacted on the level of IT adoptions that are taken up by these firms.

Ellipse 3 denotes the 'IT dependency on outsourcing' dimension within the 'external risk' property. All these owner-managers have opted to outsource most of their IT requirements. All 7 firms within the COL group have managed to attain a high degree of system integration by adopting the model of continuous collaboration with their IT providers. It is evident that for most of these firms, IT outsourcing is not posing any external risk. These owner-managers are not pre-occupied with this external dependency on IT, probably because their IT providers are collaborating with them. For example the owner-managers of firms 1 and 23 feel safe and secure with such a collaborative arrangement because they are attaining effective results by adding business value to their firms. However, even the best of relationships may come to an end. For example, the owner-manager of firm 28 became a very worried man when he started realizing that this collaboration model with his IT provider, which had functioned effectively for over a decade, was not providing benefits anymore. This is

because the IT provider had become overloaded with other software development projects for other firms and consequently, he ceased to collaborate as he used to do before. However, this owner-manager is on the verge of engaging another IT provider with the objective to adopt this partnership model.

Also, most of the information systems provided by these outsourcers denoted best practices in the firms' industry sector. Both the business and IT functions learned from each other by strategizing together. The attainment of a high level of system integration provided firms with optimizing their current business processes at both strategic and operational level, leading them also to consider innovative IT projects.

Ellipse 4 denotes two very crucial dimensions namely 'IT knowledge gap" and "perception of high IT performance" which impact on the degree of information system integration. As demonstrated in Table 5.1, the level of internal IT expertise ranges from medium to high. This internal IT expertise is sufficient to generate a synergizing effect when IT providers collaborate with these firms. The IT knowledge gap that is resident at firm level is compensated by the input provided by the IT outsourcers. This collaboration between business and IT proved instrumental in weighing equally the business and IT capabilities. This partnership model between business and IT was effective because the two types of knowledge, namely, the owner-managers' knowledge of business processes and the IT providers' knowledge of integrated information systems complemented each other. It is not surprising that all the owner-managers' perception of high IT performance and effectiveness in their firm is high. In most cases, the IT outsourcers provided Enterprise systems that denoted best practices. Both the owner-managers and the IT providers managed to devise projects together leading to aligning IT with the firms' business objectives.

Ellipse 5 denotes the 'level of website utilisation' adopted by these firms. All these owner-managers are enthusiastic about having a web-site presence, even though most of these websites are no more than a virtual showroom displaying information relating to the products and services offered by these firms. For example, the owner-manager of firm 1 who is in the PC assembly business demonstrated the importance of developing jointly with the web-site provider an effective website that provides some added value to their customers. This is how the owner-manager expressed the on-going relationship with the web-site developer:

'The website evolved through a period time. It took 2 years to be completed. The website was written by a third party. It was outsourced. You would need such expertise. That is why we outsourced. The software house is reliable because they have industrial experience and have developed similar websites. The software house understands our business language. You can work hand-in-hand with them. They share ideas with you because they look at business from a different angle.'

Similarly, the Managing Director of firm 10 who is in the insurance business stated:

'The website is important. In my view, the website is important for information purpose, in terms of branding of the company and we promote our services. The website includes quotation forms. For example, a prospective client can fill a quotation form for motor insurance and send it to us. We have this feature for all the other sectors such as home, business and travel insurance. If you want to present a claim, there is also a form which may also be filled in on our website and send it to us. So we have arrived at this point. However, the client is short of purchasing a policy on-line.'

It is significant that the owner-manager of firm 23, who has collaborated with a professional UK designer, claimed that the website has started to generate new businesses. It is evident that rather than opting for a marketing presence, most of these firms are considering the options of providing more user interactivity by providing them with on-line orders and payment facilities.

Another crucial element within the group of COL firms is that they all take the process of data backups very seriously. Backups are taken daily and stored offsite by most firms. Most of these firms do restore their data backups regularly whereby the risk of data loss (ellipse 6) is minimal. Given the adequate levels of IT expertise that are resident in these 7 firms, it is not surprising that data backup and recovery procedures are broadly in place.

Ellipse 7 denotes the level of Information System Integration attained by these firms. Throughout the analysis of the group of firms pertaining to the COL state, it was emphasised that the on-going collaboration has paved the way for all these firms to attain a high level of alignment between IT and business processes. It is apparent that the COL model is proving to be successful and more importantly, that most of the owner-managers talk very highly about their integrated information systems as if they had developed the software themselves. This is how the owner-manager of firm 1 described the process relating to the delivery of products to customers:

'The products that are imported have their serial number scanned. When it comes to deliver the products ordered, the invoice and the serial number of each product are scanned. Everything is integrated in our information system. This is also printed and given to the customer so that if the customer presents this document in future we do not have to ask him anything. We know the invoice number, when it was issued and to whom the sale was made. The technicians would be aware i.e, they would have all the details. The client presents the invoice document to the technician. This document is scanned. They have a database system called Parts Tracker. IT is our backbone. Without IT we cannot work. We cannot survive without IT. We would go bankrupt.'

It is evident that the attainment of a high level of system integration provided these 7 firms with optimizing their current business processes at both strategic and operational level, leading them also to consider innovative projects.

### 5.8 Towards Studying Alignment Process Over Time

The framework for IT strategizing in small firms as illustrated diagrammatically in figure 4.2 has classified their behaviour into three main categories, namely, the contextual conditions, the actions/reactions and the consequences/outcomes. It has already been emphasized that these three constructs are continuously impacting on each other to such an extent that the issue of reverse causality is predominant given that the consequences and outcomes will prompt further actions, reactions, consequences and contextual conditions. Also, as has already been explained in section 4.3, two subcategories were shaded in the summarized version of the framework for small firm Business-IT alignment as illustrated diagrammatically in Figure 4.1. These two subcategories comprise the owner-manager's characteristics and the management of the outsourcing relationship which are pivotal towards the attainment of any of the four identified alignment equilibrium states, namely, Adaptation, Anticipation, Synchronization and Collaboration. It has been argued that the degree of system integration depends on how each firm's business processes are managed, supplemented with the qualitative level of technological solutions that are deployed.

The main discussion of this chapter has been the four alignment equilibrium states which are illustrated in Figure 5.1. The classification of alignment equilibrium states among the 31 small firms comprise 10 firms in ADA state, 8 firms in SYN state, 7 firms in ANT state , followed by 6 firms in COL state. Table 5.2 provides a summary of the main attributes at each alignment state.

Attributes	Adaptation	Anticipation	Synchronization	Collaboration	
Number of Firms	10	6	8	7	
Operation Years: (Median)	27	13	21	21	
IT Knowledge Gap	Inadequate IT expertise; Not served professionally by outsourcers	High internal IT expertise; Served professionally by outsourcers Low-to-medium IT expertise; Served professionally by outsourcers.		High IT expertise through Firm- Outsourcing Partnership.	
IT Adoption Orientation	React to events as they unfold	Proactive. May not be linked to strategy. Risky. Business benefits may fail to be realised	IT used as an enabler. Integration of IT with business objectives. Business value.	Business and IT capabilities are weighed equally	
Owner-Managers Characteristics	Acknowledges importance of IT. Ow IT function is dom secondary to inter business. Concerned about IT external haracteristics Reluctant to take further IT sec investments. High sense of (IT) incernet		Grasp opportunities on IT-centred leadership. Focus on firm's strategic objectives. Positive attitude towards IT. It is fundamental to business performance. Management capabilities to outsource IT solutions	Focus on firm's business and IT objectives. Extremely positive attitude towards IT. It is fundamental to business performance. Management capabilities to outsource IT solutions	
Business Mind-set	IT does not understand business process; Business does not understand IT function.	Business may not understand IT function. IT function not represented at strategic level.	Business manages IT function. Outsourcers understand business processes.	Business and IT understand each other.	
Business-IT Alignment	siness-IT Misalignment with strategic objectives. Operational alignment Stand-alone systems. Align strategic biectives. IT drive strate strategic biectives. IT drive fragm system More align strategic biectives.		Strategic objectives drive IT as an enabler. System integration. Creates strategic value. Operational alignment and strategic alignment.	System integration by linking IT to business objectives. Business process optimization. Creates strategic value	
Outsourcing	Outsourcing Outsourcing No Request for Proposal (RFP). No evaluation of outsourcers. Outsourcers are badly managed. Outsourcers behave opportunistically.		Outsourcers engaged on personal recommendations. Outsourcers are managed well. Tight Maintenance & Support agreements.	Firm outsourcing partnership, Strategizing together. Tight Maintenance & Support agreements but based on trust	
IT Focus	Efficiency improvements in day- to-day operations.	Strong IT leadership	Strong strategy focus but IT is used as an enabler through outsourcing.	Owner-manager directs business-IT partnership to seek process optimization.	
IT & Strategic Orientation	Consolidation. Misalignment.	Bottom-up strategy. Seeking gradual growth.	Top-down strategy. Seeking gradual growth. Related diversification.	Business-IT partnership strategizing together.	
IT Setup	IT office automation tools including email and internet. IT as a working tool. Web-site as virtual showroom. Focus on infrastructure. UT office automation tools including and internet. Web-site as showroom. Focus on infrastructure. UT office automation tools including and internet. Showroom. Focus on infrastructure.		IT office automation tools including email and internet. Hardware maximization. Focus on application systems. Web-site as virtual showroom. Focus on application Systems and infrastructure.	IT office automation tools including email and internet. Hardware maximization. Web- site as virtual showroom. Focus on application Systems.	
Business Analysis	Do not undertake business analysis on data generated through IT.	Do not undertake business analysis on data generated through IT.	Undertake business analysis leading to effective decisions.	Undertake business analysis leading to effective decisions.	
IT Training	Not undertaken.	Not undertaken.	Not undertaken	Not undertaken	
IT Perception	High.	High	High	High	
(102)	Eunctional Control		11 Satisticing	Process (Intimization	

 Table 5.2: Main Attributes of Alignment Equilibrium States

Whereas the descriptions that pertain to each attribute within each alignment equilibrium state denote the interactions between the subcategories, properties and dimensions, the table emphasises a number of issues. In line with the methodological stance that has been adopted in this chapter, each firm was placed in the last alignment equilibrium state that it occupied, when the interview was undertaken. By adopting this silo approach, each alignment equilibrium state has a specific number of properties which are particular to that alignment stance. Even though there may be some commonalities between these alignment equilibrium states, the focus is more on the attributes that are particular to that alignment state.

The goal for each IT alignment equilibrium state has also been identified. The goal for the Adaptation alignment state has been identified as 'Functional Control' whereby any IT projects that are implemented by these firms are to control the firm's functional areas. The goal for the Anticipation alignment state has been denoted as 'IT Dominance' whereby the IT leadership is so strong within the firm that in most cases IT drives and shapes the strategy of the firm. The goal of the Synchronization alignment state has been represented as 'IT Satisficing' given that IT is used continuously as an enabler to attain the firm's strategic objectives. Finally, the objective of the Collaboration state focuses on 'Business Process Optimization' whereby the owner-managers in collaboration with their IT partners tend to strategize together by weighing equally any business and IT capabilities. This partnership leads to the integration of information systems.

The identified IT alignment equilibrium states will be used as signposts to map out a number of IT alignment patterns that small firms follow through their IT adoption activities over time. Each pattern denotes the common path that groups of firms took in their movement from one alignment equilibrium state to another, throughout their life-cycle stages. This analysis will be the main emphasis of chapter 6.

## **Chapter Six**

# 6. Evaluating Alignment Process Over Time

### 6.1 Overview and Aims of Chapter

It has been amply shown from the empirical data that has been collected in this research study that small firms' business behaviour tends to be dynamic and evolves over time. Each firm that participated in this study is classified under one of the four IT alignment equilibrium states, namely, Adaptation (ADA), Anticipation (ANT), Synchronization (SYN) or Collaboration (COL). These states, which are demonstrated in Figure 5.1, reflect the most recent behaviour relating to the small firms' IT alignment. This diagram does not disclose any information as to how each firm managed to arrive at that alignment state during the period of time that each firm has been in operation. Notwithstanding that the contextual conditions and the corresponding actions of each firm have been used to understand their IT adoption over time, the emphasis at this stage has been placed on each firm's current behaviour.

The focus now turns towards the firms' IT adoption behaviour and how their actions reflected the various IT alignment states that were attained over time. In this chapter, a deep analysis is carried out to evaluate how each firm's IT adoption behaviour shaped by contextual conditions, actions and consequences progressed over time. The four identified IT alignment equilibrium states are used as signposts to map out IT alignment patterns. These patterns will explain how IT adoption influenced the level of information systems' integration leading to alignment between IT and strategic objectives. Therefore, common paths that these firms pursued as they progressed from one alignment state to another are identified. The approach that is adopted in this analysis is the concept of IT alignment patterns using a typological approach, whereby firms are grouped under similar trajectory routes that they would have pursued through the identified alignment signposts. Such rationale is in line with Corbin and Strauss's (2008) contention that the contextual conditions and their corresponding outcomes usually exist in groups and can interact to shape and reshape the nature of their relationships between them over time.

#### 6.2 Mapping Firms' Processes Over Time

One of the crucial pre-requisites of this research study is the emphasis to study process within the area of enquiry. As has already been argued in Chapter 4, it is in this light that this research study follows Corbin and Strauss's (2008) recommendations by analysing data for process and by evaluating the on-going interactions relating to IT adoption in small firms. Each firm's contextual conditions trigger its strategic actions and reactions which then influence the outcomes and consequences. These three constructs influence, shape and are shaped by each other to such an extent that the issue of reverse causality is prevalent within each firm, where the outcomes will initiate further actions, reactions, consequences and context. This reasoning follows the philosophy of grounded theorists such as Charmaz (2006), and Corbin and Strauss (2008) who claim that categories tend to react and interact with each other without following a linear or progressive path. It is evident that ownermanagers provided various descriptions relating to the contextual conditions, the actions and reactions, and the consequences on the various subcategories, properties and dimensions. These descriptions echo the current level of IT alignment attained with the firms' strategic objectives, previous alignment levels that each firm passed through depending on the prevailing contextual conditions at the time that IT adoption was carried out and any future IT alignment changes which may emerge from the uptake of future IT solutions.

Process is an ambiguous term because its characteristics tend to be intangible. Hence, it is somewhat challenging to explain and at times problematic to capture the data relating to process. Hence the best way to unlock the meaning of process is to present a scenario which is unrelated to the research study but nevertheless provides an adequate explanation of what process is all about. When monitoring heartbeat, one cannot help but be struck by variations relating to the pulse rate exemplified by normal (70 beats per minute), rapid (more than 100 beats per minute) or slow (less than 55 beats per minute). These variations will depend on the medical conditions that each patient will have at that point in time when the heartbeat is being monitored during a particular time period. Therefore, these pulses are represented in terms of ceilings (high pulse rates), middle signals (normal pulses) and troughs (slow pulses). It is to be expected that each patient will demonstrate patterns over a period represented by these signals. Each patient will have her own patterns of signal fluctuations represented by ceilings, troughs and periods of stability. This analogy has been adopted to assess the firms' movements from one IT alignment state to another over a period of time. Therefore the process mapping of these firms is likened to the process of heartbeat monitoring.

Process represents the tempo, pauses, changing and repetitive forms, interruptions and wavering movements that are the result of actions and reactions in response to events as they unfold. The objective of grouping firms under similar trajectory routes is arrived at by using a two-phase approach. The four alignment states, namely, ADA, ANT, SYN and COL that were identified in Chapter 5 form the basis of this analysis.

The first phase comprised analysing each firm's IT adoption behaviour leading to an IT alignment pattern. In the previous chapter, each firm was placed within one of the identified IT alignment states, reflecting each firm's current IT alignment behaviour. The group of firms within each alignment state is represented in Table 5.1 and comprise 10 firms within the ADA state, 6 firms within the ANT state, 8 within the SYN state and 7 within COL state. Also, the identified alignment states were used as signposts to map the routes that each firm passed through to arrive at the alignment state that they are currently experiencing. The method to analyse IT alignment movements is somewhat cumbersome, mainly because each firm is evaluated separately. Even in this exercise, the MAXQDA Code Matrix Browser, which embodies the transcript of each firm's owner-manager, is evaluated by scrutinizing the three main categories, namely context, actions and consequences, for process. The subcategories and the corresponding properties and dimensions that are linked to each of these categories, as shown in Appendix 4 are examined in terms of their coding intensity, as amplified by the MAXQDA's Text Retrieved Segments. These retrieved segments provided rich insights relating to IT adoption by firms. This assessment is followed by drawing the paths that each firm took from one IT alignment signpost to another, throughout its lifecycle stages.

Figures 6.1 (a) to (d) represent the firms which form part of the ADA group having as an objective the control of the various business areas in a fragmented system environment. Process patterns are mapped for each firm resulting into 4 grouped classifications as shown in Figure 6.1. Each representation allows an observer to 'walk-through' the whole process and observe the firms' actions which are reflected in the identified alignment states that were attained by these firms over time. Each group of firms which are denoted by the firm numbers for each unique process pattern are plotted against the 'Y' axis representing the various alignment states, namely ADA, ANT, SYN and COL, and the 'X' axis representing the time dimension. For example, Figure 6.1(a) comprises firm numbers 16 and 24 which are shown at the top left of the diagram. Each alignment state is represented by a node. The first node reflects the first alignment state that each firm started with, whereas the last two nodes represent the alignment state that each firm ended up with when this research study was conducted. This process is repeated for the other three alignment states and is represented in Figures 6.2, 6.3 and 6.4 respectively.

The time component is crucial in this research study. Time represents the length of time from the start of each firm's IT adoption until the date when the interview was held with the owner-manager. The emphasis is on the shapes that emerge over time. Each pattern, which denotes gradients, amplitudes and heights, represents movements from one alignment equilibrium state to another. Each equilibrium state, which may be one of the possible alignment equilibrium states as illustrated in Figure 5.1, namely, Adaptation, Anticipation, Synchronization and Collaboration, is represented by a node. The point from one node to another illustrates the process of movement from one alignment equilibrium state to another. The typical firm changes its gradient over time. Indeed, each pattern signifies a 'best fit' result representing a cluster of small firms adopting one of the possible four IT alignment patterns that are identified in this study.

In figure 6.1(a), firm number 16 commenced its IT alignment journey at the ADA state by utilising basic IT automation tools such as spreadsheets to cope with their day-today operations. Then, this firm moved up to a SYN alignment state. This firm has outsourced an enterprise system from a local software house for more than a decade. This enterprise system has initially provided this firm with a period of relative stability from an information system perspective. The movements that emerged over time, from ADA to ANT, then to SYN alignment equilibrium states, are demonstrated in Figure 6.1(a). This firm lacks adequate internal IT expertise and is also not served professionally by outsourcers in their uptake of technological solutions. After the enterprise system has been running for over 8 years, the IT outsourcer was not meeting the new information system requirements that are being requested by this firm, possibly because the enterprise system has become too cumbersome to maintain. Consequently, this firm passed through a period of instability. During this period of forwarding new information system requirements, this firm moved to the ANT alignment state. During the recent years, this firm has moved towards the ADA alignment state as IT is being used more as a working tool, given that their enterprise systems are not being updated by their outsourcer. Therefore, the enterprise system is out of sync with current business practices. This is how the owner-manager of firm 16 described this situation:

'I communicate with developers to specify our information system requirements. I specify the business processes. The personal relationship is excellent. But, in actual fact, similar to all the business sectors in IT, there are instances where we are facing difficult situations and they would not be able to service our requirements at the time requested by us. The more time passes, this situation is getting worse.'

The alignment path that was pursued by firm 25, during its 17 years of operation, is represented diagrammatically by figure 6.3(b). This firm provides business solutions comprising mainly Enterprise Resource Planning Systems and e-commerce projects. The initial alignment movements of this firm's operations amounted to moving from an ADA state to an ANT alignment state. This firm stood at the ANT alignment state for over 5 years probably because of the strong IT presence which was dominated by the 12 IT graduates that are employed with this firm. The following seven years were characterised by a very important switch towards the COL state whereby the internal IT staff became collaborators with the owner-manager by weighing business and IT solutions together. This firm practised this form of partnership between business and IT for a period of eight years. The owner-manager's change of mind-set occurred during the last 2 years that this firm was in operation whereby he steered his firm from a COL state to a SYN alignment state. The latter alignment state is currently being practised by this firm. This owner-manager's motto "Make IT work for you and not you work for IT" says it all. This owner-manager, therefore, out of necessity, decided to take an outside-in perspective of the company. He reiterated that the strong IT presence at his firm was hindering his business because most decisions were ITdriven rather than strategy inspired. This is how he described the situation:

'We used to look at solutions from an IT perspective. We wanted to use the latest technology. Fastest technology. More corporate technology. IT was the number one. We were not doing well profit wise. Sales were well. We are spending a lot of IT resources in here for ourselves. Sometimes we use big IT systems for ourselves to do small things. And I do not want to do something which should take me 5 minutes, 3 hours to have all the data. So we said look. Let us start to streamline our internal processes. This created a resistance to change by some of our employees. They did not like this. Some employees left because of this.'

As shown in figures 6.4(a), firm 1 has commenced its IT alignment journey at the ADA state by utilising basic IT automation tools such as spreadsheets to cope with its day-to-day operations. It then moved to the higher SYN alignment state, notwithstanding that it lacked internal IT expertise at the time. It managed to align IT with business objectives, by maximizing the IT capabilities that were provided by its outsourcer. The SYN alignment state attained by this firm initiated a healthy working relationship between the owner-manager and the outsourcer, leading this firm to move towards the COL alignment state. This is how firm 1's owner manager described the collaboration between his firm and the outsourcer:

'The website was written by a third party. It was outsourced. You would need such expertise. That is why we outsourced. The software house is reliable because they have industrial experience and have developed similar websites. The software house understands our business language. You can work hand-in-hand with them. They share ideas with you because they look at business from a different angle.'







Figure 6.2: Firms with an ANTICIPATION Alignment End State



Figure 6.3: Firms with a SYNCHRONIZATION Alignment End State



Figure 6.4: Firms with a COLLABORATION Alignment End State

The second phase consists of evaluating all the 31 firms' grouped process patterns as represented in Figures 6.1 to 6.4 and look for similarities of IT alignment paths that are followed by these firms. Each firm is evaluated for process. In this exercise four different patterns emerged, namely, bell-shaped, v-shaped, double bell-shaped and scalloped-shaped. Each shape denotes the line of 'best fit' pertaining to the similar IT alignment patterns of a group of firms. These shapes identified as the Drifting, Consolidating, Surfing and Fulfilling IT alignment patterns are represented by Figures 6.5 to 6.8.

The Drifting IT alignment pattern, which is depicted in Figure 6.5, takes the form of a bell-shaped pattern. It encompasses a group of firms that are continuously endeavouring to cope with any IT adoption projects that are implemented in their firm. The IT expertise, whether internal or external, is not adequate to successfully sustain these IT projects. Also the Consolidating IT alignment pattern, which is shown in Figure 6.6, takes the form of a v-shaped pattern. It comprises firms that are seeking to consolidate the uptake of any IT projects that are undertaken over time. Consequently, this group of firms is experiencing a period of stability, as they are utilising IT, mostly as an enabler to sustain their business objectives. The Surfing IT alignment pattern, which is illustrated in Figure 6.7, takes the form of a double-bell shape pattern. This group of firms endeavour to reach a higher level of alignment frequently, but that higher level, once it is attained, is not sustained. This is because the IT expertise, either internal or external, is not available, or else if available, the owner-managers will hinder any high level IT alignment to take place.



Figure 6.5: Drifting IT Alignment Pattern







Figure 6.7: Surfing IT Alignment Pattern



Figure 6.8: Fulfilling IT Alignment Pattern

The Fulfilling IT alignment pattern, which is demonstrated in Figure 6.8, takes the form of a scalloped pattern. It represents firms that are mostly reaching a very high state of alignment between business and IT. Most of these firms are strategizing together with their outsourcers whereby business and IT capabilities are weighed equally. Other firms are using IT as an enabler to fulfil the objectives that emanate from the business strategy.

Table 6.1 denotes the firms within each IT alignment pattern. The table also shows each firm's recent alignment behaviour being denoted as 'end-state alignment. For example, the Fulfilling pattern embodies 9 firms that belong to the ANT (1 firm), SYN (1 firm) and COL (7 firms) alignment end-states. The Surfing pattern represents 6 firms that pertain to the ADA (3 firms) and ANT (3 firms) alignment end-states. Also, the Drifting pattern comprises 7 firms that emerge from the ADA (5 firms) and SYN (2 firms) alignment end-states. Finally, the Consolidating pattern encompasses 9 firms whereby their alignment end-state is represented by ADA (2 firms), ANT (2 firms) and SYN (5 firms).

The rationale of these four IT alignment patterns reflects the behavioural orientations relating to IT adoption over time. Provided that a firm's contextual conditions do not change drastically over time, it is to be expected that a firm's IT adoption behaviour will follow one of the four alignment orientations that has been identified.

No.	Туре	Nature of Business	Years	Emp	IT Expertise	System Integratio n	End-State Alignment	IT Alignment Pattern
3	Retail	Air Conditioners	12	2	Nil	Low	Adaptation	Drifting
16	Retail	Wines & Spirits	41	48	Low	Low	Adaptation	Drifting
24	Services	Cargo Transporters	110	25	IS Graduate	Medium	Adaptation	Drifting
8	Services	Market Research	12	4	Low	Low	Adaptation	Drifting
13	Retail	Importation	21	6	Self-Taught	Low	Adaptation	Drifting
6	Wholesale/ Retail	Material	35	20	Basic	Medium	Synchronization	Drifting
5	Wholesale/ Retail	Salon Services	25	25	Semi Basic	Medium	Synchronization	Drifting
14	Manufacturer / Retail	Ceramics	30	3	Low	Low	Adaptation	Consolidating
22	Services	Medical Clinic Services	26	5	Low	low	Adaptation	Consolidating
18	Services	Property Investment	10	5	A Level	Low	Anticipation	Consolidating
15	Services	Cargo Transporters	13	12	Low	Medium	Anticipation	Consolidating
29	Retail	Home Furnishings	16	8	Low	High	Synchronisation	Consolidating
20	Manufacturing	Paints	32	28	Low	Medium	Synchronization	Consolidating
11	Retail	Bathroom & Fireplaces	30	8	Self- Taught	Medium	Synchronization	Consolidating
26	Services	English Teaching	10	10	Medium	Medium	Synchronization	Consolidating
27	Services	Restaurant	4	8	Medium	Medium	Synchronization	Consolidating
4	Manufacturing	Electro-Plating	18	3	Basic	Low	Adaptation	Surfing
21	Service	Systems	23	40	Low	Low	Adaptation	Surfing
12	Services	Assurance	20	7	Basic	Low	Adaptation	Surfing
7	Retail cum Service	Components & IT support	13	14	High	High	Anticipation	Surfing
9	Services	IT Support	5	6	Self-Taught	Mealum to High	Anticipation	Surfing
17	Wholesale / Retail	Wines & Spirits	125	48	IT Graduate	High	Anticipation	Surfing
_		Cargo				Medium-		
2	Services	Transporters	22	47	IT Manager	High	Anticipation	Fulfilling
10	Services	Brokers	36	48	Self-Taught	High	Collaboration	Fulfilling
19	Retail	Systems	25	14	Low	High	Collaboration	Fulfilling
23	Manufacturing	Manufacturing	12	22	High	High	Collaboration	Fulfilling
1	Manufacturing	& Network Equipment	21	11	IS Graduate	High	Collaboration	Fulfilling
31	Retail	Sweet Shop	15	7	Medium	High	Collaboration	Fulfilling
28	Retail	Toners & Printer Cartridges	25	3	Medium	High	Collaboration	Fulfilling
30	Services	Architectural Services	16	12	Low	High	Collaboration	Fulfilling
		IT Software						
25	Services	& Training	17	15	High	High	Synchronization	Fulfilling

Table 6.1: Firms by IT Alignment Pattern

## 6.3 IT Alignment Behaviour: A Drifting Trajectory

The Drifting trajectory, which takes the form of a bell-shaped pattern, encompasses a group of firms that are continuously endeavouring to cope with IT adoption projects that are implemented in their firm. The IT expertise, whether internal or external, is not adequate to successfully sustain these IT projects. Consequently, these firms are drifting continuously to adapt themselves to the IT systems that are deployed. Table 6.2 depicts the salient characteristics of these firms that form part of the Drifting trajectory. This trajectory comprises 7 firms that emerge from the ADA (5 firms) and SYN (2 firms) alignment end-states.

No.	Туре	Nature of Business	Years	Emp	IT Expertise	System Integration	End-State Alignment	Trajectory
		Air						
3	Retail	Conditioners	12	2	Nil	Low	Adaptation	Drifting
		Wines &						
16	Retail	Spirits	41	48	Low	Low	Adaptation	Drifting
		Cargo						
24	Services	Transporters	110	25	IS Graduate	Medium	Adaptation	Drifting
		Market						
8	Services	Research	12	4	Low	Low	Adaptation	Drifting
	Wholesale	Candles						
13	/ Retail	Importation	21	6	Self-Taught	Low	Adaptation	Drifting
	Wholesale							
	/	Construction						
6	Retail	Material	35	20	Basic	Medium	Synchronization	Drifting
	Wholesale							
	1	Salon						
5	Retail	Services	25	25	Semi Basic	Medium	Synchronization	Drifting

Table 6.2: IT Alignment behaviour – Drifting Trajectory

Figure 6.9 denotes the line of 'best fit' (black thick line), which represents the IT process movements of all the firms that have been identified to pertain to the Drifting trajectory. These firms can be classified into three groups.



Figure 6.9: Drifting Trajectory Map

As shown in Figure 6.1(a), 6.1(d) and 6.3(c), which represent the specified firms' IT behaviour over time, all these three groups of firms have commenced their IT alignment journey at the ADA state by utilising basic IT automation tools such as spreadsheets to cope with their day-to-day operations. The first group of firms, namely 16 and 24, moved up initially to a SYN alignment state. Both firms have outsourced enterprise systems from local software houses for more than a decade. These enterprise systems have provided both firms with a period of relative stability with regards to the application of IT solutions. These movements from ADA to SYN alignment signposts are demonstrated in Figure 6.1(a). Then both firms passed through a period of instability, whereby the IT outsourcers were not meeting the information system requests of these firms, possibly because these enterprise systems became too cumbersome to maintain. Consequently, given these circumstances, both firms moved to the ANT alignment state. During the recent years, both firms have moved towards the ADA alignment state as they are using IT more as a working tool, given that their enterprise systems are out of sync with today's business practices.

It is paradoxical that firm number 24, which has been trading for over a century dealing in cargo transport and managed by family members, is not exploiting the capabilities of one of their senior managers who is a University of London Information System and Management graduate. In fact, the IT function is not represented at board level and any IT uptake that is undertaken tends to be slow. Firm 16 also lacks adequate internal IT expertise and is also not served professionally by outsourcers in their uptake of technological solutions. Consequently the firms in this group tend to react to events as they unfold resulting in business and IT strategies being separate and distinct from each other. For example, the owner-manager of firm 16 is proud that he was instrumental in articulating the information system requirements for an accounting and inventory system with the external software developers. This communication with the IT outsourcers led to a tailor-made system based more on the requirements as specified by the owner-manager. This initial period of SYN states was characterised by the outsourcing company meeting most of the information system requirements that were requested by the owner-manager. However, it is evident that this firm was underutilising this enterprise system, namely because IT was not being used as an enabler to meet the proposed business objectives. For example, this firm is not utilising this outsourced enterprise system to replenish its shelves at the retail shop;
also rather than exploiting the Material Requirements Planning module to replenish their warehouses in just-in-time mode, the firm is adopting time-consuming and ineffective rule-of-thumb methods to procure its products; no proper data and cost analysis are undertaken for effective decision-making because the owner-manager claims that they do not have time to compile the monthly management accounts. It seems that this firm is using IT as a working tool by making use of spreadsheets to meet its ad hoc data requests.

This owner-manager believes that the business activities, undertaken by his firm, denote best practices in his firm's sector. He is continuously proposing business process enhancements to the software developers. These situations have moved this firm to the ANT alignment state, given that the outsourcers are not meeting most of the owner-manager's information system requests, possibly because the system has become very cumbersome to maintain. This is how the owner-manager of firm 16 described this situation:

We do have a Service Level Agreement. I do not want to be misinterpreted. When the message is conveyed that we have a big software problem, they will try to get their resources. We have come to a turning point. Because today our firm is operating as a supermarket and because today you need software which is flexible whereby you would present offers to your customers, the software has to cater for these possibilities. So we are now at a turning point whereby we need to revisit and see what the way forward should be for our information system requirements.'

It is apparent that this owner-manager would like to change to a new enterprise system, possibly with a different software supplier. Also the high level of application systems' fragmentation in IT that is prevalent in this firm belies the high perception of IT utilisation claimed by this owner-manager. This is how this owner-manager divulged the application systems' fragmentation that is prevailing in his firm.

'Since this system is not web-based and since it is a legacy system, it has its limitations where the facility to extract information according to our requirements is concerned. So there are big limitations. Our software developers have the modern version of this information system. We do extract information from our current system. Our software developers have given us the facility to extract data and transfer it onto an excel spreadsheet. But in the majority of cases we need them to write reports for us. Our Accounting Package which was also developed by this software house is a system on its own. The point of Sale is also a system on its own.'

**Proposition 1:** Small firms that reap the benefits of early enterprise system implementation and subsequently continue to propose customized system requirements to their IT outsourcers, will eventually render the application system too cumbersome to operate at firm level and too difficult to maintain at outsourcer level.

The second group of firms, namely 3, 8 and 13, moved up initially to the ANT alignment state. There were instances whereby these owner-managers attempted to be proactive by embarking on application systems in a sporadic way without being linked to strategy. This ANT alignment state is mapped in Figure 6.1(d). For example the owner-manager of firm 8, whose level of IT expertise is low, felt capable of articulating the requirements to a software supplier and consequently, managed to invest and implement a market research programme. The owner-manager has opted to invest in a stand-alone off-the-shelf market research package costing approximately €25,000. This owner-manager complemented this investment by purchasing 20 PDAs which are used by part-time interviewers when they undertake market-research. The objective of deploying PDAs for market research was that his firm would become 100% paperless. Similarly, the owner-manager of firm 13 has articulated the information system requirements for a PDA system which was earmarked for his sales representatives. These firms moved to a period of relative stability in their IT adoption behaviour which is demonstrated by the two consecutive SYN alignment states mapped in figure 6.1(d) until these application systems were deployed by their IT outsourcers. These owner-managers initially felt that these application systems were being used as enablers to attain their business objectives. However, the postimplementation of these application systems revealed that the IT outsourcers and the owner-managers were not in sync with each other. For example, this is how the owner-manager of firm 8 expressed his dissatisfaction when the PDA application system was implemented:

'I invested to become more efficient. More efficient. Efficiency increased considerably. Mistakes have been reduced because before, everything was manual. We used to experience panic stations during the manual process. For example, questionnaires had to be counted manually. You needed to reach a quota of 1200. On the eve of the deadline, how many times I cried and was frustrated, when I got to know that I had 1199. This is not acceptable to me. If I need 1200 questionnaires, I should have 1200. With the computer system, obviously, there would be a count, obviously you will press a few buttons. So no errors and efficiency, basically. But if something happens in IT. For example, I used to utilise PDAs. And I don't really like them. I detested them a little bit. Because we experienced some mistakes. I am still using them but not for long questionnaires. I am reverting back to paper questionnaires.'

It is evident that a proper assessment of this market research application system, the PDAs, their miniature size and the questionnaire software were not properly evaluated. The owner-manager's scepticism about losing data stems from the lack of conviction that he has chosen wisely when he decided to invest in PDAs. In fact, he reiterates that PDAs are not user-friendly and that he would have been better off if he would have invested in laptops. This owner-manager has likened the usage of IT to the ease of use of a calculator which is available to carry out mathematical calculations. It is interesting how this owner-manager has had a number of bad experiences when he tried to manage outsourcers who provided his firm with software solutions. It seems that this owner-manager was incapable to manage these software vendors professionally. In such circumstances, it may happen that the business benefits that are expected to accrue fail to be realised because the IT systems that are implemented are fragmented since they are not linked to the strategic objectives.

This second group of firms passed through a period of instability, whereby the ownermanagers' expectations relating to the outsourced application systems were not met. Given these circumstances, during recent years these firms moved to the ADA alignment equilibrium state as they are using IT more as a working tool rather than as an enabler to leverage business performance.

**Proposition 2:** Small firms that tend to outsource application systems that are IT driven rather than strategy-based tend to pass through a period of stability when these application systems are implemented, followed by a period of dissonance as business benefits that are expected to accrue fail to be realised, leading the firms to pass through a period of adaptation until the next wave of IT driven projects are farmed out.

The third group of firms, namely 5 and 6 commenced their IT alignment journey from an ADA alignment state, whereby they initially utilised office automation tools to fulfil their day-to-day IT operations. Subsequently, they moved up initially to a SYN alignment state, whereby both firms have outsourced enterprise systems to local software houses. These enterprise systems have provided both firms with a period of relative stability with regards to the application of IT solutions. These SYN alignment states are demonstrated in figure 6.3(c). Both firms adopted a top-down approach with thinking strategy first and then using IT as an enabler to attain the firms' strategic objectives Then both firms passed through a period of instability, whereby both ownermanagers came up with changes, which may not denote best practice, to the existing enterprise systems. The maxim for both firms seems to be strategy first and then apply IT as an enabler to attain the strategic objectives as specified in their formal plans. As the owner-manager of firm 5 explains:

'Our company plans influence our IT activities. This is because if IT influences our company plans it would mean that we are controlled. But we want to control. Technology supports our business activities. It cannot be that IT will manage us. It will help us to walk. That is, our ideas, from a physical idea we turn it into a digital idea'

This period of instability is demonstrated by moving to the ANT alignment state, plummeting to the ADA equilibrium state until these proposals are entertained by their outsourcers, moving up again to a SYN state when the enhancements are taken up by their outsourcers for implementation. Notwithstanding that these owner-managers lack internal IT expertise, they focus most of their thinking on what needs to be done at their firm from a strategic perspective. It is apparent that the owner-managers of both these firms are knowledgeable enough to articulate their requirements to their outsourcers. The firms pass through a cycle of stability when the initial information system requirements are implemented, then experiencing a period of instability when the owner-managers identify new requirements for their respective system, having to adapt until the IT outsourcers will entertain these requests, moving up again to a SYN alignment equilibrium state.

**Proposition 3:** Small firms, that deploy IT projects to meet business objectives, will pass through cyclical fluctuations denoting periods of instability when their information system requirements are being articulated to their outsourcers, to periods of stability when these IT systems are implemented in their respective firms.

# 6.4 IT Alignment Behaviour: A Consolidating Trajectory

The Consolidating trajectory which takes the form of a v-shaped pattern encompasses firms that are seeking to consolidate the uptake of any IT projects that are undertaken over a period of time. Table 6.3 depicts the salient characteristics of the firms that form part of the Consolidating trajectory. This trajectory encompasses 9 firms whereby their alignment end-state is represented by ADA (2 firms), ANT (2 firms) and SYN (5 firms).

No.	Туре	Nature of Business	Years	Emp	IT Expertise	System Integration	End-State Alignment	Trajectory
	Manufact urer /							
14	Retail	Ceramics	30	3	Low	Low	Adaptation	Consolidating
22	Services	Medical Clinic Services	26	5	Low	low	Adaptation	Consolidating
18	Services	Property Investment	10	5	A Level	Low	Anticipation	Consolidating
15	Services	Cargo Transporters	13	12	Low	Medium	Anticipation	Consolidating
29	Retail	Home Furnishings	16	8	Low	High	Synchronisation	Consolidating
20	Manufact uring	Paints	32	28	Low	Medium	Synchronization	Consolidating
11	Retail	Bathroom & Fireplaces	30	8	Self- Taught	Medium	Synchronization	Consolidating
26	Services	English Teaching	10	10	Medium	Medium	Synchronization	Consolidating
27	Services	Restaurant	4	8	Medium	Medium	Synchronization	Consolidating

Table 6.3: IT Alignment Behaviour – Consolidating Trajectory

Figure 6.10 denotes the line of 'best fit' (black thick line) which emanates from the process movements of all the firms that have been identified to pertain to the Consolidating trajectory. These firms can be classified into three groups.



Figure 6.10 Consolidating Trajectory Map

As shown in figures 6.1(b), 6.2(c) and 6.3(a), all these three groups of firms have commenced their IT alignment journey at the ADA alignment state by utilising basic IT automation tools such as spreadsheets to cope with their day-to-day operations.

The first group of firms, as per figure 6.1(b), namely, 14 and 22 have never moved to a higher alignment state mainly because both owner-managers are reluctant to venture

into IT technological solutions that go beyond the utilisation of basic IT office automation tools. For example, the owner-manager of firm 14, who has spent his entire working career manufacturing ceramics, is more concerned about reaching retirement age and admits that he is deficient with the usage of IT. His main concern is how to pass over his business to his daughter, once he retires. He relies on his daughter to utilise IT office automation tools. His daughter also uses the internet by searching for new ideas and recently started using Facebook to upload various ceramics which the firm produces. The owner-manager of firm 22, a family medical doctor, is aware of the benefits that may accrue through computerization of its patients' data files that are still held in manual mode. However, this owner-manager is reluctant to adopt an IT solution on this issue because she feels that the task to computerise this task is enormous. She thinks continuously to take up IT initiatives. But she tends to procrastinate when she has to invest in IT projects because she feels very insecure due to lack of IT knowledge. Consequently, this firm, despite being in operation for over 25 years has not ventured beyond the ADA alignment equilibrium state. This is how this owner-manager described her procrastination to implement enterprise systems in her firm:

'I have attended basic course in Word, Excel, Email and Internet. I intend to follow all the ECDL modules so as to become more conversant with the technology. However, I feel that my blocking agent is the computer. I do not feel confident with computerisation. However, I know that I can be more effective if I have a computerised system. From the patients' perspective, the manual system is effective. Because, I have all the data transcribed manually and so all the information is there.'

**Proposition 4:** Small firms that lack project management competencies and do not have internal IT expertise may be reluctant to venture into IT solutions that go beyond the utilisation of basic IT office automation tools.

The second group of firms, as per figure 6..2(c), namely, 15 and 18, albeit having a low level of IT expertise, have endeavoured to attain the next higher state of IT alignment, namely, the ANT state. But this IT alignment state was not sustainable during the period of time that these firms were in operation due to inadequate IT leadership within both firms. They both lacked the management capabilities to implement technological solutions. Consequently, both these firms reverted back to their original ADA alignment states before they endeavoured to attempt further IT adoptions. For example, the owner-manager of firm 18 has developed a stand-alone

system relating to property investment but has not implemented it after six months of its completion. This is a typical case of IT project first and strategy later. This ownermanager is acting somewhat dangerously because he has a limited knowledge of software development gained through the practice as a hobby. Consequently, he is developing stand-alone and fragmented programmes rather than systems and he dislikes sharing with his employees what he has developed. Consequently this firm is continuously moving from an ADA to an ANT alignment state and reverting to the ADA state.

Similarly the commercial manager of firm 15 is spearheading his firm's IT projects. He seems obsessed with IT even though his expertise lies solely in logistics transport. Yet he exhibits IT dominance within the firm by influencing the owner-manager to invest in IT infrastructure and Information systems that may not be tied to strategy. This firm lacks real IT leadership as this commercial manager, whose IT knowledge is limited to some work experiences, is endeavouring to become the IT leader. This manager is continuously coming up with proposals for enterprise systems, but he acknowledges that he requires assistance as he is not competent to select an off-the-shelf package. For example, this manager takes pride when his firm invests in new servers, probably because these are tangible objects. He claims that:

'We could not talk about a more robust information system before we changed the servers. Now that we have changed the servers, we can now commence the discussion that we now require new software.'

Such a statement is intriguing because if this firm intended to invest in a new enterprise system, it would have been more appropriate to suspend the decision on any new server investment. The logic under such circumstances should have been to decide on the software first and then invest in servers that would accommodate this new application system. This is because enterprise systems are renowned for requiring substantial hardware resources. Unless this firm enhances its internal IT expertise it will continue to move from an ADA to an ANT alignment state and vice-versa.

Proposition 5: Small firms that lack IT knowledge and perceive that they can venture into innovative IT projects without seeking the outsourcers' expert advice will revert to their previous consolidated alignment state as the new IT deployed projects tend to be misaligned and fragmented.

The third group of firms, which is represented in figure 6.3(a), namely 11, 20, 26, 27 and 29, were mostly in SYN alignment state every time they implemented a technological solution, notwithstanding that the level of internal IT expertise is not high. The owner-managers' positive attitude towards IT contributed towards the creation of strategic value by successfully engaging IT outsourcers that implemented enterprise systems that were mostly in line with the firms' business objectives. This group of firms tend to move from an ADA state to SYN state every time they implement an IT project as they are mostly dependent on IT outsourcers. It seems that the outsourcers are providing these owner-managers with peace of mind where IT projects are implemented. This peace of mind is stemming from the fact that the IT outsourcers will most often understand the firms' business processes, leading to Information Systems' integration. In this scenario, most of the IT solutions that are provided by the outsourcers tend to be technically sound leading the firms to reap the benefits of computerisation through the alignment attained between business and IT.

For example, firms 11 and 29 are being served by a local software house which provided them with an enterprise system. This software house is a one-stop shop in terms of taking care of these firms' software and hardware applications. The ownermanager of firm 29 also allows the software house to take the firms' backups remotely. This may imply either complete trust on what the outsourcer is providing to this firm in terms of service or else this owner-manager is compelled to shift the firm's IT function onto the IT outsourcer, given that IT expertise is completely lacking in this firm. Notwithstanding that firm 11 has had this enterprise system from the same outsourcer, the owner-manager is reluctant to let the outsourcer to work remotely when an IT problem crops up. This firm seems to have its IT systems aligned with their business objectives. Therefore, despite the fact that this firm lacks internal IT expertise, their alignment state continues to be in SYN mode every time an IT project is adopted. It is evident that strategy is devised through the 'ad hoc' meetings that occur between the directors. This owner-manager, then, is able to communicate the business processes to the outsourcer. This is how this owner-manager expressed his satisfaction at this outsourcing arrangement.

'Despite the fact that we depend on these external people to support our IT function, we feel that we are in control of all our business processes. We use this application system to handle these quotations. For our sector, this application system is the top package. It is catering for all our business needs. There is no better package than this. We key in all the details in this enterprise system. For example, this system provides us with a debtors report. So if we want to communicate with a debtor, we print a statement from this application system and then use the word processor to print a covering letter. We believe that unless you invest well in IT you cannot expect to have good results. Both in software and hardware. We are well supported by this company that developed our application system.'

**Proposition 6:** Small firms that exhibit a positive attitude towards the deployment of enterprise systems and endeavour to use IT primarily as an enabler to attain business objectives tend to experience long periods of IT stability and consolidation, when they manage successfully qualified IT outsourcers.

# 6.5 IT Alignment Behaviour: A Surfing Trajectory

The Surfing trajectory depicts those firms that endeavour to reach higher levels of IT alignment regularly, but these high levels are not sustained either because the IT expertise is not available, or else if available, the owner-managers may attempt other IT adoption projects which may not lead to system integration. The Surfing trajectory represents 6 firms that pertain to the ADA (3 firms) and ANT (3 firms) alignment end-states respectively.

No.	Туре	Nature of Business	Years	Emp	IT Expertise	System Integration	End Alignment	Trajectory
		Electro-						
4	Manufacturing	Plating	18	3	Basic	Low	Adaptation	Surfing
	Retail cum	Security						
21	Service	Systems	23	40	Low	Low	Adaptation	Surfing
		Quality						
12	Services	Assurance	20	7	Basic	Low	Adaptation	Surfing
		Networking						
	Retail cum	Components						
7	Service	& IT support	13	14	High	High	Anticipation	Surfing
						Medium to		
9	Services	IT Support	5	6	Self-Taught	High	Anticipation	Surfing
	Wholesale /	Wines &						
17	Retail	Spirits	125	48	IT Graduate	High	Anticipation	Surfing

Table 6.4: IT Alignment behaviour – Surfing Trajectory

Table 6.4 depicts the salient characteristics of the firms that form part of the Surfing trajectory. These firms can be classified into two groups. The first group of firms, as per figure 6..2(b), namely, 7, 9 and 17, have all experienced a high IT dominance

during the past decade of operations. Whereas firms 7 and 9 demonstrate an IT dominance which is represented by their owner-managers who have a strong IT background, firm 17 has also a strong IT presence which is epitomised by their highly qualified and experienced IT manager. The second group of firms, as per figure 6.1(c), namely, 4, 12 and 21, albeit having a low level of IT expertise, have also endeavoured to attain higher states of IT alignment.

Figure 6.11 denotes the line of 'best fit' (Black thick line) which emanates from the process movements of all the firms that have been identified to pertain to the Surfing trajectory. As shown in figure 6.1(c) and 6.2(b), which represent the specified firms' IT behaviour over time, all these two groups of firms have commenced their IT alignment journey at the ADA alignment state, by utilising basic IT automation tools such as spreadsheets to cope with their day-to-day operations. They would then move to a higher alignment state, namely the ANT state. This ANT state symbolises instances whereby IT drives and shapes the business objectives of the firm. Whereas the first group of firms moved to the ANT state on the basis of the high IT expertise which was embedded within the owner-managers' or their IT staff's mind-set, firms in the second group were somewhat presumptuous to move to the ANT state, given that they lacked internal IT expertise.



Figure 6.11 Surfing Trajectory Map

The first group of firms was endeavouring to weigh business and IT capabilities but the attempt to attain adequate IT alignment levels was not sustainable because the IT dominance was so strong that IT was the driving force to craft any strategic objectives.

This group ended up with moving to the COL state and then plummeting to the ADA state because the IT projects that were taken up were not contributing effectively towards the alignment of business objectives. The IT dominance which prevailed in these firms generated another attempt to reach the COL state from the previous ANT state. This attempt was unsuccessful as it moved towards the ADA equilibrium state. This indicates that what was being attempted at COL level was not being sustained as IT was always on top of strategy. It is evident that as long as the contextual conditions of this group of firms remain what they are, this cyclical pattern of low, medium and high alignment states will prevail.

For example, firm 7, which installs networking components and provides IT support for its clients, is dominated by two co-owner-managers who have a very strong IT background, given that they were both employees working with other companies in IT. One of the owner-managers is specialised in hardware and networking and the other in software development. Supposedly, these co-owner-managers are complementing each other. During the first decade of this firm's operations, one of the co-owners was continuously developing application systems, albeit in fragmented mode, to sustain the business operations. This is how the other owner-manager described how application systems were developed during their firm's first decade of operations.

'We have a business tracking system which is an application written internally by the director that we did sell elsewhere limitedly. He is an IBM freak. He is fixated with Lotus Notes. He develops a lot with it. So he had written this application. It is a sort of CRM which we use internally for business related items. We issue the proposal, we follow it up, we enter our comments when we follow this up. It is from a business perspective, that is, quotations chasing up money emails from clients, reply to quotations, purchase orders. Anything related to the business. We started it off long ago. Up till last August, all our invoicing, all our bank account management was done through small applications in Lotus Notes. It was like a document management system. Invoices were literally a document with a sequence of numbering. Everything was under Lotus Notes. We did not have anything except Lotus Notes. We import products for networking for what we sell. These are entered into our stock system.'

Therefore this firm which had a strong internal IT dominance followed a pattern whereby IT drives and shapes business operations. Such a stance may prove risky as the firm passes through a period of cyclical fluctuations starting at an ANT state, implementing IT projects based on the IT dominance prevailing within the firm, then trying to cope with the outcome of sporadic decisions, realising that the volume of work

that was generated by these decisions is leading to information system fragmentation. This firm will never move to a SYN alignment state because the IT dominance is so strong. However, this firm had the capability to enter temporarily into COL mode whereby the business and IT capabilities are weighed equally. This firm discarded a number of IT processes which were generated within the Lotus Notes application software and moved on towards information system integration by implementing the SAGE accounting package. This is how the owner-manager described the move towards implementing SAGE.

'We have Sage as accounting package. Sage was only implemented last August. We realised that the volume of work which we had as a company, even from an accounting perspective, led us to move to SAGE. Our core competence is not writing software for in-house applications. We scrapped the debtors tracking and creditors tracking that we had in Lotus Notes because we shifted to SAGE; we scrapped the stock system in Lotus Notes as well. Keep in mind that when we started in 1997 every cent spent was extra. If we could write an application rather than buy it, we were trying to save money. We had no capital at the time. We had started the business at Lm12000 and we had spent most of it in PCs, which we didn't use. That was it at the time. Then, going back to the applications, we shifted to SAGE and eliminated our stocks because SAGE has its own STOCK System. Now, we use all the modules that SAGE offers, that is, purchases, sales, general ledger, stock system etc. Everything goes completely through SAGE.'

Then, these two co-owner-managers tend again to be pro-active. Such is the strength of their IT dominance. They tend to think IT first and strategy later. The IT function may be proactive and persuasive to the extent that it serves as the vehicle to drive and shape other business objectives. This is how this owner-manager describes the uptake of a help-desk application system in his firm:

'Then we developed a help desk system with Lotus Notes. Basically, when a client calls with a support call, it is logged in there and the job sheets issued with that particular call are logged in and we keep a history, a technical history of what has been done at a particular site on a particular PC. So if I go back to 2008 to see what has been done on this particular server, if it is still alive, we have all the history. It is there logged. And there again this was written in-house by the director. We use it on a daily basis. So technicians fill up a paper job sheet. When they get the books in here, it is entered in the system by our secretary.'

In such circumstances, it may happen that such a system may not be sustainable in the long run due to the fact that this system was IT driven and not linked to strategic objectives. **Proposition 7:** Owner-Managers that exhibit a strong internal IT knowledge dominance over their firms' strategic objectives tend to deploy IT-driven projects that are not sustainable at a higher alignment state.

One of the owner-managers of firm 17 which is a family-run business dealing in wines and spirits for over a century, directed the current researcher to interview the IT Manager of the firm. This IT manager who is one of the senior managers of this firm is conversant with IT issues because he holds IT work experiences plus he also holds a first degree in IT and a post graduate degree in "Strategic Business IT". This firm has a strong IT presence which is embedded within the expert knowledge of their IT Manager. This IT Manager, who reports directly to the CEO, one of the ownermanagers of this firm, is never invited to board meetings. IT is not represented because there is no one that is knowledgeable about IT at board level. This is how the IT Manager moves his firm continuously from an ANT state to a COL alignment state.

*R:* So what happens when it comes to decide on IT matters? Who makes IT proposals? Do they emanate from the Board or from you?

*P: I am going to reply. It will be the answer to a lot of your questions. This is a family run business. The Board is composed of family members. There are outsiders such as non-executive directors. This happened 15 years ago and this was a good move. But, we as managers are not involved at that level. Unfortunately, and this is my frustration, IT is seen simply as a supporting act and not a driver. We have just spent 2 hours this morning - I had a presentation trying to propose an investment for next year to change the hand-held system relating to on-line ordering of our salesmen. But I think that the handheld proposal has been accepted.* 

#### R: Why did you make this proposal?

*P*: Today we are using PDAs. But today we want to go for a tablet, which is more robust, has more processing power. So I can load it with more information. We will have on-line ordering; something which we do not have today. Our salesreps come to head office in the afternoon. They will soon be here because they use this room. They come in with their handheld so that they dock their handheld and customers' orders are downloaded onto our servers. Whereas what I am proposing is an online ordering system; there are a lot of benefits in the proposed system.

Due to an IT knowledge gap at board level, it is apparent that board members may find it difficult to communicate with their IT Manager on IT matters. It is evident that the IT Manager is being continuously influential and persuasive to adopt IT projects. In essence, it is a bottom-up approach whereby the IT Manager will frequently come up with proposals to adopt IT projects and present them to his immediate manager, the CEO. Notwithstanding that the board of directors' lack of IT knowledge is leading to a high resistance to change, their IT Manager's pro-activeness is placing this firm in quasi-collaborative alignment mode. Through his IT expertise, the IT Manager is directing this firm towards innovation and towards the effective use of information for better decision making. Therefore, even in this firm, the IT function may be proactive and persuasive to the extent that it serves as the vehicle to drive and shape the business objectives. However, given that any IT initiatives may be taken up without any strategic objectives, this may lead to misalignment in the long term.

**Proposition 8:** Owner-Managers that lack IT knowledge but possess internal IT expertise are often faced with bottom-up propositions to implement sound IT projects, reaching a satisfactory alignment state until the next cycle to adopt other bottom-up IT projects are activated.

The same 'surfing' pattern could be viewed in the second group of firms whereby they move from an ADA alignment state, then to an ANT state and for a period to a SYN alignment signpost by outsourcing and implementing a financial package. This is followed by a period of endeavouring to master the application system, by using trial and error methods. Such circumstances will drive these firms into an ADA alignment state as they try to cope with these application systems. This is how the owner-manager of firm 4 described the process of implementing the SAGE application systems at the work-place and at the Accountant's office.

'Then we installed the Sage Accounting package. It was simple to use. Today we are using Sage Line 50. The features that I am using, besides Accounts, I issue invoices here. But accounting does not take place here. I have a part-time accountant who carries out the accounting tasks. It is not to my benefit. The administrative clerk provides the part-time accountant with all the documents. I issue invoices here because I am in charge of Sales. These invoices are passed over to our administrative clerk who in turn passes them to the Accountant to compile the accounts. The hard copy Invoices are used as input by our accountant to prepare the accounts using Sage as well. There is no linkage with our Sage here. This is not the way I wanted it. Our Administrative clerk also uses Sage on a separate stand-alone PC. Accounts are very important to our business. Besides the accounting features, I also use Sage for the Stock system as well.'

These firms will remain in this ADA alignment state until such time that these ownermanagers endeavour to implement other new application systems. Under such circumstances, the previous alignment process is repeated, whereby firms will move to an ANT state and for a period to a SYN signpost where the application system is outsourced. This group of firms lack adequate internal IT expertise and are also not served professionally by their outsourcers in their uptake of technological solutions. It seems that most owner-managers in this group have entered into outsourcing arrangements without undertaking professional evaluations that such decisions warrant. It appears that all these firms lack the required IT expertise to evaluate IT outsourcing projects and any outsourcing arrangements that are agreed upon are mostly the result of personal recommendations. Therefore, any IT deployment that occurs within these firms may tend to be effective more due to serendipity rather than to any form of strategic top-down approach. This group of firms will face the threat of outsourcers' opportunism, resulting in deploying fragmented IT systems that are frequently misaligned with their business objectives.

**Proposition 9:** Owner-Managers, who lack IT expertise and are served opportunistically by their outsourcers, do not succeed to sustain a higher alignment state, as the deployed IT projects result in being fragmented and misaligned with business objectives.

# 6.6 IT Alignment Behaviour: A Fulfilling Trajectory

The Fulfilling trajectory which takes the form of an upward scalloped pattern spanning from left to right represents firms that are mostly reaching a high state of alignment between IT and business objectives. Most of these firms are strategizing together with their outsourcers, whereby business and IT capabilities are evaluated to maximize IT alignment. Similarly these firms have throughout the years that they have been in operation, ranging from a period of 15 to 36 years, endeavoured to gradually move towards the path leading to the integration of application systems and to high IT alignment states. Table 6.5 depicts the firms' characteristics relating to the Fulfilling trajectory. Nine firms are currently reaping the benefits of system integration which stems from either having sound internal IT expertise or where internal IT expertise is lacking, it is compensated by the professional expertise that is provided by their IT outsourcers. It is striking that 7 firms that have pursued a Fulfilling trajectory have predominantly reached the Collaboration alignment state. Notwithstanding the other 2 firms namely, 2 and 25, who also follow a Fulfilling trajectory registered an ANT and SYN alignment end- state respectively, they also managed to attain a high level of system integration within their firms. These firms can be classified into two groups. The first group of firms, which are represented diagrammatically by figures 6.4(a), 6.4 (b) and 6.4 (c), comprises firms 1, 23, 10, 19, 28, 30 and 31. The other 2 firms, namely

No.	Туре	Nature of Business	Years	Emp	IT Expertise	System Integration	End Alignment	Trajectory
_		Cargo						
2	Services	Transporters	22	4/	II Manager	Medium-High	Anticipation	Fulfilling
		Insurance						
10	Services	Brokers	36	48	Self-Taught	High	Collaboration	Fulfilling
		Power Control						
19	Retail	Systems	25	14	Low	High	Collaboration	Fulfilling
	Manufact	Cable						
23	uring	Manufacturing	12	22	High	High	Collaboration	Fulfilling
		PC Assembly &						
	Manufact	Network						
1	uring	Equipment	21	11	IS Graduate	High	Collaboration	Fulfilling
31	Retail	Sweet Shop	15	7	Medium	High	Collaboration	Fulfilling
		Toners & Printer						
28	Retail	Cartridges	25	3	Medium	High	Collaboration	Fulfilling
		Architectural						
30	Services	Services	16	12	Low	High	Collaboration	Fulfilling
		IT Software						
		Development &						
25	Services	Training	17	15	High	High	Synchronization	Fulfilling

2 and 25 are represented diagrammatically by figure 6.2 (a) and figure 6.3 (b) respectively.

## Table 6.5: IT Alignment Behaviour - Fulfilment Trajectory

Figure 6.12 denotes the line of 'best fit' (thick black line) which represents the process movements of all the firms that follow the Fulfilling trajectory.



#### Figure 6.12 Fulfilling Trajectory Map

As shown in figures 6.4(a), 6.4(b), 6.4(c), 6.2(a) and 6.3(b), these two groups of firms have commenced their IT alignment journey at the ADA state by utilising basic IT automation tools such as spreadsheets to cope with their day-to-day operations. Whereas firm 2, as shown in figure 6.2 (a), moved to the ADA state and as shown in figure 6.3(b) firm 25 moved to the ANT state, all the other firms as represented in

figures 6.4(a), 6.4(b) and 6.4(c), namely firms 1, 23, 10, 19, 28, 30 and 31 moved to the higher SYN alignment state.

There is evidence that those firms that moved to the SYN alignment state, notwithstanding that they lacked internal IT expertise at the time, managed to align IT with business objectives, by maximizing the IT capabilities that were provided to them by their outsourcers. Also these firms' management competencies compensated for their lack of internal IT expertise by engaging outsourcers that understood these firms' strategic objectives. These owner-managers focused primarily on their strategic objectives. These owner-managers managed to articulate the IS requirements to their outsourcers. It is also evident that the IT solutions that are provided by these outsourcers proved to be technically sound, which led to these firms reaping the benefits of computerisation. It is apparent that the SYN alignment state attained by these firms initiated a healthy working relationship between the owner-managers and the outsourcers, leading these firms to move towards the COL alignment state, which is the highest identified alignment state in this research study. It is also noticeable that since these firms reached the SYN alignment state, they increased their internal IT expertise over time, with the consequence that the relationship between the ownermanagers and outsourcers continued to strengthen. For example the owner-manager of firm 1 described the increase in internal IT expertise as follows:

'I generate 50% of the ideas. I adopt a participatory approach. I liaise continuously with my personal assistant who is reading a degree in Information Systems. IT is fundamental for our business. Any idea which crops up, we try to use IT. We translate our ideas into IT. If we do not use IT, we have to double the number of our employees in order to sustain our current level of activities. But if this is the case, we will have chaos.'

This owner-manager claims that his personal assistant's IT expertise, who is now an Information Systems graduate, has moved his firm towards the COL state whereby his firm is also involving their Information System outsourcer to weigh the possibilities of an e-commerce project. This is how this owner-manager explained this partnership between his firm and the outsourcer and how they are collaborating together.

'The website was written by a third party. It was outsourced. You would need such expertise. That is why we outsourced. The software house is reliable because they have industrial experience and have developed similar websites. The software house understands our business language. You can work hand-in-hand with them. They share ideas with you because they look at business from a different angle. We also

want to go for on-line-sales. We want to streamline our operations to reduce shortcomings and mistakes. I want to speed up operations. This online-sales system goes much beyond. The customer will use the on-line payment, carries out the purchase, know what is in stock. We will also deliver the products to our customer, if need be, so as we will not lose time and have any bottlenecks related to delivery. I want to work with less people. We are planning for an e-commerce web-site which should be completed by next year.'

Notwithstanding the IT-Business benefits that accrue through this collaboration process, this owner-manager is vigilant not to let IT dominate strategy. He claims that his firm is continuously using IT for any business processes that are activated in his firm. Even though business and IT possibilities are evaluated mostly at the same level through this partnership with outsourcers, strategy tends to remain at the top and IT is used as an enabler to create value to his business. But, at least, even in circumstances when strategy stays at the top, the IT possibilities are considered simultaneously with the business objectives.

**Proposition 10:** Small firms, that have a track record of well managed relationships with their IT outsourcers, tend to move to a partnership relationship with them, whereby business and IT capabilities are weighed equally, leading to the attainment of application systems' integration.

Similarly other firms such as 10, 19, 23, 28, 30 and 31 strengthened this bond with their outsourcers which led to their IT outsourcers being part of the strategizing process by becoming collaborators with the owner-managers. For such a partnership to be effective, two fundamental elements relating to two types of knowledge must be continuously present, namely, a high level of knowledge relating to business processes coupled with a focus on innovation and a similar high level of IT knowledge. The first type of knowledge was internal to these firms whereby owner-managers usually spearhead their firm's strategy. These owner-managers provided a roadmap that demonstrates the current position of the firm; where the firm envisages to be sometime into the future and how the firm will endeavour to attain its futuristic objectives. These owner-managers clearly set their goals so as to be able to communicate and be understood by the IT outsourcers that will enable that plan.

Owner-managers and outsourcers provided together the business and the corresponding IT solutions leading these firms to attain a high level of system integration by optimizing the firms' current and business processes at both strategic

and operational level. Through this collaboration, they both considered innovative projects but utilising IT technological solutions. IT expertise represents the second element of this business-IT collaboration. This group of firms' IT expertise tended to be external due to the firms' limitations relating to resources and to the inability to keep abreast of technology.

# **Proposition 11:** Small firms that manifest a deep knowledge relating to business processes coupled with the management capability to strategize together with their IT outsourcers tend to facilitate business-IT knowledge integration.

It is significant that the path that was pursued by firm 2 as represented diagrammatically by figure 6.2(a) took the upward route towards the ANT alignment state followed by the SYN state, moving then to the ANT state until it moves upward again towards the SYN and COL states. All these upward movements towards the various alignment states are spearheaded by their IT manager who made up for the absence of the IT function being represented at board level. Notwithstanding that this IT manager is not a director, he has managed to gain the confidence of the board whereby he is currently being invited to attend board meetings. This is because this firm intends to implement Enterprise Systems in the immediate future, following various proposals which were put forward by this IT manager. These proposals failed to be implemented because at the time that they were proposed, these Enterprise Systems were not a priority for this firm. It is envisaged that once these Enterprise Systems will be implemented, this IT Manager will drive his firm towards the ANT alignment state whereby he will come up with fresh proposals to adopt IT projects. Therefore, unless this IT Manager is invited to become a board member, his current collaboration at board level will be on a temporary basis. This firm had an applications system which was in operation for over 14 years. In the meantime, this firm's staff that amounted to 47 employees was continuously in ADA IT alignment state for a period of 10 years. This firm's staff also used office automation tools such as spreadsheets, including emails in their day-to-day operations. In 2000, the IT manager was the initiator for a new application system by compiling a preliminary report and by presenting it to the Operations Director who was his immediate manager. It is evident that this IT Manager was endeavouring to move his firm to the ANT equilibrium alignment state. Here is his account:

*P:* Now we are in the phase to embark in new IT investment because 2 years ago we commenced a study as to what is required for the future where IT is concerned.

R. Who initiated this study, 2 years ago?

P. I am now responsible for the IT function at Company (name withheld). I do not have any employees reporting to me where IT is concerned because everything is outsourced. I deal directly with the outsourcer. In actual fact, we felt that changes relating to IT were required in 2000. In 1995, it was the first time that we bought a computer and software. This application tailor-made system assists us in our day-today operations, by inputting data, issue notices to clients that cargo has arrived. We also issue invoices.

In 2000, we started thinking of implementing a new system to replace our existing system. I compiled a preliminary report as to what needs to be done. I was the instigator. So this initiative came purely from the IT function. I compiled a feasibility study, delving also into the costs and return on investment expected from this IT project. I based my report on financial estimates expected to be incurred in this project. I have also estimated the cost savings in terms of efficiency converted into less man hours need to implement the project.

In 2000, the IT Manager presented this feasibility report to the chief executive but due to other priorities relating to capital projects at the time, it was decided to shelve it. Two years later, the IT Manager attempted to-reactivate the proposed new application system but the company was still not in a position to invest in this IT project. In 2007, a decision was taken by the chief-executive to re-activate this project. It is evident that this process reveals that through the initiatives of the IT manager, this firm was endeavouring to move from an ANT state to a SYN state when the feasibility report was being compiled and presented to the CEO, returning to ANT state when the IT project was reactivated in 2002, moving to SYN state when it was accepted in 2007 by the CEO and climbing to a COL state when the IT Manager was invited to board meetings.

Proposition 12: Owner-Managers, who appreciate the benefits which accrue through IT adoption and have internal IT expertise, tend to create opportunities for business-IT alignment through the effective engagement of IT outsourcers.

The alignment path that was pursued by firm 25 during its 17 years of operation as represented diagrammatically by figure 6.3(b) seems paradoxical given that the ownermanager is not only proficient in IT expertise himself, having graduated in Mathematics and Computing, but also his team comprises 12 IT graduates. This firm provides business solutions comprising mainly Enterprise Resource Planning Systems and e-commerce projects.

As expected, the initial alignment movements of this firm's operations amounted to moving from an ADA state to an ANT alignment state. This firm stood at the ANT alignment state for over 5 years probably because of the strong IT presence which was dominated by the 12 IT graduates that are employed with this firm. The following seven years were characterised by a very important switch towards the COL state whereby the internal IT staff became collaborators with the owner-manager by weighing business and IT solutions together. This firm practised this form of partnership between business and IT for a period of eight years. What is striking is the owner-manager's change of mind-set during the last 2 years that this firm was in operation whereby he steered his firm from a COL state to a SYN alignment state. The latter alignment state is currently being practised by this firm. This owner-manager's motto "Make IT work for you and not you work for IT" says it all. This owner-manager has the advantage that, besides being an IT graduate, he is also an entrepreneur. As an entrepreneur, he felt that his business organisation was continuously being driven by IT and then strategy will follow suit. What caused this change of mind-set was that this firm, after 14 years in operation, was not doing well financially. This ownermanager, therefore, out of necessity, decided to take an outside-in perspective of the company. He reiterated that the strong IT presence at his firm was hindering his business because most decisions were IT-driven rather than strategy inspired. This owner-manager came out strongly against any IT dominance within his firm because he contends that IT personnel tend to obstruct the progress of a business organisation by resisting new technological ideas, given that technology is developing so fast. Such technological ideas, for example, may relate to not being knowledgeable enough on security issues which may impact on current infrastructure. He claims that until a few years ago, his IT staff rather than addressing the company's needs were more interested to address their individual needs.

P: Business executives and IT representatives may create a war at board level.

*R*: So having an IT expert at Board level can also provide guidance to the chairman of that board with regards to innovations that can be tapped by the business organisation. They will become strategic innovations only through the introduction of IT.

*P*: You are 100% right. Up to 2 years ago I would have said yes. But today, I would disagree. I would say completely no. I would tell you why. And I sustain what I am saying. First you should have the strategy on top. What strategy do we want to do. What strategy do we want to adopt. In simple lay terms, in our objectives, there should not be any IT content. In your KPIs and everything. You need to have the business owners and the chairman will have to spell out the strategy of the company in one or two lines. The business owners must see how they will implement it.

*R:* So let me see whether I have understood you correctly. That there will be an IT presence at Board level is a disadvantage.

*P:* It is a disaster. What I am objecting to is an IT presence and not a person who is Information System and business oriented. An IT person is someone who sees technology. An IT-Business person is someone who sees technology as an enabler and who sees opportunities.

# **Proposition 13:** Small firms that are able to align their business and IT strategies to their resource profiles tend to experience high alignment between business and IT.

It is significant that the 9 firms that followed the Fulfilling trajectory managed to attain a high level of system integration even though the IT function was provided externally to these firms. It also striking that all the 7 firms that ended up at the COL alignment state managed to attain a high level of system integration even though the IT function was provided externally to these firms. Both the business and IT functions managed to craft plans together leading to a satisfactory fit between IT and business objectives. Also firm 2 was operating almost at COL alignment at state given that the firm's IT manager was continuously being invited to board meetings to discuss and contribute towards the deployment of Enterprise systems. Similarly the setup at firm 25 had an owner-manager who is an IT expert, making sure that his firm, notwithstanding that it was being directed to think strategy first, would not miss out on technological solutions that would fulfil the firm's strategic objectives.

Most Information Systems provided by these firms' outsourcers denoted best practices in the firm's industry sector, especially, when Enterprise Resource Planning systems were deployed. Both the business and IT functions learned from each other by strategizing together. The attainment of a high level of system integration provided firms with optimizing their current business processes at both strategic and operational level, leading them also to consider innovative IT projects.

# 6.7 Synopsis of Research Outcomes

The focus of this chapter mirrors the small firms' IT alignment patterns that represented their IT adoption behaviour throughout their operational years. To attain this objective, it was essential to study IT adoption behaviour as a process within this substantive area of enquiry. As explained by Corbin and Strauss (2008), mapping out the process for the group of constructs relating to contextual conditions and consequences can be a very tough venture as these constructs tend to change and reorganise themselves depending on the actions and reactions that are exercised by small firms over time.

To achieve the objective of mapping the small firms' IT adoption process over time, a three stage approach has been undertaken. The first stage entailed specifying the constructs as demonstrated in Appendix 4 within a hierarchical structure based on the three main pillars of contextual conditions, actions and reactions, and consequences and outcomes (subject of chapter 4). An intense conceptual representation of these constructs, an identification of the relationships and an evaluation of the interrelationships between these emerging concepts within each level of the hierarchical structure has been undertaken. The second phase of this approach comprised the conceptual evaluation of these (subject of chapter 5). Each firm was placed within one of the four identified alignment states, namely the ADA, ANT, SYN and COL states. These alignment states, which are represented in figure 5.1, denote the alignment state that each firm was at when each owner-manager was interviewed for the purpose of this research study.

The third stage of this approach utilised the identified IT alignment states as signposts to map out a number of IT patterns and to explain how IT adoption influenced the level of information system integration attained by each firm over time. Common paths that these firms pursued as they moved from one alignment state to another have been identified. In line with Corbin and Strauss' (2008) contention that the contextual conditions and their corresponding outcomes usually reside in clusters, the concept of process patterns has been undertaken by identifying four common IT alignment paths that were pursued by the various firms. To arrive at these IT patterns, this research study followed Mintzberg's (2007) claim of strategy representing patterns that are formed by actions occurring in organisations. The actions of each firm are grounded in

the transcripts that stemmed from the owner-managers' interviews with the researcher. These transcripts, which were captured within the MAXQDA Code Matrix Browser, have been evaluated by assessing the context, actions and consequences of each firm's IT adoption behaviour over time. This assessment has led to the identification of IT alignment patterns whereby each pattern denotes the common path that a group of firms took in their movement from one IT alignment state to another, throughout its life-cycle stages. In a sense, this resembles Kotler's concept of the product life cycle (Kotler, 2000, p.304). Kotler identified the four distinct stages that each product will pass through a life cycle of introduction, growth, maturity and decline. Kotler then crafted various patterns of product life-cycle behaviours by plotting sales and profits alongside the Y-axis and the time element alongside the x-axis. Whereas a number of products usually exhibit a bell-shaped product life cycle, other different product life cycle patterns have been identified such as growth-maturity pattern, cycle-recycle pattern, scalloped-pattern, fad pattern, fashion pattern and style pattern.

# **Chapter Seven**

# 7. Synopsis of Findings, Conclusions and Implications

# 7.1 Introduction

This chapter provides a synopsis of the research findings followed by conclusions and implications. This study contributes towards the creation of mid-range theory relating to IT adoption behaviour and the corresponding IT alignment patterns that small firms follow over time. By mid-range theory, which will be subsequently referred to as theory in this chapter, is meant that theory is concrete, adaptable to a wide range of practice and easy to use (Kolcaba 2001). The contribution of this study to theory is three-fold: (1) the evaluation of constructs that stem from the small firms' contextual conditions, actions/reactions, and consequences/outcomes during IT adoption; (2) the assessment of four IT alignment equilibrium states and (3) the identification of four patterns of small firms' IT alignment over time.

# 7.2 Synopsis of Findings

# 7.2.1 Objective 1: Evaluation of Emerging Constructs

Establishing the various constructs that stemmed from this research study relating to IT adoption behaviour in 31 small firms proved to be fundamental "*to discover what is going on, rather than assuming what should go on*" (Glaser 1978 p. 159). Notwithstanding that several studies, such as Sabherwal and Chan (2001); Hussin, King and Cragg (2002); Luftman, Kempaiah and Nash (2005) have been undertaken to evaluate the level of alignment between IT and business objectives, how the levels of alignment are actually attained is not adequately known.

Given that most of these research studies have taken a positivist stance, it is possible that the understanding of the phenomenon relating to IT alignment by small firms is limited (Avison et al., 2004; Tallon 2008). This limitation stems from the fact that excluding constructs relating to context may strongly hinder our explanation on the understanding of the phenomenon under study. In order to resolve this issue, grounded theory was applied by undertaking an inductive approach to build constructs by focusing on the contextual conditions under which these firms were conducting their IT activities. These constructs were built around Strauss and Corbin's (1998) *Conditional and Consequential Matrix* which encapsulates the ramifications of three fundamental categories namely, contextual conditions, actions/reactions and consequences/outcomes. This matrix, which represents the structural conditions, embodies both the micro and macro conditions, adding conceptual depth to the analysis. These emergent constructs have been placed within a hierarchical structure as shown in Appendix 4 and illustrated diagrammatically in Figure 4.2. Such a structure encompasses three categories, fifteen discrete sub-categories and various properties and dimensions linking them to unify the various patterns of IT adoption among these small firms.

The identification of the relationships and interrelationships between these emerging constructs would not have been possible without evaluating structure to process as advocated by Strauss and Corbin (1998). Structure encompasses the contextual conditions and the consequences, whereas process denotes the actions and reactions undertaken by small firms. The different cycle stages that each firm passes through show that the contextual conditions trigger the firms' strategic actions and reactions which then influence the outcomes and consequences.

The quality of IT related technological solutions that are deployed by each small firm is reliant on the owner-manager's characteristics. These characteristics comprise the mind-set, knowledge, risk orientation, management style, management capabilities and most importantly the attitude towards IT. Also other character traits such as age, experience and enthusiasm appear to be the overriding factors that influence owner-managers to adopt IT application projects. The deployment of IT projects and the management of the outsourcing function are two important subcategories within the actions/reactions category that are activated by the small firms' owner-managers in response to their goal of aligning IT with business objectives. The IT projects deployment subcategory focuses on the thinking and actions that take place in the owner-managers' minds when they embark on implementing IT projects in an improvisational way or formulating plans which are short-term, top-down or bottom-up.

The tendency to outsource activities relating to the IT function has become a common feature in small firms. This has been confirmed in this research study whereby it is evident that the majority of firms have outsourced most of their IT application systems which are in addition to the office automation tools that are used internally to deal with their day-to-day requirements. Two very important properties emerged from the 'outsourcing' sub-category, namely, the firms' capabilities to specify the information system requirements to the outsourcers and the ability to manage the outsourcing arrangement, relating to the co-ordinating and monitoring of the outsourcers' deliverables.

The consequences and outcomes of IT adoption focus mainly on three issues, namely, small firms' external dependency on outsourcing, the two main hindrances relating to IT utilization – the firms' IT knowledge gap and the owner-managers' perception of high IT performance- and finally, the two major drivers relating to successful deployment of IT – the integration of information systems and the extent of effective business decisions made in response to successful IT adoption. All these constructs tend to influence the levels of alignment between IT and business objectives.

The owner-managers of most of the small firms in this research study have been given prominence, as they are usually the protagonists, given that they are continuously managing the activities that are carried out in their respective firms (Waker et al., 2007). Almost most owner-managers in this research study have served as catalysts in their respective firms to determine the firm's ethos, to control the financial resources, to recruit and select employees, and most importantly to direct and drive IT adoption (Filllis, Johansson and Wagner, 2003).

The majority of these small firms did not provide business plans. However, most of the owner-managers acknowledged the importance of thinking about their firms' future business activities. From an IT perspective, most of these firms endeavoured to engage in short-term technological solutions to address IT issues that arise on a day-to-day basis. This is in line with Ciborra's (2001) view that most changes and innovation opportunities related to new technologies emerge from the unplanned, situated action of the organisation's participants as they are confronted with new circumstances.

The firms' dependency on IT outsourcing is undoubtedly on the minds of most of the owner-managers of these small firms. The 'IT dependency on outsourcing' property is cited no fewer than 100 times in the transcripts that were generated from the interviews. IT outsourcing may be considered as an external risk to the firm, especially

if the outsourcing arrangement is not managed professionally. It is evident that most firms are relying mostly on external IT support to undertake sophisticated IT projects which could not be substituted by the usage of IT office automation tools. 21 firms undertook sophisticated IT solutions such as Enterprise Planning systems by outsourcing the services of third-party software houses.

Notwithstanding that most owner-managers feel capable to communicate initially their information system requirements to outsourcers; it appears that they encounter difficulties when managing outsourcers after IT application systems are implemented. Such a situation can be explained by the fact that most firms lack the abilities to assess IT outsourcing projects for selection and any deployments that take place are more based on personal recommendations rather than the feasibility studies that such projects warrant. It is also apparent that, when owner-managers undertake decisions about IT outsourcing, they tend to disregard costs relating to co-ordinating and monitoring their outsourcers. Owner-managers, that lack internal IT expertise and project management competencies, may be susceptible to the outsourcers' opportunistic behaviour. Such opportunistic behaviour sometimes leads to owner-managers feeling very insecure when information systems break down, because they feel that their firms are not adequately supported by the outsourcers. It seems that those owner-managers that have managerial competencies and low-to-medium IT expertise managed to have an effective outsourcing arrangement.

The small firms' 'IT knowledge gap' dimension and the owner-managers' 'high perception of IT performance' are two key constructs that shed deep insights how these small firms utilise IT in order to attain alignment with business objectives. Those owner-managers that exhibit a low-to-moderate level of IT expertise tend to utilise their IT knowledge that they would have gained through hands-on experience or self-tuition. Most of these owner-managers are either not knowledgeable enough about IT issues or they have not even attempted to reinforce their firms' IT expertise by engaging or investing in human resources with IT skills. The lack of IT knowledge may also hinder these owner-managers from managing professionally any outsourcing arrangements which their firms enter into with the outsourcers. In the majority of cases, there is not enough understanding between the IT and business domains. These firms tend to react to IT issues that crop up on a day-to-day basis by implementing ad hoc IT solutions, which may not always lead to IT alignment with business objectives. Any

effective IT deployment that occurs is due more to serendipity rather than to any form of planning, leading to the fragmentation of information systems. It appears that these owner-managers are reluctant to make further investments in IT because they doubt the benefits that may accrue from new technological solutions.

It is striking that the owner-managers' overall perception relating to IT adoption is favourable. They do consider IT as the vehicle that drives their firm towards better organisational performance which occurs through better productivity, effective business process restructuring and improved quality of service to their customers. It is paradoxical that notwithstanding the overall favourable perception on IT adoption, most of these firms have not engaged a full-time IT specialist or administrator to lead the IT function. Most firms are underutilising basic office automation tools because of insufficient staff training. Also, most of the firms are not exploiting the potential of business-to-consumer possibilities to improve their sales performance. Any attempts at utilising websites are to create a marketing presence as a virtual showroom. This study has identified that any website development that was undertaken by these small firms, was unstructured and in most cases, the interfacing with the back-end database was lacking. It seems that the perception of high IT performance resulting from the usage of IT basic office automation tools in these firms is precluding these ownermanagers to take up sophisticated IT projects earlier, thereby missing the benefits that may accrue through early adoption of IT projects.

This research study has identified that the 'level of system integration' attained and the degree of 'effective business decisions' made in response to the deployment of IT application systems are the two main constructs that contribute towards reaping major benefits from IT adoption. It is apparent that system integration is a fundamental pre-requisite in determining the extent of IT alignment attained with the business objectives. Whenever owner-managers are in control of managing the business processes of their firm and applying information system solutions by utilising their internal IT expertise or managing effectively their outsourcers when outsourcing arrangements are undertaken, the level of system integration attained is high.

# 7.2.2 Objective 2: Assesment of IT Alignment Equilibrium States

An evaluation of the interrelationships between these emerging constructs within the hierarchical structure denoting contextual conditions, actions/reactions and consequences/outcomes was carried out. In line with Curran and Blackburn's (2001) recommendation to organise these constructs, a typology strategy was followed in this research study whereby data were grouped into categories, subcategories, properties and dimensions according to some common criteria.

Similarly, this research study identified four IT alignment equilibrium states that small firms could possibly attain. These states are dependent on the quality of IT expertise used and the extent of integrated business processes that were managed by the firms to achieve alignment. Firms that participated in this research study were grouped within a specified IT alignment equilibrium state out of the identified four alignment positions. This equilibrium position denoted the alignment state that each firm had when the owner-managers provided their descriptions throughout the interviews held for the purpose of this research study. The IT alignment equilibrium states in this typology have been labelled Adaptation, Anticipation, Synchronization and Collaboration and are shown diagrammatically in figure 5.1. The classification of alignment equilibrium states among the 31 small firms that participated in this study comprise 10 firms in Adaptation state, then 8 firms in Synchronization state, 7 firms in Anticipation state, followed by 6 firms in Collaboration state.

#### 7.2.2.1 Adaptation Alignment State

The Adaptation alignment state represents a group of 10 firms that lack adequate internal IT expertise and are also not served professionally by their outsourcers in their uptake of technological solutions. This group of firms tend to react to events as they unfold ending up with business and IT strategies being separate and distinct from each other. This divergence is the result of a number of characteristics that leads to this Adaptation alignment state. Most importantly, these characteristics entail: IT does not understand the business processes; the business does not understand the IT function; the IT activities are mostly not aligned with the business objectives; the level of IT internal expertise is generally low; the IT outsourcing function is not serving the firm efficiently; and the outsourcing function is badly managed by the small firm. Any IT deployment that occurs within the firm is the result of serendipity rather than any form

of strategic top-down approach. This group of firms' IT systems are most often fragmented and frequently misaligned with their business objectives. The focus seems to be more on the day-to-day operations. Any IT investment that is undertaken is regarded as a cost of conducting business in which these owner-managers perceive IT as providing limited business value. Also this group of firms is mostly concerned with seeking efficiency improvements in their day-to-day operations, controlling the business operations and specific business processes, thereby focusing more on operational alignment rather than alignment at strategic level.

# 7.2.2.2 Anticipation Alignment State

The Anticipation alignment state represents a group of 6 firms where each firm experiences a strong IT dominance. This IT dominance is usually internal to the firm and is so strong that there are instances in which IT drives and shapes the strategy of the firm. It may be argued that such a stance may prove risky as sometimes IT projects tend to be undertaken in a sporadic way and may not be linked to strategy. The IT function will be demonstrating a strong IT leadership at the expense of an owner-manager who lacks IT knowledge and who feels that the IT function is uncontrollable. In such circumstances, the business benefits that are expected to accrue may fail to be realised because the IT systems are fragmented since they are not linked to the strategic objectives. Conversely, the IT function may be proactive and persuasive to the extent that it serves as the vehicle to drive and shape strategy. Hence, in such circumstances, the owner-manager is persuaded to adopt IT projects, sometimes even sophisticated IT solutions, leading to some form of system integration.

## 7.2.2.3 Synchronization Alignment State

The Synchronization alignment state embodies a group of 8 firms whereby their owner-managers' mind-set tend to grasp opportunities based on IT centred leadership. This alignment state encapsulates the integration of IT with business strategic objectives resulting very often in creating strategic value to the firm. In this Synchronization state, the owner-managers' positive attitude towards IT contributes towards the deployment of sophisticated IT solutions.

To utilize IT as an enabler presupposes an adequate level of IT expertise. It is significant that most of the firms that are classified under the Synchronization group

did not have satisfactory levels of internal IT expertise. However, the firms' management competencies more than compensated for their lack of internal IT expertise by successfully engaging outsourcers that understood the firms' strategic objectives. The owner-managers of this group focused primarily on their strategic objectives. Also owner-managers have shown their capabilities to specify the Information System requirements to their outsourcers. These firms carefully worked out their business strategies and then managed to engage outsourcers to work out plans for information systems. In such a Synchronization state, the IT function, which is mostly represented by outsourcers, will most often understand the firms' business processes, leading to Information Systems' integration. In this scenario, most of the IT solutions that are provided by the outsourcers tend to be technically sound leading the firms to reap the benefits of computerisation through the satisfactory alignment attained between business and IT.

## 7.2.2.4 Collaboration Alignment State

The Collaboration alignment state represents a group of 7 firms whereby the ownermanagers in collaboration with their IT partners tend to strategize together. This model does away with focusing on business strategy first and then let IT play a secondary role. Rather than missing out on innovation, this collaboration between business and IT at the firms' highest level, epitomises a business and IT partnership where business and IT capabilities are weighed equally. For such a partnership to be effective, two fundamental elements relating to two types of knowledge must be continuously present, namely, a high level of knowledge relating to the integration of business processes coupled with a focus on innovation and a similar high level of IT knowledge.

The knowledge on business processes is mostly internal to the firm. This knowledge leads the owner-manager to spearhead the firm's strategy, setting clear the firms' goals so as to communicate with the IT function that will enable that plan. IT expertise, which represents the second element of this business-IT collaboration, could be either internal or external. In most of the firms pertaining to the Collaboration group, IT expertise tends to be external due to the firms' limitations relating to resources and to the inability to keep abreast of technology. It is significant that all the 7 firms within the COL group managed to attain a high level of system integration even though the IT function was provided externally to these firms. Both the business and IT functions managed to craft plans together leading to a satisfactory fit between business

objectives and IT. Most Information Systems provided by these outsourcers denoted 'best practice' in the firm's industry sector, especially, where Enterprise Resource Planning systems were deployed. Both the business and IT functions learned from each other by strategizing together. The attainment of system integration provided firms with the optimization of their current business processes both at strategic and operational level, leading them also to consider innovative IT projects.

# 7.2.3 Objective 3: Common Alignment Patterns in IT Adoption Behaviour

It has been amply shown in from the empirical data that were collected in this research study that small firms' IT adoption behaviour tends to be dynamic and evolves over time. This IT adoption behaviour led to the identification of IT alignment patterns that the small firms followed, to attain their business objectives. Four different alignment patterns emerged, namely, a bell-shaped, v-shaped, double bell-shaped and scalloped-shaped pattern corresponding to the Drifting, Consolidating, Surfing and Fulfilling trajectories respectively, shown graphically in figure 7.1. The four alignment states which have been identified in this study, namely, Adaptation (ADA), Anticipation (ANT), Synchronization (SYN) and Collaboration (COL) are plotted against the Y-axis. 'Time' is shown alongside the 'X' axis. These IT equilibrium states are used as signposts that firms pass through when they change their IT adoption behaviour. Each shape, which represents a specific and unique IT alignment pattern, denotes the process that the small firms that lie within that pattern, took to move from one alignment state to another when they deployed IT projects. The corresponding propositions that emerged for each IT alignment pattern are presented in Appendix 6.



Figure 7.1 Business-IT Alignment Patterns

#### 7.2.3.1 Drifting Alignment Pattern

The Drifting trajectory, which takes the form of a bell-shaped pattern, is illustrated by the line of 'best fit' in figure 7.1. It encompasses a group of firms that are continuously endeavouring to cope with any IT adoption projects that are implemented in their firm. The IT expertise, whether internal or external, is not adequate to successfully sustain these IT projects. Consequently, these firms are drifting continuously to adapt themselves to the IT systems that are deployed. The outcomes of the Drifting trajectory, which are represented by propositions 1, 2 and 3 in Appendix 6, focus on small firms that are endeavouring to cope with IT projects before and after implementation. Those firms that are continuously demanding customised requirements for their information systems are rendering these applications too cumbersome to operate at firm level and too difficult to maintain at outsourcer level. Under such circumstances, these firms pass through a period of stability, gained from the early enterprise system implementation followed by a period of instability when the customised requirements are implemented. Another group of small firms that implement IT-driven application systems also pass through a period of stability, as initially it is thought that the deployed application systems are used as enablers to attain their business objectives. This stability is short-lived as the post-implementation of these application systems reveals that the IT outsourcers and the owner-managers are not in sync with each other. Given that the application systems are not embedded in strategy, the business benefits that are expected to accrue fail to be realised. Consequently, during this period, these firms pass through a period of dissonance, leading them to initiate a new wave of IT-driven projects.

Owner-managers who use a top-down approach by thinking strategy first and subsequently utilising IT as an enabler, are mostly knowledgeable enough to articulate their requirements to their outsourcers. Such firms pass through a cycle of stability when the initial systems are implemented. Then, when the owner-managers identify new requirements for their business processes, they pass through a period of instability, with the consequence that they would have to adapt until the IT outsourcers will entertain their requests.

#### 7.2.3.2 Consolidating Alignment Pattern

The Consolidating trajectory, which takes the form of a v-shaped pattern, is illustrated by the line of 'best fit' in figure 7.1. It encompasses firms that are seeking to consolidate the uptake of any IT projects that are undertaken over a period of time. Consequently, this group of firms is experiencing a period of stability, as they are utilising IT, mostly as an enabler to sustain their business objectives. The outcomes of the Consolidating trajectory, which are represented by propositions 4, 5 and 6 in Appendix 6, focus on small firms that are endeavouring to consolidate any gains that firms may reap through their uptake of IT projects. Firms that do not hold IT expertise and lack project management competencies may be reluctant to venture into innovative IT technological solutions. Also, those firms that lack IT knowledge but perceive that they can venture into innovative IT projects without seeking the outsourcers' expert advice will revert to their previous consolidated alignment state as the new IT deployed projects tend to be misaligned and fragmented.

There are also a group of firms that are looking for periods of consolidation relating to IT adoption by exhibiting a positive attitude towards IT. This group of firms are adopting a top-down approach and using IT primarily as an enabler to attain business objectives. They are continuously experiencing periods of stability which are emanating mostly from their IT outsourcers. Under such circumstances, it seems that most of the IT solutions that are provided by the outsourcers tend to be technically sound, leading these firms to reap the benefits of computerisation through the satisfactory alignment states attained between business and IT.

#### 7.2.3.3 Surfing Alignment Pattern

The Surfing trajectory, which takes the form of a double-bell shape, is illustrated by the line of 'best fit' in figure 7.1. The outcomes of the Surfing trajectory, which are represented by propositions 7, 8 and 9 in Appendix 6, focus on a group of firms that are continuously striving to attain a higher state of alignment. The higher alignment state is not sustained either because the IT expertise, either internal or external, is not available, or else if available, the owner-managers may hinder IT alignment to take place because it is not strategy-driven.

Those firms which exhibit a strong internal IT dominance tend to follow a pattern which reveals that IT drives and shapes business operations. Such a stance may prove risky as these firm pass through a period of cyclical fluctuations starting at an ANT state, implementing IT projects based on the IT dominance prevailing internally within the firm, then trying to cope with the outcome of sporadic decisions, realising that the volume of work that was generated by these decisions is leading to information system fragmentation. It is significant that these firms will never move to a SYN alignment state, simply because the IT dominance is so strong. Also, firms whose ownermanagers lack IT knowledge but have a strong IT presence, which is embedded within the expert knowledge of their IT Manager, are often faced with bottom-up requests. These requests relating to the adoption of IT projects are often placed by the IT manager. In such circumstances, the IT function may be proactive and persuasive to the extent that it serves as the vehicle to drive and shape the firm's business objectives. However, given that any IT initiatives may be taken up without any strategic objectives, this may lead to IT misalignment in the long term.

#### 7.2.3.4 Fulfilling Alignment Pattern

The Fulfilling trajectory, which takes the form of a scalloped pattern, is illustrated by the line of 'best fit' in figure 7.1. It represents firms that are mostly reaching a very satisfactory state of alignment between business and IT where the deployed information systems tend to be integrated. The outcomes of the Fulfilling trajectory are represented by propositions 10 to 13 in Appendix 6, where most of these firms are strategizing together with their outsourcers. In this scenario, business and IT capabilities are weighed equally. This is in conformity with Campbell's (2005) contention that successful alignment can be attained by creating an environment whereby business and IT should work together to reach common objectives. It is striking that all firms that are utilizing IT in this mode are experiencing a sense of harmony and security in the way IT projects are implemented in their firm. This sense of security seems to stem from the fact that the attainment of system integration guarantees that these firms avoid duplication of data, share information among users leading to effective decision-making and control better their business processes. Even those firms that lack internal IT expertise but manage to strategize together with their IT outsourcers by having a mutual understanding of business processes and information systems tend to achieve information systems' integration.
# 7.3 Conclusions

The conclusions that can be drawn from this research study have provided rich insights relating to the differences that are noted to exist between small and large firms. In this study, a number of distinct features of small firms distinguish them from their larger counterparts. These distinct features comprise the owner-manager's characteristics, the management of the outsourcing function and the short-term planning approach in implementing IT projects. Also, the two main factors that are hindering the maximization of IT utilization are, namely, the firm's 'IT knowledge gap' and the owner-manager's 'perception of high IT performance.'

Contrary to larger firms, as small firms have a flat structure, is informal, and nonbureaucratic, control tends to be based on the owner-manager's personal supervision. For example, the quality of IT related technological solutions that are deployed by each small firm in this research study, is reliant on the owner-manager's characteristics such as risk orientation, management capabilities and the attitude towards IT. Also, the successful management of the outsourcing function is dependent on the project management capabilities that exist within the small firm.

In this study, owner-managers, because of their resources' limitations, tend to focus their attention on core business processes. Also, owner-managers frequently face severe time constraints as they need to focus on virtually every aspect of the day-to-day operations. As they tend to adapt to urgent tasks, for the day-to-day survival of the firm, it is reasonable to expect that IT tasks are implemented without adhering too much to long-term planning. In the case of large organisations, it is more likely that top management can dedicate more time to long-term planning, since they can delegate some management responsibilities to their juniors (Wong and Aspinal 2004).

Contrary to small firms, large organisations generally have more knowledge assets because knowledge is viewed as a key resource (McAdam and Reid 2001). For example, features of small firms such as the 'IT knowledge gap' and the owner-managers' 'high perception of IT performance' are two key constructs that impact negatively on IT alignment with business strategy. It appears that small firms need not only to acquire knowledge but also to manage knowledge in their pursuit for improving organisational performance. Contrary to their large counterparts, Durst and Evardsson (2012) claim that, small firms are mostly constrained by their resource scarcity such

as finance, human resources, staff training and IT knowledge and therefore, they find it difficult to compete with large firms. This research confirms these findings. However, those small firms that managed to attain system integration operate as if they are large firms. This is because these firms are able to make effective decisions, based on the data that were resident in their main enterprise database.

The conclusions that can be drawn from this research study have contributed towards management research, particularly in the area relating to literature which focuses on small firms' IT adoption processes and business-IT alignment equilibrium states and patterns. A number of features proved to be pivotal when measuring the contribution of this research towards management processes and organisational behaviour. This analysis has extended the list of enablers and inhibitors of IT adoption within organisations by incorporating the contextual conditions which are necessary for evaluating IT adoption. The owner-manager's characteristics such as 'perception of high IT performance' and 'IT Knowledge gap' are influential in the extent of IT implementation within firms. This study has confirmed the resource-based literature detailing the importance of knowledge resources as a critical success factor for IT adoption. Further, four IT alignment equilibrium states, namely the Adaptation, Anticipation, Synchronization and Collaboration states have been identified within this study. Table 5.2 (page 191) defines the detailed characteristics corresponding to each alignment state. Lastly, four IT alignment patterns have been crafted, namely, Drifting, Consolidating, Surfing and Fulfilling patterns, which denote the dynamic IT alignment behaviour of small firms. All these features contributed towards the small firms' IT adoption and the subsequent alignment debate between IT and business strategy. This research establishes that the 'Collaboration' alignment state whereby the owner-managers, in collaboration with their IT outsourcers, tend to strategize together, is of particular importance. This alignment state is important because it discards the practice that firms firstly focus on business strategy and only later allow IT to play a secondary role. Rather than missing out on innovation, it is envisaged that business-IT partnership generated by this 'collaboration' stage partly bridges the IT knowledge gap that is resident in small firms, by weighing equally the business and IT capabilities.

The conclusions that can be drawn from this research study have also contributed towards management practice. The IT alignment grid, that is shown in figure 5.1. is

significant because it provides a framework in which academic researchers as well as owner-managers can gain a better understanding of the contextual conditions required for firms to position themselves in any of the IT alignment equilibrium states that are identified in this study. This grid model can also provide various potential applications by combining integrated business processes with IT expertise for those who wish to study organisation behaviour and who wish to manage the process of IT alignment. Also, these beneficiaries may observe the firms' IT adoption behaviour by following any of the possible IT alignment patterns labelled in this study. Similarly, researchers and owner-managers would be able to examine the business-IT alignment patterns exhibited in Figure 7.1 to understand the small firms' positioning relating to the level of alignment attained through the usage of IT deployment projects. In this respect, firms may be directed towards changing their current alignment equilibrium state by following an IT alignment pattern that will be in congruence with their contextual conditions.

Grounded theory is also utilised in this research study to gain a better understanding of the research area by focusing on the interrelationships that emerged between enablers and inhibitors relating to IT alignment as advocated by various researchers such as Urquhart (2001) and Fernandez (2004). Furthermore, as advocated by Charmaz (2006) this study used grounded theory to look for patterns that stem from the actions of participants (Charmaz 2006). This research method also provided the techniques to discover what was going on within the research area rather than trying to confirm or reject pre-determined hypothesis statements (Douglas, 2004).

# 7.4 Implications for Stakeholders

This section centres on areas of effort that may benefit from further discussion. The following discussion focuses on the implications for stakeholders in this research study.

In their seminal book "Researching the Small Enterprise", Curran and Blackburn (2001 p 5.) claim that researchers face difficulties when they conduct small business research. They argue that small firms are actually more difficult to evaluate than larger firms because activities may lack clear structures, business processes may not be documented and therefore, any propositions that emanate from research would be more difficult to test. In fact these authors state that:

'Small does not mean simple. Neither is a small business merely a scaled-down version of a large business. A small number of human beings engaged in a common endeavour can create very complex, subtle interactions. Unravelling the underlying meanings and patterns of these interactions can be far from straightforward.'

This research study is the first study that has looked for patterns relating to IT alignment over time by small firms in the island state of Malta. To identify these patterns, this research study focused on the owner-managers' actions through the undertaking of a non-positivist stance, by adopting an inductive approach within the grounded theory methodology. The key constructs that were denoted in the emerging theoretical model for IT adoption as illustrated in figure 4.2 provide salient issues which may impact on the various stakeholders such as the academics and researchers, the small firm owners, the outsourcers, the policy makers and the private constituted bodies.

## 7.4.1 Implications for Academics and Researchers

Of particular interest to academics and researchers alike are the three progressive phases that were used in this study to create theory relating to IT alignment patterns in small firms. These three phases which comprise: (1) the identification and extension of constructs as illustrated in figure 4.2; (2) the identification of alignment states that are to be used as signposts to exhibit movement as illustrated in figure 5.1 and (3) the identification of four IT alignment patterns as illustrated in figures 6.5 to 6.8 separately and collectively in figure 7.1, will contribute to the understanding of the phenomenon for future research purposes.

In particular, the key constructs as demonstrated in figure 4.1 that emerge from the detailed constructs set established in figure 4.2 prove to be the basis for contributing to learning relating to how IT alignment could be attained. This research study has identified a typology of possible IT alignment equilibrium states attained by these small firms. Academics require an instrument to understand the small firms' IT alignment patterns which stem from their IT adoption behaviour. In fact, as claimed by Curran and Blackburn (2001, p115), typologies are commendable for their explanatory characteristics and are also useful to generate meaningful interpretations. Studying the alignment process necessitated the evaluation of on-going interactions relating to IT

adoption behaviours that occur over time in response to the dynamic events that are continuously unfolding. It is hoped that mapping IT adoption behaviour leading to the identification of four IT alignment patterns has contributed towards learning. Of significance to academics is the set of 13 propositions that emanate from the observed IT alignment patterns. These propositions are shown in Appendix 6. It is expected that by extending the list of constructs that emanate from the small firms' contextual conditions, by identifying possible IT alignment equilibrium states attained by small firms and by seeking common patterns of IT alignment will reduce some of the literature gaps highlighted in the introductory chapter of this research, by gaining a better understanding of the phenomenon under study.

### 7.4.2 Implications for Owner-Managers

This study has demonstrated that the owner-manager's awareness of IT is pivotal to unleash the potential that emanates from the effective deployment of IT projects. The owner-manager should facilitate and co-ordinate the activities leading to IT deployment in order to attain alignment between IT and business objectives. In response to attaining alignment, small firms' owner-managers have tended to implement IT projects by undertaking outsourcing. The outsourcing function has exposed the owner-managers to their level of project management competencies to manage outsourcers, their capabilities to specify the information system requirements to outsourcers, their deficiencies that emanate from the IT knowledge gap and their perception of high IT usage. All these elements have an impact on the level of system integration and the levels of alignment attained between business and IT. These key constructs have also been instrumental in determining the four alignment equilibrium states, namely Adaptation, Anticipation, Synchronization and Collaboration. These IT alignment states are used as signposts to map the IT alignment processes. Ownermanagers would be able to examine the business-IT alignment patterns exhibited in Figure 7.1 to understand their firms' positioning relating to the level of alignment attained through the effective usage of IT projects.

The IT knowledge gap dimension and the owner-managers' high perception of IT performance are two key elements which need to be addressed. It is apparent from this research study that the lower the IT knowledge that firms have, the higher is the perception of attaining a satisfactory IT performance. Owner-managers will have to exercise resilience to cope with day-to-day activities when they would have to

improvise and adapt to IT tasks. It is in the interest of owner-managers to enhance their IT knowledge capabilities by pursuing educational programmes in this area. It is evident from this research study that owner-managers should endeavour to adopt the Collaboration alignment state by sharing their responsibility between business and IT functions, and by weighing equally IT and business capabilities. In the absence of a close collaboration with outsourcers, another suitable alternative is for ownermanagers to adopt the Synchronization alignment state whereby, following the execution of a top-down approach, IT will be used as an enabler to attain business objectives. Under both modes, that is, the Collaboration and the Synchronization states, owner-managers are required to strengthen their business planning and project management skills, if the integration of information systems is to be attained. These two IT alignment equilibrium states can be instrumental in reducing the small firms' external risk of outsourcing dependency. Rather than looking at outsourcing as if they are hosting a stranger in their firms, outsourcing, if managed professionally, should be seen as the vehicle that drives small firms towards reaping the benefits of computerisation. Under these circumstances, it is possible that firms will position themselves in the Fulfilling alignment pattern, leading to information system integration.

# 7.4.3 Implications for Outsourcers

Outsourcing makes it easier for small firms to focus on their basic competencies to run the business. Outsourcing not only provides small firms with the opportunity to keep abreast of technology without having to incur large investments, but also improves information systems capabilities. Given the importance of the outsourcing function in this research study, IT outsourcers should, as much as possible, understand the firms' business activities and processes before deploying IT projects. Outsourcers should also endeavour to speak the business language of these firms and ascertain that any IT projects that are to be deployed should be organisationally feasible.

Outsourcers should assume the responsibility to meet the business requirements that are agreed upon with the small firms. Furthermore, outsourcers will have to foster a relationship of trust with the owner-managers of small firms if they expect ownermanagers to be participants in enabling IT to meet the firms' strategic objectives or to invite them to be partners in weighing business and IT possibilities equally. Under such circumstances, outsourcers will assist small firms to position themselves on one of the identified IT alignment patterns, denoting stability when IT projects are implemented.

# 7.4.4 Implications for Policy-Makers and Private Institutions

Policy makers and private institutions, which include government bodies and other constituted bodies, such as Malta Enterprise, Malta Communications Authority and the Chamber of Commerce, have an interest in ensuring that small firms do utilize IT in the most effective way. The government's support to small firms manifested by the channelling of EU funds to implement IT application systems, has already been highlighted in the introductory chapter of this research study. Also the policy-makers' efforts to provide more emphasis on IT educational programmes have been pointed out.

It is expected that through this research study, the importance of educating ownermanagers and their senior-managers in areas such as business planning, project management and IT knowledge related to business processes such as Enterprise Systems will lead small firms to attain satisfactory alignment states such as Synchronization and Collaboration. Furthermore, policy-makers and private institutions should create the necessary IT infrastructure to assist small firms in enhancing their alignment between IT and strategic objectives by following one of the identified IT alignment patterns that is commensurate with the firms' contextual conditions.

# 7.5 Limitations and Recommendations for Future Development

During the research process, limitations relating to transferability, confirmability, dependability and credibility were identified.

# 7.5.1 Transferability

Whereas positivist researchers endeavour to demonstrate that research findings can be applied to a wider population, qualitative researchers find difficulty in demonstrating that research conclusions are transferable to other settings (Shenton 2004). Similarly, despite the evolving nature of grounded theory and its application to an increasing number of contexts, there remains one outstanding and challenging issue, namely, that most grounded theory studies are generated at the "substantive" level rather than raised to the general level (Goulding 2002). To resolve this issue of transferability, it is the responsibility of the qualitative researcher to provide sufficient detail relating to the context of the fieldwork so as the practitioner will be able to transfer the findings to another setting (Lincoln and Guba 1984)

The focus of this research study was primarily to gain an understanding and to explain particular aspects relating to IT alignment in small firms on the small island state of Malta. In particular, the qualitative researcher embarks on a journey of discovery rather than one of verification (Bryman 1984). As in other types of qualitative research, the research study was not conducted to attain statistical validation and widespread generalisations, but to discover patterns and seek explanatory power by developing propositions leading to a better understanding of the main issues that emerged from the substantive area of enquiry (Creswell 2007).

At this stage, two issues need consideration and clarification, namely, the contextual conditions where this research was undertaken and the predictable power that emanates from the typology of the identified alignment equilibrium states and the four trajectories relating to the IT alignment patterns of small firms. This process has already been explained in detail in chapter 6 whereby the final outcome was reflected in the four IT alignment patterns followed by the set of 13 propositions.

The weakness of this research study (as well as in other qualitative studies) is the issue of transferability. The contextual conditions faced by owner-managers in Malta may be particular, such as being members of the EU, access to other foreign markets, transportation costs, and Malta's geographical position in the middle of the Mediterranean and so on. For example, the island's small size, and therefore the close proximity of the owner-managers, should not impact on the construction of constructs as illustrated in figure 4.2., but could influence the positioning of IT alignment equilibrium states as exhibited in figure 5.1. It is apparent that small firms operating in Malta tend to adopt the insular attitude of striving for survival, thereby opting for the Adaptation alignment state, a trait which is renowned as forming part of their national culture (Bossevain 1993). Similarly the Synchronization alignment state seems to be in line with the island's traits whereby IT is used as an enabler but with the outsourcer being kept at arms' length. However, it seems that partnering with outsourcers in the Collaboration alignment state seems more to be a trait that is practised in collectivist

countries such as France (Hofsteade, 2001), given that the Maltese are perceived to be an individualistic society. Notwithstanding that small island states are not a homogeneous group, they do share many common features. However, the research study would have to be replicated in other small island states to confirm that the trends relating to IT alignment patterns that emerged are common enough to be generated across geographical settings.

This research can be considered as a substantive study, given that it relates to the understanding of an explicit phenomenon in a clearly defined setting. Curran and Blackburn (2001 p 7.) claim that small business research will always exhibit difficulties relating to transferability due to the diverse phenomena as subject matter which is resident in the contextual conditions where the study will be conducted. Notwithstanding that formal grounded theory can be generated from a single study, it is not uncommon that most examples are derived from existing substantive theories (Glaser and Strauss 1967). However, transferability may also be possible as there is the belief that the general aspects of theory may exist in the particular and any learning that emerges from particular circumstances can be applied to other situations (Glaser 2007).

# 7.5.2 Confirmability

Various researchers such as Patton (1990) and Lincoln (1995) have acknowledged the possibility of quantitative researchers' biases when questionnaires are designed. Qualitative researchers experience similar challenges to reduce their predispositions in their research findings. The concept of confirmability represents the qualitative researchers' comparable concern to objectivity (Shenton 2004). It is essential that researchers must ensure, as far as possible, that research findings emerge from the participants' experiences, rather than their preferences and characteristics (Miles and Huberman 1994).

The accumulated knowledge relating to the current researcher's academic and work experience on the subject matter may be seen as a form of bias. Therefore, under such circumstances, it may appear that the researcher may pollute the research findings by imposing concepts that represent the researcher's own pre-conceived ideas. In grounded theory, it is acknowledged that the researcher is predominantly the research tool whereby all data are filtered through the lens of the researcher and any findings are considered to be intuitive and subjective (Goulding 2002). Charmaz (2006 p. 130) asserts that "the theory depends on the researcher's view; it does not and cannot stand outside it".

Notwithstanding this position on the researcher's role, it is widely accepted that qualitative researchers should adopt a rigorous reflexive examination for bias at each stage of the research process (Charmaz 2006). The researchers' subjectivity is reflected in their viewpoints, backgrounds, positions, contextual conditions and interactions (Charmaz 2009). Researchers create value from the participants' statements by engaging themselves in reflexivity throughout the data analysis process. In particular, the grounded theory methodology has endowed the current researcher with a systematic methodology to tackle effectively any bias and prejudices (Glaser and Strauss 1967; Urguhart 2001).

The position taken in this research study is one of an anti-positivist orientation including Charmaz's (2006) approach towards a constructivist stance. Such an approach also tends to reduce bias and comprises: the researcher's own views which impact on the interpretivist and reflexive contentions adopted in the study will mould the substance of the research (Denzin and Lincoln 2008); the adoption of the rigourous constant comparative analysis method provides consistency towards objectivity (Fernandez 2004); any theories which are generated represent a construction of reality of a complex world as envisaged by the researcher's lens (Charmaz 2006). As advocated by Morse (2007), the researcher must not only be experienced in the subject matter but must also be competent in research skills. In fact, the researcher's academic and practical experience in implementing Information Systems and in undertaking various research-related consultancy works enabled the researcher to the necessary experience and skills required to conduct interviews. During all the interviews for this research study, the researcher strived, when necessary, to facilitate and direct the interviewee's discourse, to shift from the general to the specific, to request examples and to ask for additional details. Gaining trust of the interviewee at a very early stage of the interview is a very important skill which was exercised continuously throughout this research study. As contended by Haig (1995), research studies in grounded theory are based on a collaborative approach, involving both the participant's perspective as well as that of the researcher. Similarly, Creswell (2007) reiterated that research studies that use grounded theory for qualitative

analysis are reliant on the quality of the researcher's understanding of the phenomena under study.

# 7.5.3 Dependability

Another limitation to this research study is its dependability on a single informant, that is, the owner-manager of the firm. This research study has concentrated on the contribution of only one actor. However, the participation of 31 owner-managers and consequently their multiple views reduced the effect on the study of peculiar local factors that may be attributed to one firm. It is acknowledged that any qualitative research should not ignore the contribution of the other actors, both within and outside the firm. These actors will undoubtedly have their experiences to contribute towards the substantive area of enquiry leading to the enrichment of the research findings. For example, the dimension relating to the 'perception of high IT usage' would have been strengthened conceptually, had other managers or other employees participated in this research study. However, Curran and Blackburn (2001 p.112) contend that ownermanagers are reluctant to allow small business research data collection to be an ongoing process by involving other actors. The fact that owner-managers of small firms claim that they do not have the time or are unwilling to allow continuous operational disruptions by the researcher may be justification enough to focus solely on the activities of the owner-manager.

# 7.5.4 Credibility

The qualitative researcher's equivalent concept to the positivist researchers' internal validity has been labelled as credibility whereby researchers attempt to demonstrate that the research findings represent a true picture of the researched phenomenon (Merriam 1998). Similarly it is claimed that the researchers' objective to ensure credibility in their findings and conclusions is one of the most crucial features in ascertaining trustworthiness (Lincoln and Guba 1985).

Notwithstanding that grounded theory has been gaining in popularity especially in management research particularly in information systems applications (Urquhart 2007, 2013), some scepticism relating to the credibility of the method still abound (Bryant and Charmaz 2007, Bryant 2002). Issues relating to the conceptualisation of data as being unproblematic as well as the application of methodological flexible practices can

result into ambiguous findings. For example, in qualitative studies, credibility difficulties may arise when the researcher undertakes the research study on his own. Whilst it may be acknowledged that engaging more researchers may contribute perhaps towards a richer outcome relating to the research findings, the issues relating to transferability and confirmability that were previously discussed still abound. However, grounded theory, as applied in this study, was both relevant and rigorous. The identification of constructs within the hierarchical framework of context, actions and consequences; the identification of the four IT alignment equilibrium states; and the identification of four IT alignment patterns that stem from the small firms' IT adoption behaviour provide meaningful accounts that may be applied by owner-managers.

As already previously discussed, the grounded theory methodology, as applied in this study, dealt with important issues of bias and preconceptions and used an inductive approach to construct the mid-range theory. Also, triangulation, which was used in this research study, is entrenched in the methodology from which conceptualisations emerge to build categories and memos, based on multiple perspectives of the ownermanagers that evolve through the application of the constant comparison of interviewbased data. Also, the access to each firm's website data helped to verify particular details that owner-managers have supplied. Most importantly, this research study managed to construct ideas based on patterns of IT alignment through the applicability of grounded theory. Through grounded theory, the researcher seeks an approximation of what is going on within the context that is being studied. Curran and Blackburn (2001 p.95) contend that the interpretations or explanations of research findings have to be worked upon, constructing a 'best fit' result, because the end product does not dovetail with all the data collected. The patterns of IT alignment as represented by the four trajectories in figure 6.1 individually, and figure 7.1 collectively, depict lines of 'best fit'.

From a credibility perspective, this research, through the application of grounded theory, has enabled the development of unambiguous, logical and parsimonious theory-building study: that is relevant, rigorous, useful and current; that satisfies the tenets of good science; and that will be used in small business research to explain and predict the phenomena within its environment.

#### 7.5.5 Recommendations for Future Research Directions

The objectives of this section stem from the fact that just as new research is inspired by critical assessments of previous research, so the results of this research study will become the take-off ground for generating further research questions and tentative interpretations at wider formal levels. Two challenges that were previously discussed under the limitations section, namely, the issues of transferability and the non-reliance of the single informer stand out as sound elements for future research directions.

As contended by Curran and Blackburn (2001 p. 7), in order to pass the test of quality, the research findings will have to be transferable to a wider audience, and particularly to researchers. Notwithstanding that the model depicted in figure 7.1 explained the relevant behaviour of small firms in the substantive area of the research and is relevant to various stakeholders, particularly the owner-managers of small firms, the issue of transferability gains in importance. The age factor, in relation to the ownermanager's IT awareness and knowledge was not considered in this research study, but it subsequently emerged as important from the data collected. However, the age factor was ignored because this study adopted a resource-based view of the firm by analysing the owner-manager's IT awareness and knowledge capabilities, irrespective of age. Therefore, the model could be enhanced if the age of owner-managers is considered as a determinant of IT adoption in small firms. The model can also be strengthened if the propositions as established in Appendix 6 are tested quantitatively by engaging in multivariate analytic techniques, by testing the model in different settings and by fine-tuning the model as required. Also, the model should be tested in various locations such as in other small island states, for example Cyprus, Mauritius and Seychelles. Small islands are renowned for not being a homogeneous group, yet they share many common features such as limited funds, human resources and skills (Nurse et al., 2001). The model should be considered for its relevance in these small island states to determine whether they experience similar characteristics relating to IT adoption, as those exhibited by small firms operating in Malta. Scenarios relating to the owner-managers' IT awareness and their management capabilities in monitoring outsourcers may provide rich insights relating to IT adoption by small firms in these small island states. Also, the characteristics relating to alignment equilibrium states and the subsequent IT alignment patterns attained by firms operating in Malta can be compared and contrasted with those firms operating in these small island states.

The inclusion of IT outsourcers as a key component of this research study warrants their inclusion in future research studies so as to enhance the theoretical model. Further research is needed to examine how outsourcers look upon the Synchronization and Collaboration alignment states and what would be their preference if they had the option to choose. It would be interesting to evaluate what makes outsourcers partner with owner-managers to strategize together weighing business and IT possibilities equally or to perform the role of IT supplier by utilising IT solely as an enabler of the firm's business objectives. The outsourcers' views relating to the level of IT knowledge that owner-managers should have, should also be evaluated to strengthen the model presented by extending the set of constructs leading to concept generation or confirmation. It is to be expected that the inclusion of multiple views, coming from a very important stakeholder, namely, the IT outsourcer, would allow them, as participants, to contribute towards generating new insights.

It is expected, therefore, that further research would take this research model to be tested in a variety of contexts, by incorporating the views of outsourcers and other stakeholders, by investigating the interrelationships between the extended set of identifiable key IT alignment attributes and by testing quantitatively the propositions that are generated by this research study. It is hoped that by doing so the generalizability of the IT alignment patterns adopted by small firms as applied in this research study can be increased.

# **References and Bibliography**

AL-QIRIM, N., 2006. Personas of E-commerce adoption in small businesses in New Zealand. *Journal of Electronic Commerce in Organizations*, 4(3), pp.17-45

AL-QIRIM, N., 2007. The adoption of eCommerce communications and applications technologies in small businesses in New Zealand. *Electronic. Commerce Research and Applications*, 6(4), pp. 462-473

ANDREW, T., 2006. The Literature Review in Grounded Theory: A response to McCallin (2003), The Grounded Theory Review: *An International Journal*, 5(2/3), pp. 29–41

AQUILINA R. and FULFORD, H., 2011. The Effects of Entrepreneurs' Knowledge Gaps in IT Adoption in Small Firms: A Dynamic Perspective. *Institute for Small Business & Entrepreneurship, 9-10 November 2011 – Sheffield U.K* 

ARAGÓN-SÁNCHEZ, A. and SÁNCHEZ-MARÍN, G., 2005. Strategic orientation, management characteristics, and performance: A study of Spanish SME's. *Journal of Small Business Management*, 43(3), pp. 287-308

AVISON, D., JONES, J., POWELL P. and WILSON D., 2004. Using and validating the strategic alignment model. *Strategic Information Systems*, 13 (3), pp. 223–246

AVISON, D. and FITZGERALD, G., 2008. *Information Systems Development*. Mc Graw Hill Education

AVISON, D. and TORKZADEH, G., 2009. *Information Systems Project Management*. Sage Publications Inc.

BAARD, V.C. and VAN DEN BERG, A., 2004. Interactive Information Consulting System for South African Small Businesses, *South African Journal of Information Management*, 6(2) (3), pp.1-27

BAETS, W., 1992. Aligning Information Systems with Business Strategy, *Journal of Strategic Information Systems*, 1(4), pp. 205–213

BASSELLIER, G., REICH, B.H. and BENBASAT, I., 2001. Information technology competence of business managers: A definition and research model. *Journal of Management Information Systems*, 17(4), pp. 159–182

BATTISTI, G., HOLLENSTEIN, H., STONEMAN, P. and WOERTER, M., 2007. Inter and intra firm diffusion of ICT In the United Kingdom (UK) And Switzerland (CH): An Internationally Comparative Study Based On Firm-Level Data. *Economics of Innovation and New Technology*, 16(8), pp. 669 – 687

BECKINSALE, M. and LEVY, M., 2004. SMEs and Internet Adoption Strategy: who do SMEs listen to? Proceedings of the 12th ECIS conference, Turku, Finland.

BECKINSALE, M. J. J., LEVY, M. and POWELL., P. 2006 Exploring internet adoption drivers in SMEs. Electronic Markets – *The International Journal*, 16 (4), pp. 361-370

BECKINSALE, M.J.J., RAM, M. and THEODORAKOPOULOS, N., 2011. ICT adoption and ebusiness development: Understanding ICT adoption amongst ethnic minority businesses. *International Small Business Journal*, 29 (3), pp. 193-219

BECKINSALE, M.J.J. AND RAM, M., 2006. Delivering ICT to ethnic minority businesses: An action-research approach. *Environment and Planning C Government and Policy*, 24 (6), pp. 847-867.

BEHESHTI, H.M., 2004. The impact of IT on SMEs in the United States. *Information Management and Computer Security*, 12 (4), pp. 318-27

BENBYA, H. and McKELVEY, B., 2006. Using coevolutionary and complexity theories to improve IS alignment: a multi-level approach. *Journal of Information Technology*, 21(4) pp. 284-298

BERGERON, F., RAYMOND, L. and RIVARD, S., 2001. Fit in Strategic Information Technology Management Research: An empirical comparison of perspectives. *The International Journal of Management Science*, 29(2), pp. 125–142

BERGERON, F., RAYMOND, L. and RIVARD, S., 2004. Ideal patterns of strategic alignment and business performance. *Information and Management*, 41(80), pp. 1003-1020

BHARATI, P. and CHAUDHURY, A., 2006. Current status of technology adoption: Micro, small and medium manufacturing firms in Boston. *Communications of the ACM*, 49(10), pp. 88-93

BHARADWAJ, P.N. and SONI, R.G., 2007. E-Commerce Usage and Perception of E-Commerce Issues among Small Firms: Results and Implications from an Empirical Study". *Journal of Small Business Management*, Vol.45, No. 4 pp.501-521

BIRKS, M. and and MILLS, J., 2011. Grounded Theory: A Practical Guide: Sage Publications.

BLUMER, H., 1969. Symbolic Interactionism. Englewood Cliffs, NJ: Prentice Hall.

BODDY, D., 2011. *Management.* 5<sup>th</sup> edn. Pearson Education Ltd.

BOSSEVAIN, J., 1993. Saints and Fireworks: Religion and Politics in rural Malta. Progress Press Limited.

BROADBENT, M. and WEILL, P., 1993. Improving Business and Information Strategy Alignment: Learning from the banking industry. *IBM Systems Journal*, 32(1), pp. 162–179

BROADBENT, M., WEILL P., O'BRIEN and NEO, B.S., 1996. Firm Context and patterns of IT infrastructure capability. *ICIS Conference Proceedings*, Cleveland, Ohio, pp. 174-191

BROWN, J.S. and HAGEL, J., 2003. "Does IT matter?", *Harvard Business Review*, 81 (7), pp. 109-112

BRYANT, A., 2002. Grounding systems research: Re-establishing grounded theory. *Proceedings of the 35th Hawaii International Conference on System Sciences.* 

BRYANT, A., 2009. Grounding theory and pragmatism: The curious case of Anselm Strauss. F *Forum: Qualitative Social research Sozialforschung/Forum: Qualitative Social Research*, 10(3)

BRYANT, A. and CHARMAZ, K., 2007. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications.

BRYMAN. A., 1984. The debate about quantitative and qualitative research: a question of method or epistemology? *The British Journal of Sociology*, XXXV (1), pp, 75-92

BRYMAN. A., 2008. Social Research Methods. 3<sup>rd</sup> ed. Oxford University Press.

BRYNJOLFSSON, E., 1993. The productivity paradox of information technology. *Communications of the ACM*, 35 (December): pp. 66-77

BURN, J.M. and SZETO, C., 2000. A Comparison of the Views of Business and IT Management on Success Factors for Strategic Alignment. *Information & Management*, 37(4), pp.197–216

BUTLER, T. AND MURPHY, C., 2008. An exploratory study on IS capabilities and assets in a small-to-medium software enterprise. *Journal of Information Technology*, 23(4), pp. 330-344

CALDEIRA, M.M. and WARD, J. M., 2002. Understanding the successful adoption and us of IS/IT in SMEs: an explanation from Portuguese manufacturing industries. *Information Systems Journal*, 12, pp 121-152

CALDEIRA, M. M. and WARD, J. M., 2003. 'Using resource-based theory to interpret the successful adoption and use of information systems and technology in manufacturing small and medium-sized enterprises, *European Journal of Information Systems*, 12(2), pp. 127-141

CAMPBELL, B., 2005. Alignment: Resolving ambiguity within bounded choices, PACIS 2005, Bangkok, Thailand. pp. 1–14

CAMPBELL, B., 2007. *The dynamics of alignment: Resolving Strategic Ambiguity within bounded choices*, Doctor of Philosophy Thesis. University of Technology, Sydney., Australia

CAMPBELL, B., KAY, R. and AVISON, D. 2005. Strategic Alignment: A practitioner's perspective. *Journal of Enterprise Information Management*, 18(5/6), pp. 653–664

CARR, N., 2003. IT doesn't matter. Harvard Business Review, May 2003, pp. 41 – 49

CHAN, Y. E., HUFF, S. L., BARCLAY, D. W. and COPELAND, D. G., 1997. Business strategic orientation, information systems strategic orientation and strategic alignment. *Information Systems Research*, 8 (2), pp. 125–150

CHAN, Y.E., 2002. Why Haven't we Mastered Alignment?: The importance of the informal organization structure. *MIS Quarterly Executive*, 1(2): pp. 97–112

CHAN, Y.E., SABHERWAL, R. and THATCHER, J.B., 2006. Antecedents and Outcomes of Strategic IS Alignment: An empirical investigation. *IEEE Transactions on Engineering Management*, 51(3), pp. 27–47

CHAN, Y.E. and REICH B.H., 2007. "IT alignment: what have we learned?", Journal of Information Technology, 22, pp. 297-315

CHAN, F.T.S., CHONG, A.Y.L. and ZHOU, L., 2012. Empirical Investigation of Factors Affecting E-collaboration Diffusion in SMEs. *International Journal of Production Economics*, 138, pp. 329-344

CHANDLER, A., 1962. Strategy and Structure: Chapters in the history of American industrial enterprise. Cambridge: MIT Press.

CHAO, C. and CHANDRA, A., 2012. Impact of owner's knowledge of information technology (IT) on strategic alignment and IT adoption in US small firms, *Journal of Small Business and Enterprise Development*, 19(1), pp. 114 – 131

CHARMAZ, K., 2000. Grounded theory: Objectivist and constructivist methods. In: N.K. DENZIN and Y.S. LINCOLN, eds. *The handbook of qualitative research*. Thousand Oaks, SAGE Publications. pp. 509-535

CHARMAZ, K., 2005. Grounded theory in the 21<sup>st</sup> century: In: N.K. DENZIN and Y.S. LINCOLN, Eds. *The Sage handbook of qualitative research*. Thousand Oaks, SAGE Publications. pp. 507-535

CHARMAZ, K., 2006. Constructing grounded theory. London: Sage Publications.

CHARMAZ, K., 2009. Shifting the grounds. In : J.M. MORSE, P. STERN, J. CORBIN, B. BROWERS, and A. CLARKE. *Developing grounded theory: The second generation.* Walnut Creek, CA: Left Coast Press, pp. 127-147

CHARMAZ, K., and MITCHELL, R.G., 2001. An invitation to grounded theory in ethnography. In: ATKINSON, P.A. et al , eds. Handbook of ethnography. London SAGE Publications. pp. 160-174

CHASTON, I., BADGER, B. and SADLER-SMITH, E., 2001. Organizational learning: An empirical assessment of process in small U.K. manufacturing firms. *Journal of Small Business Management*, 39(2), pp.139-151

CHERRYHOLMES, C.H., 1992. Notes on pragmatism and scientific realism. *Educational Researcher*, 14, pp. 13-17

CHOE, J., 2003. The Effect of Environmental Uncertainty and Strategic Applications of IS on a Firm's Performance, *Information & Management*, 40(4), pp. 257–268

CHONG, S., 2004. Electronic Commerce Adoption by Small and Medium Sized Enterprises in Australia: an Empirical Study of Influencing Factors. *Proceedings of the 12th ECIS Conference*, Turku, Finland.

CHONG, A.Y.L., OOI, K.B., LIN, B. and RAMAN, M., 2009a. Factors affecting the adoption level of c-commerce: an empirical study. *Journal of Computer Information Systems*, 50 (2), pp. 13–22

CHONG, A.Y.L., OOI, K.B., LIN, B. and TANG, S.Y., 2009b. Influence of interorganizational relationships on SMEs' e-business adoption. *Internet Research*, 19 (3), pp. 313–331

CHUTTUR, M.Y., 2009. Overview of the Technology Acceptance Model: Origins, Developments and Future Directions. Indiana University, USA . *Sprouts: Working Papers on Information Systems*, 9(37), pp. 1-21

CIBORRA, C.U., 1997. De Profundis? Deconstructing the concept of strategic alignment. *Scandinavian Journal of Information Systems*, 9 (1), pp. 57–82

CIBORRA, C.U., 2001. From Control to Drift. Oxford: Oxford University Press

CIO INSIGHT STAFF., 2004. Is Your Culture Hindering Alignment? *CIO Insight*, 45(1), pp. 65–75

CLARKE, A.E., 2005. Situational analysis. Thousand Oaks, CA: SAGE Publications.

CLARKE A., 2009. From Grounded Theory to Situational Analysis. In : J.M. MORSE, P. STERN, J. CORBIN, B. BROWERS, and K. CHARMAZ. *Developing grounded theory: The second generation.* Walnut Creek, CA: Left Coast Press, pp. 194-233

CORBIN J. and STRAUSS A., 2008. *Basics of qualitative research*. 3<sup>rd</sup> ed. London: Sage Publications.

COVAN, E., 2007. The discovery of grounded theory in practice: The legacy of multiple mentors. In: A. BRYANT and K. CHARMAZ, Eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 58-74

CRAGG, P., KING, M. and HUSSIN, H., 2002. "IT alignment and firm performance in small manufacturing firms", . *Strategic Information Systems*, 11(2), pp. 109–132

CRAGG, P., TAGLIAVINI, M. and MILLS, A., 2007. *Evaluating the Alignment of IT with Business Processes in SMEs.* In: Proceedings of the 18th Australasian Conference on Information Systems pp. 38-48

CRAGG, P., CALDEIRA, M. and WARD, J., 2011. Organizational Information Systems Competences in Small and Medium-sized Enterprises, *Information & Management*, 48(8), pp. 353-363

CRAMTON, C.D., 2001. The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, 12(3), pp. 346–371

CRESSWELL, J.W., 2007. *Qualitative inquiry and research design: Choosing among five approaches.* 2<sup>nd</sup> ed. Lincoln: Sage Publications

CROTEAU, A. and BERGERON, F., 2001. An Information Technology Trilogy: Business strategy, technological deployment and organizational performance. *Journal of Strategic Information Systems* 10(2), pp. 77–99.

CROTTY, M., 1998. The foundations of social research: meaning and perspective in the research process. London: Sage.

CURRAN, J. and BLACKBURN, R.A., 2001. *Researching the small enterprise*. London: SAGE Publications.

DANIEL, E. and GRIMSHAW, D., 2002. An exploratory comparison of electronic commerce adoption in large and small enterprises. *Journal of Information Technology*, 17(3), pp. 133-147

DAVIS, F. D. 1986. A technology acceptance model for empirically testing new end-user information systems: Theory and results. Doctoral dissertation. Cambridge, MA: MIT Sloan School of Management.

DAVIS, F. D., BAGOZZI, R. P., and WARSHAW, P. R. 1989. User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, *35*(8), pp. 982–1003

DE LEEDE, J., LOOISE, J.C. AND ALDERS, B., 2002. Innovation, Improvement and Operations: An exploration of the management of alignment, International Journal of Technology Management 23(4), pp. 353–368

DELMAR, F. and SHANE, S., 2003. Does business planning facilitate the development of new ventures? *Strategic Management Journal*, 24: pp. 1165-1185

DELONE, W., and MCLEAN., 2003. The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19, pp. 9-30

DENZIN, N.K. and LINCOLN, Y.S., eds., 2008. *Strategies of qualitative inquiry. 3rd edition*. Los Angeles: SAGE Publications.

DEY, I., 2007.Grounding Categories. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 167-190

DOHERTY N. F. and FULFORD H., 2006. Aligning the information security policy with the strategic information systems plan. *Computers & Security*, 25 (1), pp. 55-63

DOUGLAS, D., 2004. Grounded theory and the "and" in entrepreneurship research. *Electronic Journal of Business Research Methods*, 2(2), pp. 59-68

DURST, S. and EVARDSSON, I.R., 2012. Knowledge Management in SMEs: a literature review. *Journal of Knowledge Management*. 16(6) pp. 879-903.

DYERSON, R., HARINDRANATH, G. and BARNES, D., 2009. National Survey of SMEs' Use of IT in Four Sectors. *The Electronic Journal Information Systems Evaluation*, 12(1), pp.39–50

eCIC. 2005. eCommerce in Welsh SMEs: The State of the Nation report 2005/6, eCommerce Innovation Centre, Cardiff Business School, Cardiff University.

EARL, M.J., 1987. Information systems strategy formulation. In : R.J. Borland and R.A. Hirscheim [Ed.] *Critical Issues in Information Systems Research. Wiley*, London, pp. 157-178

EARL, M.J., 1989. *Management Strategies for Information Technology*. (New York: Prentice Hall).

EARL, M.J., 1997. Knowledge as strategy: reflections on Skandia International and Shorko Films. In: L. PRUSAK, ED., *Knowledge in organizations,* Butterworth Heinemann

EDELMAN, L. F., BRUSH, C. G. AND MANOLOVA, T. S., 2005. Co-Alignment In The Resource-Performance Relationship: Strategy As Mediator. *Journal of Business Venturing*, 20 (3), pp. 359-383

EIKEBROKK, T.R. and OLSEN, D.H., 2007. An empirical investigation of competency factors affecting e-business success in European SMEs. *Information & Management,* 44(4), pp. 364-383

ERIKSSON, L.T. and HULTMAN, J., 2005. One digital leap or a step-by-step approach? – An empirical study of e-commerce development amongst Swedish SMEs. *International Journal of Electronic Business*, Vo 3, No.5, pp.447-460

EUROPEAN COMMISSION 2003. Commission Recommendation 2003/361/EC of 6 May 2003 concerning definition of micro, small and medium-sized enterprises, *Official Journal L 124*, of 20 May 2003.

FERNANDEZ, W.D., 2004. Using the Glaserian approach in Grounded Studies of Emerging Business Practices. *Electronic Journal of Business Research Methods*, 2(2), pp. 83–94

FERNÁNDEZ, W. D., LEHMANN, H. P. and UNDERWOOD, A., 2002. *Rigour and Relevance in Studies of IS Innovation: A Grounded Theory Methodology approach.* Paper presented at the Proceedings of the Xth European Conference on Information Systems ECIS 2002: Information Systems and the Future of the Digital Economy, Gdansk, Poland

FILLIS, I. JOHANSSON, U. and WAGNER, B., 2003. A conceptualisation of the opportunities and barriers to e-business development in the smaller firm. *Journal of Small Business and Enterprise Development*, 10 (3), pp. 336-344

FILLIS, I. and WAGNER, B., 2005. E-Business Development. *International Small Business Journal*, 23(6), pp. 603-634

FINK, D. and DISTERER, G., 2006. International case studies – To what extent is ICT infused into the operations of SMEs?, *Journal of Enterprise Information Management*, 19(6): pp. 608-624.

FLICK, U., 2009. An introduction to qualitative research. 4<sup>th</sup>ed. London : Sage Publications Ltd.

GALE, J. and ABRAHAM, D., 2005. Introduction: toward understanding e-business transformation, *Journal of Organizational Change Management*, 18(2), pp.113 – 116

GALLIERS R.D., 1991. Strategic information systems planning: myths, reality and guidelines for successful implementation. *European Journal of Information Systems*, 1(1), pp. 55–64

GALLIERS, R.D., 2004. *Reflections on Information Systems Strategizing*, In: Avgerou, C., CIBORRA and LAND F. (eds.) The Social Study of Information and Communication Technology, 1st edn, London: Oxford University Press, pp. 231–262.

GIBBS S., SEQUEIRA J. and WHITE M. M., 2007. Social Networks and Technology Adoption in Small Business. *International Journal of Globalisation and Small Business*, 2(1), pp.66-87

GIBSON, B. and CASSAR, G. 2005. Longitudinal analysis of relationships between planning and performance in small firms. *Small Business Economics* 25(3), pp. 207-222

GIDDENS, A., 1984. The Constitution of Society. Polity Press, Cambridge.

GLASER, B.G., 1978. *Theoretical sensitivity: Advances in the methodology of grounded theory.* Mill Valley, CA: The Sociology Press.

GLASER, B.G., 1992. *Emergence vs. Forcing: Basics of Grounded Theory Analysis*, Sociology Press, Mill Valley, CA.

GLASER, B.G., 1998. Doing grounded theory: Issues and discussions. Mill Valley, CA: The Sociology Press.

GLASER, B.G., 2001. The grounded theory perspective. Conceptualisation contrasted with description. Mill Valley, CA: The Sociology Press.

GLASER, B.G., 2005. The grounded theory perspective III: Theoretical Coding. Mill Valley, CA: The Sociology Press.

GLASER, B.G., 2007. Doing Formal Theory. In: A. BRYANT and K. CHARMAZ, Eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 97-113

GLASER, B. and STRAUSS, A., 1965. 'Temporal aspects of dying as a non-scheduled status passage', *American Journal of Sociology*, 71, pp. 48-59

GLASER, B. and STRAUSS, A., 1967. The discovery of grounded theory: strategies for qualitative research. Chicago: Aldine Publishing Co.,

GLUECK W. F., 1980. Business policy and strategic management. New York: McGraw-Hill.

GOSS, D., 1991. Small Business and Society. London: Routledge

GOULDING, C., 2002. Grounded theory. A practical guide for management, business and market researchers. London: SAGE Publications.

GOULDING, C., 2005. Grounded Theory, ethnography and phenomenology: A comparative analysis of three qualitative strategies for marketing research. *European Journal of Marketing,* Vol. 39 (3/4) pp. 294-308

GRANDON, E., ALSHARE, O., and Kwan, O. 2005. Factors influencing student intention to adopt online classes: A cross-cultural study. *Journal of Computing Sciences in Colleges, 20*(4), pp.46–56.

GRANDON, E. E. and PEARSON, J.M., 2004. Electronic commerce adoption: an empirical study of small and medium US businesses. *Information and Management*, 42, pp. 197-216

GRAY, C., 2006. Absorptive capacity, knowledge management and innovation in entrepreneurial small firms. *International Journal of Entrepreneurial Behaviour & Research*, 12(6), pp. 345–360

GUBA, E.G. and LINCOLN, Y.S., 1994. Competing paradigms in qualitative research. In: N.K. DENZIN and Y.S. LINCOLN, eds. *Handbook of qualitative research*. London: Sage Publications.

GUBA, E. G., and LINCOLN, Y. S., 2005. Paradigmatic controversies, contradictions and emerging confluences. In: N. DENZIN and Y. S. LINCOLN (Eds.), *The Sage Handbook of Qualitative Research*, Sage Publications. 8, pp. 191–215

GUNASEKARAN, A., MCGAUGHEY, R.E., NGAI, E.W.T. and RAI, B.K., 2009. E-Procurement adoption in the Southcoast SMEs. *International Journal of Production Economics*, 122 (1), pp. 161–175

GURD, B. 2008. Remaining consistent with method? An analysis of grounded theory research in accounting. *Qualitative Research in Accounting & Management*, 5(2), pp. 122-138

HAIG, B. D.,1995. Grounded Theory as Scientific Method. [online], available: <u>http://www.ed.uiuc.edu/EPS/PES-Yearbook/95\_docs/haig.htm. Accessed 18/08/2012</u>)

HAMEL, G. and PRAHALAD, C.K., 1994. Competing for the future. *Harvard Business Review*, 72 (4), pp. 122-128

HAMMER, M., 1990. Reengineering work: Don't automate, Obliterate. *Harvard Business Review*, 68 (4), pp. 104-112

HARINDRANATH G, DYERSON R, and BARNES D., 2009. ICT in Small Firms: Factors Affecting the Adoption and Use of ICT in Southeast England SMEs", In: *16th European Conference on Information Systems* (Golden W, Acton T, Conboy K, van der Heijden H, Tuunainen VK eds.), pp. 889-900, Galway, Ireland.

HASAN, B. and AHMED, M.U., 2007. Effects of interface style on user perceptions and behavioural intention to use computer systems, Computers in Human Behaviour, 23 (6) pp. 3025–3037

HENDERSON, J.C. and VENKATRAMAN N., 1993. Strategic alignment: a model for organizational transformation through information technology. *IBM System Journal*, 32(1), pp. 4–16

HILDENBRAND, B., 2007. Mediating structure and interaction in Grounded Theory. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 539-564

HITT, L. and E. BRYNJOLFSSON., 1996. Productivity, business profitability and consumer surplus: three different measures of information technology value. *MIS Quarterly*, June 1996 pp. 121-142

HODSON, M. and WHITELOCK, J., 2003 "Owner-managers: identify and innovation in adoption and early stages of Internet implementation in SMEs", *Proceedings of Business Innovation in the Knowledge Economy* conference, Warwick and Stratford.

HOFSTEDE, G., 2001. *Culture's consequences. Comparing values, behaviours, institutions, and organizations across nations. 2nd edition.* Thousand Oaks, CA: SAGE Publications.

HOLLOWAY, J., 2008. A-Z of qualitative research in healthcare. (2<sup>nd</sup> ed.) Oxford: Blackwell

HOOD, J.C., 2007. Orthodoxy vs. power: The defining traits of grounded theory. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 151-164

HONG, W., THONG J.Y.L. Wong, W.M and Tam K.Y, 2002. Determinants of user acceptance of digital libraries: An empirical examination of individual differences and systems characteristics, *Journal. Management of Information System*, 18(3) pp.97–124

HUSSIN, H, KING, M. and CRAGG, P., 2002. IT alignment in small firms. *European Journal of Information Systems*, 11(2), pp. 108-127

IGBARIA, M., ZINATELLI, N., CRAGG. P., and CAVAYE L.M. 1997. Personal computing acceptance factors in small firms: a structural equation model. *MIS Quarterly*, 23(3), pp. 279-305

IRANI, Z., 2002. Information Systems Evaluation: Navigating through the problem domain. Information Management, 40(1), pp.11–24

ISMAIL, N.A. and KING, M., 2005., Firm performance and AIS alignment in Malaysian SMEs', International. *Journal of Accounting Information Systems*, 6(4), pp. 241-259

JEFFCOATE, J., CHAPPELL, C. and FEINDT, S., 2002. Best practices in SME adoption of E-Commerce. *Benchmarking: An International Journal*, 9(2), pp. 122-132

JENKIN, T.A. AND CHAN, Y.E., 2006. Exploring the IS Project Alignment Construct, *Queen's* School of Business working paper.

JONES, P., BEYNON-DAVIES, P. AND MUIR, E., 2003. eBusiness barriers to growth within the SME Sector. *Journal of Systems & Information Technology*, 7 (1), pp. 1-25

JONES, P., PACKHAM G., BEYNON-DAVIES, P. and SIMMONS G., 2009. Attitudes to ICT adoption in Micro SMEs : An Owner/Managers Perspective. 32<sup>nd</sup> Annual Conference ISBE 3<sup>rd</sup> – 6<sup>th</sup> November, 2009, Liverpool

KALAKOTA, R. and ROBINSON, M., 2000. *E-Business Roadmap for Success*, Reading, MA: Addison-Wesley.

KAPLAN, R.S. and NORTON, D.P., 2000. Having trouble with your strategy? Then map it. *Harvard Business Review*, September-October, pp. 1-11

KAYNAK, E., TATOGLU, E. and KULA, V., 2005. An analysis of the factors affecting the adoption of electronic commerce by SMEs – Evidence from an emerging market, *International Marketing Review*, 22(6): pp. 623-640

KEARNS, G.S. and LEDERER, A.L., 2000. The Effect of Strategic Alignment on the use of IS-Based Resources for Competitive Advantage. *Journal of Strategic Information Systems*, 9(4), pp. 265–293 KEARNS, G.S. and LEDERER, A.L., 2003. A Resource-Based View of Strategic IT Alignment: How knowledge sharing creates competitive advantage, Decision Sciences 34(1), pp. 1–29.

KEARNS G.S., and SABHERWAL, R., 2007 Strategic alignment between business and Information Technology: A Knowledge-Based view of behaviours, outcome, and consequences *Journal of Management Information Systems* / Winter 2006–7, 23(3), pp. 129–162

KELLE, U., 2005. "Emergence" vs. "forcing" of empirical data? A crucial problem of "grounded theory" reconsidered. *Forum: Qualitative Social Research,* 6(2): Art.27

KHANG, T.S., ARUMUGAM, V., CHONG, A.Y.L. and CHAN, F.T.S., 2010. Relationship between supply chain management practices and organisation performance: a case study in the Malaysian service industry. International Journal of Modelling in Operations Management 1 (1), pp. 84–106

KIOSES, E., PRAMATARI, K., DOUKIDIS, G. and BARDAKI, C., 2007. Measuring the business value of electronic supply chain collaboration: the case of electronic invoicing. *BLED 2007 Proceedings*, 53.

KNIGHTS, D., NOBLE, F., and WILMOTT, H., 1997. 'We should be total slaves to the business': Aligning information technology and strategy – issues and evidence. In: Bloomfield B., Coombs R., Knights D., and Litter [Ed.] *Information technology and Organisations*. Oxford University Press, Oxford, pp. 13-31

KOBE K., 2007. How important are small businesses to the U.S. economy? *Small Business Administration Office of Advocacy. [online], available:* usinfo.state.gov/infousa/economy/industry/docs/sbfaq.pdf [accessed on 16/08/2012]

KOHTAMÄKI., M. KAUTONEN, T and KRAUS, S., 2008. Small Firm Performance: An Examination of the Role of Ambidexterity, Strategic Planning and Entrepreneurial Orientation. International Council for Small Business World Conference. 2008. Halifax, Nova Scotia, Canada.

KOELLINGER, P., 2008. The relationship between technology, innovation, and firm performance - Empirical evidence from e-business in Europe, *Research Policy*, 37(8), pp. 1317-1328

KOTLER, P., 2000. Marketing management: The Millennium Edition. Prentice Hall International

KRAUS S., HARMS, R. and SCHWARZ, E.J., 2006. Strategic planning in smaller enterprises – new empirical findings. *Management Research News*, 29(6) pp. 334–344

KRAUS S., HARMS, R. and SCHWARZ, E.J., 2008. Strategic Business Planning and Success in Small Firms, *International Journal of Entrepreneurship and Innovation Management*, 8(4). pp. 381-396

KRAUS S., REICHE S.B and RESCHKE C.H., 2007. Implications of Strategic Planning in SMES for International Entrepreneurship Research and Practice. In M. Terziovski (Ed.), Energizing Management through Innovation and Entrepreneurship: *European Research and Practice*, London: Routledge pp. 110-127

KYOBE, M., 2004. "Investigating the Strategic Utilization of IT Resources in the Small and Medium-Sized Firms of the Eastern Free State Province", *International Small Business Journal*, 22(2), pp. 131-158

LAUDON, K. and LAUDON, J. P. 2013. *Management Information Systems*.13<sup>th</sup> Edition Prentice Hall

LEE, C-S., 2001. An analytical framework for evaluating E-Commerce business models and strategies, *Internet Research: Electronic Networking Applications and Policy*, 11 (4), pp. 349-359

LEE, G. and XIA, W.D., 2006 "Organizational size and IT innovation adoption: A metaanalysis", *Information & Management*, 43(8), pp. 975-985

LEE, J. AND RUNGE, J., 2001. Adoption of information technology in small business: testing drivers of adoption for entrepreneurs. *Journal of Computer Information Systems* 42(1), pp. 44-58

LEE, M. K. O., CHEUNG, C. M. K., and CHEN, Z. (2005). Acceptance of Internet-based learning medium: The role of extrinsic and intrinsic motivation. *Information & Management, Vol.*42, pp.1095–1104.

LEE, Y., KOZAR, K.A and LARSEN, K.R.T., 2003. The technology acceptance model: past present and future. *Communications of the AIS*, 12(50) pp. 752-780

LEGRIS, P., INGHAM, J., and COLLERETTE, P. 2003. Why do people use information technology? A critical review of the technology acceptance model. *Information & Management,* 40, pp.191–204

LEHMANN, H. P., 2001. A Grounded Theory of International Information Systems. Unpublished Ph.D. Thesis, University of Auckland, Auckland, New Zealand.

LEMPERT, L.B. 2007. Asking questions of the data: Memo writing in the grounded theory tradition. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 245-264

LESJAK, D., and LYNN, M., 2000. Small Slovene firms and (strategic) information technology usage In: Hansen, R. H., Bichler, M., and Mahrer, H. (eds.), Proceedings 8th ECIS, Austria, pp. 63-70

LEVENBURG, N.M., 2005. Does size matter? Small firms' use of e-business tools in the supply chain. *Electronic Markets*. 15(2), pp. 94-105

LEVY, M. and POWELL, P., 2000. Information systems strategy in SMEs – an organizational perspective. *Journal of Strategic Information Systems*, 9 (1), pp.63–84

LEVY M., POWELL, P. and YETTON, P., 2001. SMEs: aligning IS and the strategic context. *Journal of Information Technology*, 16 (3), pp. 133-144.

LEVY M., POWELL, P. and YETTON, P., 2011. Contingent dynamics of IS strategic alignment in small and medium-sized enterprise. *Journal of Systems and Information Technology*, 13 (2), pp.106 – 124

LEWIS, W., AGARWAL, R., and SAMBAMURTHY, V. 2003. , Sources of influence on beliefs about information technology use: An empirical study of knowledge workers, *MIS Quarterly*, 27(4) pp. 657–678

LINCOLN Y.S., 1995. Emerging criteria for quality and interpretive research. *Qualitative Inquiry*, 1 pp. 275-289

LINCOLN Y.S. and GUBA E.G., 1985. Naturalistic Enquiry. Beverly Hills: Sage

LOCKE, K., 2001. *Grounded theory in management research*. Los Angeles: SAGE Publications.

LOCKETT, N. and BROWN, D., 2000. eClusters: The Potential for the emergence of digital enterprise communities enabled by one or more intermediaries in SMEs. *Knowledge and Process Management*, 7(3), pp. 196-206

LOVE, P. IRANI, Z. and EDWARDS, D.J., 2005. Industry-centric benchmarking of information technology benefits, costs and risks for small-to-medium sized enterprises in construction. *Automation in Construction*, 13, pp. 507–524

LUFTMAN, J., 2000. Assessing IT/Business Maturity. Communications of the Association for Information Systems, Vol. 4, Article 14

LUFTMAN, J., 2003. Assessing IT/Business alignment. *Information Systems Management,* Fall 2003.

LUFTMAN, J. and BRIER, T., 1999. Achieving and Sustaining Business-IT Alignment. *California Management Review*, 42 (1), pp. 109–122

LUFTMAN, J.N., LEWIS, P.R. and OLDACH, S.H., 1993. Transforming the Enterprise: The Alignment of Business and Information Technology Strategies. *IBM Systems Journal*, 32 (1), pp. 198–221

LUFTMAN, J., KEMPAIAH, R. and NASH, E., 2005. Key Issues for IT Executives. *MIS Quarterly Executive*, 5 (2), pp. 81–101

McCALLIN, A.M., 2003. Grappling with the Literature in a Grounded Theory Study, *Contemporary Nurse* 15(1–2): pp. 62–69

MaCGREGOR, R. and VRAZALIC, L., 2005. A basic model of electronic commerce adoption barriers – a study of regional small businesses in Sweden and Australia, *Journal of Small Business and Enterprise Development*, 12(4), pp. 510-527

MACDONALD, H., 1991. The Strategic Alignment Process, In: S. Morton and S. Michael (eds.) *The Corporation of the 1990s: Information technology and organizational transformation*, 1st edn, London: Oxford Press, pp. 310–322

MAES, R., RIJSENBRIJ, D., TRUIJENS, O. and GOEDVOLK, H., 2000. *Redefining business-IT alignment through a unified framework*, Universiteit van Amsterdam/Cap Gemini White Paper

MALTA ENTERPRISE, 2008. *Made in Malta*. International business directory of products and services.

MANUELI, K., LATU S. and KOH, D., 2007. *ICT adoption models*. 20th Annual Conference of the National Advisory Committee on Computing Qualifications (NACCQ), Nelson, New Zealand.

McADAM, R. and REID, R., 2001. SME and large organisation perceptions of knowledge management comparisons and contrasts. *Journal of Knowledge Management*, 5(3) pp. 231-241

McNURLIN, B.C., SPRAGUE R.H. and BUI T., 2009. Information Systems Management in *Practice.* Pearson International Edition

MEAD, G.H., 1972. The philosophy of the act. Chicago: University of Chicago Press.

MEHRTENS, J., CRAGG, P. and MILLS, M., 2001. A Model of internet adoption by SMEs. *Information and Management*, 39 (3), pp. 165-176

MELVILLE, N., KRAEMER, K. and GURBAXANI, V., 2004, Review: Information technology and organizational performance: an integrative model of IT business value. *MIS Quarterly*, 28(2), pp. 283-322

MERRIAM, S.B., 1998. *Qualitative research and case study applications in education.* San Francisco: Jossey-Bass

MILES, M.B. and HUBERMANN A.M., 1994. *Qualitative data analysis: an expanded sourcebook.* California Sage

MILES, R.E. and SNOW, C., 1978. *Organizational strategy, structure and process.* New York: McGraw Hill Book Company.

MINTZBERG, H., 1978. Patterns in strategy formation. *Management Science*, 24(9), pp. 934-948

MINTZBERG, H., 2007. *Tracking strategies. Toward a general theory*. Oxford. University Press.

MINTZBERG, H., AHLSTRAND, B. and LAMPEL, J., 2009. *Strategy safari. A guided tour through the wilds of strategic management.* New York: The Free Press.

MORSE, J.M., 2007. Sampling in grounded theory. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 229-244

MORSE, J., STERN, P., CORBIN, J., BROWERS, B., CHARMAZ, K. and CLARKE, A., 2009. *Developing grounded theory: The second generation.* Walnut Creek, CA: Left Coast Press

MPOFU C., MILNE D. and WATKINS-MATHYS, W., 2009. ICT Adoption and Development of E-business among SMEs in South Africa. *ISBE 2009 November Liverpool.* 

NACHMIAS C.F. and NACHMIAS D., 1996. Research methods in the Social Sciences. LONDON: Arnold.

NATIONAL STRATEGIC REFERENCE FRAMEWORKS 2007. Cohesion Policy 2007-13. [online], available:<u>http://ec.europa.eu/regional\_policy/atlas2007/fiche/nsrf.pdf</u> [Accessed on 12/10/2011] ISBN 978-92-79-07465-3

NAYLOR, J. B. and WILLIAMS, J., 1994. The successful use of IT in SMEs on Merseyside. *European Journal of Information Systems*, 3 (1), pp. 48-56

NDUBISI, N. O. 2006. Factors of online learning adoption: A comparative juxtaposition of the theory of planned behaviour and the technology acceptance model. *International Journal on E-Learning*, *5*(4), pp. 571–591

NDUBISI, N.O, and JANTAN., M. 2003. Evaluating IS usage in Malaysian small and mediumsized Firms Using the Technology Acceptance Model. *Logistics Information Management*, 16 (6), pp. 440-450

NELSON, A.M., 2007. Addressing the threat of evidence-based practice to qualitative enquiry. Through increasing attention to quality: A discussion paper. *International Journal of Nursing Studies*, 45(2), pp. 316-322

NEUMAN, W. L., 2000. Social research methods – Qualitative and quantitative approaches, Allyn and Bacon Pub (4th ed)

NSO., 2011. Malta in Figures 2011 National Statistics Office, Malta November, 2011

NURSE, L., SEM, G., HAY, J.E., SUAREZ A.G. and WONG P.P., 2001. Climate change, - ipcc.ch. *Small Island States*, Chapter 17 pp. 845.

OLIVEIRA, T, and MARTINS, M, F., 2010. Firms Patterns of e-Business Adoption: Evidence for the European Union- 27. *The Electronic Journal Information Systems Evaluation*,13(1), pp. 47 - 56

O'REGAN, N. and GHOBADIAN, A. 2000. Developing an exploratory model to determine the link between organisational culture, leadership style and contingency factors on the corporate strategy of manufacturing SMEs., *International Journal of Manufacturing Technology and Management*, 2(1-7), pp. 860-878

ORLIKOWSKI, W., 1996., Improvising Organisational Transformation Over Time: A situated change perspective. *Information Systems Research*, 7(1), pp. 63–92

ORLILOWSKI, W.J., 2000. Using technology and constituting structures: a practice lens for studying technology in organizations'. *Organization Science*, 11(4), pp.404–428

PACKALEN, K., 2010. *ICT Capabilities and Possibilities in Micro-firms: A Study of micro-firms in the Aland Islands Arcipelago.*, 23rd Bled eConference eTrust: Implications for the Individual, Enterprises and Society, June 20-23, 2010, Bled, Slovenia

PAI, F. and HUANG K., 2011. Applying the Technology Acceptance Model to the introduction of healthcare information systems. *Technological Forecasting & Social Change*, 78 pp.650–660

PAN, M.J. and JANG, W.Y., 2008. Determinants of the adoption of enterprise resource planning within the technology-organization-environment framework: Taiwan's communications. *Journal of Computer Information Systems*, 48(3), pp. 94-102

PAPP, R., 1999. Business–IT Alignment: Productivity paradox payoff? *Industrial Management and Data Systems*, 99(8), pp. 367–373

PARK, S. Y. 2009. An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioural Intention to Use e-Learning. *Educational Technology & Society*, Vol. 12 (3), pp.150–162

PARTINGTON, D., 2000. Building Grounded Theories of Management Action. *British Journal of Management*, 11, pp. 91–102

PATTON, M.Q., 1990. Qualitative research and evaluation methods. 2nd edition. CA: Sage.

PAVIC, S. KOH, S.C.L. SIMPSON, M. and PADMORE, J. 2007. Could e-business create a competitive advantage in UK SMEs?. *Benchmarking: An International Journal*, 14(3) pp.320-351

PEARLMAN, E., 2004. Welcome to the Crossroads, CIO Insight, 1(45). [online], available <u>http://www.cioinsight.com/article2/0,1540,1682969,00.asp</u>. [Accessed on 24/07/2012]

PEPPARD, J. AND BREU, K., 2003. Beyond Alignment: A co-evolutionary view of the information systems strategy process. In: *Proceedings Twenty-Fourth International Conference on Information Systems*, pages pp. 743 - 750, Seattle, USA.

PITUCH, K.A, and Lee, Y.K. 2006. The influence of system characteristics on e-learning use. *Computers Education*, *47*, pp.222–244.

POOL, P.W. PARNELL, J.A. SPILLAN, J.E. CARRAHER, S. and LESTER, D.L., 2006. "Are SMEs meeting the challenge of integrating e-commerce into their businesses? A review of the development, challenges and opportunities. *International Journal of Information Technology and Management*, 5(3), pp. 97-11

POON, S., 2000. Business environment and Internet commerce benefits –a small business perspective. *European Journal of Information Systems*, 9, pp.72-81.

PORTER, M.E., 1980. Competitive strategy: techniques for analyzing industries and competitors. New York: The Free Press.

PORTER, M.E., 1996. What is strategy? Harvard Business Review, 74(6), pp. 61-79

PORTER, M.E. and MILLAR, V. E., 1985. How information gives you competitive advantage. *Harvard Business Review*, 64 (4), pp. 149-160

POWELL, T.C., 1992. Organizational Alignment as Competitive Advantage, *Strategic Management Journal*, 13(2), pp. 119–134.

PRAHALAD, C.K. and HAMEL. G., 1989. Strategic Intent. *Harvard Business Review,* May-June 1989, pp. 63-76

RAI, A., PATNAYAKUNI, R. and N SETH., 2006. Firm performance impacts of digitally-enabled supply chain integration capabilities, *MIS Quarterly*, 30(2), pp. 225-246

RATHNAM, R.G., JOHNSEN, J. and WEN, H.J., 2005. Alignment of business strategy and IT strategy : A case study of a Fortune 50 Financial Services Company. *Journal of Computer Information Systems*, Winter 2004-2005, pp.1-8

RAVASI D. and TURATI, C., 2005. Exploring entrepreneurial learning: a comparative study of technology development projects. *Journal of Business Venturing*, 20(1), pp.137-164

REICH, B.H. and BENBASAT, I., 1996. Measuring the linkage between business and Information Technology objectives. *MIS Quarterly*, 20(1), pp. 55–81

REICH, B.H. and BENBASAT., I., 2000. Factors that Influence the Social Dimension of Alignment between Business and Information Technology Objectives, *MIS Quarterly* 24(1), pp. 81–113

REICHERTZ, J., 2007. Abduction: The logic of discovery of grounded theory. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 214-228

RIZZO, A., 2011. Strategic orientation and organizational performance of small firms in Malta: a grounded theory approach. [online]. Available from: <u>http://openair.rgu.ac.uk</u> [Accessed on 29/12/2013]

RONDINELLI, D., ROSEN, B. and DRORI, I., 2001. The Struggle for Strategic Alignment in Multinational Corporations: Managing readjustment during global expansion. *European Management Journal*, 19(4): pp. 404–416

RUBIN, H. and RUBIN, I. 2005. *Qualitative Interviewing. The Art of Hearing Data. 2nd ED.* London: Sage Publications.

SAADE, R. G., NEBEBE, F. and Tan, W. 2007. Viability of the technology acceptance model in multimedia learning environments: Comparative study. *Interdisciplinary Journal of Knowledge and Learning Objects*, Vol. 37, pp. 175–184

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

SABHERWAL, R., HIRSCHHEIM, R. and GOLES, T., 2003. *The dynamics of alignment: Insight from a punctuated equilibrium model.* IN: GALLIERS, R. & LEIDNER, D. (Eds), *Strategic Information Management*, pp. 311-346. Amsterdam, The Netherlands: Butlerworth Heinemann

SADOWSKI, B.M., MAITLAND, C. and DONGEN, J.V., 2002. Strategic use of the Internet by small- and medium-sized companies: an exploratory study. *Information Economics and Policy*, *14*(1), pp. 75-93

SANTHANAM, R. AND HARTONO, E., 2003. Issues in linking information technology capability to firm performance. *MIS Quarterly*. 27(1), pp. 125-53

SARKER. S., LAU. F. and SAHAY, S., 2001. Using an adopted grounded theory approach for inductive theory building about virtual team development. *ACM SIGMIS Database* 32(1), pp. 38-56

SHENTON, A. K., 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information.* 22, pp 63-75

SAUER, C. and BURN, J.M., 1997. The Pathology of Strategic Management, In: C. SAUER and P.W. YETTON (eds.) *Steps to the Future*, 1st edn, San Francisco: Jossey-Bass, pp. 89–112

SCHLENKER, L. and CROCKER N., 2003. Building an E-Business scenario for small business: the IBM SME Gateway project. *Qualitative Market Research: an International Journal*, 6(1), pp. 7-17

SCHULTE, R., 2008. Pre-start-up planning sophistication and its impact on new venture performance in Germany. In: *Management in SMEs and New Ventures*. Eds. M. Fink, and S. Kraus. London: Routledge

SCOTT MORTON, M.S., 1991. The Corporation of the 1990s: Information Technology and Organizational Transformation. London: Oxford Press.

SCOTT MORTON, M.S. and ALLEN, T.J., 1994. *Information Technology and the Corporation of the 1990s: Research Studies.* Oxford University Press

SCUPOLA A. and STEINFIELD, C., 2006. Explaining ICT Infrastructure and E-Commerce Uses and Benefits from a Biotech Cluster. Proceedings of the 39<sup>th</sup> Hawaii International Conference on System Sciences, ed./ R. Sprague, IEEE Computer Society Press

SELIM, H. M. 2003. An empirical investigation of student acceptance of course web sites. *Computers & Education, 40*, pp. 343–360

SEYAL A.H. and RAHMAN M.N.A., 2012. Organizational readiness, entrepreneurship, external pressures & strategic value of e-commerce adoption: perceptions of CEOs of Bruneian SMEs. *International Journal of eBusiness and eGovernment studies*, 4(1), pp. 1-12

SHANKAR, A. and GOULDING, C., 2000. 'Interpretive consumer research: two more contributions to theory and practice. Qualitative Marketing Research: An International Journal, 4(1), pp. 7-16.

SIMON, H., 1957. Models of Man. New York: Wiley.

SIMPSON, M. and DOCHERTY, A.J., 2004. E-commerce adoption support and advice for UK SMEs. Journal of Small Business and Enterprise Development, 11(3), pp. 315-28

SLEDGIANOWSKI, D. and LUFTMAN, J., 2005. IT-Business Strategic Alignment Maturity: A case study. *Journal of Cases on Information Technology*, 7(2), pp. 102–120 SMACZNY, T., 2001., Is an alignment between business and information technology the appropriate paradigm to manage IT in today's organisations? *Management Decision*, 39(10),, pp. 797 – 802

SMALL BUSINESS ACT 2012. Enterprise and Industry Fact Sheet Mala. [online], available: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performancereview/files/countries-sheets/2012/malta\_en.pdf [Accessed on 29/12/2012]

SMALL BUSINESS FORUM 2006. Small business is big business [online], available:http://www.forfas.ie/publication/search.jsp?ft=/publications/2006/Title,767,en.php. [Accessed on 29/12/2010]

SMITH, H. and McKEEN, J, 2003. Developing and Aligning a KM Strategy, Queen's Center for Knowledge-Based Enterprises, May, Ontario, Canada.

SPANOS, Y., PRASTACOS, G. and POULYMENAKOU, A., 2002. The relationship between information and communication technologies adoption and management. *Information & Management*, 39, pp. 659-75.

STERN, P.N., 2007. On solid ground: Essential properties for growing grounded theory. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 114-126

STRAUSS, A.L., 1987. Qualitative analysis for social scientists. Cambridge: Cambridge University Press

STRAUSS, A., 1993. Continual permutations of action. New York: Aldine de Gruyter.

STRAUSS, A. and CORBIN, J., 1990. Basics of qualitative research: Techniques and procedures for developing grounded theory. Thousand Oaks, CA: Sage *Publications*.

STRAUSS, A. and CORBIN, J., 1998. Basics of qualitative research. Techniques and procedures for developing grounded theory. London: SAGE Publications.

STREET, C.T., and GALLUPE, R.B., 2006. A Foundation For The Study Of The IS Alignment Process: A "Competing Theories Framework. *Conference Proceedings of Administrative Sciences Association of Canada conference, Banff, AB.* June 2006.

STREET, C.T., GALLUPE, R B; and REICH, B. H., 2010. Predicting Patterns of Information Systems Alignment in Entrepreneurial Organizations. *AMCIS 2010 Proceedings*. Paper 156.

SUDDABY, R., 2006. From the editors: What grounded theory is not. *Academy of Management Journal*, 49(4), pp. 633-642

TALLON, P.P. 2003. The Alignment Paradox, CIO Insight 1(47): November 15, 2003, [online], available: www.cioinsight.com/article2/0,1397,137546,00.asp. [Accessed on 14/06/2011]

TALLON, P.P., 2008. A process-oriented perspective on the alignment of information technology and business strategy. *Journal of Management Information Systems*, 24(3), pp. 227-68

TALLON, P., and PINSONNEAULT, A., 2011. Competing Perspectives on the Link between Strategic IT Alignment and Organizational Agility: Insights from a Mediation Model. *MIS Quarterly*, 35 (2), pp. 463-486

TAN, F.B. and GALLUPE, B., 2006. Aligning Business and Information Systems Thinking: A cognitive approach, *Engineering Management, IEEE Transactions,* 53(2), pp. 223–237.

TAYLOR, M. and MURPHY, A., 2004. SME and E-Business, *Journal of Small Business and Enterprise Development*, 11(3), pp. 280-289 TEDDLIE, C.A. and TASHAKKORI., 2009. *Foundations of Mixed Methods Research*. ThousandOaks, CA: Sage Publications.

TEO, T.S.H., and ANG, J.S.K. 2000. How useful are strategic plans for information systems? *Behaviour and Information Technology*, 19(4), pp. 275–282

THE REGISTER., 2002. IT project failure is rampant—KPMG. London, November 26, 2002 . [online], available: <u>www.theregister.co.uk/2002/11/26/it project failure is rampant/</u>). [accessed on 21/09/2012]

THOMPSON, A. A., STRICKLAND, A. J. and GAMBLE, J. E., 2005. *Crafting and Executing Strategy* (15th ed.). New York: McGraw-Hill/Irwin.

TURAN, H.A. and URKMEZ, T., 2010. Information Technology Satisfaction of Small and Medium Sized Enterprises in Turkey. *International Bulletin of Business Administration* 9, pp. 43-56

TURBAN, E., LEIDNER, D., MCLEAN, J. and WETHERBE, J., 2008. *Information Technology for Management* John Wiley and Sons.

URQUHART, C., 2001. An Encounter with Grounded Theory: Tackling the practical and the philosophical issues. In: Qualitative Research in IS: Issues and Trends (Ed, TRASUTH, E. M.) Idea Group Publishing, Hershey, PA

URQUHART, C., 2007. The evolving nature of grounded theory method: The case of the information systems discipline. In: A. BRYANT and K. CHARMAZ, eds. *The Sage handbook of grounded theory*. Los Angeles: SAGE Publications. pp. 339-359

URQUHART, C., 2013. Grounded Theory for Qualitative Research: A Practical Guide. Sage Publications

URQUHART, C. and FERNANDEZ, W., 2013. Using grounded theory method in information systems: the researcher as blank slate and other myths. *Journal of Information Technology*, 28, pp. 224–236

URQUHART, C., LEHMANN, H. AND MYERS, M., 2010. Putting the Theory Back into Grounded Theory: Guidelines for grounded theory studies in information systems. *Information Systems Journal* 20(4), pp. 357–381

VENKATESH, V., and DAVIS, F. D. 2000. A theoretical extension of the technology acceptance model: Four longitudinal filed studies. *Management Science*, Vol. 46, pp. 186–204

WADE, M. And HULLAND, J., 2004. "The resource-based view and information systems research: review, extension and suggestions for future research", *MIS Quarterly*, 28(1), pp. 107-38

WALKER, E. A., REDMOND, J. WEBSTER, B., and LE CLUS, M. 2007. Small business owners: too busy to train? *Journal of Small Business and Enterprise Development*, 14 (2), pp. 294-306

WALSHAM, G., 1993. Interpreting information systems in organisations. Chichester. Wiley

WALSHAM, G., 2006. Doing interpretive research. *European Journal of Information Systems*, 15(3), pp. 320-330

WATERS, J., 2000. Living in a world 24\*7, Software Magazine, 20(1): pp. 53-57

WIKLUND, J., and SHEPHERD, D., 2003. Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium sized businesses. *Strategic Management Journal, 24, pp. 1307-1314* 

WONG, K.Y. and ASPINWALL, E., 2004. Characterizing knowledge management in the small business environment. *Journal of Knowledge Management*, 8(3) pp. 44-61.

WONG, W.L.P and RACLIFFE, D.F., 2000. The Tacit Nature of Design Knowledge. *Technology Analysis and Strategic Management*. 12(4), pp. 493- 512

WOODS A. and Joyce, P., 2003. Owner Managers and the Practice of Strategic Management, International Small Business Journal 21(2) pp. 181-195

WORLD ECONOMIC FORUM 2011. The Global Competitiveness Report 2011-2012. [online], available: <u>http://reports.weforum.org/global-competitiveness-2011-2012/</u> [Accessed online 10<sup>th</sup> August, 2012]

WYMER, S.A. and REGAN, E.A., 2005. Factors influencing e-commerce adoption and use by small and medium businesses. *Electronic Markets*, 15(4), pp. 438-453

YLI-RENKO, H., ERKKO, A. and SAPIENZA, H., 2001. Social Capital, knowledge acquisition and knowledge exploitation in young-technology-based firms. *Strategic Management Journal*, 22(6-7), pp. 587-613

YOUSAFZAI, S.Y., FOXALL, G.R. and PALLISTER, J.G., 2007. Technology Acceptance: a meta-analysis of the TAM: Part 1. *Journal of Modelling in Management,* 2(3), pp. 251-280

No.	Туре	Nature of Business	Operation (Yrs)	Employees	Owner_Manager Education	IT Expertise
1	Manufacturing	PC Assembly & Netw ork Equipment	21	11	Engineering Graduate	IS Graduate
2	Services	Cargo Transporters	22	47	Post-Secondary	IT Manager
3	Retail	AirConditioners	12	2	Technician	Nil
4	Manufacturing	Electro_Plating	18	3	Engineering Graduate	Basic
5	Wholesaler/Retailer cum Service	Salon Services	25	25	Post Secondary	Semi Basic
6	Wholesaler/Retailer	Construction Material	35	20	Econ & Acc Graduate	Basic
7	Retail cum Service	Netw orking Components & IT support	13	14	Post Secondary	High
8	Services	Market Research	12	4	Business & Man Graduate	Low
9	Services	IT Support	5	6	Post Secondary	Self Taught
10	Services	Insurance Brokers	36	48	Post Secondary	Self Taught
11	Retail	Bathroom & Fireplaces	30	8	Post Secondary	Self Taught
12	Services	Quality Assurance	20	7	Micro_Biology_Graduate	Basic
13	Wholesale/Retail	Candles Importation	21	6	Diploma Level Management	Self Taught
14	Manufacturer/Retail	Ceramics	30	3	Seconday	Low
15	Sevices	Cargo Transporters	13	12	Diploma Level Management	Low
16	Retail	Wines & Spirits	41	48	Post Secondary	Low
17	Wholesaler/Retail	Wines & Spirits	125	48	Post Secondary	IT Graduate
18	Services	Property Investment	10	5	MBA	A Level
19	Retail	Pow er Control Systems	25	14	Secondary	Low
20	Manufacturing	Paints	32	18	Secondary	Low
21	Retail cum Service	Security Systems	23	40	Post-Secondary - HTD	Low
22	Services	Medical Clinic Services	26	5	Medical Graduate	Low
23	Manufacturing	Cable Manufacturing	12	22	Secondary	High
24	Services	Cargo Transporters	110	25	Secondary	IS Graduate
25	Services	IT Softw are Development & Training	17	15	Maths & Computing Grad	High
26	Services	English Teaching for Foreigners	10	10	Tertiary - Pharmacist	Medium
27	Services	Restaurant	4	8	Tertiary - Architect	Medium
28	Retail	Toners & Printer Cartridges	25	3	Post Secondary	Medium
29	Retail	Home Furnishings	16	8	Post Secondary	Low
30	Services	Architectural Services	16	12	Tertiary-Architect	Low
31	Retail	Sw eet Shop	15	7	Post Secondary	Medium

# Appendix 1. Details of Small Firms That Participated in Research Study

# Appendix 2. Interview Guidelines

During the initial stages of the interview, unstructured questions are asked first relating to the general overview of the firm, its history, its values and beliefs, growth, core competencies, opportunities and threats, and utilization of Information Communication Technology. This is followed by increased structuring later during the interview leading to a flexible use of the semi-structured questions/prompts as indicated in the following list:

- 1. Firm History: years in operation, core competencies, growth and direction.
- 2. Firm Structure: hierarchical/flat, formal, formal/informal

# 3. Organisational Performance:

Long-Term profitability Sales/turnover growth Image and reputation with customers Market growth

# 4. Strategy :

Strategic development, management and communication
Strategic Management Process
Lack of Business Strategy
Strategic focus on budgets, tactical plans and governance or on strategic direction
Strategic use of IT in the development of new products and services
Impact of IT projects on business growth
Influence of internal politics on business strategy development and execution
Role of management in leveraging IT capabilities
Impact of cross-functional team including IT in business strategy execution
Management's support towards IT
Alignment/Misalignment between business areas
Top management's use of IT as a strategic weapon for business growth

## 5. IT Function in Firm :

Creating value through IT

IT as a cost centre

Use of basis IT tools such as office automation

Use of application systems

Outsourcing IT administration and application systems

Use of internet, intranet, and e-commerce to support business strategy

IT staff participation and involvement in top-management meetings

Role of IT in setting strategic direction of firm and execution of business strategy

Influence of IT internal IT expertise on strategic direction of firm

Role that Information Systems play in Business Processing Re-Engineering

Size of IT Budget Meeting deadlines for IT Projects IT Projects Prioritization Alignment/misalignment between Information Systems and corporate objectives

### 6. Business Users and IT

Business users and IT staff's understanding of each other's domain

Relationships between business and IT staff

# 7. Communication

IT staff's communication skills with business users Common terminology between business and IT Business strategy not communicated

# 8. Education

Management's knowledge of IT Management's participation in IT courses/seminars to keep abreast of technology trends

Key users' knowledge of IT to challenge IT projects IT staff understanding of business processes
# Appendix 3. Covering Letter to Participants

### Attn: (Managing Director)

15<sup>th</sup> January, 2010

Dear

I am currently reading for a Doctorate in Business Administration with the Robert Gordon University of Scotland, UK. The title of my research is **"IT Strategizing in Small Firms : a Maltese Perspective"** The research aims to analyse how the strategic and improvisational behaviour relating to IT activities are undertaken by small firms in Malta.

If this is acceptable to you, it will be necessary to undertake a 45-60 minute interview, which will have to be recorded due to the qualitative aspects of the research. Strict ethical guidelines as established by *Robert Gordon University* will be followed. The information collected within this study shall be solely utilised for research purposes. No reference to your company, directly or indirectly, will be made in the published research. Also, no questions will be asked during the interview, relating to details of your company's products or services. All the information gathered about yourself and your organisation will remain strictly confidential.

Whilst thanking you for your time and cooperation, I shall be glad to keep you informed about the development and the results that will emanate from the research. Yours Sincerely

Ronald Aquilina Mob. No. 99858086 Email : r.aquilina@rgu.ac.uk *Robert Gordon University* Student Number 0915882

## Appendix 4. Full Set of Constructs Using MAXQDA

#### MAXQDA

13/08/2013

Code System Contextual Conditions Structure Nature of Business Business Setup Strategy IT Setup IT Setup Owner\_Manager\_Characteristics Mindset Knowledge Risk Orientation Management Style Attitude Towards IT Internal Factors Communication Communication Business IT Communication Resources Family\_assistance Time Human Resources Finance Training IT Expertise Employee\_IT Adaptation Coping with Change External Challenges Customer Demand Supplier Demands Competitors Pressures Bandwagon Effect Government Actions Government Funding IT Usage IT Adoption Mar Manual Activities IT Automation Level IT Working Tool Tailormade\_Off\_the\_Shelf\_Packages Internet Usage Web-Based Applications Enquiries\_linked\_email Promoting Company & Products Electronic Commerce Actions Reactions Internet Communication Technologies Remote Computing Virtual Organisation Social media Outsourcing Assessing IS Requirements Managing Vendors Forced Training Internal Manufacturers\_Vendors Customers IT Investment Exploiting Government Funds Infrastructure Systems IT Projects Deployment Improvisation Short-Term IT Projects Formal Plans Bottom\_up\_plans Business Analysis Analysing Business Data

ITOperations Goods Monitoring Transaction Traceability Customer Monitoring Supplier Monitoring Controlling Costs Consequences Outcomes Business Development Operation Efficiency Levels Time Utilization Staff Levels Productivity Growth Level New Business Opportunities Gradual Growth Business Consolidation IT Cost Maintenance Cost ITAsset Liability Restructuring External Risk IT Dependency on Outsourcing Process Changes Strategy Driven Processes Re-engineered Processes Inefficient Business Processes Inefficient Business Processes IT Adoption - Drivers and Inhibitors Hindering IT Exploitation IT Knowledge Gap Perception of high IT Performance Untrained Workforce Level of Website Utilization IT\_Driven Projects Reverting to Manual Systems Information Overload IT Process Curtailment Data Loss Risk Data Loss Risk IT implementation procrastination IT implementation procrastination It Adoption Doubts and Fear Unlocking IT Potential Information Sharing Level of Information System Integration Level of accurate and timely information Level of Effective Business Decisions Perceived Intangible Benefits

Sets

# Appendix 5. Dimensions With Corresponding Occurrences

Code	Occurrence
IT Dependency on Outsourcing	100
IT Working Tool	97
IT Expertise	86
Level of Information System Integration	84
Business Setup	80
Managing Vendors	76
Nature of Business	73
Analysing Business Data	70
IT Automation Level	64
Internet Usage	62
Productivity	61
Human Resources	60
Strategy	58
Mindset	52
Knowledge	52
IT Knowledge Gap	52
IT Setup	50
Attitude towards IT	49
Tailormade_off _the shelf_Packages	47
Training	45
Formal Plans	43
Assessing IS Requirements	40
Data Loss Risk	40
Management Style	31
Manual Activities	31
Promoting Company and Products	27
Infrastructure Systems	26
Perception of High IT Performance	26
Website Utilisation	23
Effective Business Decisions	23
Risk Orientation	21
Goods Monitoring	21
Transaction Traceability	21
Re-engineered Processes	21
IT Asset/Liability	20
New Business Opportunities	19
Coping with Change	18
Strategy Driven Processes	18
Family Assistance	17

Finance	17
Gradual Growth	17
IT Driven Projects	17
IT Adoption- Doubts and Fear	17
IT implementation Procrastination	16
Improvisation	15
Inefficient Business Processes	15
Level of Accurate and Timely Information	15
Electronic Commerce	14
Untrained Workforce	14
Customer Demand	13
Government Funding	13
Staff Levels	13
Time	12
Business Consolidation	12
Perceived Intangible Benefits	12
Remote Computing	10
Controlling Costs	8
IT Process Curtailment	8
Enquiries-Linked_Email	7
Social Media	7
Business-IT Communication	6
Supplier Demands	6
Virtual Organisation	6
Customer Monitoring	6
Bandwagon Effect	5
Exploiting Government Funds	5
Short-term IT Projects	5
Internal Communication	5
Manufacturers_Vendors	4
Maintenance Cost	4
IT Barriers to Business	4
Information Sharing	4
Customers	3
Bottom-Up Plans	3
Information Overload	3
Supplier Monitoring	2
Level of Documentation	2

# Appendix 5. Dimensions with Corresponding Occurrences (cont...)

# Appendix 6. Proposition Statements for IT Alignment Patterns

IT Alignment	No.	Proposition Statement
Drifting	1	Small firms, that reap the benefits of early enterprise system implementation and subsequently continue to propose customized business system requirements to their IT outsourcers, will eventually render the application system too cumbersome to operate at firm level and too difficult to maintain at outsourcer level.
Drifting	2	Small firms that tend to outsource application systems that are IT driven rather than strategy-based tend to pass through a period of stability when these application systems are implemented, followed by a period of dissonance as business benefits that are expected to accrue fail to be realised, leading the firms to pass through a period of adaptation until the next wave of IT driven projects are farmed out.
Drifting	3	Small firms, that deploy IT projects to meet business objectives, will pass through cyclical fluctuations denoting periods of instability when their information system requirements are being articulated to their outsourcers, to periods of stability when these IT systems are implemented in their respective firms.
Consolidating	4	Small firms that lack project management competencies and do not have internal IT expertise, may be reluctant to venture into IT solutions that go beyond the utilisation of basic IT office automation tools
Consolidating	5	Small firms that lack IT knowledge and perceive that they can venture into innovative IT projects without seeking the outsourcers' expert advice will revert to their previous consolidated alignment state as the new IT deployed projects tend to be misaligned and fragmented.
Consolidating	6	Small firms that exhibit a positive attitude towards the deployment of enterprise systems and endeavour to use IT primarily as an enabler to attain business objectives tend to experience long periods of IT stability and consolidation, when they manage successfully qualified IT outsourcers.
Surfing	7	Owner-Managers that exhibit a strong internal IT knowledge dominance over their firms' strategic objectives tend to deploy IT-driven projects that are not sustainable at a higher alignment state.
Surfing	8	Owner-Managers that lack IT knowledge but possess internal IT expertise are often faced with bottom-up propositions to implement sound IT projects, reaching a satisfactory alignment level until the next cycle to adopt other bottom-up IT projects are activated.
Surfing	9	Owner-Managers, who lack IT expertise and are served opportunistically by their outsourcers, do not succeed to sustain a higher alignment state, as the deployed IT projects result in being fragmented and misaligned with business objectives.
Fulfilling	10	Small firms, that have a track record of well managed relationships with their IT outsourcers, tend to move to a partnership relationship with them, whereby business and IT capabilities are weighed equally, leading to the attainment of application systems' integration.
Fulfilling	11	Small firms that manifest a deep knowledge relating to business processes coupled with the management capability to strategize together with their IT outsourcers tend to facilitate business-IT knowledge integration.
Fulfilling	12	Owner-Managers, who appreciate the benefits which accrue through IT adoption and have internal IT expertise, tend to create opportunities for business-IT alignment through the effective engagement of IT outsourcers.
Fulfilling	13	Small firms that are able to align their business and IT strategies to their resource profiles tend to experience high alignment between business and IT.

## Appendix 7. Prior Research

#### Institute for Small Business & Entrepreneurship 9-10 November 2011 – Sheffield UK

The Effects of Entrepreneurs' Knowledge Gaps in IT Adoption in Small Firms: A Dynamic Perspective

#### Ronald Aquilina, Research Student Aberdeen Business School, Robert Gordon University Scotland, UK

#### Dr. Heather Fulford

#### Senior Lecturer, Aberdeen Business School, Robert Gordon University

#### Objectives

This study examines, from a dynamic perspective, the effects of knowledge and competency gaps in IT adoption in small firms in Malta. There are over 28,000 small firms in Malta that employ fewer than 50 full time employees and provide 65% of private sector employment as well as contribute to 39% of GDP. This study assesses patterns of small firms' IT strategic behaviour which are dependent on the entrepreneurs' accumulated knowledge level related to IT.

#### Prior Work

Various researchers have undertaken studies in small firms to assess the exploitation of IT. However, the literature provides limited evidence as to how entrepreneurs' knowledge capabilities are impacting on small firms to attain IT alignment with business strategy.

#### Approach

The research stance applied is Grounded Theory methodology as advocated by Charmaz's (2006) constructivist approach. The use of interpretive and qualitative in-depth interviews is undertaken in 8 small firms relating to manufacturing, services, wholesale and retail sectors. Whilst not concluding with a final theory, the method will be used to generate and analyze conceptual categories. This study analyses grounded data for process and examines the interrelationships between concepts based on context, actions and reactions, and consequences and outcomes.

#### Results

Findings indicate that the entrepreneur's characteristics, values and beliefs, knowledge of basic usage of office automation, email, internet technologies and focus on cost cutting are the overriding elements precluding small firms from their capacity to adopt IT effectively. Entrepreneurs' concerns relating to external dependency on outsourcers and their perception of losing control on their business stem from their lack of IT knowledge. They are reluctant to implement enterprise systems and e-commerce. Of significance is the impact on IT strategic behaviour and business strategy, when internal IT expertise is present in the firm.

#### Implications

The findings are part of a larger study on IT strategizing in small firms, taking place over a fouryear period. It is envisaged that this initial study will form the basis for developing typologies relating to how small firms are endeavouring to align their IT activities with business strategy.

#### Value

This study moves away from the deductive approach to research. Inductive studies using Grounded Theory have been infrequently applied in Management Research. In particular, studies relating to process in IT adoption in small firms undertaken to date have been scarce. The grounded theory methodology adopted in this study fits the interpretive approach, where a model outlining small firms' IT adoption behavioural patterns based on entrepreneurs' IT knowledge level is developed.

# Appendix 8. Turnitin Certificate

