Change and Resistance in Cost Accounting System: The Evidence from Libyan Oil Organisation

Submitted by Sameh Farhat Belgasm Ammar to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Accountancy, January 2014
DECLARATION

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: ................................................................. Date: 2\(^{nd}\) January 2014
Wisdoms

سورة يوسف (67)

In The Name Of Allah the Beneficent the Merciful

We raise in degrees of rank whomsoever we please; and over every possessor of knowledge is One, Most-Knowing.

[Qur’an, Surat Yusuf (12), Ayah (76)].

Famous saying

Among the sayings of Al-Imad Al-Asfahani:

In my view, no one wrote a book one day, but the next morning he would say: if this was changed it would be better, or if this was added that would be preferred, or if this was brought forward that would be best, or if this was left out, it would be more beautiful… Indeed, this is one of the greatest of lessons, and is evidence that imperfection seizes the majority of humans…
ABSTRACT

This thesis explored the dynamics of cost accounting systems\(^1\) (CAS). It focused on particular situations in which CAS can become institutionalised, embodying settled patterns of action and thought common to an organisation (Burns & Scapens, 2000). In such context, it is argued that the greater the degree of institutionalisation of CAS, the more difficult they are to change, and vice versa. This thesis has investigated the conditions and processes through which CAS can change and/or persist (i.e., remain relatively unchanged) through time. Exploring when, how and why institutional change and/or resistance may occur in CAS, is the specific motivation of this thesis.

The following investigates CAS at a large oil refining organisation operating in Libya (RefCo). RefCo was undertaken as an interpretive case study, involving data collected through interviews, archives, internal company documentation and general (formal and informal) observations. The CAS in RefCo was subject to two change initiatives in a relatively short space of time. The first source of change was a requirement of its parent company to shift from a traditional production-orientation to a more commercial-orientation. With minimal resistance, the highly institutionalised CAS of RefCo evolved to become much more geared towards commercial decision-making. The second source of change originated in the recommendations of an external consulting organisation, who recommended that RefCo changed its CAS to take on more ‘best-practice’ principles, but also as part of a wider initiative of implementing Enterprise Resource Planning systems (ERPs). However, this particular change initiative faced significant resistance.

Analysis of the case was informed by institutional theory using, in particular, the concepts of deinstitutionalisation (Oliver, 1992), institutionalisation (Burns & Scapens, 2000), and politics and power mobilisation (Hardy, 1996). In contrast to the more conventional view that institutionalised practices (e.g., CAS in RefCo.) are difficult to change, this thesis has shown how such practices can be

\(^1\)CAS is defined here as “a narrower application (subset) of a management accounting [system], which concentrates on an organisation’s acquisition or consumption of resources (Burns et al., 2013, p. 681)
destabilised and changed through the configuration of a complex and dynamic process of costing system change. It suggests an *institutional interdependence* that underpins the interrelation between various components of the organisational system, and exemplifies an intertwining between CAS and operation control. While CAS change processes were shaped by ongoing changes in operation control, the outcomes of the former provided an *institutional basis* from which to make sense of the operational activities (Scapens, 1994). This interdependence helps sustain day-to-day organisational life in RefCo and contributes to our understanding of both change (processes) and resistance in relation to institutionalised practices. Moreover, we observed that a great deal of such change and/or resistance could be understood and explained in terms of politics and power mobilisation.
DEDICATION

My big brother

SAMI who passed away in Canada in 2006 and was always encouraging me to keep learning and to achieve higher degrees

Much-loved Parents (Farhat & Fayza)
For their ongoing pray and support by which this success is made.

Beloved wife: HANAN
For her continuous patience, love and wonderful support

Honey Sons
SAMI & EYAS
Hoping to be a candle that lights their future

Beloved Brothers, Sisters and their Families
For their continual support, encouragement and love
ACKNOWLEDGMENTS

Many have given me their support during this study, without whom I could not have completed this research. However, I would like to specially acknowledge:

First and foremost, I would like to kneel down in gratitude to ALLAH, for blessing me with the health to learn and to complete this PhD.

Supervisory team: I would like to express my deepest and sincerest appreciation to Professor John Burns for his constant guidance, encouragement, patience, constructive comments and kind treatment. His concern and kindly support will never be forgotten, especially that shown during the Libyan Revolution and during financial shortages. Case study skills and using theory to illuminate the case study’s story are among the most remarkable experiences that I have acquired from him. Also, I am extremely grateful for the assistance provided by my co-supervisor, Dr Stephen Jollands, for his warm feelings and constructive comments. The remarkable lessons gained from Dr Stephen were in how to craft my skills in critical thinking and in making a sensible case study story. Although they have different theoretical backgrounds, they always assisted me as a consistent and constructive supervisory team.

Examiners, I am really grateful to Professor Bill Nixon (External Examiner), and Professor Kim Soin (Internal Examiner) for their acceptance to take part in, and enhancing this thesis through their discussions, comments and suggestions which added value to this thesis. Special thanks for Professor Kim Soin regarding her efforts in organising PhD sessions in which enriched this thesis and the researcher’s knowledge.

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<td>ABC</td>
<td>Activity Based Costing System</td>
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<tr>
<td>BPR</td>
<td>Business Process Reengineering</td>
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<tr>
<td>BSC</td>
<td>Balanced Score Card</td>
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<tr>
<td>CAC</td>
<td>Cost Accounting Co-ordination/ Coordinator</td>
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<tr>
<td>CAS</td>
<td>Cost Accounting System</td>
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<tr>
<td>CC</td>
<td>Commercial Committee</td>
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<tr>
<td>CD</td>
<td>Commercial Director</td>
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<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
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<td>ERP FI</td>
<td>ERP Financial Module</td>
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<tr>
<td>ERP PM</td>
<td>ERP Project Manager</td>
</tr>
<tr>
<td>FGM</td>
<td>Finance General Manager</td>
</tr>
<tr>
<td>GAC</td>
<td>General Accounts Co-ordination/ Coordinator</td>
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<tr>
<td>GAD</td>
<td>Director of General Accounts Department</td>
</tr>
<tr>
<td>IAM</td>
<td>Internal Auditing Manager</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology/ Manager</td>
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<td>MAD</td>
<td>Material Accounts Division</td>
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<td>MAPs</td>
<td>Management Accounting Practices</td>
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<tr>
<td>MC</td>
<td>Management Committee</td>
</tr>
<tr>
<td>MCM</td>
<td>Management Committee Member</td>
</tr>
<tr>
<td>OEC</td>
<td>Operations Engineering Co-ordination/ Coordinator</td>
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<tr>
<td>ParentCo</td>
<td>National Oil Corporation</td>
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<tr>
<td>PD</td>
<td>Purchase Director</td>
</tr>
<tr>
<td>PFC</td>
<td>Purchase Follow up Co-ordination/ Coordinator</td>
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<tr>
<td>PPFC</td>
<td>Production Planning &amp; Follow up Co-ordination/ Co-ordinator</td>
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<tr>
<td>RefCo</td>
<td>Azzawyia Oil and Refining Company</td>
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<tr>
<td>RLC</td>
<td>Ras-Lanuf Company</td>
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<td>SoW</td>
<td>Scope of Work</td>
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<td>TD</td>
<td>Technical Director</td>
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Chapter 1 - INTRODUCTION

1.1 Research motivations

At a broad level, this thesis explores the inter-relationship(s) between enterprise resource planning system (ERPs hereafter) and cost accounting system (CAS hereafter) practices. Two particular contrasting claims that have been given considerable coverage in previous studies have provided the immediate motivation for this focus.

First, it has been argued that ERPs are effective in supporting some of the functions of management accounting, especially with regard to the collection and processing of management data (cf. Booth et al., 2000; Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Hyvönen, 2003; Spathis & Constantinides, 2003; 2004; Doran & Walsh, 2004; Spraakman, 2005; Rom & Rohde, 2006; 2007). Such arguments have encouraged high expectations from, and some adoption of, sophisticated management accounting practices such as activity based costing (ABC)\(^2\) (Sutton, 1999; Chapman & Chua, 2000; Granlund & Malmi, 2002; Hyvönen, 2003). These practices can be very complex, and require significant measurement, based on the sophisticated collection and processing of data which ERPs are said to offer.

However, second, despite these extant claims for ERPs, there is also evidence\(^3\) that the system is actually incapable either of supporting an organisation’s existing techniques in its management accounting system\(^4\), or offering a pathway and/or rationale for adopting new techniques. More specifically, there is evidence that CAS practices are operated independently, rather than being integrated into ERPs, a finding that has been highlighted in numerous different contexts (e.g., Malmi, 2001; Booth et al., 2000; Granlund & Malmi, 2002;

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\(^2\) This is a costing technique that uses activity pools to store overheads, these are then traced to cost objects through the use of cost drivers (Burns et al., 2013, p. 616)

\(^3\) See (Fahy & Lynch, 1999; Maccarone, 2000; Booth et al., 2000; Quattrone & Hopper, 2001; 2005; 2006; Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Hyvönen, 2003; Granlund & Mouritsen 2003; Spathis & Constantinides, 2003; 2004; Doran & Walsh, 2004; Spraakman, 2005; Jackling & Spraakman, 2006; Dechow & Mouritsen 2005; Spathis & Ananiadis; 2005; Spathis, 2006; Rom & Rohde, 2006)

\(^4\) Management accounting involves in “the provision of information to assist organisational decision making” (Burns et al., 2013, p. 621)
Hyvönen, 2003; Scapens & Jazayeri, 2003; Soh & Sia, 2004; Rom & Rohde, 2006; 2007; Grabski et al., 2009). As we will explore in this thesis, the complexities involved in this seemingly misaligned interrelationship between ERPs and CAS practices is far more than a ‘technical’ issue.

ERPs are defined as being: “commercial software package[s] that promise the seamless integration of all the information flowing through a company” (Davenport, 1998, p. 121). These packages are generic, and embrace thousands of options for what are considered ‘global best practices’ that will fit the requirements of organisations (Davenport, 1998; Holland & Light, 1999; Light et al., 2001; Gattiker & Goodhue, 2002). Conceptually, ERPs are associated with several characteristics (Scapens & Jazayeri, 2003), namely: (1) integration - the inter-connection of organisational divisions into a central database, (2) standardisation – global best practice-based organisational rules, (3) centralisation - real-time access, (4) and routinisation - the computerisation of daily accounting routines. However, despite such characteristics, it appears that ERPs have had only moderate impact on CAS practices (Booth et al., 2000; Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Hyvönen, 2003; Grabski et al, 2009).

Extant literature has been criticised (Aernoudts et al., 2005; Rom & Rohde, 2007; Granlund, 2011; Vakalfotis et al., 2011) for focusing predominantly on the outcomes of management accounting change that have resulted from ERP implementation. In contrast, some researchers have called for greater exploration of the conditions and processes through which ERPs implementation unfolds, including potential problems and misalignments in relation to CAS practices (Aernoudts et al., 2005; Rom & Rohde, 2006; 2007; Granlund, 2011; Vakalfotis et al., 2011). A misalignment is a gap between the functionality/ practices offered by ERP packages and those performed by the implementing organisation (Soh & Sia, 2004). Granlund (2011), in particular, has suggested a need for research into the impact of the accounting context on (and/or from) ERPs, which can potentially lead to misalignment.

There is little research which examines the (potential) misalignment of organisational and accounting practices in the context in which they operate in general (Soh et al., 2000; 2003; Soh & Sia, 2004; Kholeif et al, 2007; 2008;
This limited research advances the notion that the misalignment of accounting practices relates to institutional and organisational contexts, rather than to technicalities; and that regulations and institutionalisation keep CAS practices unchanged and they are then not integrated into the ERPs. While regulation involves imposition of external constituents to implement particular practices (Scott, 2008), institutionalised practices underlie the pathways of organisations in developing their own practices (e.g., rules and routines) which, over time, become ‘widespread and deeply recognised’ within their context (Burns & Scapens, 2000). The lack of research to explain the importance of the contexts within which CAS practices operate (Hopwood, 1983; Rom & Rohde, 2006; Granlund, 2011), and the nature of the interactions or interrelationships between ERPs and CAS practices, have been the primary motivation of the present investigation. Although the response of organisations through resistance to change and the misalignment of imposed practices can be justified, it is unclear why organisations are also reluctant to change misalignments in the institutionalised practices of CAS despite their being voluntarily adopted. As such, they prefer to maintain institutionalised CAS practices that are independent of ERPs, rather than change them.

The notion of institutionalisation, in particular, has become a key explanation of change and resistance in the context of management accounting practices in general. It is argued that the more institutionalised CAS practices are the more difficult they are to change; and vice versa (Burns & Scapens, 2000). However, accounting practices are not equally institutionalised (Tolbert & Zucker, 1996; Barley & Tolbert, 1997). Consequently, relatively little is known about when, how and why change and resistance may occur, respectively in high-low institutionalised CAS practices, and this is the specific motivation of this study. It is the particular objective of this thesis to unfold the conditions, and the processes through which, the institutionalised practices of CAS undergo change or become resistant to change, in light of an organisation’s adoption of ERPs.

1.2 Background and development of the research question

The emergence of ERPs at the end of the 1980s was accompanied by high expectations for ‘revolutionary change’ in management accounting (Johnson &
Kaplan, 1987), in particular for new technical innovations, such as ABC. Generally, the expectation was that ERPs would encompass (or drive) the development of sophisticated management accounting techniques because of its promise for high information technology capabilities in respect of data collection and processing. Prior to this time, the design of such systems would require significant investment, but the arrival of ERPs was seen to remove many of the barriers to the design and implementation of management accounting techniques (Johnson & Kaplan, 1987; Al-Omri & Drury, 2008).

The high expectations for ERPs encompassed support for existing management and cost accounting practices, and/ or the development of these practices. This included functions, techniques and the roles of accountants. The functions were examined mostly in terms of the (potential) impact on information processing, reporting and decision making; and management accountants’ roles were primarily investigated in relation to the necessary skills needed to work with (and alongside) ERPs. In particular, there was an increased focus on changes in cost accounting techniques in relation to the (assumed) impact that ERPs would have on the various techniques already in use, and also in terms of the effect on the development of new techniques (i.e., both traditional and/or sophisticated).

These expected impacts of ERPs to (support and/or develop) cost accounting practices are inter-connected, rather than independent. There are three major, extensive reviews in the literature thus far, i.e., Rom & Rohde (2007), Granlund (2011), and Vakalfotis et al. (2011), which all reach similar conclusions in terms of the potential capability of ERPs for impacting on information processing. At the same time, this literature highlights that there is inconclusive evidence in terms of ERPs support of sophisticated management accounting techniques. Importantly, there seem to be some patterns emerging around this

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5 See (Booth et al., 2000; Quattrone & Hopper, 2001; 2006; Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Hyvönen, 2003; Granlund & Mouritsen 2003; Spathis & Constantinides, 2003; 2004; Doran & Walsh, 2004; Dechow & Mouritsen 2005; Spathis & Ananiaid; 2005; Aernoudts et al., 2005; Spathis, 2006; Rom & Rohde, 2006; 2007; Granlund, 2011; Vakalfotis et al., 2011)

6 Traditional management accounting techniques are such as standard costing and variance analysis, traditional budgeting and cost volume profit analysis; whereas sophisticated techniques are those meet dynamic changes in business environment such as just in time, activity based costing and management, total quality management, process re-engineering, life cycle assessment and target costing (Sulaiman et al., 2004).
interrelationship between ERPs and management accounting techniques – including, and especially, in relation to, cost accounting techniques. These will now be explored in further, albeit brief, detail.

First, some of the literature highlights ERPs as being, at least potentially, change drivers for management accounting techniques (Spathis & Constantinides, 2004; Doran & Walsh, 2004; Spraakman, 2005). However, such potential, in fact, receives limited support from prior studies, most of which draw their conclusions from surveys. These surveys have, in the main, suggested that ERPs increase the use of traditional management accounting techniques, including budgeting, forecasting, performance measurement and traditional costing methods. However, there has been at least some evidence of the adoption of sophisticated techniques, such as ABC and target costing, as a result of ERPs’ implementation (Spathis & Constantinides, 2004; Doran & Walsh, 2004). On the other hand, it is argued that it is difficult to distinguish between adopters and non-adopters of sophisticated management accounting techniques⁷, such as ABC, through the use of surveys, which means that these findings cannot be taken to be significant (Hyvönen, 2003; Al-Omri & Drury, 2008; Al-Sayed et al., 2008).

Second, the literature to date seems to highlight a potential for ERPs to ‘act’ as stabilisers and tools to reinforce continuity, rather than to act as change drivers (Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Hyvönen, 2003; Burns & Quinn, 2011). In this sense, most of the findings appear to suggest that ERPs reinforce the existing management accounting techniques that are being used, but sometimes they improve the accuracy and detail of the information produced (Scapens & Jazayeri, 2003; Spraakman, 2005). Rather than encouraging new innovation and change, most of the evidence suggests that the existing techniques were integrated into ERPs (Granlund & Malmi, 2002), and most commentators have therefore concluded that ERPs have only a moderate impact on management accounting techniques.

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⁷ This is usually an indication that ABC and BSC are tools that assist managers to rationalise resource consumption and map out ways to achieve organisational goals.
Third, there have been arguments suggest that ERPs neither drive change nor stabilise existing practices. Mainly through case studies, researchers have found that both traditional and/or sophisticated management accounting techniques tend to exist in stand-alone systems\(^8\), rather than being integrated into ERPs (Booth et al., 2000; Granlund & Malmi, 2002; Hyvönen, 2003; Scapens & Jazayeri, 2003; Grabski et al., 2009). Normally, these findings are supplemented by an argument that specialised (i.e. stand-alone) systems are superior to ERPs in supporting management accounting techniques, especially in relation to sophisticated techniques (Malmi, 2001; Hyvönen, 2003; Rom & Rohde, 2006). These findings raise questions about possible misalignment between the practices embedded within ERPs and the existing organisational practices (including management accounting practices) that are already in use:

*One of the main results of this study has been the fact that so far ERPs, contrary to many expectations, seem to have had little impact on both the management accounting methods and managerial controls used. In most of the cases studied advanced management accounting techniques—and many of the conventional ones, too (e.g., annual budgeting)—are operated in separate systems* (Granlund & Malmi, 2002, p. 306).

More specifically, it has been argued that stand-alone systems are more powerful, more user-friendly and more flexible than ERPs in supporting sophisticated management accounting techniques (Fahy & Lynch, 1999; Booth et al., 2000; Hyvönen, 2003; Grabski et al., 2009). Based on their findings from seven case studies carried out in the UK, Grabski et al. (2009), have stated:

*Management accountants [are] using [specialised] software (such as spreadsheets) for budgeting, ABC, balanced scorecards and other performance management techniques independent of, rather than integrated within ERP systems* (Grabski et al., 2009, p. vii).

The empirical evidence of prior studies, outlined above, puzzled this researcher and motivated me to raise a critical question. That is, why does the implementation of the same standardised ERPs show different outcomes of

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\(^8\) These systems are specialised and are usually developed to support a particular technique of management accounting, such as a specialised stand-alone ABC system.
(mis)alignments across different contexts in relation to management accounting techniques, especially those pertaining to cost accounting? These variations seem to be subject to: (a) the way of investigating, and (b) the context surrounding, the interplay between ERPs and management accounting. The first emphasises the importance of exploring this interface as a process. The prior literature (described, briefly, above) examined the impact of ERPs on management accounting techniques through descriptions of changes in management accounting that resulted from ERP implementation, rather than through analysing and understanding the change processes per se (Vakalfotis et al., 2011). However, second, it is in the (ongoing, unfolding) inter-relationship between ERPs and management accounting techniques where ERPs may shape, or be shaped, by management accounting, as Luft & Shields (2003) suggest. As a result, there have been several calls for closer examination of this inter-relationship between ERPs and management accounting (Aernoudts et al., 2005; Rom & Rohde, 2006; 2007; Granlund, 2011; Vakalfotis et al., 2011).

In this sense, there is a scarcity of research examining both types of interface process between ERP and management accounting (Soh et al., 2000; 2003; Soh & Sia, 2004; Kholeif et al., 2007; 2008; Jack & Kholeif., 2008). Despite their limitations, these studies shed light on the role of regulations, institutionalisation and power relations in causing misalignment. More specifically, CAS-related institutionalised practices (rules and routines) were the most fundamental challenge to ERPs, although these practices were voluntarily adopted and have evolved historically.

Some past research has argued that ‘institutional embeddedness’ is a key factor in the reasons that management and cost accounting practices tend not to change too much over time, even in the face of new technologies, such as ERPs (Burns & Scapens, 2000; Burns et al., 2003; Siti-Nabiha & Scapens, 2005; Busco et al., 2006; Nor-Aziah & Scapens, 2007; Busco & Scapens, 2011). Furthermore, such past work has argued that the more deeply institutionalised an organisation’s management accounting practices are frequently cemented through day-to-day routines and unquestioned ways of working, the more difficult they are to change:
It is likely to be much easier to introduce changes which do not challenge existing routines and institutions, i.e., where the change can be accommodated within existing ways of thinking and norms of behaviour. However, change which conflicts with existing routines and institutions is likely to be much more difficult to implement (Burns & Scapens, 2000, pp. 16-17).

According to Burns & Scapens (2000), ‘technical’ change in management accounting (e.g., change in an organisation’s cost systems) is likely to be less problematic when the new ‘rules’ (i.e., the new cost systems) do not conflict with, or challenge dominant organisational routines and unquestioned⁹ ways of working. Conversely, they add, technical accounting change which conflicts with existing routines and unquestioned ways of working, is more likely to be problematic, to experience resistance, and to have a greater chance of failing to achieve the original goals of change.

So, finally, the overall research question for the present thesis can be established. That is, the main (broad) research interest of the present thesis concerns the processes of change (or lack of change), and the dynamic interrelationships, when ERPs are implemented in situations of relative embeddedness (i.e., they are ‘institutionalised’, c.f. Burns & Scapens, 2000) in management accounting practices, and with a particular focus on settled cost accounting practices.

1.3 Research process and question refinements

The research process underlying the present thesis is more iterative and emergent, than deductive (Humphrey & Scapens, 1996; Ahrens, 2004; Baxter & Chua, 2008; Creswell, 2014). The process is depicted in Figure (1.1), see below. While this research process will be described briefly here, more detail will be presented in later chapters.

As mentioned already (in section 1.2), an initial review of extant literature in the area incited the researcher to explore and better understand the complex

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⁹ These unquestioned ways of working relate to what Burns & Scapens (2000) call ‘institutions’, and there will be more discussion around such theoretical concepts in Chapter Three. Initially, and as underlined in past research, terms such as ‘embeddedness’, ‘institutionalised’ and ‘taken-for-granted assumption’ tend to be used in an interchangeable manner.
interrelationships (and potential misalignments) between ERPs and CAS practices. This research has adopted a social constructivist viewpoint in order to unfold the conditions and processes by which CAS practices remained independent, rather than becoming integrated into ERPs (Ryan et al., 2002; Creswell, 2014).

**Figure 1-1 Research process**
The nature of the research inquiry led the present researcher to design a research strategy and theoretical framework. The research took on an interpretive approach (Burrell & Morgan, 1979; Tomkins & Grove, 1983), a qualitative methodology (Parker, 2012), and adopted an interpretive case study (Scapens, 1990; Yin, 2009), since this overall design seemed most appropriate for an examination of the complex interrelationships (and potential misalignments), over time, between ERPs and CAS practices. The actual interpretive case study research, meanwhile, was comprised of semi-structured interviews, observation, and access to organisational archives.

A ‘skeletal’ theoretical framework was also established at a reasonably early stage, to guide the research inquiry up to and including the case study (Humphrey & Scapens, 1996, p. 88). From an initial review of possible theory, two rather complementary frameworks emerged from ‘institutional theory’, namely: Burns & Scapens (2000) and Dillard et al. (2004). Both of these theoretical frameworks focus on the (potential) process of management accounting practices, including CAS practices, becoming ‘institutionalised’ (taken-for-granted, embedded) within organisations, grounded for the most part in the continual and ongoing dynamics of the rules and routines which underpin such practices. However, importantly, the main focus and level of ‘institutional’ analysis in Burns & Scapens (2000) is intra-organisational, whereas Dillard et al (2004) pay more attention to contextual (i.e., extra-organisational) institutional processes. Nevertheless, there is enough commonality and overlap in terms of their respective methodological grounding (Dillard et al., 2004) to make it reasonable to combine their theoretical constructs and ideas when interpreting our case.

An initial visit and period of observation at the case study site, an oil refining organisation in Libya (hereafter RefCo), aimed to explore the nature and extent of ‘embeddedness’ in the interrelationships between ERPs and CAS practices. However, as the fieldwork progressed, the research direction required some adaptation. As illustrated in Figure (1.2), CAS practices in RefCo were subject to two change initiatives within a relatively short time period, although only one of these initiatives actually resulted in the achievement of the intended outcomes. First, CAS was subject to changes that aimed to promote a costing
system which facilitated greater commercial orientation within the business, a change that was imposed by RefCo’s parent company (hereafter ParentCo). Second, there was pressure to change CAS based on recommendations made by an external consultancy organisation which was leading a new ERPs initiative.

**Figure 1-2 Adapted research direction**

On thinking about the initial empirical observations, and drawing on the theoretical insights of Burns & Scapens’ (2000) and Dillard et al.’s (2004) frameworks, it appeared that the notion of ‘embeddedness’ was perhaps not as influential a factor in explaining change and resistance to change CAS practices over time as such frameworks might have suggested.

**Figure 1-3 Fieldwork observations**
Instead, from initial observations shown in Figure (1-3), and contrary to what the extant (theoretical) literature might suggest, it appeared that strongly embedded (or ‘highly institutionalised’) CAS practices changed relatively quickly and without significant resistance when ParentCo passed down its recommendations. Moreover, at a stage when the new (ParentCo-enforced) CAS practices were still weakly-embedded (or ‘lowly institutionalised’), the consultants’ attempts to encourage further changes, as part of the ERPs initiative, met with considerable resistance and ultimately failed. This, therefore, put into question the whole issue of how important and reliable it was to think in terms of ‘embeddedness’ (or the level of institutionalisation) when investigating the nature and processes of organisational change, such as changes in costing systems. At this point, the focus of the present thesis became more directed to exploring the conditions and processes through which embedded CAS practices persist, or do not persist, when embroiled in broader organisational change initiatives. More specifically, this thesis seeks to explore the following specific research questions:

**RQ1:** In high institutionalised CAS practices; when, how and why can change occur?

**RQ2:** In low institutionalised CAS practices; when, how and why can resistance to change occur?

These revised research questions are grounded in the present researcher’s interpretation of inconsistencies between the initial observations of the nature of change (or lack of change) in RefCo’s CAS practices, and what might be suggested from insight gained, in particular from the theoretical lens of Burns & Scapens (2000). Subsequently, as an acceptable part of the ongoing research process, this also led to a revisiting, and refinement, of the original theoretical framework (Scapens, 1990; Humphrey & Scapens, 1996; Ahrens, 2004). As shown in the Figure (1-1), additional insights were thus attained from institutional theory in particular from the theoretical contributions of Oliver (1992). It was felt that Oliver’s research would be useful to the extent that she explores the conditions under which institutionalised organisational practices can be *de-stabilised*. Oliver has proposed mechanisms of “de-institutionalisation” that can be triggered by functional, political and/or social pressures (1992, p. 563) and these could be used in order to understand the
transformation of RefCo’s CAS from being financially oriented to becoming commercially oriented, without resistance. The processes of “encoding”, “enactment”, “reproduction” and “institutionalisation” of a commercial orientation into a new CAS are informed by Burns & Scapens’ framework (2000, p. 9). Importantly, both processes of (de-) institutionalisation are facilitated by the mobilisation of politics and power that are suggested in Hardy’s framework (1996).

It was Oliver’s theoretical work, in combination with emergent empirical observations, that particularly shaped the refinements made, especially those to the adopted understanding and extension of Burns & Scapens (2000) theoretical viewpoint, as will be developed in Chapter (7) (Humphrey & Scapens, 1996). The incorporation of Oliver’s (1992) theoretical ideas introduces institutional interdependence to the thesis, and particularly to the interpretation of the case study. There is also some use of theory that focuses on the mobilisation of power and politics in facilitating processes of change and resistance respectively in high-low institutionalised CAS practices (Hardy, 1996), and it becomes possible to make sense of the unfolding change processes in RefCo’s CAS practices in ways that would not necessarily be possible by simply using Burns & Scapens’ (2000) framework. That is, rather than embeddedness (or institutionalisation) being the main explanatory, institutional interdependence becomes a key to understand both the change (and resistance) experienced in situations of high (and low) institutionalised CAS practices. As will be developed further in Chapter (7), this institutional interdependence defines and captures the interrelationships across organisational (including cost accounting) practices.

1.4 Research contribution to the knowledge

This thesis attempts to contribute the existing knowledge of management accounting literature in several ways. At a broad level, it aims to contribute to studies regarding the role of ERPs in changing costing system practices. It takes practice-misalignments and explores why some management accounting practices are operating in specialised systems rather than integrated within ERP. Function-related practices including costing system and operation control are considered as the fundamental challenge that can result in ERP
misalignments (Soh & Sia, 2004). This challenge is acknowledged in attempting to contribute to the literature of interrelations between costing system and operation control. The current work aims to explore how costing systems may influence or be influenced by operation control. And, in this regard, the present study intends to fill a research gap regarding the conditions and processes through which these practices evolve over time and become embedded in its context; and how embeddedness may be associated with non-integration of costing system practices into ERP.

The role of embeddedness in shaping change and/or resistance remains a topic of great debate within institutional theory (Englund & Gerdin, 2013). It is argued that if organisational actors, including accountants, are embedded in their context, how do they come to recognise a need for change (Seo & Creed, 2002; Scapens, 2006). On the other hand, it is also argued that organisational practices, i.e. costing system, are not equally institutionalised (Barley & Tolbert, 1997). In this regard, the present thesis aims to explore the conditions and processes by which institutionalised practices of costing system could be destabilised and changed.

1.5 Structure of the thesis

The thesis is structured into six additional chapters, each of which is briefly outlined here. Chapter (2) presents an overview of the literature on ERPs and management accounting change. Given the sheer bulk of such literature, this chapter focuses primarily on extant works which highlight the interrelationships between ERPs and CAS practices. The chapter is organised into three subsections, which respectively focus on three particularly key publications, namely: (i) Granlund & Malmi (2002), (ii) Soh & Sia (2004), and (iii) Burns & Scapens (2000). The chapter concludes that the embeddedness (or institutionalisation) is the key misalignment between ERPs and CAS practices.

In Chapter (3), the theory that has been adopted is explained and discussed, as is its use as a ‘lens’ through which case study observations can be sensitised (Humphrey & Scapens, 1996). More specifically, the original aims were for the present researcher to utilise the adopted theory in a manner that helps to explain the conditions and processes underlying (1) the de-institutionalisation of
CAS practices when they moved from being financially-oriented to having a more commercial-orientation, without significant resistance; and, (2) the (rather quick) institutionalisation of commercially-oriented CAS practices, and their resistance to further (consultant-driven) change. The theory adopted draws insight particularly from two seminal works in the institutional theoretical field, namely: Oliver (1991; 1992) and Burns & Scapens (2000). In addition, these institutional perspectives are supplemented by Hardy’s (1996) theoretical contribution on power mobilisation.

Chapter (4) presents an overview of the research design, the philosophical and practical foundation(s) of the study. There is, thus, a discussion of the ontological, epistemological and methodological grounding, and also an overview of the methods of data collection (Tomkins & Grove, 1983; Ryan et al., 2002). As will be articulated in more detail in this chapter, this research draws on a subjective (social constructivism) view of the world, an interpretive approach, a qualitative methodology, and adopts an interpretive case study. The case study, meanwhile, is undertaken through semi-structured interviews, observation, and the analysis of archive material.

In Chapter (5), the thesis begins to explore the case study (RefCo) in more detail, and the chapter is divided into two parts. The first part positions the case study amongst its counterparts, and in relation to its regulator (i.e., ParentCo); in other words, this is background context to the case organisation. The second part of the chapter then explores and describes the nature and processes underpinning the launch of the two initiatives that were each intended to have (changing) impact on the CAS practices. The first initiative was introduced by ParentCo, while the second came from the demands of external ERPs consultants.

Chapter (6) presents a theoretically-informed analysis of the empirical observations, and is split into three sections. The first sections elaborate the unfolding processes of CAS practices over time, covering both aspects of its change and stability. They articulate how new rules and routines of CAS become embodied in a more commercially-oriented way of working, and how such new rules and routines subsequently seem to become intertwined with broader (operational) control practices. The third section of Chapter (6) explores
how these new commercially-oriented CAS practices resisted further changes that had been recommended by external consultants, who were tasked with implementing ERPs in RefCo.

Finally, Chapter (7) concludes the thesis, and reflects on the findings in relation to the original research objectives. Importantly, this closing chapter highlights both the theoretical and practical contributions of the study, as well as acknowledging the study’s limitations and identifying recommendations for future research.
Chapter 2 - LITERATURE REVIEW

2.0 Introduction

This chapter reviews extant literature that has explored management accounting change in relation to ERPs. In the context of broader ERPs change initiatives, this review intends to achieve three objectives, in order to better understand the conditions and processes through which CAS practices persist or are changed. The three objectives are: (1) to identify the research-gap in similar extant studies, which have neglected to examine the misalignments between CAS practices and ERPs; (2) to address this gap by presenting the conditions of these misalignments at the macro level; and, (3) to explore the conditions and processes that shape organisational response to misalignments.

The chapter is structured into four sections, as follows: Section (2.1) presents an overview on what ERP systems consist of, and their capabilities, in addition to some remarks on early expectations for ERPs in the management accounting field. This section also reviews the literature which covers the (potential) implications of adopting ERPs for management, and particularly cost, accounting practices. The main conclusion from this review is that ERPs’ implementation generally meets an organisation’s expectations in terms of improvements to information processing and cost reduction, but does not make any headway or improvements in respect of either traditional or sophisticated cost accounting techniques. Moreover, it has frequently been reported that CAS practices are maintained and are operated independently of ERPs (Granlund & Malmi, 2002; Hyvönen, 2003; Grabski et al, 2009). One of the principal aims of this thesis is to explore why this is so.

In Section (2.2), it reviews studies that have examined the interrelationships between ERPs and accounting practices in a broader context in order to understand the roots of misalignments. The misalignment emphasises incongruence between cost accounting practices that are pre-configured (or embedded) in ERPs, and those practices being used in the organisations that are implementing ERPs. The key conclusion of this literature underlines the conditions that cause practice misalignments and the responses of organisations; leaving behind the processes that shape organisational
responses to misalignments in general, and to cost accounting practices, in particular.

Section (2.3) offers a review of the so-called ‘process-studies’, in order to assist our understanding about when, why and, especially, how CAS practices evolve (i.e., persist, change) over time. This review presents pointers as to the complexities of unfolding processes where embeddedness; power relations, political manoeuvring, and inter-connectedness, can assume important roles in terms of shaping an organisation’s practices-based response (i.e., for example, change and/or resistance) in the face of other broader changes, such as ERPs implementation.

Finally, section (2.4) makes some concluding remarks about the relevant and extant literature, and explicitly revisits the motivations and questions of the present research in the context of this literature review. Furthermore, working from some of the issues that have been raised in this chapter, we begin to explore some of the key foundations of the intended theoretical framework, in advance of a more detailed exposure to the theory that has been adopted, which is found in Chapter (3).

2.1 ERPs and management accounting change

This section explores and defines the concepts of ERPs and management accounting, and the interrelationship between them. The first part of this section (2.1.1) will explore the definition, structure and characteristics of ERPs; and the second part (2.1.2) will explore the expectations of (i.e., changes in) management accounting practices when ERPs are adopted. The third part (2.1.3) reviews the evidence of the actual implications on management accounting practices following ERP adoption; and the research gap is outlined in Section (2.1.4).

2.1.1 Defining ERPs

The essential idea of ERPs is designed around best practices and structured cross-organisational functions (Davenport, 1998; Scapens & Jazayeri, 1998). They are comprised of a number of components, called modules, as illustrated in Figure (2.1) below. This Figure depicts that different modules offer different
applications which support various organisational tasks. It has been that ERPs can be an important driver for organisational change, since they are structured around an organisation’s business processes rather than functions (e.g., O’Connell, 1995).

**Figure 2-1 Anatomy of enterprise system**

ERPs allow the automation of business processes and the sharing of common data across the organisation, with the intention of producing real-time data (Booth et al., 2000; Nah et al., 2001; Spathis & Constantinides 2004). The implications of this have been said to include improvements in information quality, lower inventory levels and costs, improvements in customer service and more flexibility in the manufacturing process (Drury, 2008).

However, in respect of ERPs having a positive impact on management accounting practices, the evidence has been fairly mixed (Hyvönen, 2003; Arenoudts et al., 2005). In particular, when making such judgements, Hyvönen (2003) highlighted a need to distinguish between organisations that close down their stand-alone systems and wholeheartedly adopt an ERPs, from those which have adopted some (but not all) of the ERP modules, which are then intended to support some of their stand-alone systems in specific functions.
Such differences can make comparisons across organisations when investigating the interrelationship between ERPs and management accounting, quite ambiguous and difficult (Granlund & Malmi, 2002; Hyvönen, 2003; Al-Sayed et al., 2008).

The most cited definition for ERPs in pertinent literature is that they are “commercial software package[s] that promise the seamless integration of all the information flowing through a company - financial and accounting information, human resource information, supply chain information, customer information” (Davenport, 1998, p. 121). Such a definition, in common with others, focuses more on the structural aspects of the system, rather than emphasising ERPs’ characteristics. These characteristics have more potentiality to introduce change into management accounting practices (Scapens & Jazayeri, 2003). The characteristics of ERPs, which distinguish ERPs from other types of systems, include: (1) integration - interconnecting organisational functions into a central database, (2) standardisation - best practice-based organisational rules, (3) centralisation real-time access, and (4) routinisation - the computerisation of daily accounting routines (ibid, p. 225).

Rather than exploring the extent to which ERPs might be key drivers of organisational change (including management and cost accounting practices), Scapens & Jazayeri (2003) have argued for more research into the implications of the above characteristics, since they “open up opportunities and facilitate” change (p. 201). We explore these characteristics, and their potential to re-shape expectations for (e.g., management and cost accounting), in the following section.

2.1.2 ERPs and expected changes in management accounting

Early, it has been argued that management accounting had lost its relevance for business managers, since it was found to be dominated by financial accounting (Johnson & Kaplan, 1987). The cost of management data processing is the key to the authors’ claim. That is, financial reporting was obligatory in comparison to management accounting. At the same time, organisations cannot afford the cost of two information systems for the processing of information on financial and management accounting. As such, it has been argued that management (and
cost) accounting can regain relevance by seizing the opportunities presented by revolutionary information technology change (Johnson & Kaplan, 1987):

"the computing revolution of the past two decades has so reduced information collection and processing costs that virtually all technical barriers to the design and implementation of effective management accounting systems have been removed" (1987, p. 6; see also Joseph et al., 1996).

This quotation argues that we should expect advanced information systems, such as ERPs, to deliver radical change in management accounting practices. For example, some have suggested that management accounting techniques, both traditional and more innovative, may become more efficient and effective when supported by ERPs (Cooper & Kaplan, 1998; Edwards, 2001; Granlund & Malmi, 2002; Baxendale & Jama, 2003; Lea & Min, 2003; Scapens & Jazayeri, 2003; Lea, 2007; He, 2008).

More specifically, these advanced information technology developments have, by some observers, been expected to incite organisations' adoption of new management accounting innovations, such as ABC and the Balanced Scorecard (BSC) (e.g., Cooper & Kaplan, 1998; Cooper, 1988; Drury, 2008). ABC is a technique that attempts to trace the cost of resources for business activities and processes, and then to attach them to specific products, services, and customers (Cooper & Kaplan, 1998). While ABC is a sophisticated technique, it is also complicated, and requires difficult measures, at high cost. It has thus been argued that only those organisations which acquire high-quality information technology are likely to adopt such management accounting techniques as ABC (Cooper, 1988). More specifically, with the advent of ERPs, its advocates have highlighted its potential to reduce the costs of information-processing (e.g., performance measures) that are required by the ABC techniques (Granlund & Malmi, 2002; Lodh & Gaffikin, 2003).

Recently, there have been several calls to examine the implications of ERPs for management accounting practices, in particular for cost accounting (see, for example, Sutton, 1999; Chapman & Chua, 2000). Sutton has suggested that: "ERPs radically change the way accounting and business information exists within organisations and the effects are likely to be quite significant" (1999, p. 5), while Chapman & Chua have stressed that the development, and increasing
spread of ERPs-types of technologies, have added an urgency to carrying out more field-based case studies in this area (2000, pp. 204-207).

Granlund & Malmi (2002) argued that ERPs provide standardisation to organisational activity through a more accessible data warehouse, and have highlighted how some management accounting innovations might be built into them. They have argued that ERPs should improve the prospects of implementing sophisticated management accounting techniques, such as ABC:

\[\text{...a well-built data warehouse underlying the corporate information system should make it easier to build new management accounting constructions} \] (2002, p. 301).

More specifically, Granlund & Malmi (2002, p.301) pose some questions in relation to the (potential) implications for ABC techniques when implementing ERP systems, as follows:

- **Does the adoption of ERPs mean that companies are turning to using ABC?**
- **If a company is already using ABC techniques, is it configured into ERPs or is it a stand-alone system?**
- **If ABC techniques are configured into the ERP-system, is the content somehow different from earlier applications due to the technical complexities of ERPs?**

Similarly, Hyvönen’s (2003) study was also motivated by a general claim that the importance of management accounting had increased during the 1990s as a consequence of changes in both the competitive and production environments (see also, Hope & Toney, 1997). Hyvönen investigated the diffusion of new management accounting innovations, such as ABC, target costing, life-cycle costing and balanced scorecard. More specifically, he hypothesised that there might be some connection between the adoption and use of management accounting innovations, on one hand, and the adopters and non-adopters of ERPs, on the other. By this, ‘non-adopters’ are those organisations which use stand-alone systems for management accounting, rather than ERPs. In a similar vein, and more recently, Al-Omiri & Drury (2007) have hypothesised that the widespread availability of advanced information technology, such as ERPs, may reduce the cost of their adoption which, they argue further, also therefore acts as a facilitator to the implementation of more sophisticated costing systems.
The above-mentioned expectation of management accounting change in the context of ERP's adoption has resulted in the emergence of new literature. This literature has, however, presented only inconclusive evidence against the above expectations, as discussed in the following section.

2.1.3 ERP's impact on management accounting

The potential impact of ERP's characteristics on management accounting became an interesting research topic in the first decade of the 2000s. That research was, however, primarily focused on describing management accounting changes in relation to ERP implementation. These investigations included management accounting functions, techniques, and the roles of accountants. This study, however, focuses more on the management accounting functions and techniques, because they are apparently inter-connected as noted in Section (2.1.2). More specifically, this may help to understand why ERP's did not deliver their promises in relation to cost accounting practice changes.

2.1.3.1 Management accounting functions

The three main management accounting functions that are examined in the literature, in relation to ERP's adoption, are: information-processing and accessibility, reporting, and decision making. In general, and as we will further develop here, the popular argument is that ERP's are effective with regard to information-processing, but less effective in terms of making improvements to reporting, or in support of decision-making.

There is a general acceptance that ERP's can create space for changes in the processing of management accounting information. In their exploration of management accounting change, Burns & Yazdifar's (2001) survey revealed that almost 75% of organisations cite ‘advanced information technology’ (i.e., ERP's) as ‘the most vital driver of management accounting change in the five

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10 See (Fahy & Lynch, 1999; Maccarone, 2000; Booth et al., 2000; Quattrone & Hopper, 2001; 2006; Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Hyvönen, 2003; Granlund & Mouritsen 2003; Spathis & Constantinides, 2003; 2004; Doran & Walsh, 2004; Dechow & Mouritsen 2005; Spathis & Ananiadis; 2005; Spathis, 2006; Rom & Rohde, 2006)
years between (1995) and (2000)’. Booth et al.’s (2000) study also concluded that ERPs are effective in supporting information-processing (see also Spathis & Constantinides, 2003; Hyvönen, 2003; Rom & Rohde, 2006; Granlund, 2007).

More specifically, some researchers have suggested that ERPs support cost and profitability analysis at segmental and product levels (Granlund & Malmi, 2002; Scapens & Jazayeri; Hyvönen, 2003; Spathis & Constantinides, 2004; Spathis & Ananiadis, 2005).

Similar findings have also emerged from an in-depth case study undertaken by Scapens & Jazayeri (2003). In particular, they have argued that the impact of ERPs is exemplified by increasing information visibility which, in turn, makes accounting information more readily available to decision-makers (see also, Dechow & Mouritsen, 2005; Rikhardsson & Kraemmergaard, 2006).

Furthermore, Scapens & Jazayeri (2003) argued that ERPs have also enabled more frequent and accurate forecasts to be carried out, and have improved the conditions under which both standard and actual costing calculations were made (i.e., via input-automation).

The evidence is, however, more mixed in regard to the impact that ERPs may have on reporting and decision making practices. Booth et al. (2000) make comparisons between ERPs adopters and non-adopters, e.g., stand-alone systems, and conclude that ERPs are less effective than stand-alone systems in supporting reporting and decision-making practices (Spathis & Constantinides, 2003; Hyvönen, 2003; Spathis & Ananiadis, 2005).

In similar studies, both Hyvönen (2003) and Rom & Rohde (2006) also make comparisons between organisations which adopt ERPs and those which maintain stand-alone systems. These studies drew their findings through surveys, which were carried out in different contexts. They found that the compromised systems, above, have almost the same influence on management accounting practices. Interestingly, in these particular studies, stand-alone systems were seen to offer more than ERPs in terms of supporting management accounting problems that relied upon such techniques as budgeting and cost control, as well as on the accuracy and reliability of reporting activities (Hyvönen, 2003; Rom & Rohde, 2006). Rom & Rohde (2006), in particular, resonate with the findings of Scapens & Jazayeri (2003),
who argued that ERPs were unable to provide all of the required ‘top management’ reports in their case study. Rather, spreadsheets were frequently used by accountants to organise and report the information that was pulled from the ERPs. However, these findings contrast with those of Quattrone & Hopper’s (2001) study, which claimed significant changes in business reporting procedures had resulted from the adoption of ERPs.

To sum up, while much of the evidence suggests that ERPs are effective in making improvements to an organisation’s information-processing, there is less support for suggesting greater effectiveness in regard to reporting and decision making support. We might even go further to suggest that, based on the evidence so far, there is no reason to assume that advanced information technology, such as ERPs, have advantages over stand-alone systems for management and cost accounting in terms of reporting and decision-making. However, ERPs do appear to have driven transaction-oriented changes in management accounting, such as the automation of information-processing. Since the costs of information-processing were generally considered a barrier to implementing effective management accounting systems (Johnson & Kaplan, 1987), it is probably reasonable to assume high expectations of ERPs in regard to support for traditional management accounting techniques, and/or support in developing more ‘sophisticated’ techniques. This issue of ERPs’ impact on sophisticated management accounting techniques is the main subject for discussion in the next section.

2.1.3.2 Innovations in management accounting

Integrating management accounting techniques were regarded by many of the advocates of ERPs as one of their most fundamental challenges, especially with regard to CAS practices (Granlund & Malmi, 2002; Hyvönen, 2003; Rom & Rohde, 2007; Grabski et al., 2009). The hypothetical role of ERPs to drive change(s) in management accounting techniques is not conclusively supported by empirical research (see, e.g., Booth et al., 2000; Maccarone, 2000; Granlund & Malmi, 2002; Hyvönen, 2003; Scapens & Jazayeri, 2003). In respect of this possible inter-relationship between ERPs and management accounting techniques, we can draw from three strands within the extant literature.
First, past literature has attended to whether (or not), and the extent to which, ERPs are indeed key drivers of change in management accounting techniques. For example, drawing mostly on questionnaire survey results, some research has highlighted that ERPs tend to increase the use of traditional techniques, such as budgeting, forecasting, performance measurement and basic costing techniques (Spathis & Constantinides, 2003; 2004; Doran & Walsh, 2004). Interestingly, Doran & Walsh (2004) found a significant correlation between ERPs and the adoption of more sophisticated techniques, such as ABC and target costing. Their results were premised entirely on a questionnaire survey amongst organisations in Ireland; however, similar results were also found in Spathis & Constantinides’ (2004; 2003) survey of organisations in Greece. Overall, the conclusion from the studies considered here is that ERPs drive changes in both traditional and sophisticated management accounting techniques; and such techniques are being integrated within ERPs. However, it is difficult, through using a questionnaire survey, to identify a clear cut between adopters and non-adopters in terms of sophisticated techniques, especially of ABC (Hyvönen, 2003; Al-Omiri & Drury, 2007).

A second strand in the past literature has investigated ERPs as potential ‘stabiliser’ of management accounting techniques, rather than as drivers of change (Granlund & Malmi, 2002; Spraakman, 2005; Jackling & Spraakman, 2006). In his study of Australian organisations, for example, Spraakman (2005) has stated that ERPs can reinforce existing management accounting techniques, such as the techniques for basic costing, performance measurement, forecasting, operating statements and budgeting. In particular, he has highlighted that ERPs normally enhance the detail, accuracy and flexibility of such techniques. Jackling & Spraakman (2006) later found similar results when specifically investigating the impact of ERPs on capital budgeting in Australian organisations, highlighting, in particular, the impact of ERPs on the use of analytical and measurement tools. Similarly, Granlund & Malmi (2002) carried out ten case studies on companies operating in Finland. Curiously, the authors pointed out that existing cost accounting techniques were transferred, as they stood, into ERPs, and the reasons for this seemed to be beyond the scope of the interview survey which they undertook. Overall, these studies conclude that ERPs have a moderate impact on management accounting
techniques. Such an impact is mainly demonstrated in improvements in the use of existing traditional management accounting techniques, rather than in the enabling of the use of sophisticated accounting techniques.

The third pattern of studies recognises ERPs as being neither the drivers of change nor the stabilisers of existing practices (Booth et al., 2000; Granlund & Malmi, 2002; Hyvönen, 2003; Scapens & Jazayeri, 2003). In this stream, most of the extant literature is opposed to Johnson & Kaplan’s (1987) expectations, since no association was reported between the adoption of ERPs and that of sophisticated management accounting techniques (Booth et al., 2000; Granlund & Malmi, 2002; Hyvönen, 2003; Scapens & Jazayeri, 2003). Interestingly, Granlund and Malmi’s (2002) study, in particular, reported that some techniques of management accounting, such as ABC and BSC, were being used, but were not being supported by ERPs (see also Scapens & Jazayeri, 2003; Hyvönen, 2003; Newman & Westrup, 2005; Al-Omiri & Drury, 2007; Grabski et al., 2009).

Some researchers found that either traditional or sophisticated management accounting techniques were operating independently, rather than being integrated into ERPs (Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Al-Sayed et al., 2008; Grabski et al., 2009). Alternatively, specialised (stand-alone) systems are superior in terms of supporting management accounting techniques, especially sophisticated ones (Booth et al., 2000; Malmi, 2001; Hyvönen, 2003; Rom & Rohde, 2006). In their observations from ten case studies, Granlund & Malmi (2002, p. 312) concluded that:

“One of the main results of this study has been the fact that so far ERPs, contrary to many expectations, seem to have had little impact on both the management accounting methods and managerial controls used. In most of the cases studied [sophisticated] management accounting techniques - and many of the [traditional] ones, too (e.g., annual budgeting) - are operated in separate systems."

Similarly, Hyvönen (2003) has argued that stand-alone systems surpass ERPs in terms of solving management accounting problems that are related to budgeting, cost control and flexibility; and to the accuracy and reliability of reporting activities. Such findings were drawn from observation, which found that financial departments tended to adopt stand-alone systems, whereas
production departments still generally preferred ERPs (see also; Fahy & Lynch, 1999; Booth et al., 2000). Grabski et al. (2009) have reinforced this claim through a conclusion drawn from observations for seven case studies in the UK context. Their observations aimed to explore the impact of ERPs in changing management accounting techniques, and the authors stated that:

> [M]anagement accountants using traditional software (such as spreadsheets) for budgeting, ABC, balanced scorecards and other performance management techniques independent of, rather than integrated with ERP systems (p. vii).

The general view, across the three patterns, is that although ERPs may have some impact on management accounting techniques, overall, this impact is rather modest; so ERPs cannot really be considered to be the drivers of the adoption of new techniques. More specifically, ERPs do not motivate the utilisation of sophisticated accounting techniques. Rather, they have generally reinforced the use of traditional management accounting practices and made them more integrated, detailed, accurate, automated and timely.

The complexity of ERPs has been criticised by the majority of the above-mentioned literature. This complexity stems from the quality of integration that is the contribution of the thwarting of the configuration of sophisticated management accounting techniques into the system. As such, the literature above argues that the management accounting practices that are pre-configured (or embedded) in ERPs do not offer such user-friendly methods as the most sophisticated accounting software does. This makes accountants reluctant to adopt ERPs (Grabski et al., 2009). On the other hand, criticising ERPs’ complexity contradicts the concrete evidence presented in section (2.2.1) that claims ERPs are effective in information-processing. Drawing on Johnson & Kaplan’s view, even sophisticated management accounting techniques should be seen in ERPs, as ERPs have proved that they have capabilities in information-processing which did not previously exist.

Instead of complexity, there is an alternative explanation for the stability and misalignment of management accounting with the practices that are embedded in ERPs. Rom & Rohde (2006) argue that it is not an option in ERPs, rather than an organisational choice which decides why, when and how management
accounting techniques need to be developed or replaced (see also Rom & Rohde, 2007; Granlund, 2011). The authors suggest that the “sophistication of management” is a factor which is likely to affect the extent of change in management accounting in relation to ERPs’ implementations. This factor is concerned with the extent to which management focuses on and adopts appropriate management techniques. In this sense, Drury & Tayles (2006) found variations across the organisations they surveyed in terms of a particular practice of CAS, profitability analysis. They advanced that the choice of this seemed to be a matter of personal preference, organisational and/or sector custom. The authors have suggested that profitability analysis may have become an institutionalised routine, and the institutional economics framework of Burns & Scapens (2000) may provide further insights into explaining these variations. Early on, Malmi (1997) outlined several sources from which ABC implementation failed to be implemented, since it encountered resistance. The most fundamental sources pertain to institutional factors that are exemplified in organisational culture, power and politics. He added that organisational routines, ‘institutions’ and culture are important in explaining resistance to, and the failure of ABC adoption. Prior to this, there was an attempt to explain why and how accountants resist ABC (Argyris & Kaplan, 1994). These authors suggest that “[…] barriers to change arise from the defensive routines that participants trigger to protect themselves from experiencing embarrassment and threats from the new ideas”. However, they did not explain how and why this defensive routine is triggered.

2.1.4 Outlining the research gap

This section presents the critical aims that seek to address a research gap that has been left unexplored by previous literature relating to ERPs and management accounting. The review of the studies, above, has examined the relationships between ERPs and management accounting. This review has presented the contrasting claims about ERPs’ capabilities in relation to: (a) management functions, and (b) techniques. As noted, these studies have focused more on describing the outcomes of management accounting changes when ERPs were introduced. Such a focus has largely resulted in neglecting
consideration of the *conditions* and *processes* through which, and how and why, these outcomes occur.

First, this literature did not explain the conditions under which the implementations of the same ERPs result in different outcomes across the contexts within which management accounting operates. Instead of a simplistic view (one of complexity), why does management accounting in a particular organisational context operate within ERPs, whereas in other contexts it has been maintained in stand-alone systems? This has not been explored, i.e., how have the contexts within which management accounting operates contributed to ERP misalignment. In this sense, Granlund has suggested that “[…] it remains an open question to what extent and in what sense we might argue that accounting and control practice may also affect IT” (2011, p. 15). In order to proceed to this stage, it is important to understand better the conditions under which ERP-related changes in management accounting take place (Vakalfotis et al., 2011; Rom & Rohde, 2007).

Second, the implication of the conditions and management accounting contexts on the path of the interplay process is another research gap. Studies that have reported misalignments between ERPs and management accounting techniques are drawn from questionnaires and/or interview surveys across organisations, rather than from undertaking in-depth case studies, with some exceptions. They were unable to explain why there is misalignment (see, for example, Maccarone, 2000; Booth et al., 2000; Granlund & Malmi, 2002; Hyvönen, 2003; Rom & Rohde, 2006; Grabski et al., 2009). As mentioned, these studies focus on describing management accounting outcomes in relation to the implementation of ERPs. The ERPs are depicted as independent factors, while management accounting changes are dependent factors. Such an exploration not only dismisses the other conditions that may affect the pathways to ERP implementation, but also overlooks the processes by which misalignment emerges between the management accounting techniques that are embedded in ERP and the implementing organisation.

Giving attention to these processes advances our understanding about why and how ERPs have facilitated only incremental changes to the management accounting techniques already in use (Scapens & Jazayeri, 2003). In this
sense, it is argued that ERPs cannot drive revolutionary changes in management accounting alone, for instance, in regard to strategically-oriented changes that include the greater adoption of sophisticated accounting techniques (Rom & Rohde, 2007). It is suggested that investigating the conditions and interplay processes will help academics and practitioners to achieve a better understanding of the impact that ERPs have upon management accounting (Vakalfotis et al., 2011).

To sum up, there is a lack of research which has attempted to provide sufficient understanding to explain the different outcomes of management accounting practices in relation to ERP implementations. Notably, (a) conditions that shape, (b) the process interplay of ERPs with management accounting, are issues that have not been given fair attention in order to understand the process of management accounting change and/or stability. To reinforce this, several calls have been made for the development an understanding of the conditions which affect the path to ERP implementation (Rom & Rohde, 2006; Staehr, 2010; Granlund, 2011).

2.2 ERP-management accounting in the broad context

This section intends to review studies that are focused on misalignment instead of describing the changes in management accounting that result from ERPs’ adoption (Soh & Sia, 2004; Rom & Rohde, 2007; Kholeif et al., 2007; 2008; Jack & Kholeif, 2008; Granlund, 2011). The misalignment is a gap between the best practices offered by ERP packages and the actual practice in use in the implementing organisation (Soh & Sia, 2004). These studies view the interplay process of ERP-management accounting in a broad context. This direction of observation is informed by the assumption that interrelationships between ERPs and the management accounting techniques in use may take the form of a bi-directional relationship (Luft & Shields, 2003). That is, while ERPs could drive change, the implementation process could be driven by management accounting practices that are embedded in their context, as shown in the Figure (2.2) that follows.
There is an argument behind hypothesising a bi-directional relationship, that is, that accounting should not be viewed in isolation from wider social and political contexts, or from organisational practices, because “accounting is interwoven with social, cultural, and political processes” (Ahrens et al., 2008, p. 842; and see also Hopper & Powell, 1985; Ahrens & Chapman, 2006a,b). More specifically, “accounting is not a neutral technical activity” that can be transferred from one context to another, e.g., through ERPs, rather, it is both a constituent and constitutive element of organisational practices (Humphrey & Scapens, 1996, p. 89). By drawing on this view, we can understand the advocacy of Granlund for examination of the impact of management accounting on ERPs, rather than vice versa. As Granlund states, “[…] it remains an open question to what extent and in what sense we might argue that accounting and control practice may also affect IT” (2011, p. 15). Earlier, for instance, Nixon found that:

> [T]he new technology investment decision is technically more complex and the process is politically more contentious than the sequential ‘rational’ decision model (1995, p. 283).

Such a consideration aims to understand the implication of this context in the resulting misalignment. In bringing misalignment into consideration, the literature that will be considered in this section advances our understanding in terms of the conditions behind the puzzle: some accounting practices were configured into ERPs in a particular context, while others were not (Soh & Sia, 2004). Another feature of these studies also explains the organisational response to misalignment, whether through: (a) system customisation, (b)
practice change, or (c) to maintain misaligned practices in a specialised (stand-alone) system. The following two subsections thus respectively deal with: (a) sources that cause misalignment, and (b) the organisational response to this.

2.2.1 Typology of misaligned practices’ sources

This section emphasises a different typology of accounting practice misalignments. Institutional and organisational forces are the key sources that give rise to misalignments between ERPs and accounting practices. The two following subsections discuss, respectively, the misalignments of accounting practices from (a) a technical viewpoint, and (b) an institutional perspective.

2.2.1.1 A technical typology

The study of Soh et al. (2000), for instance, has identified the different sources that result in misalignments between the accounting practices embedded in ERPs and the implementing organisation. These sources are classified into five groups, as follows (pp. 48-50):

1. *Data [misalignments] that arise from incompatibility between organisational requirements and the package in terms of data format;*
2. *Functional [misalignments] that arise from incompatibilities between organisational requirements and the package in terms of the processing procedures required;* and this includes the following:
   2.1. *Control [misalignments] that arise from validation procedures or checking routines;*
   2.2. *Operational [misalignments] that occur when normal operational steps are missing or inappropriate, often due to the incompatibility of the embedded business model.*
   2.3. *Output [misalignments] that arise from incompatibilities between organisational requirements and the package in terms of the output;*

‘Functional [misalignments] have, in particular, been considered the most fundamental challenge and as a recognised source for practice misalignments. Instead of criticising complexity, this has made a case for, and advances our understanding in terms of misalignment, but this is still about the technical, rather than the contextual challenges, as discussed below.
2.2.1.2 A contextual typology

Several studies have further developed interpretations around misalignments of organisational and accounting practices (Gattiker & Goodhue, 2002; Soh et al., 2000; 2003; Soh & Sia, 2004; Kholeif et al., 2007; 2008; Jack & Kholeif, 2008). Gattiker & Goodhue’s (2002) study, and Soh et al. (2003), draw on a dialectical perspective as a lens through which to understand how misalignments come about. They have suggested that misalignment is a representation of opposing forces/ practices that are embedded inside ERPs and the implementing organisation. On one hand, ERPs offer integration, process orientation, flexibility and domain- specific assumptions, regulations and rules. On the other, the implementing organisations are usually seeking systems that offer practices which support their values and norms, rather than offering new practices (Soh et al., 2000; 2003).

In the same vein, other studies drew on institutional and structuration theories to understand accounting practices' change in their context (Soh & Sia, 2004; Kholeif et al., 2007; 2008; Jack & Kholeif, 2008). They examined the contextual differences between the vendors of the ERP systems/ packages and the implementing organisations; and the influence of these differences in causing misalignments. Soh & Sia (2004), in particular, they have further developed conceptual understandings around misalignment, as shown in Figure (2.3) below.

Their development was informed by their earlier studies Soh et al. (2000) and (2003). These misalignments were classified according to their sources instead of their technical typologies. More specifically, misalignments in financial and management accounting practices were thus classified respectively into: (a) coercively imposed accounting practices, and (b) voluntarily acquired accounting practices. How organisations respond to these misalignments is discussed in the following subsections.
2.2.2 Misalignment and organisational response

It is argued that the nature of practice misalignment, coercively or voluntarily, exerts a strong influence on organisational response, and the latter is a scenario that reflects a complex interplay of several probabilistic elements (Soh & Sia, 2004). The general view is that the way that organisations can respond to misaligned practices, e.g., those that are coercively imposed or voluntarily adopted, could be through: (1) ERPs’ customisation, (2) accounting practice change, (3) a combination of both (Gattiker & Goodhue, 2002; Soh et al., 2003; Soh & Sia, 2004; Kholeif et al., 2007; 2008; Jack & Kholeif, 2008).

The first hypothetical view among these studies argues that misalignments in imposed financial accounting practices are more likely to be resolved through system customisation, due to the difficulty of change regulation. Conversely, misalignment of voluntarily acquired cost accounting practices could be resolved via practice change. The latter case involves business process re-engineering (BPR hereafter) as a way to reconcile cost accounting practices in use and those embedded in the ERPs (Gattiker & Goodhue, 2002). As such, Gattiker & Goodhue (2002) argue that ERPs could be either the drivers of change or the stabilisers that reinforce accounting practices that are already in
use. In particular, Soh & Sia (2004)\textsuperscript{11} carried out three case studies in order to perform the above-mentioned cross-sectional analysis. They found that misalignments of coercively imposed practices are fewer if compared to those that are voluntarily adopted, as will be discussed in subsequent sections that follow:

2.2.2.1 Misalignments in coercively imposed accounting practices

Coercive practices are those imposed and dictated by authoritative sources in the organisation's environment, especially by the coercive authority of nation-states (Soh & Sia, 2004). The authors found that these misalignments accounted for a third of the total; and governmental and industry regulations are the key forces for this. Regulation-based practices are usually related to financial accounting and control procedures over payment and debt collection. In this sense, Soh & Sia (2004) have argued that maintaining these financial accounting practices, unchanged, is governed by country and industry regulations. The most notable organisational response to a misalignment of these practices was thus through ERPs' customisation (ibid). In other words, these practices are considered to be taken-for-granted, as Soh & Sia (2004, p. 389) emphasise:

\begin{quote}
Users and management took it as given that the imposed [practices] would continue, and their arguments for modifying the package to conform to imposed organisational [practices] and emphasised the pervasive effects caused by the misalignments.
\end{quote}

This quotation shows that accounting practices could become embedded in a context over time and then could become a challenge to change. Similarly, both Kholeif et al. (2007; 2008) and Jack & Kholeif (2008) respectively, have investigated the failure of ERP projects in two Egyptian organisations. These cases were in state-owned organisations. While the outcome of the ERPs; implementation was the same in both cases, the reasons for failure were different. The ERPs failure, in the first case, is ascribed to an accountability

\textsuperscript{11} It is not intended here to produce a lengthy review of Soh & Sia’s (2004) study. Rather, their study is probably the key publication that makes a clear link between misalignment and the institutional context of organisational practices.
system that was enforced by a governmental agency, and this system had been enacted for four decades (Kholeif et al., 2007; 2008). The second ERPs failure, however, relates to constraint enforced by the European Union (EU), which aimed to promote the economic transition of Egypt from a centrally planned to a market-oriented economy.

2.2.2.2 Misalignments in voluntarily adopted accounting practices

The second source of misalignment arises from organisational and accounting practices that are voluntarily acquired (Soh & Sia, 2004). The authors define voluntary practices as those adopted for organisational reasons as a result of an organisation’s experience, history and/or management preferences. Interestingly, Soh & Sia (2004) found that the misalignment in voluntarily acquired practices accounted for numbers as high as double those of coercively imposed practices (ibid). In elaborating on Soh et al. (2000), Soh & Sia’s study found that the majority of these misalignments were clustered around function-related practices. More specifically, these practices pertained to customer orientation (i.e., service quality indicators), planning (resource management), reporting (i.e., segmental information) and decision making (i.e., allocation of cost and revenues for pricing decisions) (see also Granlund & Malmi, 2002; Hyvönen, 2003). These practices could not, however, be integrated within the ERPs.

Paradoxically, organisational response to misalignments in voluntarily acquired accounting practices was via the customising of ERPs, rather than via practice change (Soh & Sia, 2004). The authors argued that each case has a unique history that has resulted in the development of the organisation’s own practices (Soh & Sia, 2004, p. 386). These practices become part of organisational rules and routines, since they appear to be “institutionalised” in their own context. These practices were thus difficult to change, even in the face of ERPs, as Soh & Sia stated (2004, p. 396):

>T]he persistence or strength of voluntary structures varies, with those related to strategic differentiation being most likely to persist even in the face of opposing pressure to adopt differently packaged enabled structures.
To sum up, this section reviews studies that give rise to contextual forces that cause misalignment between the accounting practices offered via ERP and those that are already in use in the implementing organisation. While misalignments of coercively imposed practices are more likely to be related to financial accounting and control, misalignments of voluntarily acquired practices are more likely related to management and cost accounting systems. More specifically, the majority of misalignments are in institutionalised practices of CAS, where an organisational response was mostly through system customisation, rather than practice change. It is, however, still obscure why organisations respond through ERPs customisation, even in the case of the misalignment of voluntarily adopted practices? These views are still simplistic and have not explained how imposed (financial accounting) and voluntarily acquired (cost accounting) practices become institutionalised; nor explained why these practices cannot be changed in accordance with best practices that are embedded in ERPs. The following section explores the sources and processes which shape the organisational responses to the cases that need practice change at the micro level.

2.3 **Change and stability in cost and management accounting practices**

This section draws insights from studies that focus on the micro processes of organisational response through practice change and/or resistance to change. As argued, the nature of practice misalignment, coercively or voluntarily, exerts a strong influence on organisational response, and the latter is a scenario that reflects a complex interplay of several probabilistic elements at the organisational level (Burns & Scapens, 2000; Burns, 2000; Soh & Sia, 2004; Yazdifar et al., 2008; Scapens, 2006; 2012). These processes, and the sources which shape organisational responses, are respectively discussed in the following sections:

2.3.1 **Processes of change and stability**

Processes of management and cost accounting change and stability have been widely explored since the early 2000s (Burns, 2000; Burns & Vaivio, 2001; Soin et al., 2002; Hussain & Hoque, 2002; Burns & Baldvinsdottir, 2005; Siti-Nabiha & Scapens, 2005; Ribeiro & Scapens, 2006; Busco et al., 2006; Lukka, 2007;
Yazdifar et al., 2008; Busco & Scapens, 2011). These studies drew on argument of Burns & Scapens (2000) in order to attempt to understand the processes through which management and cost accounting practices, over time, can become institutionalised in a context that underpins taken-for-granted ways of thinking and doing things (Burns & Scapens, 2000). In Burns & Scapens’ argument, the degree to which these practices are institutionalised is the explanatory factor for change and/or resistance, as they stated:

*Institutions which are relatively short-lived and/or which have not gained widespread acceptance, are more vulnerable to challenge and less likely to influence action (2000, p. 8).*

This quotation shows that the degree of institutionalised practices in an organisational setting could be classified into a high-low continuum as shown in Figure (2-4). Similarly, change and stability (resistance to change) are a continuum, rather than being mutually exclusive (Siti-Nabiha & Scapens, 2005; van der Steen, 2009; 2011).

Figure 2-4 Continuums of institutionalisation and change

As a consequence, the occurrence of change-resistance in high-low institutionalised management accounting practices offers four dichotomies of processes. That is, the occurrence of change in high-low institutionalised accounting practices in a particular organisational setting; and the occurrence of stability in high-low institutionalised accounting practices in a particular organisational setting. Importantly, and according to Burns & Scapens, the more
radical and incongruous change that introduced into high institutionalised accounting practice, the less likelihood that it will be successful, whereas the more likelihood that it will be successful in the context of less institutionalised practices (2000). The converse case explains the resistance to change in CAS in order to maintain organisational stability. These dichotomies are explored in light of prior literature in the subsequent sections.

2.3.1.1 Change in high-less institutionalised practices

The concept of change is problematic (Burns & Vaivio, 2001); and is avoided by organisational studies (Quattrone & Hopper, 2001). On a general level, change is defined as “making or becoming different, a shift from one state or phase to another (The On-line Cambridge English Dictionary). In this respect, Burns & Scapens have suggested “revolutionary versus evolutionary” as one of the proposed forms that represent management accounting practice change (2000, p. 18). The former involves “radical change to existing routines and fundamentally challenging the prevailing institutions” (ibid, p. 13); whereas evolutionary changes are “incremental with only minor disruption to existing routines and institutions” (ibid, p. 20).

It is advised that we should not confuse revolutionary-evolutionary change with advanced-traditional introduced management accounting practice (Burns & Scapens, 2000). Rather, revolutionary change is the impact of introduced practice on existing institutions, on their ways of thinking and doing things. For instance, introducing inconsistent change into highly and deeply institutionalised accounting practices may encounter resistance and/ or be inherited by path-dependency. The latter represents the influence of existing rules, routines and institutions upon introduced revolutionary change in order that it becomes evolutionary. The key point to distinguish between revolutionary-evolutionary changes is the congruence of introduced change that underlines the weight of disruption in the organisational context.

2.3.1.2 Stability in high-less institutionalised practices

The converse dichotomy in the aforementioned diagram outlines the occurrence of resistance in the high-less institutionalised corporate setting. As argued, it is
difficult to predict sources of resistance, since this requires a thorough understanding of the rules, routines and institutions that make up the organisational context. In general, introducing change challenges institutionalised management accounting rules and their routines are likely to be path-dependent, inherited from existing ways of thinking and norms, or, alternatively, they could be subject to resistance (Burns & Scapens, 2000), since organisations have greater tendencies towards the maintenance of stability.

Organisational inertia underlies the inability to enact internal change in the face of significant external change (see Miller & Friesen, 1980, cited by van der Steen, 2009). The notion of inertia, as such, refers to a correspondence between organisational capabilities and their environment (Hannan & Freeman, 1984). In the same vein, inertia is also referred to as the relative speed of organisational change in terms of its responsiveness to change and the time it takes to obtain process and evaluate information from the environment (van der Steen, 2009, p. 738).

It is argued that inertia is associated with existing accounting routines, and this, to some degree, makes accounting practices resistant to change (Burns & Scapens, 2000). Resistance is defined as the “reluctance of individuals to conform to new modes of thinking and behaviour, either by choice or through difficulty (in adapting)” (ibid, 2000, p. 16). In this sense, there are three separate and interrelated elements that give rise to resistance to change: “(a) formal and overt resistance, due to competing interests; (b) resistance due to a lack of the capability (knowledge and experience) to cope with such change; and (c) resistance due to a “mental allegiance” to established ways of thinking and doing, embodied in existing routines and institutions” (ibid, p. 17). These forms of resistance may become both explicit and implicit (Siti-Nabiha & Scapens, 2005).

2.3.2 Sources-based change and stability

The process of organisational response to accounting practice misalignment is a result of the interplay among various parties, including management, users, information technology personnel, and consultants (Soh et al., 2000; Soh & Sia,
The interaction among these parties can be mobilised by several sources; namely: regulations, organisational embeddedness, power over (consultant-user) negotiations (Burns & Scapens, 2000; Burns, 2000; Cagilo, 2003; Soh & Sia, 2004; Rom & Rohde, 2007; Al-Omri & Drury, 2007; Kholeif et al., 2007; 2008; Yazdifar et al., 2008). The implications of these sources in shaping processes of change and/or resistance to change, are discussed in the subsections that follow.

2.3.2.1 Embeddedness-based change and resistance

As noted, organisations still respond via system customisation, rather than through practice change, to misalignment of voluntarily adopted CAS practices (see section 2.2.2). The hypothesis was that the less the regulation, the easier to change practice (Gattiker & Goodhue, 2002; Soh et al., 2000; 2003; Soh & Sia, 2004). However, the evidence in Soh & Sia’s (2004) study refuted this hypothesis. The response, in three case studies, to misalignment in voluntary cost accounting practices, was through system customisation rather than practice change. The authors claim that each case has a unique history that has resulted in the development of its own practices. Furthermore, as these practices become part of organisational rules and routines, they become highly “institutionalised” in the organisation’s own context (2004, p. 393). It was thus difficult to change them in the face of ERPs, as Soh & Sia stated (2004, p. 396):

> [T]he persistence or strength of voluntary structures varies, with those related to strategic differentiation being most likely to persist even in the face of opposing pressure to adopt different packaged enabled structures.

Apart from practice source (imposed versus voluntary) as an explanatory factor, Burns & Scapens (2002) have suggested “institutionalised/ embeddedness” as the key to understanding organisational change or resistance to change. They argue that management accounting practice has the potentiality to be institutionalised and then to become a “taken for granted assumption” (2000, p. 11). Elaborating on Soh & Sia’s finding, embeddedness stems from the production and reproduction of settled habits in the thoughts and actions of organisational actors, before becoming an imposed form that provides coherence in order to make sense to day-to-day organisational actors (Burns &
Scapens, 2000). In the context of Soh & Sia’s study, the power of embeddedness could explain the organisational response via system customisation in either the case of imposed and voluntarily adopted accounting practices.

Embeddedness-based processes of management accounting change and/or resistance have been widely addressed (Burns, 2000; Soin et al., 2002; Burns & Baldivinsdottir, 2005; Siti-Nabiha & Scapens, 2005; Ribeiro & Scapens, 2006; Busco et al., 2006; Yazdifar et al., 2008; Busco & Scapens, 2011). This literature has drawn on the seminal framework presented by Burns & Scapens (2000). Their framework is concerned with the analysis and explanation of processes leading to the adoption of (or resistance to) innovative systems and practices in specific organisational settings. They argue that the process of the implementation of a change is portrayed as complex, where its success depends on the extent to which the change introduced is consistent or in contradiction with embedded practices (the existing way of thinking), Burns & Scapens explain:

"It is likely to be much easier to introduce changes which do not challenge existing routines and institutions, i.e., where the change can be accommodated within existing ways of thinking and norms of behaviour. However, change which conflicts with existing routines and institutions is likely to be much more difficult to implement" (2000, pp. 16-17).

This quotation demonstrates that the focal point of change emphasises the interplay between two issues, namely: the nature of introduced change, and the context into which change is introduced. As such, it is important to recognise the congruence between introduced change and the context of change implementation (the existing ways of thinking) in order to take the process of change forward (Scapens, 2012).

Researchers who drew on Burns & Scapens’ (2000) argument provide sensible explanations for an understanding of the processes of organisational responses to the misalignment of accounting practices. There are two streams in this literature explored process of management accounting change and/or resistance, each stream includes patterns that explain how embeddedness shapes organisational responses via practice change and/or resistance. It is,
however, beyond the time frame of this PhD project to undertake a comprehensive review of the literature that draws on Burns & Scapens’ argument for embeddedness, since these have now reached a total of almost 900 papers. Amongst those that are the most relevant are Soin et al. (2002); Siti-Nabiha & Scapens (2005), Ribeiro & Scapens (2006); Nor-Aziah & Scapens (2007) and Busco & Scapens (2011).

The first major stream of Burns & Scapens’ (2000) users explain the process of management accounting change in relation to new initiatives. The first pattern argues that change can happen even when it is incongruent with embedded accounting practices. The success of this entails the mobilisation of organisational actors for new practices, such as those introduced via ERPs. In Burns’ et al. (2003) study, for instance, senior managers recognised the need to replace an internally focused production orientation with a more externally focused customer orientation, and a transformation programme was then arranged accordingly, to provide extensive staff training.

The second pattern that arises from this stream recognises the workable relationship between embedded and new practice as another way of taking the change process forward. Busco & Scapens’ (2011) and Busco et al.’s (2006) studies, have examined the implementation of Six Sigma in Italian organisations. They found that management accounting change happened quite quickly. Such change was considered both to be revolutionary and evolutionary change. The former underlines organisational transformation from financially-oriented to performance-oriented management. However, it is evolutionary change when the implementation of Six Sigma, as a new practice of accounting, was congruent with the existing quality-oriented ways of thinking which underline evolutionary change. Six Sigma thus linked accounting changes to contemporary ways of thinking in the organisation (i.e., the prevailing institutions).

The third pattern arising from this stream emphasises the incongruity of introduced change with an inheritance of path-dependence; existing organisational rules and routines. In this sense, Soin et al.’s (2002) study reported that the implementation of ABC as a new project in a bank “was congruent with the mood of cost cutting demanded by senior management”
(ibid, p. 268). So, “the ABC team succeeded in institutionalising a less radical version of ABC that revealed new links between costs and products, but did not go as far as to transform the strategic thinking of the bank’s senior management” (ibid, 2002, p. 249). This case also represents path-dependency; the influence of the existing institution, its rules and routines.

The second stream of this extant literature focuses on explanation of the process of management accounting resistance in relation to new initiatives. The key argument in this stream is that change cannot take place if there is incongruity between the practice being used and the new initiatives. The first pattern from this stream reports loose coupling/decoupling as a strategy for implicit resistance to accounting change. The studies of Nor-Aziah & Scapens (2007) and Siti-Nabiha & Scapens (2005), have explored the process of implementing a new budget system and value-based management, including key performance indicators, as new initiatives in accounting change. Neither was the new budget system effective in the operations department, nor were key performance indicators considered in the decision making process. As both studies reported, these changes began day-to-day to decouple their organisation’s life, as they challenged the existing ways of thinking and doing things. The second pattern from this stream uncovers explicit resistance to incongruous changes. In Burns’ et al. (2003) study, there are two case studies of failures in the implementation of a new accounting system, since they did not align with the existing ways of thinking (i.e., the prevailing institutions) even though attempts were made to use incentives built around the new accounting system. A contradiction between underlying assumptions about the new accounting system and the managers’ interests were the focal points of this explicit resistance.

To sum up, the studies cited above illustrate the difficulties involved in introducing new accounting systems that conflict with institutionalised practices which reflect the existing ways of thinking and doing things. The key point is that initiatives that are designed to explicitly challenge/change existing ways of thinking should accompany, or preferably precede, the introduction of the new accounting systems (Scapens, 2012b). Nevertheless, embeddedness is a critical point in implementing management accounting change. However, these
studies did not explain when and how incongruent change may successfully take place in high institutionalised practices.

### 2.3.2.2 Politics and power-based change and resistance

Organisational response to misalignment depends on interaction among consultants-users, as well as on the nature of the misalignment (Soh & Sia, 2004). Soh & Sia found that organisational response to the resolution of misalignments in voluntarily acquired accounting practices is “much less clear” if compared to misalignment of imposed practices, due to difficulty in changing regulation in a government or industry (ibid, p. 394). If ERPs cannot accommodate regulation-related practices, the alternative must be system customisation. Regulation of financial accounting practices can become something that is unquestionable, not only by the accountants involved in the implementation process, but also by consultants, as Soh & Sia (2004, p. 389) state:

*In the interactions, while consultants may occasionally have offered suggestions of workaround solutions, they appeared to accept the ‘imposed’ nature of the misalignment, and there was relatively little effort to dissuade the organisations from customising the package. These interactions led to decisions to modify the package for most of the imposed [practices] misalignments.*

In contrast, misalignments of voluntarily acquired CAS practices are open to negotiation. Negotiations among involved parties may sometimes lead to change in CAS practices and, at other times, to system customisation (Soh & Sia, 2004). The authors found that consultants and the Information System Department played significant roles; more specifically when users lacked a unified view and had to be persuaded by consultants and project managers to adapt to the standards of ERPs. Soh & Sia stated that (2004, p. 394):

*Organisational members may understand their country and industry context well, while consultants are likely to understand the [ERP] package [practices]. Such contextual knowledge is often hard to communicate, as its embedded nature gives it a ‘taken-for granted’ quality.*

This shows the power of the knowledge which consultants and information technology staff have in comparison to that of the users. In the same vein,
Ribeiro (2003) questions the notion that accounting practices (rules and routines) are underpinned by embeddedness/ institutions that largely have unquestioned assumptions. In his case, there were attempts to introduce new systems, which challenged existing accounting rules and routines, but they were kept in place by powerful actors, rather than being part of taken for granted assumptions.

2.3.2.3 Inter-connectedness-based change and resistance

The majority of practice misalignments are clustered around function-related practices (Soh et al., 2000; 2003; Soh & Sia, 2004). These practices pertain to customer orientation (i.e., service quality indicators), planning (resource management), reporting (segmental reports) and decision making (i.e., the allocation of cost, revenues and pricing) (Granlund & Malmi, 2002; Hyvönen, 2003; Soh & Sia, 2004). More specifically, functional misalignments have been considered the most recognisable source in contributing to misalignments (Soh et al., 2000; 2003; Soh & Sia, 2004). As noted in Section (2.3.1.1), functionally-related practices include operational control and the cost accounting system, especially cost allocation practice (CAP hereafter). The CAP was the most challenging factor for ERPs and was found to be operating within stand-alone systems (Granlund & Malmi, 2002; Hyvönen, 2003; Scapens & Jazayeri, 2003; Soh & Sia, 2004; Grabski et al., 2009). However, these studies did not explain why and how operational control and CAS became inter-connected so that organisations may respond via ERPs customisation.

In this sense, Modell (2002) has proposed a framework that attempts to unveil the contextual forces that shape inter-connectedness between practices related to functional misalignment (operational control and CAP). As shown in Figure (2.5), the author argues that coercively imposed CAP, which is adopted through processes that are dominated by governmental coercion, tends to be decoupled from the operating process in organisations. By contrast, CAP adopted through processes that are dominated by voluntary diffusion tends to be more tightly coupled to operational processes in organisations. The strength of this inter-connectedness shapes organisational response to functional misalignments. In the case of loose coupling, the organisation may respond via CAP change to
pertinent misalignment, whereas system customisation may be an organisational response in the case of tight coupling.

According to Modell, there are several contextual forces that shape the strength of inter-connectedness between CAP and operational control, namely: power relations; involvement in implementation; market competition; and technological complexity, as shown in the following diagram:

**Figure 2-5 Direct and moderating influences on the coupling of institutionally induced CAP to operating control**

The involvement of organisational actors, competition and technological complexity contribute positively to the strength of the inter-connectedness between CAP and operational control when CAP is voluntarily adopted. Conversely, these forces may have negative, or no, impact when CAP is coercively imposed. However, these situations become completely opposite when in the presence of power relations.

**Figure 2-6 Prior literature based research questions**
The Figure (2-6) summarises the empirical evidence of prior studies on the occurrence of successful change in less institutionalised accounting practices; (a) when there is congruence between introduced change and the existing ways of thinking; and (b) incongruous change which is shaped by path-dependency. Similarly, this review provided evidence of the occurrence of resistance (unsuccessful change) in high institutionalised accounting practices where there is incongruence between introduced change and the existing ways of thinking. This literature, however, showed the lack of empirical evidence on the occurrence of successful change in highly institutionalised accounting practices where revolutionary change is incongruent and influences, rather than being influenced by, path-dependency. Similarly, it also showed the lack of empirical evidence on the occurrence of successful resistance in less institutionalised accounting practices. So, unanswered questions are left, they are:

- **RQ1**: In high institutionalised CAS practices, when, how and why can change occur?
- **RQ2**: In less institutionalised CAS practices, when, how and why does change not occur?

### 2.4 Concluding remarks

This chapter reviewed existing studies through which the research questions of this thesis have become specific. That is, when and how do institutionalised CAS practices persist or become otherwise? This review has been organised to achieve three purposes, as follows:

(a) It outlines the research gap in exploring CAS practice misalignments. This section (2.1) addressed its purpose by reviewing empirical evidence from extant studies that have dealt with the impact of ERP on management accounting change. This review reveals two contrasted forms of evidence: that ERPs have powerful capabilities for information-processing, whereas they are incapable of providing an incentive for the adoption of new, or of supporting CAS practices, that are in use. Rather, these practices are found to be operating in stand-alone systems, and ERPs are found to be a data supply source for these systems. The general conclusion, then, was that ERPs have only a moderate impact on management accounting and this finding is attributed to system complexity.
Importantly, the stances of these studies depart from a unidirectional relationship, that is, ERPs are portrayed as an independent factor (as drivers of change), whereas management accounting change is supposed to be a corresponding factor, and this technical viewpoint isolates accounting from its context. As a consequence, it was a challenge for these studies to explain the conditions and processes that caused the emergence of misalignments in CAS practice.

(b) It developed a research gap by presenting the misalignment of CAS practices in their contexts. This purpose is addressed in section (2.2), which drew on studies that brought the environmental and organisational context of accounting into consideration in order to understand CAS-related practices’ misalignment. This review draws us to an interesting conclusion, that is, that misalignment is a consequence of both coercively imposed and voluntarily adopted practices. Function-related practice misalignment, including those relating to CAS, are the most fundamental challenges that make organisational response to these misalignments unpredictable. This non-linear organisational response is shaped by the complex interplay between regulation, power relations, politics, embeddedness and interconnectedness. Nevertheless, it is an invaluable finding that CAS-related institutionalised practices, to some extent, present a convincing explanation for the moderate impact of ERPs. This has become a challenge to the studies in this section, in which neither the processes through which CAS practices become institutionalised, nor the ways through which organisational response is shaped, have been explained.

(c) It outlines the research questions of this study. This is addressed in section (2.3) by drawing on process-based research that has been influenced by Burns & Scapens (2000). Its aim is to develop further explanations of the conditions and processes whereby CAS institutionalised practices can change and/or resist doing so. These studies give more emphasis to embeddedness and power relations, if compared to inter-connectedness, in explaining organisational responses to new initiatives for change. Consistency between an underpinning assumption of proposed change and embedded practices (the existing way of thinking) is the key point in successful change. Nevertheless, these studies add sense to processes through which CAS-related practices
become institutionalised. It seems that there is a lack of evidence to explain the processes through which change and resistance can respectively occur in high-less institutionalised practices. It is not, however, intended to test the questions outlined above. Rather, the study aims to explore these themes in the fieldwork. In so doing, these themes are developed further in the following chapter by drawing insights from institutional theory.
Chapter 3 - THEORETICAL FRAMEWORK

3.0 Introduction

This chapter aims to outline the theoretical framework informed by drawing on institutional theory as a lens through which to guide the research inquiry of this thesis. In Chapter (2), the extant literature that examined the interrelationships between ERPs and management accounting practices was reviewed. This review revealed that function-related practices, including operation control and cost accounting systems (CAS), were the focal challenge to, and become misaligned with ERPs. More specifically, CAS practices become part of the organisational system in the form of institutionalised rules and routines. The literature review, however, outlined lack of research that explains when and how institutionalised CAS practices may change, and it is to this gap that this thesis intends to contribute.

Institutional theory is primarily concerned with an organisation’s interaction with the institutional environment, the effects of social expectations on the organisation, and the incorporation of these expectations into organisational practices, including rules and routines (Dillard et al., 2004). It also unfolds the processes by which these organisational rules, norms or behaviours exist, change, or stabilise (become institutionalised) over time (Scapens, 1994; Ahmed & Scapens, 2000; Burns & Scapens, 2000). Using institutional theory, this study aims to unfold the conditions and process through which institutionalised practices of CAS can change or persist over time. For reasons outlined in the previous chapter, this study is particularly focused on exploring the following themes:

- The conditions and processes of change in high institutionalised CAS practices.
- The conditions and processes of resistance to change in low institutionalised CAS practices.

Institutional theory, in general, includes three main strands, namely; economics; political science and sociology (Scott, 2008). Each strand, in turn, encompasses different approaches that are rooted in different assumptions that aim to understand the interrelationships between the construction of the social world
and the rational actors who form the principal debates in these different approaches. Whereas extreme economists believe that the behaviour of individuals is rational, the extreme sociologists undermine the role of the rational actor in supporting the role of the social norms and rules to understand how the social structure has been constructed.

Institutional theory provides an alternative framework with a sociological flavour (Wickramasinghe & Alawattage, 2007). The institutionalism focuses on the relationship established between the predominant cultural aspects in a social setting, such as symbols, beliefs, values and cognitive systems, and the individuals and organisations that operate in this social setting (Scott, 2008). These aspects often attain an institutionalised status, in the sense that they reflect the widely shared constructions of reality and tend to be taken-for-granted as being legitimate (Oliver, 1992).

Since the 1990s, “institutional theory has become one of the popular theoretical frameworks in management accounting studies” (Wickramasinghe & Alawattage, 2007, p. 427). This popularity came from its ability to seek to understand why and how accounting has become what it is, or is not (Moll et al., 2006). In exploring the usage of institutional theory in accounting research, Moll et al. found that new institutional sociology, old institutional economics and new institutional economics have been used in five areas that are as follows:

(a) the first strand seeks to understand and investigate the influence of 'macro' institutional forces on organisational accounting systems;
(b) the second strand aims to understand how the institutional environments (organisational fields) are shaped. The idea behind this is that organisations affect their environments, and the construction and potency of institutions depends to a large extent on organisations within the institutional field;
(c) the third strand of studies seeks to explain the relationship between legitimacy and accounting systems, that is, organisations adhere to wider social values to achieve legitimacy, and these values govern organisational practices;
(d) the fourth strand aims to understand and explain the relationships between the role of agency and power relations within an organisation and the process of organisational change;

(e) the fifth strand seeks to explain accounting configurations in cost-minimisation or efficiency terms by drawing on new institutional economics.

Institutional theories, and in particular new institutional sociology (NIS) and old institutional economics (OIE), have been prominent in extending the study of management accounting change and resistance towards the inclusion of the social and institutional dimensions of organisations and their environment. The key aim of institutional theories (NIS and OIE) explains the ways in which institutions shape the actions of individuals, and the ways in which new rules and institutions may emerge (Scott, 2008). From an institutional perspective, cost accounting systems are seen as being interlinked with the prevailing rules and norms that structure organisational life. To understand how cost accounting systems become institutionalised rules and routines in their contexts, Scapens stressed that:

*If we want to understand what shapes management accounting practices in individual organisations, it is not sufficient to stay at the level of NIE and NIS. Those approaches look to the broader external environment and explore how it impinges on organisations. To get a fuller understanding of the mish-mash of inter-related influences it is essential to go inside the organisation and to study how management accounting practices are shaped within the organisation* (2006, p. 14).

As such, the theoretical framework of this thesis draws on NIS and OIE, supplemented by a perspective on power and politics as a lens through which we aim to explore the conditions and processes by which institutionalised CAS practices persist or become otherwise. More specifically, the framework will be drawn from the works of Oliver (1991; 1992), Hardy (1996) and Burns & Scapens (2000).

This chapter consists of three sections including concluding remarks that are structured as follows: the first section presents an overview of new institutional sociology theory (NIS) and old institutional economics theory (OIE). In each subsection the origins, main assumptions, and limitations of these theories are
outlined and discussed. In section (3.2), the theoretical framework of this thesis, driven by its research questions and purposes, is described in great detail. Finally, section (3.3) contains the concluding remarks of this chapter.

3.1 Approaches from institutional theory

New institutional sociology (NIS) and old institutional economics (OIE) are the two institutional theories that have been adopted in this thesis. This section explores the prominent features of these approaches and how they promise to address the research questions and purposes. The theoretical framework incorporates both OIE and NIS, since they appeared to be the most appropriate theories with which to explore the conditions and processes through which CAS-related institutionalised practices persist or change.

The rationality of adopting NIS is attributed to its primary focus on the macro (inter-organisational) level (Yazdifar, 2007; Moll et al., 2006; Ribeiro & Scapens, 2006; Yazdifar et al., 2008; Scapens, 2012b). For NIS theorists, management accounting change is explained as a search for legitimacy in the external environment and the environmental interactions upon organisations. In a complementary fashion, OIE is adopted because its focus is primarily on the micro (intra-organisational) level (Yazdifar, 2003; Moll et al., 2006; Ribeiro & Scapens, 2006; Yazdifar et al., 2008; Scapens, 2012b). OIE is suitable for studies of the processes of change, and resistance to change, within organisations (Scapens, 1994; Burns & Scapens, 2000; Scapens, 2012b). In addition, OIE is useful in explaining the influence of power relations on the process of CAS change.

This combination of OIE and NIS can advance our understanding of the conditions and processes through which CAS can change or persist in the context of ERPs. This multi-institutional framework helps us to understand the conditions under which CAS becomes (de)institutionalised. More specifically, this study intends to unfold the conditions and processes of (a) change and/or (b) resistance to change, in the institutionalised practices of CAS. As described in Chapter (2), the extent to which practices are institutionalised is a continuum that represents high-less institutionalised practices. For reasons discussed in that same chapter, this study is interested in exploring the following themes:
RQ1: In high institutionalised CAS practices; when, how and why can change occur?
RQ2: In less institutionalised CAS practices; when, how and why does change not occur?

NIS and OIE are explored in great detail in the subsequent sections.

3.1.1 New institutional sociology

The new institutional sociology (NIS) approach is concerned with the macro/extra-organisational level (Moll et al., 2006; Ribeiro & Scapens, 2006). It aims to explore the influence of the political, social and economic in shaping organisational structures, policies and accounting practices (Scott, 2008). The pioneers of this approach are Meyer & Rowan (1977), who proposed the NIS paradigm in opposition to the rational actor model that assumed an organisational structure which was dominated by the demands of technical production and exchange (see Powell & DiMaggio, 1991, p. 8; Scapens, 1994, p. 305). The central thread of the NIS paradigm suggests (a) “conformity for legitimacy”, (c) “isomorphism”, and (d) “decoupling”, as alternative explanations for organisational structures and, importantly, these concepts are interdependent, as described below.

Organisations are viewed as being embedded within large inter-organisational networks and cultural systems (Powell & DiMaggio, 1983). This institutional environment influences not only the input and output markets of an organisation, but also its beliefs, norms, and historical traditions. In addition, the institutional environment is characterised by the elaboration of rules, practices, symbols, beliefs, and the normative requirements to which individual organisations must conform in order to receive support and legitimacy. As such, the success of an organisation is defined by the extent to which it embodies societal ideals (myths) regarding the norms of rational behaviour that are enforced by organisations’ constituencies (Scott, 2001, 2008).

This search for legitimacy and resources explains the second thread of Meyer & Rowan’s paradigm. This outlines why specific accounting practices and procedures are diffused across organisations that operate in similar (a) settings/
environments (Scott, 1992), (b) societal sectors (Scott & Meyer, 1983), or (c) organisational fields (DiMaggio & Powell, 1983). An organisational field is defined here as a totality of relevant actors/organisations that, in the aggregate, constitute a recognised area of institutional life: key suppliers, resource and product consumers, regulatory agencies and other organisations that produce similar services or products (DiMaggio & Powell, 1991, pp. 64-65). DiMaggio & Powell (1983), in particular, have developed these insights further to suggest that the process of diffusion is shaped by institutions which create pressures that lead organisations to become *isomorphic* with other organisations in their institutional area. These institutions are defined within NIS as:

*Institutions consist of cognitive, normative and regulative structures and activities that provide stability and meaning to social behaviour. Institutions are transported by various carriers—cultures, structures, and routines—and they operate at multiple levels of jurisdiction* (Scott, 2008, p. 48).

According to Scott, the definition of an institution consists of three pillars, namely; the regulative, normative and the cultural cognitive (2008). Each of which is associated with a particular mechanism of institutional isomorphism which are: coercive isomorphism; normative isomorphism and mimetic isomorphism (Powell & DiMaggio, 1983). These pillars and their mechanisms are explored as follows:

The regulative pillar is associated with imposed pressure that results in coercive isomorphism. The latter occurs when powerful actors within the organisational field exercise power so as to adopt particular accounting practices. At the same time, the organisations cannot resist, due to resource dependency (Powell & DiMaggio, 1983; Scott, 1987). Regulative institutions are exemplified by the state and by laws and sanctions that are imposed to promote convergence.

The normative pillar explains the social obligations that define goals and the appropriate means by which they can be achieved. Powell & DiMaggio (1983) argue that normative isomorphism occurs under conditions of uncertainty when organisations imitate certain practices of other organisations which they perceive to have greater legitimacy or to be more successful, with the aim of reducing the level of uncertainty regarding the efficiency of alternatives. As such, consultants, professional bodies, business schools and the business
media infuse the beliefs that represent the key success[es] of organisations.

The cognitive pillar explains the shared understandings and conceptions of social reality that frame common beliefs and action. Associated behaviour is mimetic: taken-for-granted understandings, often unconscious, give structure, meaning and predictability to human life. Mimetic isomorphism is driven by imitation and uncertainty; i.e., organisations are expected to adopt accounting practices from well-established organisations due to their own lack of knowledge and/or to avoid the cost of assessment, especially when there is uncertainty (see also Covaleski & Dirsmith, 1988a, b).

Additionally, Meyer & Rowan (1977) argue that organisations may be confronted with contradictions between institutional pressure, explained above, and technical pressure, which relates to efficiency. In such cases, organisations may, as a solution, decouple what is causing the contradiction. Decoupling refers to the situation in which the formal organisational structure, or practice, is separate and distinct from the actual organisational practice (Meyer & Rowan, 1977). This occurs when organisational practices are introduced to meet institutional requirements and they are used in a ceremonial way (see Burns & Scapens, 2000; Scapens, 2006; Scapens, 2012).

Recently, NIS research has been criticised for several reasons (Abernethy & Chua, 1996; Scapens, 2006; Yazdifar et al., 2008). These critiques are discussed in the subsections below:

(a) Legitimacy versus efficiency

NIS treats institutional (legitimacy) and technical (efficiency) pressures as though they are mutually exclusive, and fails to recognise that both types of pressures can be interdependent and can confront organisations simultaneously (Hopper & Major, 2007; Yazdifar et al., 2008). It assumes, for instance, that organisational practices are adopted only to secure external legitimacy that they are only symbolic and are always decoupled from internal operating systems (Carruthers, 1995; Abernethy & Chua, 1996; Lukka, 2007; Major & Hopper, 2007; Nor-Aziah & Scapens, 2007; Yazdifar et al., 2008). Nevertheless, the difference between the technical and institutional pressures is
an important one. The two pressures are hard to distinguish, for: “[…] those who formulate institutional rules strive to make them appear technical in nature” (Scott & Meyer, 1991, p. 124; see also Carruthers, 1995). The lack of concern with technical pressures and efficiency factors is also linked to NIS (Oliver, 1991; Abernethy & Chua, 1996; Collier, 2001; Modell, 2001; Dillard et al., 2004; Ribeiro & Scapens, 2006; Scapens, 2006; Yazdifar et al, 2008).

(b) Macro versus micro

NIS does not explain the processes through which institutions are created, adapted, transposed and/or discarded (Scott, 2001; Dacin et al., 2002; Seo & Creed, 2002). It provides only limited insights into the processes of institutionalisation and de-institutionalisation within organisations (see Oliver, 1992; Tolbert & Zucker, 1996; Burns & Scapens, 2000; Scapens, 2006; Hopper & Major, 2007; Yazdifar et al., 2008). In other words, “it does not provide an adequate answer to the question, how do new values and beliefs take root and supplant earlier norms?” (Abernethy & Chua, 1996, p. 572). Abernethy & Chua (1996) thus suggest that to understand the processes of de-institutionalisation and “re-institutionalisation” researchers need to analyse the strategic interests of powerful stakeholders.

(c) Passive versus active agency

The NIS approach explains isomorphism instead of organisational heterogeneity and fails to recognise power, agency and interest at the organisational level (Collier, 2001; Scott 2001; Dillard et al., 2004; Nor-Aziah & Scapens, 2007; Lounsbury, 2008). NIS overlooks the role of active agency and resistance, and instead portrays organisations as passively adapting their formal structures to the demands of the environment (Oliver, 1991). Similarly, Scott has highlighted that “organisations are not passive actors being imprinted by cultural templates;” […] “they exercise some choice in selecting the systems with which to connect” (1991. P. 170 & p. 181). However, some of the above-mentioned critiques have been addressed by Oliver’s works (1991; 1992), as will be discussed in Section (3.3).
3.1.2 Old institutional economics

Old institutional economics (OIE) concerns the reasons why, and how, particular, e.g., cost accounting, systems, rules, norms, or behaviours exist, change, or stabilise over time (Scapens, 1994; Ahmed & Scapens, 2000). It focuses on the roles of rules, habits, routines and taken-for-granted ways to explain how things become stabilised and are eventually taken-for-granted (institutionalised) in organisations over time (Burns & Scapens, 2000). Moreover, it emphasises the role of a multiplicity of influences, such as power, politics, values, perception, and cognition, on how things (systems and practices) evolve and are shaped over time (Burns & Scapens, 2000; Scapens, 2006). So, OIE provides insights into processes of change and/or resistance to change. These theoretical insights in relation to management accounting are reviewed in this section, including their assumptions and limitations. It is, however, unavoidable that in reviewing OIE we must reference neoclassical economics, as it used to be and still is the mainstream theory that dominates management accounting research.

Principally, OIE emerged in opposition to neoclassical economics (Scapens, 1994). Nevertheless, both the approaches of OIE and neoclassical economics recognise the importance of institutions in economic theory (Scapens, 1994). As will be explained, the OIE approach is different from neoclassical economics. The analytical status of institutions is a matter that is somewhere between the OIE and neoclassical approaches. The neoclassical economics approach treats institutions as having static constraints that ultimately define the economic equilibrium. Neoclassical economics therefore assumes that: (a) the rational maximising behaviour of the economic agent (the individual decision maker); and (b) a general equilibrium, can be achieved by market forces. These assumptions have been challenged by the work of early institutional economists (American institutionalists) such as Veblen, Commons, Mitchell and Ayres (Scapens, 1994; Ahmed & Scapens, 2000).

Institutional economists, including Veblen as the most prominent scholar from the OIE approach, assume that the institution, rather than the rational maximising behaviour of the individual decision maker, is a unit of analysis (Scapens, 1994). They reject both optimal decision rules and the
methodological individualism of neoclassical economics. This critique is attributed to: (a) the opportunities to access all of the information that is needed to make a decision is unavailable to / or unequal for all of the decision makers; (b) that there are time restrictions and an incapacity to process information; (c) and that information itself is often imperfectly perceived (Rutherford, 1995).

Alternatively, the OIE approach assumes that actors should not be treated as a given (Hodgson, 1998). Rather, the tastes and preferences of individuals should be assumed to be socially constructed and to be influenced by institutions (ibid). These institutions are structures that are comprised of sets of norms, rules, procedures and routines that give consistency and pattern to behaviours (Ahmed & Scapens, 2000). In this sense, there is no universal definition of an ‘institution’ (Scapens, 1994; Barley & Tolbert, 1996; Burns & Scapens, 2000). However, the definitions of institutions given by Veblen and Hamilton are probably those that are the most cited in literature on institutional theory. Veblen defines institutions as "settled habits of thought common to the generality" (1919, p. 239 cited by Burns & Scapens, 2000). In the same vein, Hamilton views institutions as being a "way of thought or action of some prevalence and permanence, which is embedded in the habits of a group or the customs of a people" (1932, p. 84, cited by Burns & Scapens, 2000). Importantly, Veblen views this process of institution as a social provision which is part of a holistic on-going process of change. This process is therefore subject to multiple and cumulative causation, rather than being part of a series of static equilibrium (Hodgson, 2000). In OIE, institutions thus need to be analysed as dynamic and active instruments that may facilitate or prevent a process of change (Boland, 1979, p. 958 cited by Scapens, 1994).

More recently, Nelson and Winter (1982) revived the OIE approach in their publication “An Evolutionary Theory of Economic Change”. This publication provides a potentially useful basis from which to develop an understanding of the institutionalised character of organisational routines and rule-based behaviours, such as accounting. Scapens (1994), in particular, draws on ideas of institutional and evolutionary economics to sketch out an institutional framework for the study of management accounting practices. Accounting is defined by Scapens as an: “institutionalised routine [that] creates
understandings of activities according to particular sets of accounting rules and procedures which enable decisions to be made and activities undertaken in a complex and uncertain world" (Scapens, 1996, p. 301). Furthermore, this institutional framework has been extensively developed by Burns & Scapens (2000) to conceptualise the process of management accounting change and/or stability, as will be elaborated in the section that follows.

Similarly to NIS, OIE is not without its critics. It is argued that OIE "does not represent a single well-defined or unified body of thought, or methodology, program of research" (Rutherford, 1994, p. 1). Rather, OIE is a collection of assumptions that can be described as follows (Hodgson, 2000):

- Institutionalism itself is not defined in terms of any policy proposal.
- OIE largely uses ideas and data from other areas of knowledge, such as psychology, sociology and anthropology, to improve the analysis of institutions and human behaviour.
- The key elements of analysis are the institutions, and the main aim of old institutionalism is to investigate institutions and the processes of stability, innovation and change.
- The economy is an open system, located in a natural environment, which is affected by technological changes, and embedded in a broader set of social, cultural, political and power relationships.
- The notion of individual agents as maximising utility is not acceptable. OIE does not take the individual as a given. Individuals are affected by their institutional and cultural situations.

**3.2 Research questions-based theoretical framework**

The two research questions outlined above involve three issues which this thesis intends to explore, namely: (1) the types of organisational responses to external pressures for change; (2) organisational response via change in CAS-related institutionalised practices; and (3) organisational response via resistance to change in less institutionalised CAS practices. The framework of this thesis will be driven by these three themes, as follows:
3.2.1 External pressure and organisational response

This section draws insights from Oliver’s (1991) typology of organisational response to external pressure. Her framework outlines the relationships between institutional pressure that can be forced, such as that came from the parent organisation and/or a consultancy organisation, on one hand, and the organisational response, such as that exhibited by RefCo, to these pressures, on the other. As shown in Table (3.1), the organisation’s response to institutional and/or technical pressure(s) is on a continuum of change-resistance. At one end of the continuum is a high degree of conformity, where the focal organisation may acquiesce (change). On the other end of the continuum, organisations may avoid and/or defy institutional pressures (resistance). Oliver has therefore identified five possible organisational responses, namely: (a) acquiescence; (b) compromise; (c) avoidance, (d) defiance, and (e) manipulation.

<table>
<thead>
<tr>
<th>Level of active resistance to institutional pressures</th>
<th>Strategies</th>
<th>Tactics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiesce</td>
<td>Habits</td>
<td>Following invisible, taken-for-granted norms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Imitate</td>
<td>Mimicking institutional models</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comply</td>
<td>Obeying rules and accepting norms</td>
<td></td>
</tr>
<tr>
<td>Compromise</td>
<td>Balance</td>
<td>Balancing the expectations of multiple constituents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pacify</td>
<td>Placating and accommodating institutional elements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bargaining</td>
<td>Negotiating with institutional stakeholders</td>
<td></td>
</tr>
<tr>
<td>Avoidance</td>
<td>Conceal</td>
<td>Disguising nonconformity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Buffer</td>
<td>Loosening institutional attachments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Escape</td>
<td>Changing goals, activities, or domains</td>
<td></td>
</tr>
<tr>
<td>Defiance</td>
<td>Dismiss</td>
<td>Ignoring explicit norms and values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Challenge</td>
<td>Contesting rules and requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attack</td>
<td>Assaulting the sources of institutional pressure</td>
<td></td>
</tr>
<tr>
<td>Manipulation</td>
<td>Co-opt</td>
<td>Importing influential constituents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Influence</td>
<td>Shaping values and criteria</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>Dominating institutional constituents and processes</td>
<td></td>
</tr>
</tbody>
</table>

Source: (Oliver, 1991, p. 152)

Furthermore, each type of organisational response embraces three possible tactics. Importantly, the response decision depends on the degree of choice and
activity that organisations exhibit in the face of institutional constraints. More specifically, organisational response to external pressures via change or resistance depends on several factors, as follows; namely (Oliver, 1991, p. 159):

- **Why these pressures are being exerted (cause);**
- **Who is exerting them (constituents);**
- **What these pressures are (content);**
- **How or by what means they are exerted (control); and**
- **Where they occur (context).**

Oliver’s (1991) framework presents great insights through which to explore an organisation’s response to external pressures. The prominent feature of this overcomes some of the limitations of NIS. Instead of passivity, the organisation’s response to external pressure can take its form on a continuum of change-resistance. This helps to understand the response of RefCo’s CAS towards the two types of change. As noted in Chapter (1), CAS practices in RefCo were subject to two change initiatives within a relatively short time period, although only one of these initiatives actually resulted in the achievement of the intended outcomes. First, CAS was subject to changes that aimed to promote a costing system which facilitated greater commercial-orientation within the business, a change that was imposed by RefCo’s parent company (hereafter ParentCo). Second, there was pressure to change CAS on the basis of recommendations made by an external consultancy organisation which was leading a new ERPs initiative.

However, an organisation’s response depends on a complex interplay of factors at intra-organisational level, such as politics, power mobilisation and the prevalence institutions underpin accounting practices that are subject to change (Burns & Scapens, 2000; Burns, 2000; Scapens, 2006; 2012; Kholeif et al; 2007; 2008; Yazdifar et al., 2008). In this sense, Oliver’s (1991) framework has neither explained how these issues shape organisational response, either via change and/or resistance to change, to external pressure, nor has it explained how this may take root within an organisation, especially when the pressure for change targets institutionalised practice, such as the CAS practices of RefCo. To address these limitations, the theoretical framework of this thesis draws
insights from Burns & Scapens’ work in terms of the processes of change and resistance to change in CAS practices.

3.2.2 Persistence and process of institutionalisation

Burns & Scapens (2000) drew on the OIE insights outlined above to develop a framework with which to elaborate on the black box of stability and change in management accounting. Their framework unfolds the process by which management accounting becomes institutionalised over time. As outlined, the institutionalised practices (rules and routines) of CAS were the focal point of the function-related misalignments of ERPs (see Section 2.2). This helps to address the second research purpose, which deals with practice persistence and, more specifically, with the reasons for which organisations respond via resistance to change in CAS-related practices that are subject to the pressure for change, i.e., ERPs, although these practices are voluntarily adopted.

In their seminal work, Burns & Scapens (2000) “use a modified version of Barley & Tolbert’s framework to develop [their] framework for studying management accounting change” (2000, p. 10). In Burns & Scapens’ framework, a set of underpinning assumptions are proposed in their attempt to explain the complex and non-linear processes by which the practices of CAS have the potentiality to become institutionalised (or embedded) and to become taken for granted assumptions within an organisation. These assumptions and processes are explored in the subsequent sections:

3.2.2.1 Underpinning assumptions of embeddedness

In the Burns & Scapens’ (2000) framework, it is the first and fundamental assumption that portrays CAS as being made up of organisational rules and routines. Rules are defined as “the formally recognised way in which things should be done”, whereas routines are defined as “the way in which things are actually done” (Burns & Scapens, 2000, p. 6). These rules and routines have the potentiality to become institutionalised, constituting organisational stability rather than change.

As such, the second assumption, that CAS can be depicted as an institution, shapes individual action at the organisational level. At the same time, these
institutions may also be changed over time due to changes in, for instance, CAS rules and routines that are influenced by the actions of individuals. Then, Burns & Scapens have defined institutions as “shared taken-for-granted assumptions which identify categories of human actors and their appropriate activities and relationships” (2000, p. 8). Importantly, they argue that:

Institutions which are relatively short-lived and/or which have not gained widespread acceptance are more vulnerable to challenge and less likely to influence action (2000, p. 8).

This indicates the extent of embeddedness, that is, the more embedded, the more the challenge to change. This embeddedness is a result of a cumulative process of interaction between two realms. That is, the institutional realm and the realm of action and, in turn, both are facilitated by the cumulative process of interaction between the rules and routines of CAS.

The above brings us to the third pillar of Burns & Scapens’ (2000) framework, which assumes a dual relationship between institutions and individual actions. The latter is constrained and shaped by institutions through a synchronic process at a specific point in time. Conversely, the institutions are themselves produced and reproduced through a diachronic process that is shaped by individual actions, according to Burns & Scapens (2000, p. 9). Importantly, this duality is mediated by the first assumption that positions, i.e. CAS, rules and routines in the central role between the institutional realm and the realm of action.

As a consequence, both duality and centrality provide two types of relationship between rules and routines. The first presents the existence of rules prior to routines. By repeatedly following rules, behaviour may become programmatic and such programmatic rule-based behaviour is described as a routine that represents the habits of collective actors. In such a case, the authors argued that CAS routines are informed and developed by rules. The alternative form of dual relationship assumes that rules are formalised through the daily undertaking of the routines of CAS. These assumptions shape the process through which CAS becomes institutionalised, as discussed in the section that follows.
3.2.2.2 Institutionalisation process

Burns & Scapens have translated the assumptions, outlined above in Figure (3-1), which explain the institutionalisation process. This process is constituted of four sub-processes; namely: “encoding”; “enactment”; “reproduction”; and “institutionalisation” (Burns & Scapens, 2000, p. 10). While processes of encoding and enactment represent a synchronic interaction between the institutional realm and the realm of action, the reproduction and institutionalisation denote a diachronic interaction between the two realms.

Figure 3-1 Process of institutionalisation

Source: (Burns & Scapens, 2000, p. 13)

The encoding process explains how new CAS rules and routines are encoded by the existing institutional principles within an organisation. As such, these existing rules and routines may become “local instantiations” of organisational meaning, values, norms and institutions (p. 10). The enacting of these rules and routines by individuals defines the enactment process. However, it is argued that the enactment process may be a failure if the new CAS rules and routines challenge the local instantiations that represent the existing institutions, ways of thinking and doing things (Burns & Scapens, 2000). This challenge may occur through conscious and/or unconscious choice that is triggered by tacit
knowledge about how things should be done. By having sufficient power and/or resources, actors may resist acting upon new CAS rules and routines that are introduced to their organisation.

Reproduction and institutionalisation are sub-processes of diachronic interaction between the institutional realm and the realm of action. The reproduction process *re-acts out* of CAS rules. This may or may not involve (un)conscious deviation from the original rule. Conscious change occur when a group of actors mobilise their power (resources) to question the existing rules and routines (Burns & Scapens, 2000). In contrast, unconscious change may occur in the absence of sufficient details that explain how rules should be enacted, or due to misunderstandings about how rules should be enacted.

The institutionalisation process entails that CAS rules and routines are taken-for-granted and have been reproduced by individual actions. Importantly, Burns & Scapens (2000) have argued that this involves disassociation between patterns of behaviour and their historical circumstances. To return to the encoding process, these institutions will be encoded again into ongoing rules and routines, as well as into new ones. In such a case, these CAS rules and routines may be institutionalised and may be represented in taken for granted assumptions, ways of thinking and doing things, which are disassociated from their historical circumstances.

Burns & Scapens have argued that institutionalised CAS rules and routines are likely to become resistant to challenge. They maintain that it is likely to be much easier to introduce changes which do not challenge the existing routines and institutions. This represents the case for change that can be accommodated within existing ways of thinking and norms of behaviour. The resistance is therefore defined as the “reluctance of individuals to conform to new modes of thinking and behaviour, either by choice or through difficulty (in adapting)” (Burns & Scapens, 2000, p. 16). In this sense, there are three separate and interrelated elements that give rise to resistance to change, they are: “(a) formal and overt resistance, due to competing interests; (b) resistance due to a lack of the capability (knowledge and experience) to cope with such change; and (c) resistance due to a “mental allegiance” to established ways of thinking and doing, embodied in existing routines and institutions” (Burns & Scapens, 2000,
Importantly, these sources of resistance are difficult to predict unless a thorough understanding of the rules, routines and institutions that make up the organisational context is gained.

3.2.2.3 Typology of change-resistance

By drawing on OIE, Burns & Scapens have categorised change-resistance processes into four groups. These categories are explored below:

- Revolutionary-evolutionary change

Revolutionary change involves “radical change to existing routines and fundamentally challenging the prevailing institutions” (p. 13). However, it is argued that this revolutionary change may follow evolutionary change when it is inherited by “path-dependency”. That is, it represents the influence of existing rules, routines and institutions on the new rules. Evolutionary change is thus “incremental with only minor disruption to existing routines and institutions” (Burns & Scapens, 2000, p. 20). Crucially, the border distinction between the revolutionary-evolutionary changes is not in how the introduction of CAS is advanced. Rather, it is in the impact of introduced techniques on existing institutions, ways of thinking and doing things.

- Intentional-unintentional change

Unintentional change defines the outcomes of deviated individual actions from original rules during the process of the enactment and reproduction of CAS routines. This contrasts with the intentional change that is involved in introducing new CAS rules and routines. Burns & Scapens have argued that intentional and unintentional change may intersect with formal and informal change (p. 20). Formal change occurs by conscious design, usually through the introduction of new CAS rules and/or through the actions of a powerful individual or group. Although this change may be straightforward, it requires a change in the ways of thinking that are instantiated in existing rules and routines.

In contrast, informal change occurs at a more tacit level, such as when new CAS routines adapt over time to make sense of changes in operating
conditions. This change may not be straightforward, but may be easier in terms of implementation, due to the fact that a slight adaptation of routines over time involves changes in individuals’ behaviours. Burns & Scapens thus maintain that “if the processes of informal change lag behind the formal change processes, tensions may be introduced in the form of anxiety and resistance, possibly leading to the failure of the implementation” of ERPs as an instance (2000, p. 19). This is attributed to the fact that not encoding, or even a lag in encoding, the existing institutions into new CAS rules and routines may result in conflict between the new and existing rules and routines when the latter act as a local instantiation of ways of thinking and doing things.

- **Progressive-regressive change**

Burns & Scapens have equalised the progressive-regressive change dichotomy ceremonial and instrumental behaviour. Ceremonial behaviour “emerges from a value system which discriminates between human beings and preserves existing power structures”. Instrumental behaviour “emerges from a value system which applies the best available knowledge and technology to problems and seeks to enhance relationships” (Burns & Scapens, 2000, p. 20).

Indeed, Burns and Scapens’ framework is insightful in the sensitising process of the institutionalisation (implementing) of change-related initiatives of CAS. However, the framework is not without its limitations. Their work has sought to develop a framework that explains why management accounting remains unchanged for a long period of time or, being similar, becomes a group of taken for granted assumptions. Scapens recounts how Burns & Scapens’ framework may have been “less used” in studying how change actually comes about (2006, p. 25). The framework seems to have overlooked the flipside of institutionalisation that explains when, why and how actors can influence change, such as CAS, while embedded within the institutional fabric of a particular time and space. In other words, where does institutional change come from? (see Seo & Creed, 2002; Burns & Baldivisdottir, 2005; van der Steen, 2009; Englund & Gerdin, 2013).

In this sense, the framework has neither explained the conditions nor processes through which institutionalised CAS becomes challenged to change. Scapens
poses the question “[...] if existing rules and routines are underpinned by taken-for-granted ways of thinking, how do actors come to recognise that they need to change those ways of thinking?” (2006, p. 26). More specifically, when, why and how may individuals challenge/deinstitutionalise what have become taken-for-granted assumptions seems beyond the scope of their framework. For instance, in the fieldwork data analysis in reference to Burns & Scapens, it was noted that their framework exhibited a limitation in explaining a change to institutionalised CAS practices without resistance. The limitations of Burns & Scapens’ framework are discussed in the light of Oliver’s (1992) work, as follows:

- The framework portrays institutions as having absolute power, which overlooks times when they exert the least influence on the actions Tolbert & Barley, 1997). When the organisational consensus of organisational actors deteriorates around the value of institutionalised practices of CAS, this seems to be beyond the scope of their framework. As Oliver (1992) argued, if an institutionalised practice reflects “common understandings” of legitimate behaviour/practice, what degree of consensus is adequate to sustain the institutionalised practice of CAS? Burns & Scapens’ framework did not explain the extent of the power of an institution to hold to a particular way of thinking and doing things as a common understanding.

- The framework exhibited a limitation in explaining why change to CAS practices, in line with commercial rules that were forced by ParentCo, was not resisted, although the change was inconsistent with the highly institutionalised practices of CAS. Similarly, it also did not explain why the outcomes of the above change, which were less institutionalised, still encountered significant resistance to change in line with the consultants’ suggested changes. As Ribeiro (2003) argued, management accounting rules and routines were held in place by power rather than by taken-for-granted assumptions.

- While the framework explains the process of the emergence of a new CAS and its institutionalisation, it did not account for (a) the conditions, or (b) the processes, whereby institutionalised CAS practices were vulnerable to challenge and eventually become changed, although they are strongly institutionalised. Rather, the framework focuses on individuals as units of
change analysis, neglecting the external conditions of change. It assumes that change may come from individuals, due to misunderstandings or the interpretation of ambiguous rules, thus underestimating the conditions which give rise to change.

These limitations may be overcome by drawing insights from Oliver’s (1992) framework, which explains de-institutionalisation, and Hardy’s (1996) framework of power mobilisation. Politics, power, functionality, and/or social pressures could be useful in explaining how change may occur in the institutionalised practices of CAS. Accordingly, Burns & Scapens’ framework needs to be complemented by Oliver’s (1992) and Hardy’s (1996) frameworks, for reasons outlined above, to sensitise fieldwork observations, as discussed in Sections (3.2.3) & (3.2.4).

3.2.3 Change and process of de-institutionalisation

This section draws on Oliver’s (1992) works to address the first research purpose and question. That is, in aiming to understand the conditions and processes through which change may occur, even though practices CAS are highly institutionalised. The prominent feature of Oliver’s works assumes that change may emerge even after the institutionalisation stage and also after taken for-granted assumptions; and this process was called de-institutionalisation. In her framework, a set of underpinning assumptions are proposed to explain the processes through which institutionalised practices of CAS may be de-stabilised. These assumptions and processes are explored in the subsequent sections:

3.2.3.1 Underpinning assumptions of de-institutionalisation

This section explores the assumptions of Oliver’s (1992) framework in order to understand the conditions under which the institutionalised practices of CAS can be de-stabilised and thus change. Oliver weighted her argument in opposition to the central thread of institutional theory, that is, that “institutionalised organisational practices are relatively stable, enduring, reproducible and sustainable over long periods of time without continuing justification” (Zucker, 1987, p. 446). She argued that the notion of
institutionalised practices that become taken for granted cannot be accepted forever and without justification. It is argued that institutions represent constraints on the options that individuals and collectives are likely to exercise, and, in turn, these constraints are susceptible to modification over time (Tolbert & Barley, 1997). Oliver has thus brought into question the notion of persistence forever, e.g., in institutionalised CAS practices. Rather, these practices are likely to “erode”, “destabilise” or “disappear” (Oliver, 1992, p. 564).

Oliver has therefore proposed a “de-institutionalisation”, under which institutionalised CAS practices may change. De-institutionalisation defines “the de-legitimation of established [CAS] practices or procedures as a result of organisational challenges to, or the failure of organisations to reproduce previously legitimated or taken-for-granted organisational actions” (Oliver, 1992, pp. 363-364). This is the key understanding of (dis)continuity justification and legitimacy over the feasibility of institutionalised CAS practices. As Oliver has argued, change in institutionalised practices could be understood in the context of an organisational failure to accept what was once legitimate practice as shared understanding.

### 3.2.3.2 Conditions of de-institutionalisation

Oliver has proposed three types of pressure that may cause the loss of the persistence of an institutionalised practice, they are: politics (interests and agendas); functionality (practice necessity); and social pressure (cultural consensus among actors). Each group of these conditions is constituted from a set of factors that are expected to cause discontinuity in the use of institutionalised CAS. Oliver went on to argue that these pressures may come from the intra- and/or extra-organisational level, as shown in Table (3-2) that follows. While intra-organisational factors are assumed to erode political agreement on the value of institutionalised CAS practices, extra-organisational pressures cause organisations to question the appropriateness of maintaining institutionalised CAS practices in response to specific contextual changes.

Oliver (1992) argues that de-institutionalisation may be a pro-active and conscious response by organisations to changes in internal and external events. Equally, the de-institutionalisation could be unconscious and result from
changes in the organisation and the environment, over which organisations can exert little control.

**Table 3-2 Levels and types of pressures for de-institutionalisation**

<table>
<thead>
<tr>
<th>Intra-organisation Factors</th>
<th>Organisation-Environment Relations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Political pressures</strong></td>
<td><strong>Competitive environmental pressures</strong></td>
</tr>
<tr>
<td>Increasing workforce diversity</td>
<td>Increasing resource or domain</td>
</tr>
<tr>
<td>Declining performance or crisis</td>
<td>Competition</td>
</tr>
<tr>
<td>Power re-allocations</td>
<td>Increasing innovation pressures</td>
</tr>
<tr>
<td>Threat of obsolescence</td>
<td></td>
</tr>
<tr>
<td><strong>Functional pressures</strong></td>
<td><strong>Social environmental pressures</strong></td>
</tr>
<tr>
<td>Increasing technical specification</td>
<td>Changing government regulations</td>
</tr>
<tr>
<td>Increasing goal clarity</td>
<td>Changing societal values</td>
</tr>
<tr>
<td><strong>Social pressures</strong></td>
<td><strong>Random external occurrences</strong></td>
</tr>
<tr>
<td>Increasing turnover or succession</td>
<td>Dissonant events and data</td>
</tr>
<tr>
<td>Weakening socialisation mechanisms</td>
<td><strong>Changes in constituent relations</strong></td>
</tr>
<tr>
<td>Culturally disparate managers and alliances</td>
<td>Declining external dependence</td>
</tr>
<tr>
<td>Increasing diversification, dispersion, or differentiation</td>
<td>Withdrawal of incentives</td>
</tr>
<tr>
<td></td>
<td>Rising efficiency standards</td>
</tr>
</tbody>
</table>

*Source: Oliver (1992, p. 579)*

She assumes that organisations and individuals consciously acknowledge the need to replace institutionalised CAS practices, for instance, and then act upon this recognition under functional and/or political conditions. By contrast, social pressures accelerate organisations into unconsciously de-institutionalising organisational practices. The implications of these pressures in de-stabilising CAS-related institutionalised practices to change are explored in the subsequent sections:

- **Political pressure for change**

Performance crisis in particular has been advanced as the factor that is most significant in resulting in political pressure for de-institutionalisation (Oliver, 1992). Such crises may interact with other intra-organisational forces to create internal *political disagreement*. The latter may intensify the probability of the de-institutionalisation that erodes CAS-related institutionalised practices. In such
cases, performance crises tend to heighten the potential for internal conflict and to fragment shared interpretations of appropriate CAS practices. There is an important consensus among actors on the meaning, value and validity that are the fundamental conditions of ongoing conformity for the use of CAS-related institutionalised practices. However, the development of political disagreement, or of conflicting interests, may cause agreement among organisational actors on the value of CAS-related institutionalised practice, whereby de-institutionalisation is facilitated.

Oliver argues that the de-institutionalisation of CAS-related institutionalised practices could be a political response: (a) to changing power relations, and/or (b) to what is perceived as an imminent threat of failure. In such cases, de-institutionalisation follows the political efforts of organisations to protect their own interests and to resolve political conflict surrounding the legitimacy of CAS-related institutionalised practices. Under such circumstances, institutionalised practices are susceptible to erosion, as their values are seriously called into question.

Importantly, Oliver has advised against separating functional from political pressure. As she argues, the potential for performance problems to de-institutionalise enduring CAS is also related to functional considerations. These considerations tend to compromise, or raise doubts, about the instrumental value of CAS-related institutionalised practices, as will be explained in the following subsection.

- **The functional pressure for change**

The discontinuation of CAS-related institutionalised practices may be explained by the perceived functional instrumentality of these practices. Oliver argues that the functionality of CAS-related institutionalised practices may be re-evaluated when: (a) the instrumental rewards for conformity are withdrawn, (b) there is increasing goal clarity, technical specification, and (c) dissonant events and data destabilise traditional organisational assumptions and principles. Under these conditions, it is argued that the functional necessity of CAS-related institutionalised practices may be fundamentally questioned; and then
abandoned for economic reasons, rather than for political purposes, such as power distribution and political interests.

- **The social pressure for change**

Oliver also argues that social pressures may result in the de-stabilisation of CAS-related institutionalised practices. This may be the case in the absence of an organisation's conscious recognition of the sustaining of the *status quo*. The implications of such unconscious change may result in: (a) social fragmentation; a loss of cultural consensus or agreement amongst organisational members on the meanings and interpretations that they attach to on-going organisational tasks and activities; and/or (b) historical discontinuities.

**3.2.3.3 Processes of de-institutionalisation**

The implications of the conditions above are outlined here to explain the process of change (de-institutionalisation) in institutionalised CAS practices, as shown in Figure (3.2).

**Figure 3-2 Pressures for & processes of de-institutionalisation**

According to Oliver, the conditions outlined above could create pressures through which the mechanisms of the de-institutionalisation process are triggered. These mechanisms are “entropy” and “inertia”, which are portrayed as organisational properties and which may differ from one organisation to another. Whereas entropy is defined as “natural tendencies towards erosion or
decay of institutional phenomena and [which] then accelerate the process of de-institutionalisation” (change), the notion of inertia refers to “institutionalised values and activities [that] will exhibit inevitable resistance to erosion or change” (resistance) (Oliver, 1992, p. 567). Importantly, it is suggested that the prevalence of inertia and entropy within an organisation, and across organisations, partially moderates the rate at which institutionalised CAS practice erodes over time.

The mechanisms above then cause dissipation and rejection, by means of which the de-institutionalisation process occurs. For Oliver, dissipation means “a gradual deterioration in the acceptance and use of a particular [CAS-related] institutionalised practice” (1992, p. 566). In these cases, the de-institutionalisation or de-legitimation of a customary practice is the result of a gradual atrophy in use; previously accepted practices or activities are no longer continually reproduced or re-enacted over time. In contrast, the mechanism of rejection questions the validity of the institutionalised practices of CAS.

The conditions outlined above also underline the probability of the dissipation or rejection of institutionalised CAS practice. Under such conditions, the persistence of institutionalised CAS practices may be much more fragile and less inevitable than the suggestion of a taken for granted assumption. More specifically, the meaning or legitimacy of institutionalised CAS practices may be vulnerable to scepticism and re-evaluation, causing CAS to fall into disfavour.

3.2.4 Politics and power relations

The thesis’ framework also adopts Hardy’s proposal for politics and power mobilisation. The rationality of this is to overcome the limitations of Oliver’s (1991; 1992) and Burns & Scapens’ (2000) frameworks. The notion of politics and power mobilisation that is presented by Hardy (1996) helps to illuminate the dynamics of the processes of CAS, that is, the occurrence of change and resistance respectively in high-low institutionalised CAS practices, as discussed below.

Hardy’s framework focuses on the role of politics and power in addressing problems and in orchestrating the implementation process, such as, an ERP
project and commercial rules. Power and politics are inter-connected terms, as Pfeffer stressed:

(*If power is a force, a store of potential influence through which events can be affected, politics involves those activities or behaviours through which power is developed and used in organisational settings (Pfeffer, 1981, p. 7).*

In the same vein, it is argued that if the power is “to produce intended effects” in line with perceived interests (Pettigrew & McNulty, 1995), politics is “the practical domain of power in action” (Buchanan & Badham, 2008, p.10). In this sense, politics is defined as:

(*Organisational politics involves those activities taken within organisations to acquire, develop and use power and other resources to obtain one’s preferred outcomes in a situation in which there is uncertainty or dissensus about choices (Pfeffer, 1981, p. 7).*

However, it is argued that politics, as a means for achieving personal (or collective) interests, is continually open to resistance and conflict which emerges from clashes of interest (Burns, 2000). As such, Hardy argues that “power comprises a number of dimensions” (p. 4), the productive side of which allows us to achieve outcomes we could not achieve alone (Knights & Morgan, 1991). Drawing from Lukes’ (1974) argument, Hardy adds “power [is] embedded in the system” to Lukes’ suggestions of power over: (a) resources; (b) processes; and (c) meaning (p. 6), outlined as follows:

First, power over resources is task-oriented, where actors exercise power in order to influence decision outcomes and to bring about the desired behaviour. In so doing, actors may deploy or restrict the key resources on which others depend, such as information, expertise, political access, credibility, stature and prestige, access to higher echelon members, financial control, rewards and sanctions. Hardy argues that this type of power works alongside actors’ behaviour through continuing resource deployment. By contrast, power over resources has a limited impact on actors’ behavioural change. In the case of insufficient resources, this type of power may be ineffective in ensuring that the behaviour of organisational actors is sustained, even after the intended
outcomes are reached. In other words, power over resources is ineffective in the long term because its limitations are task-oriented.

Second, power over process involves participating, active, organisational actors who dominate the process of decision making. These actors are supposed to be more powerful and to support the process. They do so by preventing their subordinates, who are expected to act in opposition, through procedures and political routines in which they are either not involved, or in which they do not have full participation in the decision making process, in order to exercise dominance over the pre-intended outcomes. As Hardy argues, powerful actors are not necessarily the key decision makers. Rather, they may be invisible and have great influence in pushing the process forward, but work behind the scenes. In actuality, ensuring that these powerful actors’ behaviours are aligned with the norms and values that underlie the process may be a challenge. This is attributed to the fact that the clash between a system’s values and norms and the behaviour of powerful actors, may be exposed only during the process.

In contrast, power over decision making by itself is also insufficient to bring about institutional change. It is argued that an advantage of such mobilisation of power is that through enhancing awareness of the intended new ways of thinking, change can sometimes be self-reinforcing. This contrast with power over resources, as described above, that requires the continual deployment of the appropriate resources.

Third, power over meaning is another dimension that emphasises the failure of the individual actor to accept the status quo (see also Lukes, 1974). It has the power to shape organisational actors’ perceptions, cognitions and preferences through not recognising any alternatives. Hardy argues that this type of power has fundamental change at its basis, as it directly targets the behaviour of organisational actors. By contrast, it is difficult to target specific changes in behaviour.

Power over the system is the fourth dimension of power, and this draws attention to the importance of examining the power that is deeply embedded within an organisational system. Hardy argues that the power of the system lies in the unconscious acceptance by individual actors of the organisational values,
traditions, cultures and structures of a given institution. They shape organisational activities and members’ relationships.

The central point of Hardy’s argument is that mobilising a collection of power’s dimensions against the power of the system is necessary in order to move change forward. This is attributed to the fact that each dimension of power has limitation(s). This implies that the strengths of power’s dimensions are not equal and that the power of the system is the most significant dimension and should be given more attention. In so doing, Hardy suggests that it is necessary to mobilise strategy to accomplish two things. The first is to address: (a) the power that is embedded in the system, which requires a thorough understanding of what it involves, such as the organisational values, norms, culture …etc. Then “a coordinated approach that encompasses all three dimensions to influence actions, awareness and values, and avoid both inertia and confusion” (p. 10) must be undertaken. Equally, Burns & Scapens (2000) give attention to “the power embedded in the institutionalised routines, which shape[s] the actions and thoughts of members of the organisation” (p. 23).

3.3 Concluding remarks

This chapter has outlined the theoretical framework that will be used as a lens through which to guide the research inquiry of this thesis. That is, it aims to explore the conditions and processes of CAS practices’ persistence or change. The thesis’ framework has drawn insights from works that draw on institutional theory, namely: Oliver (1991; 1992); Hardy (1996) and Burns & Scapens (2000). These works are combined in such a manner as to address the specific themes which this study intends to explore, as follows:

- **RQ1: In high institutionalised CAS practices; when, how and why can change occur?**

The framework has adopted the notion of “de-institutionalisation” that was suggested by Oliver (1992). Its prominent feature is that it allows an understanding of the conditions and processes under which organisations respond via change to institutionalised CAS practices. However, Oliver’s works are criticised for their lack of concern with the micro processes of change and/or
resistance, within an organisation. Such an inadequacy can be overcome by utilising Burns & Scapens’ (2000) and Hardy’s (1996) work, in order to address the following question:

- **RQ2: In less institutionalised CAS practices; when, how and why may change not occur?**

The thesis’ framework drew from Burns & Scapens’ (2000) framework’s some insights through which to explore the institutionalisation process of new CAS. Due to some limitation in Burns and Scapens’ work, the framework has also drawn on Hardy’s notion around power’s ability to sensitise resistance to change in less institutionalised CAS practices through the mobilisation of power and politics. Having discussed the theoretical framework model, the next chapter outlines the research design and strategy adopted in this thesis.
Chapter 4 - RESEARCH DESIGN & STRATEGY

4.0 Introduction

This chapter outlines the research paradigm that is suited to an exploration of the conditions and processes though which institutionalised CAS practices persist or change. It involves a basic set of assumptions that guide this research inquiry (Creswell, 2014). This set consists of two parts, namely: the research design (theoretical issues), and the research strategy (practical issues) (ibid). The former concerns the philosophical foundations, as outlined by Malmi (2010, p. 121):

"[...] set of assumptions, concepts, values, and practices that constitute ways of viewing reality, [in addition] paradigms provide focus, orchestrate effort and assist the research community to accumulate knowledge about the issues of interest (see also Merchant, 2010)."

While these foundations shape ways to investigate the research puzzle addressed in Chapter One, the research strategy concerns the practical issues of the research paradigm that correspond to the research design, as stressed by Lukka (2010, p. 111):

"[...] what is to be studied, what kind of research questions are supposed to be formulated in relation to these subjects, with what methods these studies should be conducted, and how their results should be interpreted."

To address the research questions outlined above, this chapter aims to achieve the following two objectives:

- To outline the research design, including its philosophical foundations that approaches the research puzzle in terms of research ontology and epistemology.
- Research strategy: the practical foundations of the data collection issues that are employed in this study and how they will be performed in order to collect data, driven by the research question.
4.1 Research philosophy

There are several philosophical frameworks that have been proposed to classify and/or to conduct research in the social sciences, e.g., Burrell & Morgan (1978); Chua (1985) and Laughlin (1995). The most important factor in these frames is to ensure consistency across a set of research paradigm assumptions. The selection of the most appropriate research paradigm, for instance, depends on the nature of the phenomenon that is being researched and the assumptions that a researcher holds regarding the nature of the phenomenon's reality (ontology), which affect the ways in which knowledge about that phenomenon (epistemology) is gained; and, in turn, shapes the research’s assumptions about the role of human nature and the research strategy for data collection (research methodology) (Burrell & Morgan, 1978; Morgan, 1980, Morgan & Smircich, 1980; Tomkins & Groves; 1983; Ryan et al., 2002).

Laughlin’s framework suits this thesis for several reasons, which will be explained as the discussion of the research paradigm progresses. According to Laughlin (1995), a researcher can be positioned in what is so-called “middle range thinking” (MRT hereafter). MRT suggests three sets/ dimensions for the research paradigm, namely; theory choice, change choice and methodology choice; and each of these choices is scaled into three levels: high, medium and low. However, Laughlin’s framework of MRT is not without critiques (Dey, 2002; Lowe, 2004; Quattrone, 2004; Chua, 2004; Gurd, 2008). Among these, MRT was criticised for its influence upon researchers as the only one way to go (Lowe, 2004). In response to this, Laughlin argues that MRT is a heuristic for choice amongst research approaches, and that no research approach has total privilege over another (2004). But, Laughlin (2004) also recounted that “auto-critique and some refinements” resulted in reframing MRT and integrating change dimension into theory and methodology choices. This reframing follows the argument that that change dimension involves understanding process that consists of set of assumption follows from theory and methodology choices. In the context of this thesis, the above philosophical dimensions and levels are outlined in light research question in the subsequent sections:
4.1.1 Level of theory choice

This dimension concerns a researchers’ perception of the nature of social science. It represents theory choice and a level of theorisation usage before the undertaking of any investigation (Laughlin, 1995). Theory choice involves research ontology and epistemology; and both are discussed in relation to this study.

4.1.1.1 Ontological research assumption

Research ontology pursues the reality of the existence of a particular phenomenon (Burrell & Morgan, 1978; Morgan & Smircich, 1980; Tomkins & Grove, 1983; Chua, 1986; Laughlin, 1995), that is, that cost accounting system (CAS)-related practices have posed the most fundamental challenge to ERPs, which results in misalignments being operated independently of ERPs. Yet, CAS practices are usually voluntarily adopted (Soh & Sia, 2004); and the requirements of these practices (i.e., information processing) are met by ERPs (cf. Booth et al., 2000; Hyvönen, 2003). Organisations’ responses to misalignments in CAS practice via ERPs’ customisation, or otherwise by maintaining them independently of ERPs; and both options mean resistance to practice change. This phenomenon has frequently been reported in prior research that has been conducted in different contexts (Booth et al., 2000; Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Soh & Sia, 2004; Hyvönen, 2003; Rom & Rohde, 2006; Grabski et al, 2009).

In this respect, there are various ways of looking at the impact of CAS-related practices on ERPs’ implementation. As outlined in the following table (4-1), Morgan & Smircich (1980) have suggested the following table with a six-way classification that represents a continuum that defines an alternative, but which overlaps ways of viewing the world from an extremely objective viewpoint that ranges from: (1) reality as a concrete structure, to (6) reality as a projection of human imagination, as the most subjective view.

In Laughlin’s MRT, prior studies presented in Section (2.2) drew on a high level of theorisation to approach an interface between ERPs and cost accounting from a unidirectional relationship. This view pursues ERPs as an independent
factor and a driver of CAS change, whereas the opposite was not accepted. Such an approach showed inadequacy in understanding why CAS-related practices are maintained independently, rather than integrated within ERPs.

Table 4-1 Six basic ontological assumption sets

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<td>Reality as a concrete structure</td>
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<td>Reality as a concrete process</td>
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<td>3.</td>
<td>Reality as a contextual field of information</td>
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<td>4.</td>
<td>Reality as symbolic discourse</td>
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<td>5.</td>
<td>Reality as social construction</td>
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<tr>
<td>6.</td>
<td>Reality as projection of human imagination</td>
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Source: Morgan & Smircich (1980, p. 492)

In contrast to the above, although accounting practices may be considered analytically rational, that rationality can only be understood in its socio-historical context (Colignon & Covaleski, 1991). Management accounting practices were, for instance, found to be strongly framed and driven by factors at the macro level (Granlund & Lukka, 1998). Accounting change and/or resistance should thus not be viewed in isolation from its context as “accounting is interwoven with social, cultural, and political processes” (Ahrens et al., 2008; p. 842; see also Hopper & Powell, 1985; Roberts & Scapens, 1993; Ahrens & Chapman, 2006a,b). Recently, Parker (2012) has also advocated examination of management accounting’s interaction with its institutional, organisational, economic, social, political and technological contexts. This supports studies that are considered in sections (2.2 & 2.3) that demonstrate the influence of institutional and organisational forces in the shaping of the implementation processes of ERPs.

Consequently, the view taken in this study is social constructivist and gives consideration to the context within which CAS operates. This is also consistent with the theoretical framework outlined in Chapter (3). In contrast to prior studies, the medium level of prior theorisation that has been adopted in this study assumes a bidirectional relationship between ERPs and CAS (Luft & Shields, 2003; Rom & Rohde, 2007; Granlund, 2011), that is, while ERPs, as a material world, may drive change in CAS practices, ERPs may be customised by these practices for some reason. The latter is not a material world, as would
be understood by the projection of human minds, where the main source of understanding of the reality of the research phenomenon is being studied. Since these projections are different, making generalisations is neither possible, nor is it intended in this study. Crucially, the adoption of social constructivist stance aims to understand the conditions and processes by which institutionalised CAS practices persist or change (Creswell, 2014, p. 8). How this shapes the research epistemology of this research paradigm is discussed in the subsection that follows.

4.1.1.2 Epistemological research assumption

The outline of the ontological assumption above influences the research epistemology of this thesis and concerns the nature of knowledge and how it can be obtained (Burrell & Morgan, 1978; Morgan & Smircich, 1980; Tomkins & Groves, 1983, Ryan et al., 2002). In corresponding to a social constructivist viewpoint, this study has adopted an interpretive approach which considers the projection of individuals as the main source for gathering knowledge where reality is socially constructed. As outlined above, this study aims to unveil the conditions and processes by which CAS-related institutionalised practices persist, exhibit resistance to change, or are changed. The interpretive approach offers a radical and unique understanding and the potential to contribute to theory (Ahrens & Chapman, 2006; Armstrong 2008; Ahrens et al, 2008; Scapens, 2008; Baxter et al., 2008; Parker, 2012). Its suitability for this study is attributed to the following reasons:

- It allows us to examine CAS in its contexts (organisations and society) (Malmi in Ahrens et al., 2008); so as to understand how CAS shape and/or are shaped by its context (Burns in Ahrens et al., 2008).
- This examination provides cumulative knowledge that is superior in studying the processes of CAS practices persistence and/or change (Ahrens in Ahrens et al., 2008).
- This allows the employment of a lens through which to explore the course of action of CAS dynamics and their interplay by tracing back the history and path of dependency matters, i.e., the social, economic, institutional, cultural and political, behind CAS practices (Burns in Ahrens
et al., 2008).

- This provides rich explanations for the processes of CAS changes and/or resistance to change, as well as comprehensive and contextually rooted interpretations of their interplay in wider contexts (Parker, 2012).

- This offers close contact analysis of human interaction in order to understand how CAS is performed in everyday practice (Granlund in Ahrens et al., 2008).

- It has a great deal to contribute to our understanding of how accounting is actually performed, and researchers still know remarkably little about how accountants go about producing accounting, as an instance (Armstrong, 2008).

- More specifically, it recognises, understands, explains and describes CAS-related institutionalised practices, that persist or change, as a social reality that is emergent, subjectively created and objectified through human interactions—i.e., produced and reproduced through the actions and interactions of the members of that world (Orlikowski & Baroudi, 1991; Elharidy et al., 2008; Ahrens, 2008).

4.1.2 Level of methodology choice

Both the choices and levels that are adopted above for theory influence the methodology choice of the present thesis (Laughlin, 1995). This dimension is also scaled into three levels; namely: high, medium and low level. In turn, the methodology includes two research assumptions: human action in a particular society (human nature) and how this society may be examined (research methodology) (Laughlin, 1995). Choice and the level of human nature and the research methodology define the methods of investigation as they are outlined in the subsequent sections:

4.1.2.1 Human nature

Choice and level of theorisation (first dimension) defines the role of individual action in the society being studied. As noted, this research aims to understand the reality of change and/or resistance to change institutionalised CAS practices as pursued to be socially constructed. Under such assumption, the role of
human nature adopted in this thesis is assumed to be *voluntary* rather than being determined. This approach relays on individuals’ views to reconstruct processes of change and resistance to change of CAS. The individuals include those participants are responsible for CAS (accountants) and their (inter)action with others. This also pays attention to the influence of personal, cultural, and historical experiences of those participants in their negotiation with others over changing institutionalised CAS practices. And, participants’ background in turn reflects historical and cultural norms of organisation in which they work and context in organisation operate.

### 4.1.2.2 Research methodology

Research methodology deals with the philosophy of data collection (Burrell & Morgan, 1978; Chua, 1986; Laughlin, 1995). The research choice for theory (ontology and epistemology); change and human nature’s role that are outlined above, together influence the methodological choices in this thesis. Qualitative research methodology (QRM hereafter) corresponds to social constructivist view, an interpretive approach and voluntary human nature, as stated by Covaleski & Dirsmith (1990, p. 543):

*Qualitative methodology is an umbrella term applied to a number of interpretive techniques directed at describing, translating, analysing, and otherwise inferring the meanings of events or phenomena occurring in the social world.*

Arguably, management accounting research is a leader in applying qualitative research methodologies (Parker, 2012); and the rationale for choosing QRM is attributed to the following reasons:

- QRM is consistent with an interpretive approach that aims to understand how CAS operates in different societal, cultural, institutional and organisational settings (Vaivio, 2008; Parker, 2012).
- As such, it has the potential to enhance understanding of how CAS-related practices shape and/or are shaped by the unique contexts in which they are performed (Parker, 2012).
- As the organisational and accounting world is a complex place, the QRM allows for the unpacking of their complex processes, providing deeper
processual maps and contextualised understandings of CAS in action (Covaleski & Dirsmith, 1990; Parker, 2012).

- This offers a pathway to a deeper understanding and application of CAS-related practices in situations of organisational change (Parker, 2003, 2012).

- QRM provides penetration and unpacking from the inside of organisational processes, and the CAS’ interface with such processes (Burns & Scapens, 2000; Burns, 2000).

- The pathways that follow provide rich descriptions of the events and the behaviours and actions of people. This facilitates the exploration of unforeseen relationships, and reduces the researcher’s induced retrospective distortion and unsupported inferential leaps (Covaleski & Dirsmith, 1990, p. 544).

- This allows the penetration of formal CAS and processes in order to unpack the informal, implicit, embedded motivations and behaviours that lie beneath the surface (Parker, 2012).

- Finally, QRM is suitable for penetrating actors’ interpretations and practices in organisations’ technical and political processes (Ahrens & Chapman, 2006). This empowers an understanding of the projection of individuals behind the persistence or changes in CAS practices.

The above features shape the practical aspects of QRM for data collection. Atkinson & Shaffir (1998), for instance, reduce this to the means of the data collection techniques of participant observation and/or intensive interviewing and data analysis techniques that are non-quantitative. Vaivio & Sirén (2010) holds the same view regarding QRM that relates to the:

[…] entire interpretive research tradition in accounting, especially case-based research that relies on rich empirical material collected from a single target organisation or a handful of case organisations [...]. It uses multiple sources of evidence [...] as well as forms of participant observation within the research site.

In this sense, Marshall & Rossman (2010) suggest that QRM can be carried out using a wide variety of strategies, such as in-depth interviews, case studies, projective techniques, role-playing, life histories, or focus groups. The following
section discusses the research strategy, including the techniques of data collection that are employed in this study and that correspond to a social constructivist viewpoint, an interpretive approach, voluntarily given human nature and qualitative methodology.

4.2 Research strategy

The second part of the research paradigm concerns the research strategy and execution process. This is influenced by the philosophical underpinnings outlined in section (4.1). This strategy outlines the means and processes of data collection in order to explore the conditions and processes of change and persistence in institutionalised CAS practices. More specifically, it aims to explore specific themes that are outlined in Chapter (1) as follows:

- The conditions and processes of change in high institutionalised CAS practices.
- The conditions and processes of resistance to change in low institutionalised CAS practices.

This part is therefore organised into two subsections. The first discusses the wisdom of using a case study as a research strategy for data collection, while the second outlines in great detail the process of the execution of the case study that was carried out for this thesis.

4.2.1 Case study research choice

Case study has been suggested as a useful research strategy in exploring the interconnection between accounting and its contexts (Scapens, 1990, 2004; Ryan et al., 2002; Cooper & Morgan, 2008; Yin, 2009). It is defined as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used” (Yin, 2009). In the same vein, Scapens argues that:

*Case studies offer us the possibility of understanding the nature of management accounting in practice; both in terms of the techniques, procedures, systems, etc. which are used and the ways in which they are used* (1990, p. 264).
However, it is argued that case study strategy varies according to philosophical foundations, such as those outlined above, as Berry & Otley state: “the methodological underpinnings of accounting research are an important starting point for consideration of case-based research” (2004, pp. 231-232). In referring to the ontological continuum that has been suggested by Morgan & Smircich (1983), Scapens (1990) suggests a typology of case-based research that ranges from extremely objective case studies that are informed by neoclassical economics, to extremely subjective case studies that are informed by social theory. While, the former approach portrays case studies as an exploratory tool in the construction of positive theories, and gives only an incidental role to case studies in management accounting research, the latter gives a much more central role to case studies, which are fundamental to the development of explanatory theories of management accounting practice. From the subjective to the objective, the types of case study are: descriptive, illustrative, exploratory and explanatory/ interpretive (Scapens, 1990; 2004; Ryan et al., 2002). Equally, case studies can also be framed as being single, collective, comparative or layered (see also Parker, 2003; Scapens, 2004; Yin, 2009).

This study has adopted an interpretive/ explanatory case study, which is consistent with the philosophical foundations outlined above, for the subsequent reasons:

- It is a useful choice for exploring how day- to-day CAS is performed by individuals in the contexts in which they work (Scapens, 1990).

- Its suitability is due to the involvement of a researcher in direct contact with organisational settings, conducting in-depth research into the actors and their contexts in their naturally occurring settings (Merchant & Stede, 2006; Parker, 2012).

- It is consistent with the institutional theory-based theoretical framework that has been outlined in Chapter (3), that we explore the processes of change in, and persistence of institutionalised CAS (Burns & Scapens, 2000, p. 14).

- It empowers the search for deep and rich understandings of the social nature of accounting practices; and it will be “greatly strengthened” if it
focuses on explanation and theoretical generalisation (Scapens, 1990; 2004; Ryan et al., 2002).

- This allows an understanding of the content, processes and contexts of accounting practice (Berry & Otley, 2004).

4.2.2 Steps and methods of case study data collection

This study adopts the case study steps that have been suggested by Scapens (1990, 2004), with slight modifications, in order to examine when, why and how institutionalised CAS practices may persist or change. Furthermore, these steps, in turn, represent the process of data collection, the analysis and reporting of findings, as follows:

4.2.2.1 The process of case study selection

There is an argument around the process of case study selection, that is, a clear specification of research questions and theoretical framework of research should influence the decisions in case study selection prior to negotiating access, arrangements, and appointments (Scapens, 1990, 2004; Cooper & Morgan, 2008). These authors argue that the wisdom of this helps to select a “critical case” by means of which the inadequacies of prior studies can be brought into focus via the scrutinising of a critical event which raises those issues to the surface in the organisation being studied.

Following this argument, this study’s initial purpose was to set out to explore why ERPs have only a moderate impact on management accounting change, as prior studies have shown. It was, then, decided to re-approach this interface as an on-going process that involved three factors rather than two, namely: ERP, business processes and cost accounting practices. This covered the “deficiencies” that had been demonstrated by prior studies, especially the role of business process re-engineering (BPR hereafter) (Creswell, 2014). The BPR is a way of change that reconciles misalignments between pre-configured practices in ERPs and the CAS practices that are in use. The emergence of misalignments and the needs of BPR offer an opportunity to observe change and/or resistance in management accounting (Cagilo, 2003). As such, the process of case study selection should consider several issues; namely: (1) an
organisational case that has decided to adopt ERPs; (2) ERP implementation that is still on-going; (3) the organisational structure of the case is functionally-oriented and may be challenged by ERPs as being cross functionally structured (Scapens & Jazayeri, 2003). Having established these issues, the researcher started to negotiate case study access, as explained in the following subsections:

4.2.2.1.1 Case study selection and the first impact of Libyan revolution

During the first year of his PhD course (December 2009), the researcher found, on the website of a Libyan iron and steel company (LISCO hereafter), an invitation to academic institutions for participation. This organisation specialises in producing steel and iron products. Further, it is located in Misurata, which is to the East of the capital city (Tripoli) by approximately 200 Kilometres. LISCO asked academia for their collaboration in resolving managerial problems and communication across departments. They had started to think about replacing their existing systems and of implementing an integrated information system by SAP. Moreover, LISCO has complex operation processes and cost accounting systems (CAS hereafter). It was thought that LISCO would be an ideal case study; especially since the implementation process had not yet been started at that time. Accordingly, communication was launched indirectly with the Chairman of LISCO, and, more directly, with a key actor in the cost accounting department. Communication was successful and they requested an official letter from both the thesis’ supervisor and its sponsor (the Libyan Embassy). All of these requirements were met, and official communication was then begun. All preparations for the case study, such as the interview questions, were made prior to the beginning of the fieldwork data collection.

By January 2011, the researcher was back in Libya to visit LISCO and to start data collection on the process of interaction between ERPs, BPR and CAS. The researcher had the opportunity to meet the Chairman and to explain the purpose of the visit; and was then warmly welcomed. The Chairman

12 The researcher gained access to the Chairman through social contacts. The Chairman’s brother was a PhD student at Huddersfield University and was conducting research in the management accounting field. It is very usual, and usually better, to gain access to a particular organisation through social relationships.
appreciated the role of research, especially as he holds a PhD degree. Immediately, he authorised the Committee Chair of the SAP project to meet the present researcher's needs for data collection. The Committee Chair was also the Chief Officer of Finance & the Administrative Affairs Sector, which eased the sorting out of further procedures, such as the issuing of an ID card to allow the researcher to access the targeted departments. A week later, the researcher held the first informal and unstructured joint interview with the former Director of the Cost Accounting Department and the IT partner (an Indian organisation).

(Un)fortunately, the Libyan uprising took place and revolution spread quickly throughout the nation by mid-February, 2011. The researcher lives in a different city, Surman, which is approximately 255 Kilometres to the far West of the case study site. Furthermore, Misurata (the city of the case study- LISCO) became one of the most violent areas during the revolution, as was extensively reported across a wide range of media. More specifically, LISCO itself was hit by rockets, which meant that potential travel to access LISCO became impossible.

The researcher then started to seek alternative options for a case study in order to meet the research requirements outlined above. Keeping these requirements in mind, the researcher fortunately spotted another suitable case study, called the General Electric Company of Libya (GECOL thereafter). GECOL had already implemented an integrated information system, and this was neither SAP nor ERP. Rather, it is called an industrial and finance system. GECOL is state-owned and it has a compete monopoly of the electricity services sector and of distilled water in Libya. This means that it was a challenge to gain access, especially during the Libyan revolution. Searching among the social relations of the GECOL Chairman, the researcher found his MSc dissertation supervisor, who had second connection access to the Chairman. This key contact meant that the researcher had the opportunity to hold a quick meeting with the Chairman in order to obtain acceptance. While the official letter of acceptance was signed, on the following day there was a NATO strike on

Tripoli. Importantly, the majority of GECOL employees, managers and senior managers disappeared due to the NATO attacks\(^\text{14}\).

In this situation, the researcher began to re-think and re-strategise the case study selection and access. There were no feasible options, unless to access the oil sector, to examine the interface process between ERPs, BPR and CAS. The oil sector organisations, however, were considered to be highly sensitive during the Libyan revolution, which meant it was impossible to access them, especially as the revolution was becoming stronger.

4.2.2.1.2 Case study selection and the second impact of Libyan revolution

By October, 2011, the Libyan revolution was ended and the situation was becoming more stable. This resulted in another re-thinking of the situation and a return to seeking a case study in the Libyan context. Four interesting cases were outlined in two relatively safe cities. The first two cases operate in and monopolise the communication sector, in which the process of implementing ERPs was still on-going. In contrast, the other two cases operate in the oil sector. The first case was the Arabian Gulf Oil Company (AGOCO) which had already implemented an integrated information system, which was neither ERPs nor SAP. The second case in the oil sector was the Azzawiyah Oil and Refining Company (RefCo hereafter) and it was still implementing ERPs, and had nearly reached the point of going live when the Libyan revolution took place. The revolution halted the implementation. The researcher briefed the supervisors about each of the four cases in order to make a rigorous decision about which case the researcher should choose. Indeed, RefCo was an ideal case for several reasons:

First, RefCo is: (a) highly structured, (b) complex, and (c) it has accounting practices that are shaped by industry specifications. Scapens & Jazayeri (2003) call for research that examines case(s) implementing ERPs with a strong functionally-oriented organisational structure. RefCo is specialised in refining crude oil to produce petroleum products, such as diesel and petrol for cars. The

process of refining is very complex and takes many intertwined stages to achieve the final products. While some products at the first stage are final, and go to tanks ready for selling, others are semi-manufactured and need further reprocessing in order to produce the final products. As a consequence, the cost accounting system (CAS) was expected to be complex in order to assign material cost (input/ direct cost) across final (output) products. Furthermore these intertwined processes are also supported by other units, called utilities, and the cost of their products is more than complex. These complexities may put at stake the implementation processes of ERPs in relation to CAS-related practices.

Second, RefCo had started to think about replacing its legacy information system in 2000. The organisation had experienced different managerial problems in terms of information processing. RefCo, for instance, has different ‘stand-alone’ systems in which data accuracy had become unreliable. More specifically, the organisation was confronted by significant demands for financial reports that were requested by the different shareholders, and the existing systems did not fulfil these requirements. For these reasons, RefCo decided to engage with an integrated information system, especially ERP, and more details are presented in Chapter (5).

Third, the organisation is experiencing a significant transformation that has been imposed by its parent organisation: the National Oil Corporation (ParentCo thereafter). This was an unrealised factor that would require changes in the relationship between RefCo and ParentCo, as well as in the accountability systems. One of the requirements that RefCo had to take into consideration was the commercial orientation. In doing so, RefCo would have to incorporate this commercial orientation into the Operations and Cost Accounting Departments so as to support commercial decisions. This gave a great opportunity for analysing the interaction between ERPs’ implementation and the emergence of new CAS in order to address ParentCo’s imposition of new conditions.

Finally, the researcher had a key contact through whom to access RefCo as a case study for research. Most fortunately, the period after the Libyan revolution left a more positive impact in terms of case study access than ever before. The
researcher gained access through social relations and a warm welcome was
given by the interim Chairman of RefCo in November, 2011. This access was
also reinforced by the previous tutor\textsuperscript{15} of the present researcher. Immediately,
the researcher contacted the Chairman by phone and expressed his gratitude
for being able to undertake research on a case study at RefCo. The researcher
also gained access to the Director of the General Accounts Department. Both
efforts were organised and resulted in the researcher gaining full access to
RefCo.

The Chairman addressed the Training and Development Centre (TDC), asking
them to process the researcher’s requests. This is the procedure when a new
trainee/researcher want to conduct fieldwork within RefCo, when the
researcher’s letter is forwarded to TDC. This procedure is needed for several
reasons, such as addressing the targeted departments the researcher intends
to visit, as well as issuing an ID card so that the researcher can access the
main gate of the administrative building and RefCo’s industrial gate. Having
sorted out these issues, the process of data collection started, but help was still
needed in order to address the key players who needed to be interviewed. It is
reasonable here to devote space to the communication process during the
course of data collection.

Indeed, the ERP project manager (ERP-PM henceforth) was on time and in
place to receive the researcher so that he could be introduced to key
departments. Furthermore, the ERP-PM was helpful, not only in giving an
introduction to the progress of ERP implementation, but was also very friendly,
acting as a facilitator to others who were considered to be the key players to
interview. The ERP-PM, however, sometimes became busy due to other
commitments. The researcher was very keen to benefit from every day that he
was on the RefCo site. The researcher thus sought assistance from another
colleague, who had worked with the researcher during his undergraduate
studies. This draws our attention to the processes and techniques of data
collection.

\textsuperscript{15} The tutor taught the researcher management accounting during his MSc course. He holds a PhD from
Manchester Business School and undertook his case study research, exploring management control
practices, at the same organisation.
4.1.1.1 Techniques and processes of data collection

This is the second step in executing the case study strategy which outlines research methodology of data collection (Scapens, 1990). The latter argues that using multiple data sources and data gathering techniques is a feature that distinguishes case study research (see also Yin, 2009). It is reported, for instance, that over 60% of the papers published in *Qualitative Research of Accounting and Management* are based on empirical studies, and they predominantly use case study, ethnographic and interview research methods (Northcott & Doolin, 2008). There are key insights behind multiple sources, namely: they reduce the potential for bias (Cooper & Morgan, 2008); and they allow the researcher to experience new issues and theories that emerge from the case, rather than those that are imposed on it (Scapens, 1990, 2004).

To begin, this study draws on interviews, documents and organisational archives, and observations as sources of data collection. These included interviews (i.e., formal and informal records), archival data (e.g., formal reports and financial statements, correspondence) and observations (e.g. personal notes, Minutes of meetings, memos made during meetings and interviews) (see Atkinson & Shaffir, 1998; Scapens, 1990; 2004; Marginson, 2004; Bédard & Gendron 2004; Eisenhardt & Graebner, 2007; Yin, 2009). These sources provide a rich account and understanding of the conditions and processes by which CAS-related institutionalised practices change or persist at RefCo (Parker, 2012). The next sub-sections discuss why the techniques are important for case study strategy and how they were executed during the collection of data.

4.1.1.1.1 Interview techniques

The technique of interview is considered to be the most useful type of evidence associated with case study research (Marginson, 2004; Scapens, 1990, 2004; Yin, 2009). In this sense, Ahrens & Chapman state (2006b, p. 822):

*The interview technique might be mobilised towards qualitative or positivistic ends depending on the notion of reality that they are supposed to explore.*

This quotation indicates different metaphors for interviews as a research
method that should be informed by the foundations of the research philosophy that is addressed in section (3.1). It has since been outlined that this thesis draws on a social constructivist viewpoint, an interpretive approach, qualitative methodology and interpretive case study to explore the conditions and processes by which the institutionalised CAS practices persist or change at RefCo. In the same vein, this study draws on unstructured and semi-structured interviews as forms employed in addressing this research purpose (Scapens, 1990, 2004; Yin, 2009; Qu & Dumay, 2011).

The form of unstructured interview allows the flexibility to pursue new issues and ideas as they arise (Scapens, 2004). More specifically, the researcher often follows up emerging lines of enquiry by adapting interview questions for later interviewees (Scapens, 2004). This form, for instance, was followed in the first interview that was undertaken with the ERP-PM and his Deputy on the ERPs Committee, who was the Internal Auditing Manager (see Appendix No. 1). This un-structured interview shaped the researcher’s strategy for the course of interviews, which was constituted of three stages, as will be explained in the next subsection. However, the plan was flexible enough to pursue emerging issues which it had not been planned to discuss. In complementarity, the researcher also utilised semi-structured interviews, which are considered the most common form in qualitative research methods (Qu & Dumay, 2011). The popularity of this form is due to it being considered flexible, accessible and intelligible and, more importantly, capable of disclosing important and often hidden issues behind CAS, commercial rules and ERPs (ibid). While this form allowed the interviewer to address a broad framework of questions to the interviewee, the latter could respond sensitively and in-depth to issues that emerged during interviews (Scapens, 2004; Qu & Dumay, 2011).

The length of the course of data collection also seems to be important, according to Vaivio (2008), who stated that:

*The longer the researcher spends in the studied context, the less vulnerable the study is to factors that jeopardise its reliability and validity.*

The length of the course of the fieldwork may, however, not be the only indicator of data quality. Instead of a lengthy course of data collection,
Marginson (2004) suggests three general questions to endorse its quality in case study research, namely: (a) what to collect; (b) how much to collect; and (c) how to ensure the accuracy of what is collected. He believes that the last two can be the most problematic when doing (qualitative) research. Importantly, Marginson believes that researchers may stop collecting data when they have achieved “theoretical saturation” (2004, p. 331). This implies that a short intensive period of fieldwork could be enough to address the research’s purposes and questions. The researcher spent three weeks in intensive fieldwork. This resulted in the conducting of (34) interviews (see Appendix No. 2). Managing this number of interviews should be attributed to the efforts of the key assistant (a previous colleague of the present researcher) and the ERP-PM. For instance, in the case of new issues related to other departments that emerged during interviews, the researcher called these two colleagues and asked them to (a) introduce the researcher to those departments, and (b) to arrange appointments for interviews. As a consequence, the process of conducting interviews was always concise and re-strategised so as to follow up issues that emerged during interviews. More specifically, the interview technique was carried out using the three stage strategy discussed in the following section.

4.1.1.1.1 Interview process

The first stage targets interviewees at the shop floor level and pursues technical issues. The aim of this stage is to understand RefCo business processes and the accounting practices undertaken by either accountants and/or non-accountants (see Appendix No. 1). On the other hand, formal and informal interviews were held with consultants, such as ERP-PM and the On-Site financial module of the ERP team, as both forms of interview resulted in the provision of important evidence (Scapens, 1990). For instance, an informal interview with ERP-PM reported resistance from one of the key players in the ERP committee, which the researcher followed up to explore the issues behind it in more depth. Overall, the purpose of the first stage of the interview technique is to make a comparison between the users’ views on the existing practices of management accounting carried out by RefCo, and the consultants’ perceptions, in terms of practices embedded within the ERPs.
The first stage of the interview strategy was useful in reducing technical questions at the second stage. Prior to this, early interviews with ERP-PM had highlighted significant issues, which had not been planned, such as emerging resistance that was opposing change to the legacy information system. This issue was one of the greatest obstacles hindering the ERPs' implementation. Another issue was mentioned by all interviewees, without exception. This was the changing of the accountability system between the Supervision Corporation (ParentCo) and RefCo, as the case study site. This was considered to be the most significant change that had happened in the history of the case study organisation. This offered a crucial implication for RefCo's CAS and contributed, in one way or another, to hindering the implementation process of ERPs.

Accordingly, the researcher gained from shop floor interviewees’ opinions so as to update the plan for the next interviewees. In other words, the interview plan was regularly changed and redirected to key players who were more familiar with the emerging issues. Once the researcher has experienced an emerging issue, attention was redirected to identify the pertinent interviewee(s). Speedy arrangements with interviewees were facilitated by personal key contacts in terms of introductions, becoming known, and arranging appointments. If the researcher had not been given this assistance, the fieldwork would not have been finished within the three weeks. Overall, it was very hard for the researcher to familiarise himself with the RefCo context during the first stage of the fieldwork. After taking stock of the knowledge of technical issues, the process of interviews moved up to mid-level management, as the second stage of the planned data collection strategy.

The second stage aimed to address managers’ reflections on the issues that had been highlighted at the shop floor level (Vaivio, 2008). This process was helpful in reducing lots of technical questions in favour of focusing on issues such as why something had happened, or not. This stage targets directors, managers and senior managers, such as the General Manager of Finance, the Directors of the General Accounts Department; Commercial Department, Operations Department (see Appendix No. 1). In order to clarify the reasons behind changing the accountability system with ParentCo, for instance, it became clear that most of RefCo’s practices were influenced by ParentCo’s
imposition of them. Overall, the scope of the interview questions at the second stage was more intensive and concise, if compared to the first stage.

At the third stage, the researcher targeted reflection from top management on both internal issues that had been underlined and on external issues, such as the relationship between RefCo and ParentCo. One of the most significant issues underlined by the Chairman of RefCo was that ParentCo does not act as a supervisory corporation, but instead represents the political commitments of the Libyan state.

4.1.1.1.1.2 Confidentiality and responsiveness

The researcher was always keen to respect ethical practices in data collection. In so doing, the researcher introduced himself by explaining the research area and the extent to which ethical approval had been issued by the University of Exeter Business School before the empirical work began. Further, he explained to all of the interviewees how material that was obtained during the research would be used. Where such material would be stored; how findings would be reported; and who else would look at these materials, for instance, the thesis’ supervisors, was also explained (Bédard & Gendron, 2004; Anderson-Gough, 2004). This procedure is put in place to reduce the risk of response bias and to make the interviewee more willing to freely answer questions, especially those that might be critical. This also supports the researcher’s trustworthiness in the eyes of interviewees, where the validity of the data depends on such trustworthiness (Bédard & Gendron, 2004).

4.1.1.1.1.3 Taping interviews

Taping interviews and full transcripts are highly preferable (Bédard & Gendron, 2004; Scapens, 2004). Crucially, a tape-recorder provides the opportunity to play back the recording and to be able to listen to an interview several times and identify relevant scripts, thus eliminating the risk of missing data. In the context of this research, all interviews carried out during the case study course were recorded on a digital recorder, with the exception of one interviewee, who refused to have the interview recorded and so the researcher had to rely on note taking. By contrast, taping interviews may be accompanied by the risk of
preventing interviewees from disclosing some data, but the Chairman’s permission overcame such hesitation.

4.1.1.1.2 Documentation and archival records

As outlined, the researcher was given full access to RefCo. This access included access to documents and the organisation’s archive in both digital and hardcopy formats, which provided complementary support to interviews. The aim of using this technique is to control subjectivity by enhancing the credibility of the information obtained from interviews (Horton et al., 2004). Whenever an interviewee answers an interviewer’s question, or raises a new issue, the researcher asks for supporting documents. These documents can be categorised into four groups:

The first group of documents relates to organisational affairs. As shown in Appendix No. (2), these documents provided context to the researcher during the course of conducting the interviews. The first documents show the organisational structure of RefCo, which empowered the researcher in familiarising himself with the accounting system that RefCo was using. This also provided background for discussing with interviewees the implications of ParentCo’s imposition on the organisational structure of RefCo. Similarly, other documents show the responsibilities of the departments targeted for interviews, and these were always discussed in comparison to their role within both (a) ERPs, and (b) the commercial rules imposed by ParentCo. Crucially, these reports provided clear evidence in terms of the significance of the role of cost accountants, in line with ParentCo’s commercial rules, and many of these materials are referred to in Chapters (5) and (6).

The second group of documents relate to ParentCo’s imposition of commercial rules and feasibility studies that had been conducted in-house. These documents were helpful in pursuing the implications of commercial rules on the accountability systems of ParentCo and RefCo. More specifically, they also manifested RefCo’s response to the impositions of ParentCo. Interestingly, these documents evidenced the superior role of technicians over accountants, not only in how to assign overhead costs, but also in how cost accounting systems should be designed.
The third group includes documents that show changes in the reporting practices within RefCo. The purpose of these can be highlighted in two ways: in RefCo’s accountability system, that is, the management control system at both top and shop floor management levels; and in RefCo’s performance monitored reports, which were needed by ParentCo. In this context, analysing the content of these documents resulted in useful insights that would enrich the material collected from interviews (Berry & Otley, 2004). The content of the Annual Reports from 2002-2010 were, for instance, extensively analysed on Excel sheets to pursue the implications of the commercial rules put in place by ParentCo.

The final group focuses on documents relating to ERPs. These documents are classified into four sub-groups: ERP’s introduction, contract, implementation process and business process analysis. Most of the ERP introduction documents are formatted as PowerPoint presentations, which gave the researcher context on how the system would be. The second sub-section included documents on the ERP’s contract, which established external evidence of the reasons and purposes for which ERP was needed. Furthermore, these documents were consistent with interviewees’ perception about ERP. More specifically, asking questions based on ERP’s scope of work revealed crucial proof of the emergence of misalignments between CAS-related practices embedded in ERP and those in use. The third sub-group also relates to the misalignment which emerged during the ERP’s implementation process. They also provided an intimation of resistance to ERP implementation by analysing correspondence between ERP-PM and the targeted departments. The final sub-group included documents that emphasised business process analysis and proof that this task had not been given enough space, which was the greatest pitfall of the project.

4.1.1.1.3 Observation

Data collected from interviews and documentation is not necessarily reflected in day-to-day practice. Observation was also employed as a technique to observe ERPs and CAS practices in action, in order to address the research’s purposes
(Creswell, 2014). For instance, accountants and operations engineers were observed respectively in terms of assigning joint and common costs and production planning. The course of undertaking this technique resulted in the researcher obtaining valuable information.

4.1.1.2 Process of organising the data

This is the third step in executing the case study strategy to explore the conditions and processes through which institutionalised CAS practices persist or change. This section deals with two issues: the process of organising the data collected and of assessing what had been collected.

4.1.1.2.1 Data transcription & translation

It is argued that one of the major practical limitations of undertaking case study research is that it is a costly exercise and takes a lot of time (Berry & Otley, 2004; Scapens, 2004). There is no doubt that recording an interview ensures a full record and it is available at the demand of a researcher (Hayes & Mattimoe, 2004). However, in order to analyse the data post-interview, all the material recorded must be transcribed and edited. This activity is a very time consuming and expensive activity (Scapens, 2004); and it has to be done by the researcher himself in the case of lack of funding (Hayes & Mattimoe, 2004). Alternatively, the researcher may need to listen to recorded interviews more than once and to select what is relevant to the research question, so that it can be transcribed. The disadvantage of this strategy, which clearly aims to overcome time consumption, is that the researcher may miss the opportunity of capturing unintended, but significant issues that may contribute to theories other than the pre-determined ones (Scapens, 2004). All the interviews were therefore transcribed to avoid missing data and/or significant issues.

In this sense, it is argued that the process of distilling and editing the transcript provides a permanent and valuable record of the interview from which direct quotations may be extracted (Hayes & Mattimoe, 2004). However, Robson (1993) warns that a one-hour recording may take up to ten hours for data transcription. As noted above, all of the interviews in this study were carried out at RefCo in the researcher’s mother tongue, Arabic. Furthermore all the
interviews were recorded, with the exception of one interview, where the interviewee refused to allow recording, and they were stored in more than one location to avoid any risk of technical problems. The key advantage of recording interviews is that it makes the data tangible and it can be revisited at any time (Hayes & Mattimoe, 2004).

Additionally, all interviews were transcribed and typed in Arabic and were kept in digital format (audio and text) files. It was always borne in mind that all that had been said was important and the full interview should be transcribed. This process resulted in a significant amount of data (Marginson, 2004). Although this procedure was time consuming, the aim was to ensure that no data should be missed. In such a case, it is possible for the researcher to re-visit the data at any time, either in an audio version (Arabic recorded) and/or in digital document format (Arabic digital written files). Eventually, all interviews were, and still are, stored in three locations: the researcher’s laptop, which is synchronised with the central database of Exeter University; on an external hard drive, and in a Dropbox, in case of damage to any of the means of storage.

Translation is also as important as conducting and transcribing the interviews and document observation. All of the transcribed interviews mentioned above were translated into English. The translation process is sensitive work, due to the possibility of losing meaning in the case of lack of translation skills (Scapens, 2004). To ensure this, the researcher checked random samples of the translated interviews with different professionals. Those professionals are qualified in both languages (Arabic and English). Eventually, all of the transcribed interviews became English written source material, stored in digital file format. In the same vein, the process of transcribing and translating documents was quite similar to the interview process. At the beginning, the researcher reviewed these documents critically and made comments. Then it was stepped up to write a summary report on each piece of documentation. All of these summaries are typed in Arabic and stored as digital files. Finally, these Arabic documents were translated into English and were also kept in stored digital format.

Overall, each hour of taped interview consumed four hours of transcription and typing in the Arabic language. One hour of typed transcription generates
approximately 3000 words. This in turn requires between two hours and half and three hours to translate it from Arabic to English. As a consequence, the 34 hours of interviews consumed approximately (225) working hours. This also applies to commenting, transcribing and translating documents, but there are no approximate statistics, because the length of documents differs one from another. For instance, commenting on annual reports is different from commenting on the progress reports of ERP. The outputs from this stage feed the next step, which is the data analysis. Before moving on, it is also important to show the process of organising data collection within a computer system, computer-based data management.

4.1.1.2.2 NVivo-based qualitative data analysis

Building a database and organising the fieldwork evidence that was collected from RefCo as a case study is an important step. It is stressed that case study research requires a researcher to be very well organised, both when collecting his/her evidence and when synthesising the outcomes, which result in the building of a database (Scapens, 2004; Berry & Otley, 2004). These authors argue that this raw data material constructs a case record, which is the first step in analysis, and from it a holistic and comprehensive picture may be developed, but it needs to be managed carefully. Another issue is the ethics that need to be considered to ensure confidentiality agreements for maintaining data securely (Gagnon, 2010). The requirements of collecting, organising and ensuring confidentiality might, however, be difficult to meet by keeping data in hard copy documents or bound note books, as suggested by Scapens (2004).

The researcher instead employed NVivo as a superior tool for data management and analysis (Anderson-Gough, 2004; Hutchison et al., 2010; Rujirawanich et al., 2011). NVivo is defined as a “software [that] supports qualitative and mixed methods research […] lets [a researcher]… collect, organise and analyse content from interview, focus group discussions, surveys, audio, social media and web pages”\(^\text{16}\).

\(^\text{16}\) [http://www.qsrinternational.com/products_nvivo.aspx](http://www.qsrinternational.com/products_nvivo.aspx)
The researcher started setting up the project on NVivo software and it was given RefCo as a name. All of the data sources outlined above were imported into the RefCo project under internal sources. These sources were organised into two main folders, called interviews and documents. The folder of interviews includes three sub-folders: (a) Audible Interviews, (b) Arabic Transcription Interviews, and (c) English Transcription Interviews. The second reason was to allow the researcher to quickly return to check the original source in the case of encountering any kind of challenge.

In a similar vein, the second folder of internal sources is called “Documents”. This included: (a) Original Documents (digital format), (c) Transcribed Documents, and (d) Translated Documents. The reason for keeping the original sources within the RefCo project was to retain these sources in a secure place and it is also possible to set up synchronisation between the researcher’s personal laptop and Exeter University’s central database in order to block any chance of losing data. Having set up RefCo as a research project, the next step was to decide how to analyse the uploaded data to achieve the research’s purposes and to answer its questions, and this is addressed in the subsequent section.

4.1.1.3 Evidence assessment

Having collected data, it is an important step in interpretive case study strategy to assess evidence quality in relation to the research’s purpose and questions. This quality depends on (a) good research design; (b) suitably conducted data collection and analysis procedures, namely; (1) the degree to which findings reflect the context from which they are drawn; and (2) the degree to which arguments are supported by evidence drawn from multiple sources (Scapens, 2004; Vaivio, 2008). As these issues are related to the validity and reliability of fieldwork, Marginson (2004) has advanced three necessities that represent the criteria that may guide the course of data collection, namely; (a) what to collect (the type of evidence); (b) how much to collect (the quantity of evidence); and (c) how to ensure the accuracy of what is collected (quality of evidence).

On the contrary, it is argued that interpretations of reliability and validity may be appropriate to quantitative rather than qualitative research methodology.
(Scapens, 1990; 2004; 2012). The reliability reflects “the extent to which evidence is independent of the person using it” (Scapens, 2004). In case study research, it is important to know that the researcher has adopted appropriate and reliable research methods and procedures, and this is known as procedural reliability. In contrast, the validity must express “the extent to which the data is in some sense true” (Scapens, 1990, 2004). In case study research, Scapens argues that what is meant by reliable case study findings underlines: (a) a good design that addresses clearly specified research questions; (b) a comprehensive research plan; (c) all evidence should be recorded in coherent and comprehensive field notes; and (d) the case analysis should be fully documented.

Recently, Scapens (2011) wrote a critical review of a book entitled The CAS STUDY as Research Method: A Practical Handbook, authored by Gagnon (2010). Criticisms were raised due to a lack of recent discussion, either on the validity of interpretive accounting research (Lukka & Modell, 2010), or on its authenticity, credibility and transferability of writing qualitative research (Baxter & Chua, 2008). In other words, these criteria are suggested as alternatives to reliability and validity in case study research (Scapens, 2004, 2012). Scapens (2012) suggests Plausibility instead of Validity, Authenticity/ Credibility instead of Reliability and Criticality/ Transferability instead of Generalisability. Authenticity and plausibility are especially considered to be the central aspects of validation in interpretive and qualitative accounting research (Lukka & Modell, 2010). The following three sub-sections discuss these terms and how they are addressed in the context of this thesis, through the process of using NVivo:

4.1.1.3.1 Authenticity/ credibility instead of reliability

Authenticity concerns the relationship between a researcher and the fieldwork undertaken (Baxter & Chua, 2008). This impression can be enhanced through the construction of relatively holistic accounts giving voice to the Other (Lukka &

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17 This was a workshop organised by the European Network Research of Organisation Accounting Change (ENROAC) as part of its 6th summer school.
Modell, 2010). This authenticity should emphasise three issues regarding fieldwork: (a) the researcher’s presence; (b) the length of the fieldwork’s course; (c) the intensiveness of the evidence (Baxter & Chua, 2008).

In terms of the fieldwork relationship, the present researcher proved his presence in the fieldwork during the course of data collection. This was achieved through underlining case study details and the length of the fieldwork’s course; as well as by allowing informants (interviewees) to speak (see Chapters 5 & 6). For instance, the present researcher has proved this by showing the acceptance letter from the organisation used for the case study; his ID card for gaining access to the case site; a list of the times and dates at which interviews were held, and the titles of interviewees; and organisational reports and archive materials. Importantly, all documents and records are still held, as promised and declared in the forms for ethical approval, and will be held until the official examination of this work. The purpose of these procedures is to persuade and assure the reader of the research’s authenticity.

The intensiveness of the data collection during the fieldwork’s course is another aspect that helps to demonstrate the research’s authenticity, according to Baxter & Chua (2008). The research’s intensiveness reflects both the character and quality of data collection. While the former underlines a type of data source, the quality of evidence expresses data triangulation, or multiple sources of data. As outlined in section (3.2.2.2), this thesis drew on interviews, documentation and organisational archives and observation (participants and documents).

Thinking and/or changing research direction is also considered be an aspect that proves research authenticity (Baxter & Chua, 2008). The original focus of this research aimed to explore the interplay process between ERPs, business process re-engineering and CAS. This focus was, however, adapted, as the present researcher was confronted by an empirical puzzle, that is, significant change that took place in highly institutionalised CAS practices in line with the ParentCo change initiative and without resistance. Conversely, the outcomes of that change are less institutionalised, but exhibit significant resistance to the change initiative of the consultancy firm as part of the implementation of the ERP project. The present researcher thus became interested in exploring the conditions and processes by which CAS-related institutionalised practices
persist or change. As a consequence, the research questions, purposes, literature and theoretical framework have all been revisited and adapted to the issues that emerged during the course of the fieldwork.

4.1.1.3.2 Plausibility instead of validity

The notion of plausibility is about how field research is made sensible and believable (Baxter & Chua, 2008; Lukka & Modell, 2010). Lukka & Modell (2010), in particular, have suggested that three aspects constitute plausibility/validity; namely: (a) external validity; (b) internal validity; and (c) construct validity (Scapens, 1990; 2004; Modell, 2005; Yin, 2009).

First, external validity underlines the extent to which the findings of a particular study can be generalised across populations, contexts and time (Lukka & Modell, 2010). Case-based generalisations, however, are theoretically informed explanations of the observed phenomena (Scapens, 1990; 2004). The present researcher went to RefCo with a little knowledge of existing theories in management accounting in order to examine whether the observations agreed with this existing theory, otherwise that theory should be modified (Scapens, 2004). This also aimed to reduce the theoretical bias, since the researcher went into the fieldwork with a range of common theoretical frames in management accounting research. However, it is not part of a researcher’s attention to make generalisations. Rather, the research is intended to contribute to the theory by drawing on fieldwork observation.

Second, internal validity refers to the credibility of the causal relationships between independent and dependent variables that are inferred by the data (Lukka & Modell, 2010). In the context of case study research, this is replaced by the notion of contextual validity, which indicates the credibility of the case study evidence and the resulting conclusions that are drawn from it (Scapens, 2004). In so doing, the researcher assessed the validity of each theme through evidence triangulation (Ryan et al., 2002; Scapens, 1990; 2004; Vaivio, 2008). This triangulation was conducted within and across sources of evidence (i.e., interviews, documentation and/or observation) (Horton et al., 2004; Marginson, 2004). Formal resistance by the Co-ordinator of General Accounts (Financial Accounting) in opposition to ERPs’ implementation was, for instance,
highlighted by ERP-PM. The validity of this claim was confirmed by gaining access to formal correspondence, letters between ERP-PM and the Cost Accounting Co-ordination.

Third, construct validity concerns the adequacy of theoretical concepts in sensitising the operational definitions and measures of an empirical phenomenon (Lukka & Modell, 2010). To achieve this, the present researcher assessed the validity of his own interpretations of collected evidence with his supervisors and with colleagues who are working in the same area and using the same theoretical background. The aim of this procedure was to overcome “biased interpretation” (Scapens, 2004). On the side of theory, alternative theories, or even alternative methodologies, could be applied to the same data, and might open up a diverse range of insights to be considered when interpreting the case. However, the researcher could not do so due to the time frame of the PhD project. Rather, the researcher made comparison with prior studies that had been conducted in the same field and which had adopted the same theories.

4.1.1.3.3 Criticality/ transferability instead of generalisability

Criticality (transferability) in qualitative research methodology is suggested as an alternative to generalisability in quantitative research methodology. This characteristic, which emerged during interviews, is addressed in Chapters (5) & (6).

4.1.1.4 The process of data analysis and pattern identification

This step elaborates on the research procedures followed to analyse the qualitative data that was collected from different sources at RefCo, as the case study. Qualitative research methodology has been criticised for its lack of reference to common structure and language, or what is called the protocol of analysis (Marginson, 2004; Lillis, 2008). A protocol analysis underlines the method of analysis in qualitative research that aims to ensure the following (Berry & Otley, 2004):

- the internal intellectual processes of the analyst are formally held;
- no conclusion is missed;
• the whole field is explored;
• conjectures are held contingent, and;
• all are subject to rigorous cross checking.

NVivo corresponds to these objectives as it is widely recognised in qualitative data analyses; especially for studies that are theoretically informed (Scapens, 2011). One useful function of NVivo in shaping RefCo’s story is called coding selection. This term refers to the attaching of meaning labels to segments of the data. Having set up an NVivo project entitled RefCo, the researcher started browsing, reading and integrating every single source of uploaded data: i.e., interviews, documentation and observations (Menzies & Orr, 2010). This interrogation enables the segmentation of large blocks of data, called nodes, to be tagged and linked into hierarchical patterns called trees. Once the researcher had identified an interesting data strap (interviews, documents or observation), that strap is coded into a new/existing node. If this strap of data relates to a particular node (theme) which has already been created, then the strap of data is coded into an existing node. Thereafter, that node is given a name that represents the encoded text, such as resistance to change (theme) (Hutchinson et al., 2010). The more themes identified, the more nodes are created.

The continuation of this process resulted in (230) nodes and sub-nodes. This requires continuous re-organisation; i.e., in the case of an emerging group of nodes that relate to each other, they are grouped under a new node called parent node. The parent node is then given a name which represents the related group of nodes, such as reasons for resistance to change in CAS-related practice. In other words, a parent node represents a theme or a pattern of case study. Further, this process continues until the last source of data which terminates in a tree of nodes/themes. On the other hand, the researcher used another feature of NVivo: Annotation. This allows the researcher to make comments on each single strap of data, such as writing instant analytical thoughts in relation to theoretical concepts (Hutchison et al., 2010).

4.1.1.5 The process of developing explanations

It is argued that case study research does not follow a simple linear process but
is, rather, often much more 'messy' (Scapens, 2004). Using NVivo helps the researcher to control this messiness. It allowed the researcher to go through all this data repeatedly (forward and backward) in order to identify themes and patterns. These constitute the case study story of RefCo, as discussed in subsequent sections:

**4.1.1.5.1 Developing case study patterns**

The first attempt to analyse the RefCo project revealed approximately (230) child and parent nodes. However, this process of analysis was still too broad and needed to be refined. A major refining process then took place and this not only included re-examining the nodes, but also re-observing the coded text (block of references) under each node. This aimed to exclude irrelevant data/references, if any.

The process of refining the data analysis reduced the number of nodes to (150) in the second attempt at data analysis. This was also considered to be broad analysis. After further discussions and possible interpretation with supervisors, the researcher was advised to focus on the most interesting corner of the case and then to *re-direct* the researcher’s attention to it. This advice resulted in keeping one descriptive in the three that focussed on CAS at RefCo. More specifically, change and resistance in high-less institutionalised CAS became the most interesting issue.

The third attempt to refine the case study analysis reduced the number of nodes to (18). These nodes were organised into three sections. The first section was devoted to the case study’s background, underlining the major changes that have taken place at the case study in recent years. The second section focuses on the implications of these changes on RefCo’s CAS, whereas the interaction of CAS change outcomes with ERPs occupies the third section.

Additionally, the researcher exploited another valuable tool in NVivo, called *Sets*. The function of Sets allowed the clustering of nodes together into a particular concept of institutional theory (see also Bazeley & Jackson, 2013). This does not mean that the researcher is changing the node structure or duplicating items, but simply shows that these themes may belong together in
some way. In other words, it re-groups project nodes based on a theoretical framework.

### 4.1.1.5.2 Representing case study story in a diagram

It has been suggested that a successful case study makes a fascinating read – offering new and fresh perspectives, observations and thorough interpretations of single, or a few, research objects – thereby increasing the understanding of the field studied by the research community (Lukka & Kasanen, 1995). Diagramming case study issues has been suggested as a way to map out what is going on (Roberts & Scapens, 1993; Scapens, 2004). As mentioned earlier, as the case study progressed, various themes and patterns emerged. Scapens (2004) suggested it might be helpful to prepare models (diagrams, flow charts, etc.) which attempt to link the various themes and issues.

Using both NVivo and Microsoft Visio, the researcher was able to develop the case study story via diagram (Hutchinson et al., 2010). The researcher used this feature throughout the research process to visualise the case study story. In addition, NVivo was used to identify relationships between case study themes. However, it is not intended to trace cause and effect so as to build a mathematical model. Rather, diagrams allowed the researcher to re-construct the processes by which high-institutionalised CAS was changed, whereas the outcomes of these changes exhibited resistance to change.

During the coding process, the researcher defines the relationship between nodes/ themes. This allowed the creation of relationships and the re-naming of these relationships according to the researcher's understanding, gained from the case study context. For instance, the researcher recognises that the process of ERP implementation was hindered by the resistance that was exercised by the accountant. Exploring further reasons for resistance, it became clear to the researcher that inter-connectedness between CAS and production planning was a driver that motivated resistance to ERPs change.

As the researcher discovered more about the nature of these relationships through the exploration of other themes and segments of potentially relevant data, he could then code any evidence that was considered relevant to the
corresponding relationship nodes. Consequently, the relationship tool provided
the researcher with a valuable means to explore the complexities of potential
relationships among emerging issues within a case study, which was grounded
on the data collected.

4.1.1.6 Writing up the case study report

The time and effort involved in writing up case study research
should not be underestimated. It can be a very time consuming
process (Scapens, 2004, p. 272).

The process of writing up a case study description is the last step in the process
of case study execution (Scapens, 2004; Yin, 2009). Scapens, in particular, has
stressed that the task of case study writing up is about the relationship between
the researcher and the reader (2004). Once the researcher is able to convince
him- or herself, the task of writing a text to convince others can begin. The
present researcher has taken into consideration the authenticity, plausibility and
criticality that were mentioned in a previous section, and they can be
determined through the text presented in Chapters (5) & (6). While Chapter (5)
provides background to case study research, Chapter (6) presents theoretical
interpretations of the case story.

4.3 Concluding remarks

This chapter has outlined the research paradigm in order to explore the
conditions and processes of persistence and/or change in CAS-related
institutionalised practices. This involved specifying (a) the research design
(philosophy) and (b) the strategy (practice), as follows:

The research design drew on middle range thinking in shaping the philosophical
underpinnings needed to address this research’s aims. This included research
choice and level, in terms of theory, change and methodology.

In regard to theory, this study adopted social constructivist viewpoint as the
research ontology, since it represented a medium level of theorisation prior to
investigation. This position gives consideration to the context in which CAS
operates. It assumes that the reality of CAS change, or resistance to change, in
relation to ERPs’ implementation, is not in the material world. Rather, it entails
the projection of human minds, in which one finds the main source of the understanding of the reality of the research phenomenon being studied here. Since these projections are different, this study does not aim to make generalisations, rather, it explores the conditions and processes by which CAS-related institutionalised practices persist or change (Creswell, 2014, p. 8).

In corresponding to a social constructivist viewpoint, this study has adopted an interpretive approach as its research epistemology. This approach considers the projections of individuals as the main source for gathering knowledge when reality is socially constructed. That is, it aims to unveil the conditions and processes by which institutionalised practices of CAS persist, exhibit resistance to change, or are changed. The interpretive approach offers a radical and unique understanding, as well as a potential contribution to theory.

The social constructivist viewpoint and the interpretive approaches resulted in the choosing of a qualitative research methodology. This methodology suits an exploration of why and how CAS practices persist and/or change. More specifically, this methodology includes techniques of data collection that help to achieve such a research purpose, and these techniques underline the research strategy outlined below.

The second part of the research strategy concerned methods of data collection that were informed by the philosophical underpinnings outlined above. This strategy adopted interpretive case study, which was supplemented by semi-structured interviews, observations, and access to organisational documentation and archives. These sources of data were organised, maintained, managed and analysed by using NVivo. The latter was used to identify patterns and to construct the case study story. The descriptive and theoretical interpretation of this case story is respectively presented in the two following chapters (5) & (6).
Chapter 5 - BACKGROUND TO THE CASE STUDY RESEARCH

5.0 Introduction

This chapter presents a contextual background to the case study research to assist in understanding the conditions and processes of change and resistance to change in the institutionalised practices of a cost accounting system (CAS hereafter) (Burns & Scapens, 2000). As outlined, the case is a refining organisation operating in the Libyan oil sector, which will be referred to as RefCo hereafter. The CAS of RefCo was subject to two CAS-related change initiatives in a relatively short space of time. The first source of change to RefCo’s CAS was the requirement of its parent company (ParentCo hereafter) to adapt the costing systems so that they would become much more useful for decision-making in a commercial sense. This was part of the organisation’s transformation from being a simple tariff-based operation producing products to an organisation that is subject to greater commercialisation (market price)-based operations. The second source of change came from the recommendations of an external consulting organisation, who recommended that RefCo change its CAS, to instil more ‘best-practice’ principles, but also as part of a wider initiative of implementing enterprise resource planning systems (ERPs).

The two initiatives were quite different in their original source, as were the processes by which the respective change initiatives unfolded. The principal aim of this chapter is to explore both the root and content of these two change initiatives to promote the understanding discussed in Chapter Six, that is, why and how have RefCo’s CAS-related institutionalised practices changed in line with ParentCo’s change initiative, the outcomes of which, though less institutionalised, have exhibited resistance to change.

This chapter is therefore divided into two main sections, followed by concluding remarks. Exploration of the commercial rules of the CAS change imposed by ParentCo is outlined in Section (5.1). This aims to unfold the roots of ParentCo’s commercial rules and what it expected to achieve. However, analysing the implications this has had for the organisation’s orientation, organisational structure, and the CAS of RefCo will be discussed in Chapter
Six. Section (5.2) explores the legacy information systems of RefCo in order to understand the roots of the need to adopt and implement ERPs. The last section of this chapter offers final remarks on RefCo's CAS that will be analysed in greater detail in the subsequent chapter.

5.1 The roots and content of the CAS-related first change initiative

This section explores the roots and requirements of the change initiative imposed by ParentCo for CAS. While Section (5.1.1) provides a context to ParentCo as a regulator in the oil sector in Libya, which includes RefCo, and highlights the main events in the history of Libya in regard to the oil sector, section (5.1.2) presents an overview of RefCo’s relationship with ParentCo and explores the requirements of their commercial rules, especially for CAS.

June, 1959, was the date of the most prominent event in the history of Libya. It is associated with the first commercial quantity of oil, which was discovered by the Esso Standard Company (The Arab Petroleum Research Centre, 1977-1978). This promoted Libya into becoming a member of the Organisation of the Petroleum Exporting Countries (OPEC) in 1962 (St. John, 2007). In the following year, the Ministry of Petroleum was established to take charge of developing the oil industry at all levels. This Ministry’s work, however, was taken over, in April 1968, by the creation of the Libyan General Petroleum Company (LGPETCo hereafter). Its charter meant that it was to regulate Libya’s partnerships with all the oil organisations. One of its roles is to represent the government’s share in joint oil exploration and development ventures, as well as its right to participate in existing and future concessions. In March, 1970\(^1\), LGPETCo was, in turn, taken over by the National Oil Corporation (ParentCo hereafter), whose role is outlined in the following section.

5.1.1 The regulator of the Libyan oil sector (National Oil Corporation)

The ParentCo is a governmental institution and acted as the regulator of the Libyan oil sector till the course of the data collection. This institution was authorised with responsibilities to negotiate with the oil organisations as part of

its mission to achieve Libya’s development plans in the hydrocarbon industry. These responsibilities were extended thereafter to include financial and administrative power for planning and governing oil activities in terms of both the oil and gas of Libya. Similarly, the marketing activity for oil products in Libya is also undertaken by the ParentCo. In 1971, the ParentCo established the Brega Company to carry out the marketing (commercial) activities of the oil sector in the domestic market (St. John, 2007, pp. 176–177). Later, this activity was authorised and became the core requirement of the commercial rules that were imposed by ParentCo, as will be discusses in Section (5.1.3.2). In March, 2004, the Ministry of Energy was reinstated. The Ministry was supposed to undertake the responsibility for policy formulation, while the ParentCo continues to manage day-to-day activities, executing the decisions made by the Ministry (Mustafa, 2004).

Consequently, the ParentCo became both the owner and regulator of the Libyan oil sector. This applies to all the national oil organisations, as well as to foreign oil organisations that are partially owned (more than 50%) by the government. The ParentCo is supposed to take responsibility for governing operations undertaken by the oil sector organisations, that is, the discovery, production and marketing of oil and natural gas for (inter)national markets. The following diagram explains these organisations according to both their ownership and core activities; and this helps to position RefCo in relation to ParentCo and other parties. The first group of oil organisations are those that are 100% state-owned and that are accountable to ParentCo. This category, in turn, consists of four groups that are classified according to their principal objectives and core activities. The first group consists of upstream organisations, which specialise in oil and gas exploration and production, new field development, and the maintaining and upgrading of existing fields (Glossary, 2004). This category includes the Arab Golf Oil Company (AGOCo), amongst others, which is 100% owned by, and is accountable to ParentCo.

**Midstream** organisations are in the second group that is regulated by ParentCo. This group encompasses organisations involved in services; catering, transportation and distribution (Glossary, 2004). As previously noted, the transportation and distribution activities were monopolised by only one
organisation, the Brega Company for Oil Marketing. This situation has, however, changed, since marketing activities have been privatised, while the role of the Brega Company for Oil Marketing remained that of a regulator at the time of the data collection (an interviewee from the Commercial Department of ParentCo).

The third group is made up of **downstream** organisations, which include those involved in *transforming* crude oil (outputs of upstream), as raw material, into the final products for consumers (Glossary, 2004). The Azzawiyah Oil and Refining Company (RefCo hereafter) and the Ras-Lanuf Company (RLCo henceforth) are the only two refineries in Libya that belong to this downstream group. In particular, RefCo was selected as the case study for this research for several reasons, which are addressed in Section (4.2).

Recently, Libya has initiated an economic reform plan, which has included the oil sector. This plan was proposed and managed by the Libyan Prime Minister. In May, 2006, the latter stepped down to take up the position as ParentCo’s Chairman; and the apparent purpose of this change has been attributed to a real desire to develop a variety of hydrocarbon projects, and this will necessitate...
the modernisation and expansion of refinery operations (ParentCo’s Chairman, 2006, cited by St. John, 2007). As part of the privatisation vision, the new Chairman of ParentCo took an initiative that aimed to change the relationship between ParentCo and the national oil refineries, including RefCo. The content of this change initiative is explored in the subsequent sections.

5.1.2 An introduction to the RefCo case study

RefCo was the first refining organisation in Libya and was established by ParentCo in 1974. It is located in the Western part of Libya, as shown in the map below:

**Figure 5-2 Map of Libya**

![Map of Libya](image)

The site of RefCo is to the far West of Tripoli, Libya’s capital city, by 50 Kms and is situated in a city called Azzawiyah. The wisdom behind this location is that it would meet the needs of the Western region for fuel and gas. RefCo undertakes three production activities: petroleum products; asphaltic products.

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19 I would arrange an interview with ParentCo’s Chairman in order to glean more detail behind the commercial rules imposed by ParentCo. Such an interview would help to understand the attributes behind the commercial rules and whether it was introduced for political or technical reasons (Soin et al., 2002). However, he disappeared during the Libyan revolution and it was confirmed that he had died, as shows in the following link: [http://www.bbc.co.uk/news/world-europe-17889660](http://www.bbc.co.uk/news/world-europe-17889660)
and engine oil, and two service activities: renting pipelines and harbours through two locations, Azzawiyah and Benghazi. These activities have been the story of the organisational case for the almost four decades of its development and exploring this story provides a key to understanding RefCo’s CAS prior to the attempts to change it.

The capacity of RefCo, when it was established, was for 60,000 barrels per day, which covered approximately 70% of local needs (Director of Technical Department). RefCo produces, amongst other products, (a) Car Petrol; (b) Jet fuel; (c) Kerosene; (d) Diesel; (e) Heavy Fuel Oil, and (f) Liquefied Petroleum Gas. By 1976, the capacity of RefCo became twice as high, and it accounted for 120,000 barrels per day\(^\text{20}\). This capacity, however, now fulfils no more than 30% of local needs, especially for car petrol, as the Director of the Technical Department told me:

\[\text{The refinery does not fulfil more than third of the needs of the Western region of Libya. At the same time, the figure of gasoline consumption in Libya increased by 2002 from 1.5 million tons to 3 million tons within 10 years because of the recent increase in the number of cars, as well as smuggling across the border into Tunisia. However, although the industry of refining has been developed in European countries, it remains undeveloped in Libya.}\]

In 1980, RefCo began to engage in another activity that involves it in producing Asphalt. This product is an outcome of the refining of Reduced Crude, the raw material. The plant for this was established at the same location (Azzawiyah) with a capacity to refine Reduced Crude up to a maximum of 100,000 tons per year. However, RefCo was split into two organisations in June, 1982, namely: RefCo and the Ras-Lanuf Company (RLCo thereafter). RefCo continued to expand and it established another plant for asphaltic products in Benghazi in 1984. This plant is located in the Eastern part of Libya and far from the main campus at Azzawiyah, approximately 1,100 Kms. away.

To continue meeting local needs, RefCo engaged in a third activity in 1983, and began to produce various types of Motor Engine Oil. The capacity of this factory

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\(^{20}\) This means 15,000 metric tons per day.
is for 60,000 tons a year. However, during the course of the fieldwork, the researcher experienced the progression of an upgrading project, to develop the plant in two ways. The first aims to double the production capacity to reach 120,000 tons a year, while the second targets putting engine oil into plastic bottles, rather than into cans.

In addition, RefCo also manages pipelines. Although these pipelines are assigned to importing crude oil from the heart of the Libyan Desert, they are also exploited to import and/or export crudes or products for counterpart organisations for particular fees. This also applies to the Harbour, which is owned and managed by RefCo. Importantly, the core business of RefCo is crude oil refining and the CAS for it, which is the main interest of this thesis.

Having given the contextual background of both ParentCo and RefCo, the following section explores the requirements and content of the change initiative imposed by ParentCo, through which RefCo’s CAS was changed.

5.1.3 An overview of the accountability and cost accounting systems at RefCo

This section explores the content of the commercial rules forced on RefCo by ParentCo; and its requirements for change in the accountability relationship and CAS. This exploration also includes CAS prior to this initiative. This presents a grounding that later helps in understanding the processes through which CAS change, and resistance to change, will be discussed in Sections (6.2) and (6.3) (see for example Burns & Scapens, 2000; Scapens, 2004; Parker, 2012). In so doing, the subsequent sections explore, respectively (1) the accountability relationship (a) prior to the change- and (b) under-commercial rules, as well as its change requirements for CAS.

5.1.3.1 Operations-based accountability and accounting

Operations-based accountability was a rule that governed the relationship between ParentCo and RefCo pre-2008. As noted, RefCo is completely owned by, and is correspondingly accountable to ParentCo. Since it was founded in 1974, the primary business objective of RefCo was to fulfil the social demand for fuel products, namely: car petrol, diesel, and cooking gas. As long as RefCo
is doing this, ParentCo gives it full support, even in the case of making a loss. For strategic expansions, such as increasing its refining capacity, RefCo is also granted financial support for projects by ParentCo. In short, the continuation of RefCo’s operation in the Libyan context depends on the extent to which RefCo complies with the rules of ParentCo (Scott, 2008). These rules not only reflect the role of ParentCo as the owner, but also as the regulator of oil organisations, as has been outlined in Section (5.1.1).

As such, RefCo’s performance was evaluated according to tariff-based operations until the end of 2007. Under this rule, RefCo was usually given crude oil (raw material) for the purposes of refining, and then returned it to ParentCo as outcomes, in the form of the final processed products, ready for use. For this operational activity, RefCo was paid a tariff for each ton of crude oil that was processed into final products. The tariff consists of: (a) the total operational cost of the refining process, plus (b) the margin of profit, which should not exceed 10% of the operational costs. This percentage of profit margin is not determined by ParentCo; rather, it is regulated by the Minister of the Economy (Cost Accounting Co-ordinator). The 10% profit margin is designed to cover administrative expenses. In the case that RefCo is incapable of covering these expenses, ParentCo provides RefCo with funds so that it can continue its refining activities.

The organisational objectives and structures of RefCo are then influenced by the accountability rules, tariff-based operations, outlined above. Yet, RefCo produces a variety of petroleum products. It has never been concerned with the outputs of the refining process and whether or not they are commercially viable in either the global or domestic markets. Rather, RefCo is only interested in processing as great a quantity of crude oil as possible under tariff-based operations, albeit that this interest is also constrained by their capacity. By the same token, there was no need to establish a marketing department, as they were isolated from customers. Instead, RefCo had Production Planning and Follow up Co-ordination (PPFC hereafter), which were involved in co-ordinating RefCo’s products with ParentCo in order to manage the distribution process. A consequence of this was that the Director of PPFC reporting daily to ParentCo on the outcomes of operational processes. This description of the accountability
relationship between RefCo and ParentCo suggests that organisational objectives and structure were all influenced by tariff-based operations as an accountability rule.

Equally, the organisational practices (rules and routines) of the Operational Planning and Cost Accounting Departments were also shaped by tariff-based operations. Business information at product unit level was not vital to the managers in accomplishing their objectives. This was because the focus of the Operations Department was only on the technical settings of the refining process. The profitability of this process is seen in refining as great an amount of crude oil as possible, and this was the 'prevailing way of thinking' (Burns & Scapens, 2000). Referring to Figure (5-3) below, neither types nor prices of inputs (raw materials) and outputs (products) were important for the top management decisions of RefCo under these tariff-based operations. Rather, the scope of CAS was very simple at that time. The primary objective of CAS, prior to 2008, was to aggregate all operational costs in terms of the oil refining process.

**Figure 5-3 Financially-oriented CAS scope**

![Crude Oil Refining Diagram](image_url)

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21 This figure was taken from internet at early stages of data analysis, but later was disappeared. The aim is to explain the focus of RefCo’s CAS prior introducing commercial rule by ParentCo.
As such, the objectives of CAS were neither concerned with (a) the cost of inputs of crude oil, as this was being handled by ParentCo, nor with (b) the unit cost of outputs, as explained by the Co-ordinator of Cost Accounting:

*Determining the cost of products was easy in the previous business relationship [technically-oriented accountability rules]. I aggregate all the cost elements and then divide by the amount of refined crude to get the cost per refined ton. Then, ParentCo may approve the product cost plus a margin of profit of 10%, or only at cost, and this was continuous up to the end of 2007.*

However, it is necessary here to make a distinction between (a) the total operational cost, and (b) the cost of the final product. The total operational cost was the main objective of the CAS under tariff-based operations. This lack of concern with the cost of each product unit can be attributed to the accountability rules (tariff-based operations), as explained by the Director of the General Accounts Department:

*In the past we were never ever concerned with determining refined product costs, the relationship between RefCo & ParentCo in terms of refinery was based on granting a refining fee for each metric ton that RefCo refined. This points RefCo as a Barley Mill or Wheat or Olive Oil Press, where RefCo receive crude oil and return it to ParentCo as refined products, regardless of what these products are.*

Alternatively, the concern of RefCo’s CAS is mainly to report to ParentCo, across other external stakeholders, and importantly this practice focuses only on financial issues. At that time, the CAS of RefCo was perceived to be a satisfactory system, as it was dominated by financial accounting. Even, the 10% of profit margin on the operational cost meant that significant taxes were owed, forcing ParentCo to follow another payment system, called CASH CALL. Under this system, RefCo had to report the status of management accounts in the form of a trial balance sheet monthly. According to these accounts, ParentCo could decide how much funding needed to be handed to RefCo. So, the

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22 This is similar to the Financial Accounting Department. The Department of General Accounts includes two divisions, namely: General Accounts Co-ordination and Cost Accounting Co-ordination. Whereas the former is primarily involved with financial accounting, beginning from the creation of a journal voucher to preparing financial statements, income statement and a balance sheet; the division of cost accounting co-ordination is principally concerned with cost accounting tasks, not least with the bookkeeping for incurred costs, up to identifying the product unit cost.
accounting system in general, and CAS in particular, at that time fitted with RefCo’s activities and its relationship with ParentCo as mentioned by the Director of General Accounts Department, above.

The above evidence may suggest that RefCo’s CAS was dominated by the financial accounting system. Unlike Johnson & Kaplan’s work (1987), this lack of the CAS in being concerned with the product cost is not due to limited resources in having two information systems together (see Section 2.1). Rather, the case of RefCo could be ascribed to the lack of demand from either internal (top management level) and/or external (ParentCo) users for cost information, as explained by a senior accountant in the Finance Department:

**The lag in CAS could be attributed to RefCo neglecting the importance of CAS, which can also be attributed to its business relationship with ParentCo, before issuing ParentCo with the resolution, the deal base on the tariff for each refined ton of crude oil. In contrast, the relationship has been changed to a commercial relationship, where CAS has become very important for pricing, determining the cost of products and to conduct product profitability analysis. In other words, it is a tool for identifying where the RefCo is going to.**

To sum up, the oil refining activity of RefCo was entirely made up of tariff-based operations and the main priority was given to processing as great a quantity of crude oil as possible. This priority undermined the scope of CAS in being concerned with the outcome of the refining process. Further, this mentality of technical-orientation was continuously reproduced and self-reinforced over time, until the end of 2007 (Burns & Scapens, 2000; see also Yazdifar, 2007). For instance, RefCo had to report to ParentCo only the total cost of the operational process, without being concerned either with classifying such cost into particular types or with determining the cost of each unit of the outcome of the refining process. This means that the principal objective of RefCo’s CAS was financially-oriented in order to serve external reports. This scope has, however, been fundamentally changed due to ParentCo’s imposition of commercial rules, and the content of these rules is explored in the subsequent section.

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23 He is also a representative of his department for ERP team implementation
5.1.3.2 Rules of the commercially-oriented accountability system

This subsection sheds light on the content of the change initiative for commercial rules that was introduced in January, 2008. The commercial rules forced RefCo to change its accountability from being a tariff-oriented operation into becoming commercially-oriented, as a “new way of thinking” and managing RefCo as a business (Burns & Scapens, 2000). This requirement was described by almost all of the interviewees as the most significant change in the history of RefCo since its foundation in 1974. The researcher noticed, during the course of data collection, that all of those interviewed, without exception, described the rules of commercial orientation as a fundamental change in RefCo’s objectives and way of doing business. This transformation was exemplified as moving from being an Olive oil press into becoming a Commercially-oriented organisation.

As noted, the ParentCo appointed a new Chairman in May, 2006 (see Section 5.1.1); and the introduction of commercial rules to RefCo was associated with this change of management at ParentCo. Before this, this Chairman had been the Prime Minister of Libya and he was planning to introduce privatisation into some of the state-owned organisations. Although he stepped down to chair ParentCo, he carried out his view for the privatisation of the national oil organisations that were regulated by ParentCo. More specifically, the Chairman of ParentCo was not satisfied with its accountability, as both owner and regulator, with subordinated organisations, including RefCo, according to the Chairman of RefCo.

By January, 2008, the Chairman of ParentCo had introduced commercialisation as a new rule of accountability between RefCo and ParentCo. This challenged the tariff-based operation and left implications thereafter for the organisational objectives, structures and practices, including CAS. The introduction of the commercial rules began to be implemented in the field of national refineries,

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24 This expression was used by most of the interviewees, including the RefCo chairman. The phrase stems from Libyan society, which explains the status of person (owner) who has machines to press Olives while he has farmers as customers, at an olive press, they have olives. The former provides olive press services by transforming olives into olive oil; the latter has to pay commission/ fees against this service. This was the previous relationship between RefCo and ParentCo which is called Tariff-oriented operation/technical.
which consists of two organisations, namely: RefCo and RLCo\textsuperscript{25} (see Section 5.1.1). The overall objective of the commercial rules was to encourage and assist national refineries, that is, RefCo and RLCo, to become more financially independent, as well as becoming more generally recognised as being world class manufacturing organisations, as the commercial rules stated, they wanted to:

*Push local refineries to work with applicable global commercial law in terms of profit and loss by pricing crude procurement and refined product sales at global prices, rather than through the method of refining fees that was currently in place, and they urged them to do more technical, economic and marketing efforts with the purpose of developing their operations (processes), reducing costs and adjusting the bunching of production to achieve the greatest amount of revenue.*

This quotation underlines both the institutional and technical pressures on RefCo (Carruthers, 1995, Hopper & Major, 2007; Yazdifar, 2007; Yazdifar et al., 2008). While the implementation of these rules could not be avoided, as it was being exerted by the regulator, ParentCo, it pressurised national refineries to become profit-seeking, instead of tariff-oriented operations. To do so, the ParentCo made four obligatory sub-rules under the commercial rules, as follows:

The first pillar of the commercial rules aims to change the relationship with RefCo so that it will become a more independent economic entity; and will have its own resources by seeking profit- instead of tariff-based operations. The consequence of this was that it would have to value both raw materials (crude oil) and final processed products (outcomes) according to the global market prices for oil products. These prices are reflected in a daily bulletin called *Platts*, which is published in London\textsuperscript{26}. This is linked to the subsequent (second) sub-rule of discontinuation funding: strategic expansion projects. RefCo was advised to gradually come to rely on its own profit, which it would generate in the future in order to fund any strategic projects.

\textsuperscript{25} The reason behind bringing RLCo into this context is that the researcher spotted some points of shared experience through delegating a committee to visit this counterpart organisation, as will be explained in Chapter Six.

\textsuperscript{26} [http://www.platts.com/commodity/oil](http://www.platts.com/commodity/oil)
The third and fourth sub-rules of the commercial rules involve structural and accounting practice changes. These changes are suggested to channel commercial orientation into the operational level. In so doing, RefCo is required to establish a Commercial Department, consisting of knowledgeable and skilful staff who would be involved in marketing activity for RefCo’s products. Further, the Director of the Commercial Department should co-ordinate with his counterpart in the Technical Department. This co-ordination is expected to focus on re-setting the outcomes of the refining processes according to the global market prices shown in Platts. Under this co-ordination, ParentCo expects “RefCo to make a profit by identifying bunches of products that underline low cost and/or achieve great returns”, as the fourth sub-rule. More specifically, RefCo is advised to “adopt accounting practice in order to conduct marketing research, including the feasibility of available raw material and the profitability of product outcomes” (ParentCo’s resolution on commercial rules). As a complement to this, the role of the Technical Department was to change operational settings according to the recommendations of market research conducted by the Commercial Department.

Practically, RefCo was not given the authority for marketing activity. Rather, ParentCo retained the responsibility for marketing RefCo’s products and purchasing raw material, granted that this marketing activity was conditioned by achieving two requirements, according to the MCM FI & AA. ParentCo views the success of RefCo through the extent to which RefCo can (a) establish a marketing department, including well skilled staff, and (b) achieve satisfactory performance alongside adopting the accounting practices that embody the rules of commercial orientation (Meyer & Rowan, 1977; Scott, 2001; 2008; Burns & Scapens, 2000).

Accordingly, the ParentCo outlined a time frame of three years in which to measure the success of RefCo. The primary reason for this time frame was to decide whether or not RefCo deserved to be granted its complete independence in undertaking marketing activity. The first year, 2008, of the

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27 MCM of FI & AA stands for Management Committee Member of Finance and Administrative Affairs. This position is equivalent to a Chief Officer for Financial and Administrative Affairs
commercial rules implementation was considered a learning period. During this year, RefCo was supposed to transform its business objectives from being production-oriented into becoming commercially-oriented. The second year, 2009, of the rules implementation was considered to be a measurement period, whereas the third year, 2010, was the time to make the decision on whether or not complete independence should be granted to RefCo. Analysis of the implications of commercial rules for RefCo’s organisational structure, accountability forms and cost accounting systems are presented in Chapter Six. However, the following section explores the CAS change initiative introduced by the consultancy organisation as part of the ERPs project.

5.2 The roots and content of the CAS-related second change initiative

This section aims to explore the second change initiative that was introduced by the consultancy organisation as part of the ERP project. The importance of this presents a context that helps to understand the attributes of such a project, whether it is introduced for technical or political reasons (Nixon, 1995). This context helps to address the second sub-research purpose in Chapter Six, that is, when, why and how may CAS-related practice persist? In so doing, Section (5.2.1) explores the existing information systems of RefCo in order to understand the reasons behind the adoption and implementation of ERPs, as will be outlined in Section (5.2.2).

5.2.1 Legacy information system at RefCo

The legacy (old) information systems of RefCo had been used for more than three decades. The Co-ordinator of General Accounts was the only interviewee who helped the researcher to reconstruct the organisation’s history in this regard. He pointed out that RefCo is required by ParentCo to report its management accounts (debt and credit) on a regular basis and these reports include financial and fixed assets. As such, the top management of RefCo was only concerned with the trial balance, which was always requested by the MCM of FI&HR, as the General Accounts Co-ordinator explained:

RefCo was only preparing a balance sheet, rather than a monthly trial balance. All of these reports were manually prepared up to the beginning of the 1980s, when we
introduced punched cards. At that time, we punched journal entries onto punch cards before sending them to another organisation, which printed out a report of journal entries, transactions, trial balance and salaries.

Later, as explained by the General Accounts Co-ordinator, the top management of RefCo was invited into the Cyprus organisation, which specialised in information systems design (1985). This organisation was invited to examine, understand and analyse the existing business processes of RefCo before starting to design a new system accordingly. As outlined by the Information and Communication Technology (ICT henceforth) Manager, RefCo was running up to 14 disparate stand-alone systems called VAX. These systems were designed to support: (a) payroll, (b) material & stock, (c) payments, and (d) general accounts, etc. However, only systems for payroll, material & stock, and general accounts remained in use during the data collection period. The other departments, in contrast, had abandoned their systems and returned to manual work. Importantly, these systems dated back to the mid-1980s. As explained by the ICT Manager, when he joined RefCo in 1986, there were no PCs, other than a few screens, and accounting staff had to come in person to the ICT Department to enter accounting data.

At the beginning of the 1990s, RefCo started thinking about introducing a new generation of information technology. It adopted a Mainframe which connected these fragmented systems to each other. The purpose of this was to achieve integration amongst the departments of RefCo, and then to increase the potential by adding more terminal screens. RefCo was still using the Mainframe & VAX at the time of the data collection. According to the General Accounts Co-ordinator, “the real connection we have seen was between the Receiving Orders Division & the Stock Control Division and the Material Accounts Division”.

However, the ICT Manager, the ERP-Project Manager (ERP-PM thereafter) and the ERPs consultants all criticised VAX. They pointed out that VAX was outdated, as it was designed in old fashioned language. As a consequence, the accuracy of the accounting information was brought into question due to duplications in data entry. Each department relies on its own data and VAX was considered to be on the system for data classification and the production of
some of the reports. With these information shortcomings, the organisation started to change the infrastructure of the accounting information system, as the ICT Manager stated:

*We reached an idea that we should design systems that should be interconnected with each other and we began to seek for the idea of interconnected systems in 2000. At the beginning, the idea was not ERP, we identified Scope of Work [SoW] and introduced specialist companies, but later we amended it. Instead of designing systems and connecting them to each other, we could buy Ready Made/Pre-prepared solutions, such as ERP.*

The ICT Manager explained that there was a recommendation from an organisation with a Libyan Director who offered a free study and to determine the scope of the work (SoW hereafter) of RefCo. The consultancy organisation provided a brief SoW after talking to users, and this SoW did not address RefCo’s business processes in detail. Then, a Tender Book was prepared based on the specifications of the SoW of RefCo, before sending an invitation letter to specialised companies to get quotes for evaluation. Having addressed the drawbacks of the existing information system, it is possible to understand RefCo’s demand to replace the existing system, discussed in the following section.

### 5.2.2 The need of information system change at RefCo

The desire of RefCo to adopt new IT could be attributed to several factors; namely: routinisation, integration, accuracy and timely access. The borders between these characteristics might, however, be difficult to identify and some overlap is expected. One of the ERP team members for the Finance Department suggested:

*Due to lots of requisitions from RefCo departments regarding IT problems, the ICT Manager has been pushed into a corner where an integrated information system has become the best option to resolve all of the problems in one go. For instance, cost accounting co-ordination needs a system; the purchase & stock departments need a system that integrates them together, and so on. Then, the ICT Department reached the view that, instead of wasting time in small or stand-alone systems here and there, which would finally collapse, we should introduce a comprehensive IT project that encompasses all of the RefCo*
sectors, departments, co-ordination and divisions, and that project was considered to be a long term IT investment.

Adding to this, the ICT Manager pointed out that “due to the high demand of users with limited technology in the organisation, and IT development in the world, we had to meet internal requirements, on one hand, and keep pace with global developments, on the other hand”. For instance, whenever the ICT department plans to design a system, the system shows some defects. This led RefCo to adopt a comprehensive and conceptual IT framework as cited by the ICT Manager:

*General Accounts Co-ordination was the RefCo department that addressed the highest demand for IT change to computerise the daily routine work... at that time, the focus was on providing systems to help computerise the daily work routine. Recently, however, the business environment and the mentality of managers or leaders have been changed to focus more on information analysis and identifying the key financial indicators. For instance, General Accounts Co-ordination, Cost Accounting Co-ordination and Budgeting Control are the departments that regularly call ICT most requesting technical support.*

The Head of the Material Accounts Division (MAD hereafter) addressed the limitations of the current system in relation to his division. He argued that the current system does not give the flexibility to enter multi-accounts on the debit side, while it is possible on the credit account side. Further, “while I, [the Head of MAD], undertake data entry to the system, reviewing and approving is assigned to another party through withdrawal reports for various parties, asking them to manually review them.”

Another limitation relates to the monitoring of stock levels. According to the Head of MAD, RefCo fall into stock accumulation due to the absence of communication across departments, such as MAD and the Stock Control Division, alongside overload work. He said that “having an advanced information system, it would be possible to regulate and monitor inventory levels”. In other words, this job requires an integrated information system which interconnects departments to each other to allow only single data entry, as explained by the Head of MAD:
In the past, however, whenever we complained about the current system, ICT would tell us that this new system was coming. This was before the introduction of the idea of ERP. Thus, their expectation levels increased and programmers became lazy in their work waiting for ERPs.

The Director of General Accounts Department also expressed how ERPs could be helpful in the context of performing financial accounting tasks, and he believes that:

*ERP is expected to help us in eliminating duplication data entry work from MAD and the Material Department. Another example is that procurement transactions are entered twice, once from General Accounts Co-ordination and the other from Purchase Department. However, we expect that, within the ERP, the data will be entered once and it will eliminate duplication data entry of the current stage. In future, we expect that it will help us in the extraction of indicators that we need to make decisions. We understood from ERP that it reduces the use of documents and data entry duplication.*

This quotation shows that the main reason behind changing the legacy system was to computerise the existing daily accounting routines. In this context, the ERP-PM and the Internal Auditing Manager pointed out that:

*The first objective in demanding a new IT system is to prepare statement sheets in a timely manner and to provide special reports that are required by decision makers. This increase of information is aspired for either from the top and senior management, or from external bodies, as well as the method of workflow, which is mostly manual.*

In contrast, “VAX and Mainframe have very limited capabilities and are expected to stop working at any time” (ERP-PM). Further, RefCo is no longer able to meet the requirements of users for information reports, as the organisation lags behind in terms of PC diffusion, databases, networks and/or internet, etc. The ERP-PM has apparently a tendency to go for the Ready Meet Package (e.g. ERP), as it only requires configuration and activation, as well as having best practices embedded in it.

In the context of the Commercial Department, the Co-ordinator of Sales and Products Follow Up (SPFC henceforth) complains about the current information system. He suggested that the legacy system was not qualified to undertake marketing activity in a very ordinary way. The SPFC exemplifies this in that
RefCo is still using the Excel sheet, on which it is quite easy to enter data and make enquiries, but it cannot fulfil all the requirements, or extract particular information. RefCo still use Excel sheets to monitor some indicators, such as the production volume, in order to programme stock and collection. SPFC clearly stated that “it might be easy entering data, such as quantity and prices, into Excel sheets, but it is difficult to run forecasts and production programming”.

An accountant from the Cost Accounting Co-ordination staff addressed the fundamental challenge encountered in the existing system (VAX). He said that “there is a particular problem regarding utilities that are the value of exchanged services between these units”. Further, there is no value for each unit produced because all are internally produced. Although VAX provides the possibility to identify the total cost of each unit of utilities, this can be done before the exchange of services. He added that “under this system, we just enter the quantities produced and the system runs the distribution”. Another drawback of the current system, in terms of cost accounting, is the length of the accounting cycle, as explained by the Cost Accounting Co-ordinator:

*The Cost Accounting Co-ordinator is correlated to trial balance and we should wait for a while until approving vouchers for journal entries and transferring them into the relevant accounts to show their impact on the trial balance. Only at that point of time, can we allocate costs that are associated with the cost centres of utilities, or the administrative costs in productive cost centres.*

This quotation and the researcher’s observations show that it is evident that all Cost Accounting Co-ordination staff are busy with accounting and cost data classification. The Cost Accounting Co-ordinator explained that there was no room for conducting analyses and/or consultative studies to rationalise the information for decision makers and this was also expressed by the MCM of FI&AA:

*In the previous system [VAX], the transactions of accounting were completely processed manually, and thus most of the accountants’ time was consumed in bookkeeping … now we have semi-automatic and integrated systems. I suppose accountants within the new system [ERP] will play the roles of analysing and explaining, providing alternative options for*
decision makers alongside analysing RefCo’s achievements against the targeted plans. In short, the role of the accountants should be promoted from the traditional role of bookkeeping to a very contemporary role that is concerned with information analysis and interpretation.

The above problems are ascribed to a lack in the technical assistance needed to computerise the daily routine work, in spite of repeated calls being addressed to the ICT department. The Cost Accounting Co-ordinator explained that “whenever we demand a system that is due to change several things in the organisation, ICT responds that ERP is coming and will solve all of the company's problems”. Crucially, the Cost Accounting Co-ordinator stated that:

*We need a system to devote to special analysis. For instance, in the last week there was a presentation on the terms of the refinery development and I was in an embarrassing situation when they asked me for the cost and returns for each refined barrel. Further, the General Manger of Finance always criticises the Cost Accounting Co-ordinator regarding cost accounting information, because most of the Cost Accounting Co-ordination time is spent on the daily routine work of tracing and classifying cost information. Therefore, we must be discharged from conducting deep analysis that supports decision making. We should be a consultative and analytical party, rather than bookkeepers.*

The Chairman of RefCo also highlighted the need for a new system when he pointed out that “I do not see the current system fulfils the provision of the information that we need. However, ERP will be a facilitator… [due to] the availability of information on ERP [which] will give me the opportunity to access in real time any kind of information, instead of consuming a long time in getting a report”. A similar view is also held by the MCM of FI & AA, who explained that “there is a real desire within RefCo to transition from a semi-integrated system to full integration that inter-connects all departments to each other”.

This shows that there is a consistent view across RefCo that they should have an integrated information system. This view can be summarised through several factors, namely: (a) the integrated information system and ERPs has become the mainstream in the world; (b) the integrated information system is needed to help RefCo in handling information across departments, computerising routine tasks, organising data, extracting reports, saving time and effort, especially for those who are working in finance, HR, Purchase, Internal Auditing and stock;
and (c) RefCo is no longer confident about their out-dated system, VAX. These reasons have pushed RefCo to go ahead with the ERP system as their mainstream information system. In this context, the Director of the General Accounts Department expected:

*ERP to provide him with the required information in real time to produce integrated reports rather than collecting scattered information here and there in order to reach a full report, which is what is happening now. For example, ParentCo sometimes calls me for a report on RefCo debts and credits, which has to be collected from different parties, such as Cost Accounting Co-ordination and finance…etc., hence there is uncertainty in the accuracy of the information. Thus the least expectation, according to Director of General Accounts Department, is that under ERP we can get a unified source of access to information.*

Interestingly, the researcher was able to collect a copy of the original contract that was made with an ERP implementer. These documents were helpful in verifying RefCo’s reasons for replacing the legacy system. The very first paragraph of the contract stated:

*RefCo has currently separate Core Systems for General Accounting, Payroll, Personnel and Materials. Together, they form a hodge-podge of redundant database files and applications, which run on the VAX platform. There are also some scattered smaller systems in different departments of RefCo. Most of these systems utilise different programming languages (mostly COBOL) and database software products (Access) and are not integrated together. This existing operating system brings costly inefficiencies, such as redundant keying, time-consuming paper flow, and substantial reconciliation of information or data. Furthermore, RefCo’s managers and employees cannot obtain the accurate, timely information or data needed to effectively implement their work plan. Therefore, the management of RefCo is seeking to adopt a versatile and the latest Enterprise Resource Planning (ERP) Software Package to replace the existing out-dated system.*
feel that we are lucky with adopting ERPs in relation to ParentCo’s commercial rules”. In this sense, the General Accounts Co-ordinator stated that “our aspirations have become wider; therefore, we need systems that support RefCo’s activities. Further, the demand has begun for requesting reports of accounting information, especially cost information, but whenever we have requested assistance from ICT, the response is that the ERPs is coming”.

Overall, it could be concluded that the entire view of changing the legacy systems was motivated by the need to computerise daily routine work and to have timely access. This means that the focus of RefCo is on information provision. This view has, however, been extended due to the change that has taken place regarding the commercial rules imposed by ParentCo, as explained by SPFC:

RefCo systems could be referred to 1980s and since that time IT has been developed due to external forces that hinder development projects and IT, as such, where any new project or amendments need to be approved by ParentCo. The adoption of IT saves time and effort, especially for daily accounting routines.

This brings us to the following section, which will explore the initiative taken by RefCo regarding the new information system that will overcome the problems discussed above.

5.2.3 ERP system adoption, objectives and scope

This sub-section intends to shed light on the emergence and objectives of ERPs’ adoption, as well as exploring its scope of work.

5.2.3.1 Background to ERP adoption

There was a trend for ParentCo to deal with Oracle, but there was no obligation. Another motivation is that the Arabian Gulf Oil Company (AGOCo) has adopted an integrated system from Oracle, but not ERP (ICT Manager). This is consistent with the perception of the Finance General Manager, as he stated that “there has been a forced situation to adopt ERPs, especially when there
were several of Libyan companies that had adopted Oracle databases and the Arabian Gulf Oil Company (AGOCo)”. The researcher noticed that the idea of ERPs emerged due to communication between the IT staff at AGOCo & RefCo. Then RefCo delegated a number of IT staff to the same implementer as AGOCo so that they could be trained on the Oracle database. The reason behind this was to transform IT at RefCo in order to build an in-house integrated system, as well as training within RefCo.

At that time, the ICT Manager was a member of the Automation Committee formed by the top level of ParentCo. The committee members hold meetings about the automation process in the Libyan oil companies. The committee came to the conclusion that they should recommend taking advantage of AGOCo’s success by exploiting their systems to resell them to the other oil companies of ParentCo after making some modifications to bring them into line with each organisation’s properties. According to the ICT Manager, the main objective of ParentCo is to introduce automation to all its subordinate organisations, but at the lowest cost, through engaging them in the foundational costs, while each organisation should be responsible for the cost of re-configuration resulting from their own specifications. However, RefCo rejected this idea as it was the only organisation that needed to make significant customisations, due to the nature of its activities’ nature, which are downstream (refinery), while the majority of the others, including AGOCo, are upstream (exploration). Instead of this, the ICT Manager became more and more convinced to go with a Ready Made Package, as he stated:

*We conducted several comparisons between SAP and Oracle, but the problem with SAP was that if we wanted to buy [for example] the E-Business Suite, we must purchase all of the attached applications as one package and the price cannot be broken down. The insistence of SAP [especially] on not detailing the price was not commensurate with the financial regulations of the organisation; hence its price was basically higher than Oracle. In contrast, there was, though, restriction in the option for Oracle where we were eligible for a particular module, application and/or a number of user licences alongside this, and prices are clear and known for each option…etc. In other words, we can buy the applications that we want. The comparisons were in 2005, while the contract was signed in 2007.*
Nevertheless, the ERPs contract was signed in October, 2007, the actual implementation started about one year later. The ICT Manager ascribed this delay to logistical problems, such as the problem of the merging of GeoTech, which was the original contractor, and Atlas International, which has taken over GeoTech. This problem delayed the project for 7-8 months until the merger was complete, there was also the absence of a representative of the contractor in Libya and there were immigration problems. Further, due to regulatory obstacles, such as obtaining the approval of the Audit Court for the project, this exhausted at least 8 months for nothing, as the ERP-PM mentioned. All of these reasons contributed to delaying the project’s implementation.

Having resolved these problems, the contract was awarded to a sub-contractor for an organisation called Bahwan Cybertek (BCT hereafter), based in Oman. Fortunately, the sub-contractor is considered by the ICT Manager to be qualified in ERP implementation, according to their CVs, website and because they have been awarded the Best Implementer in the Middle East Award for two years consecutively. The ICT Manager added that “we had the assistance of a consultant from the UK to help us in the process of examining consultants’ offers and selecting the best”. The reason behind the consultancy work, the ICT Manager says, was that “we were not aware of these ready-made solutions, nor did any organisation in Libya begin this project until 2006”. After negotiations with two companies, a report was submitted to the Principal Bidding Committee in December, 2006, to evaluate the technical specifications.

### 5.2.3.2 Objectives and scope of work of ERP

The contract for ERPs between RefCo and the implementer shows that the primary (sub-) objectives of this adoption can be classified into three categories, as follows:

- **Business Process Standardisation**
  - To streamline existing core administrative and financial processes.
  - To standardise processes and practices to conform to countrywide policies, regulations or procedures.
  - To eliminate administrative activities that add no progressive value, such as redundant keying and reconciliation of data.

- **Access Data**
• To provide system users with the necessary technology, tools, and training to enable them to extract the data they require to meet their departmental needs.
• To improve the organisation’s ability to conduct business, human resources based on reliable, timely, financial and Human Resource (HR) data.
• To introduce web-enabled management reporting in order to enable selected users direct access to reports, regardless of the location of the existing IT resource.

➢ Achieving Integration
  • To simplify and integrate the infrastructure of RefCo’s core system.
  • To eliminate separated information systems, and the interfaces that connect them, running on different computers, written in different programming languages, and utilising separate databases.

As can be seen, all of the objectives of the ERPs focus on data access. This means that RefCo is still at the stage of information provision, although there are significant changes that have taken place at the level of top management needs and at the operational level, in line with the commercial rules of ParentCo. These changes have clearly emphasised the need for analytical information. As such, a gap is expected between the contracted scope and the requirements of top management, the operational level and Cost Accounting Co-ordination.

As mentioned, one of the valuable documents that were accessed by the researcher was the original contract between RefCo and the consultancy organisation. The contract shows that SoW covers three tracks of RefCo business processes, they are: finance (FI thereafter), supply chain management (SCD thereafter) and Human Resources (HR thereafter). Each of these encompasses a set of modules. The finance track includes five modules: General Ledger (GL thereafter), receivable accounts, payable accounts, cash management and fixed assets, while the HR track covers Core HR, Employee self-service and Payroll. The SCD track includes three modules; namely: procurement to pay, order management and inventory. The modules of the financial track are briefly explored as follows:

➢ Modules of the Finance Track

The ERP contract shows that this track is expected to provide various capabilities. One of these is that the system is expected to provide full scale
data integration between modules. The contract defined the work of the system of the fully integrated ERPs thus: “data should be entered […] only once and posting must be done in real time”. As such, ERP-FI will support multiple-users, especially when two users are editing the same record; conflict resolution is done in order-of-edit mode. The main modules of ERP-FI addressed, in the contract, are (a) general ledger (GL), (b) bank reconciliation, budget, costing and fixed assets. Each of these modules includes sub-modules which depend on how wide the business process is, and/or how complex, as will be described below. The aim of this description is to address the modules’ characteristics on one hand, and the opportunities these modules can provide to CAS, on the other hand (cf. Scapens & Jazayeri, 2003).

- General ledger (GL)

According to the ERP contract, the GL module is structured on a double-entry accounting system and provides validation checking that prevents saving non-balanced transactions. More specifically, the GL module simplifies the chart of the account structure and makes it flexible for updating. For instance, each account can be given a name of up to 30 alphanumeric Unicode characters. Giving analytical skills, the GL module also provides a feature that analyses expenses and revenues based on cost/profit centres and each cost centre can be encoded, into the chart of the account, with up to 10 alphanumeric Unicode characters, and hence can be a dependent account. Further, the system administrator, usually a management accountant, should be able to define the acceptable cost/profit centres for every expense/revenue account. Equally, the GL provides a way of extracting information to trial balance, not only for different levels of accounts, but also for different years. For instance, the user will be able to enter data in the following year without having to close the previous year. Further, the user will be able to generate all the GL reports covering a particular transaction currency (or all of them) in one (or more) of the base currencies, hence any transaction can be attached to supportive documents in a scanned format for later retrieval.
- **Bank reconciliation**

This module provides bank settlement in a semi-automatic mode when bank data is not available in an electronic format. According to the ERP contract, it provides a fully automatic mode if bank data provided is available in an electronic format. In other words, the module is entirely financially oriented and ensures financial control.

- **Letter of credit**

The scope of this module covers information concerning any credits for a specific *Contract or Purchase Order*. The basic information for a Letter of Credit (L/C thereafter), such as an increment in a L/C, a percentage of each increment in order to simplify payments follow up and the reaching of an up-to-date balance for each L/C. This module controls any actual invoices against any L/C in order not to exceed the payment's conditions. More specifically, the module provides flexibility in preparing JV entries and complete control of L/C information and types. It also determines the cost of each purchase order and the percentage of each L/C, as well as applying L/C conditions in order not to exceed the invoice value, expiry date and the implications of these changes. In fact, this module was requested to meet the contextual regulations of Libyan Law. The aim of this module was adopted to meet RefCo’s business processes regarding payment methods as RefCo was not being trusted by some foreign suppliers.

- **Budget control**

This module is important for management accounting practices, especially for the process of budgeting preparation and control. It provides the accounting department, especially Budgeting Co-ordination, with a feature to define the budget per account/cost centre. In the enforced mode, transactions violating the budget constraint are not allowed. In the alert mode, transactions can be allowed, but the user should be alerted of the violation. Further, the module also provides facilities to modify budget information on request. In terms of reporting, the user would be able to generate reports that show Budget, Usage,
Remaining, Variance, and Percentage, for both the whole year and for any period of the year.

- **Costing system**

This has been given less attention, although it is associated with the core business of RefCo. Theoretically, it allows users to track labour, machine-related, and material-related costs, including indirect (industrial) costs. Overall, the ERP system is expected to provide workflow that supports the process of the cost accounting practices embedded within RefCo. However, it was stated that this module be *integrated with modules of GL, personnel and Inventory*. In the context of the implementation process, the workflow of the costing accounting department was the most significant challenge that the ERP team encountered, as will be explained in section (6.3).

- **Fixed assets (FA)**

The module is entirely designed to serve FA that automatically calculates depreciation over a flexible period selection (annually, quarterly, monthly, etc.). It also gives an option to calculate the depreciation of selected subset Assets, and tracks Assets movements between locations, employees, or cost centres alongside tracking Purchases of assets, Rehabilitation, Re-evaluation, Disposal and Sale, and it can generate reports to cover all of these functions. FA is also integrated with GL.

### 5.2.3.3 Implementation plan for the ERP project

Documents show that there are two teams that have been formed to manage the implementation of the ERP project. The first team represents the RefCo party and includes the ERP Project Manager (ERP-PM thereafter), accompanied by seven members drawn from the Finance Department, Information & Communication Technology Department, Materials Department, General Accounts Department, Human Resources, and the Procurement Department. The role of each member of the RefCo committee in the ERP project is to represent existing business processes that are conducted within his/her department. On the other hand, the implementer (BCT), in turn, formulated a core team, which includes three On-Sites (consultants) for: the
financial module, the human resources module, and the supply chain management module.

After formulating the ERP core teams, meetings between the two parties were launched. The representative of Finance in the ERP team explained that the BCT team started surveying targeted departments first. Then, they went back to their office to discuss and decide what could or could not be configured before providing a report to the targeted department that had been surveyed. Paradoxically, these rounds of BCT and RefCo teams were conducted after signing the contract and launching the implementation process. The process starts with an explanation from RefCo users about how the business process is conducted in a particular department, accompanied with a copy of a description and a business process flowchart, if available. Then, discussion was launched with the BCT team to decide what could or could not be configured into ERP. Of course, these rounds are accompanied by the RefCo team members who are responsible for function-based discussions. Although that discussion is between the Head of Departments/Division and users, on one hand, and the consultant team, the RefCo team members sometimes have to intervene in the discussions to simplify the process, or to persuade the users by enriching their understanding.

Importantly, the phase of surveying and analysing RefCo’s business processes had already been conducted prior to the fieldwork. The researcher, however, was able to gain access to a document that portrayed all of the misalignments between the ERP-embedded business processes and those already exercised at RefCo. This document explains the business process procedures in a particular department and the comments of the consultant team regarding each procedure; and what happened if that process or procedure was changed. On the other hand, the RefCo ERP team discussed and examined these comments and users’ responses before offering their opinions. The interplay between the ERP teams and the accountants of RefCo regarding best practice-based rules and existing accounting rules is discussed in Chapter (6).
5.3 Concluding remarks

This chapter has explored the two change initiatives introduced to the CAS of RefCo. The processes of these initiatives could be summarised as follows:

Table 5-1 Timeline of implementation of change-related initiatives

<table>
<thead>
<tr>
<th>Players</th>
<th>2007(^{28})</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>ParentCo</td>
<td>Quick evaluation</td>
<td>Commercial rule implementation</td>
<td>Learning</td>
<td>Evaluating</td>
<td>Deciding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultancy organisation</td>
<td>Superficial analysis &amp; contracting ERP</td>
<td>ERP implementation</td>
<td>Interrupted</td>
<td>Launches</td>
<td>Continues</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RefCo’s performance</td>
<td>Stable</td>
<td>Worst performance</td>
<td>Worse performance</td>
<td>Improving</td>
<td>Improving</td>
</tr>
</tbody>
</table>

- Roots and content of the first change initiative for the CAS of RefCo

The first initiative imposed by ParentCo aimed to introduce a commercial orientation into RefCo via changing the accountability relationship. The requirements of such change targets RefCo’s organisational objectives, structures and systems. As a business, RefCo needs to pursue a commercial, rather than a technical, way of thinking. This was followed by proposed changes in the organisational structure of RefCo via the establishing of a Commercial Department and Co-operative Teams to ensure a commercial orientation in RefCo’s operations. This specifically targets CAS in order that it will react to these changes at all levels of RefCo. More specifically, CAS needs to support the commercial decisions that need to be taken by RefCo’s managers. This involves developing new rules and routines that aim to transform CAS from aggregating the total operational cost, which has been in place since RefCo’s establishment, to a system that is concerned with the cost of individual units of

\(^{28}\) Beginning from the 4\(^{th}\) quarter (Oct 2007)
each type of product. The conditions and processes of change in institutionalised CAS practices are discussed in Chapter Six.

- The roots and content of the second change initiative for the CAS of RefCo

The second change initiative for CAS was introduced by a consultancy organisation as part of ERPs. The root of this project was not linked to the commercial rules of ParentCo. Rather, it was put in place to overcome the day-to-day challenges of financial accounting. However, the project includes a costing module that may cover the requirements of the CAS forced by ParentCo. This module did not provide great detail about how the CAS would be within ERPs. The intersection between both initiatives for change in relation to CAS is also discussed in the following chapter.
Chapter 6 - A THEORETICALLY-INFORMED INTERPRETATION OF THE CASE STUDY

6.0 Introduction

This chapter presents a theoretical interpretation of the key patterns of RefCo’s cost accounting system’s (CAS) story. That is, change and resistance to change occurred, respectively, in high-less institutionalised practices of CAS. By using the theoretical framework outlined in Chapter (3), the principal aim is to make sense of the nature and dynamics of these processes over time. The framework blends the works of Oliver (1992), Burns & Scapens (2000) and Hardy (1996) in order to articulate the ways in which the institutionalised practices of CAS have changed, whereas outcomes of which have exhibited resistance to change. The framework also helps throw light on, and aid in an understanding of, the interconnectedness of such routines with other (non-accounting) organisational routines and institutionalised assumptions.

As described in Chapter (5), RefCo is an oil refining organisation in Libya and was subject to two CAS-related change initiatives in a relatively short space of time. The two initiatives were quite different in their original source (i.e., who or what were the champions or sponsors of such changes), as were the processes by which the respective initiatives for change unfolded. The first source of change for the CAS in RefCo was the requirement of its parent company (ParentCo hereafter) that it adapt its costing systems in order that they would become much more useful in decision-making in a commercial sense. This was part of the organisational shift that caused a move from RefCo being a simple, tariff-based operation for products, to becoming an enterprise that is subject to more commercially (market price)-based operations. The second source of change came from an external consulting organisation, which recommended that RefCo change its CAS, to instil more ‘best-practice’ principles, but also as part of a wider initiative of implementing an enterprise resource planning system (ERP).

Importantly, and in line with the institutional theory that informs this thesis, we assume that both change initiatives constitute changes in organisational rules, including CAS. This assumption allows the exploration of the broader context in great detail, and also of the nature and dynamic processes that underpin the
system’s change and resistance to change. As has already been described at some length in this thesis, the ‘institutional framework’ of cost accounting change and resistance, outlined in Chapter (3), is used here as a lens through which to explain how and why the (existing and new) CAS emerge, remain stable and/or change through time at RefCo.

Importantly, in the case study interpretations that follow, we emphasise how these interpretations suggest a need to question a number of Burns & Scapens’ (2000) important conclusions. More specifically, the RefCo case appears to suggest that even when CAS is deeply institutionalised, a ‘revolutionary’ change that aims to alter the institutional basis which underpins that practice can actually happen in a relatively smooth way without associated resistance. At RefCo, when the ParentCo imposed changes which aimed to instil a greater (and fundamentally different) commercial orientation to CAS, the transition involved virtually no resistance. The (potential) resistance from the embeddedness and taken-for-granted nature of (settled and) institutionalised ways of working in RefCo, as highlighted in Burns & Scapens (2000), did not apply in this case.

Similarly, the outcome of changes which were later recommended by the external consultants also seemed to contradict what was suggested in Burns & Scapens’ (2000) framework, i.e., although the proposed (ERP-based) changes suggested by the consultants seemed, on the face of it, to be relatively complementary to the new commercially-oriented routines and ways of working, RefCo actually experienced considerable resistance to them, and they caused some conflict. Moreover, it was the accountants, who ‘politicised’ the powerful decision makers to resist such changes being ‘sold’ to the RefCo by the external consultants. What follows will thus now elaborate upon this and offer other reflections, and will tackle the research questions that were established in Chapter (1), namely:

- **RQ1:** In high institutionalised practices of CAS, when, how and why can change occur?
- **RQ2:** In less institutionalised practice of CAS, when, how and why can resistance occur?
These questions will be discussed via the following Figure (6-1), to explain the conditions and processes through which high institutionalised CAS was changed from being financially-oriented to being commercially-oriented without resistance, whereas the outcome was challenged when attempting to change and adopt the best practices-based CAS suggested by the consultancy organisation as part of the ERP project implementation.

**Figure 6-1 Pressures & processes of CAS change and resistance**

In order to address these emerging research questions, the following case study analysis is presented in logical sections, which, in turn, also reflect (more or less) the different time-stages of the change and resistance processes. The first section (6.1) therefore discusses the conditions and processes through which CAS was questioned in these changes, for instance, it analyses the implications of the new commercial business methods imposed by ParentCo, and how they caused changes in the role of cost accounting information. The implications include changes in the organisational structures and performance, and the re-thinking of ways to manage the business. A discussion of the consequences of these changes at the operational level is addressed in the section that follows.

Section (6.2) presents an analysis of the ways in which business operations were impacted on and are intertwined with the aforementioned broader organisational and managerial changes. In so doing, this section explores the
emergent (new) rules and routines in production planning\textsuperscript{29} and their ‘interconnectedness’ with CAS. In particular, this section discusses how this interconnectedness resulted from the pressurising of CAS to make sense of the emergent rules and routines of production planning. It draws conclusions about how this interconnectedness becomes part of the daily routine of organisational life. How this contributes to resistance to the consultants’ changes is discussed in the subsequent section.

Section (6.3) focuses on how the CAS (and the accountants) mobilised resistance against the ‘best practice’ rules and routines that were being introduced by the consultants. In particular, this section explains the complex inter-play between politics, power and organisational systems on the interconnectedness of the institutional rules and routines of production planning and cost accounting. Finally, section (6.4) draws together some of the key aspects of what is discussed in the chapter, which acts as a link to the thesis’s final (reflective) chapter.

6.1 The Implications of commercialisation

This section discusses the implications of implementing a new commercial business method, such as that imposed by ParentCo. As already discussed, the last two sub-rules of commercialisation required two structural changes, namely (see Chapter 5 for more detail):

(a) the establishment of a Commercial Department, and this was followed by;
(b) the formation of a Co-operative Team that is drawn from the Commercial and Technical Departments\textsuperscript{30}.

The principal aim of this change was supposed to be the channelling of a commercial ‘way of thinking’ into the operational level (Burns & Scapens, 2000).

\textsuperscript{29} Production planning and operational control are using in interchangeable way

\textsuperscript{30} The Technical or Operational Department are used as interchangeable terms, but do not mean the Production Department. While the Technical/Operational Department is involved with production planning and operation setting, the Production Department is only an executor of what is planned by the Technical Department.
The following sections discuss these structural changes, which were required to ‘embody’ the commercially-oriented rules, including new forms of accountability (Burns & Scapens, 2000; Scott, 2008); and the ways in which this, in turn, creates political and technical pressures that bring into question the suitability of institutionalised practices of production planning and costing systems (Oliver, 1992).

6.1.1 Changes in organisational structure and the accountability system

As noted in Chapter (5), the third pillar of the commercial rules introduced by ParentCo stipulates the establishment of a Commercial Department. The key purpose of this was to ensure the transformation from a technical/operationally-oriented concern to a more commercially-oriented one, through the involvement of a Commercial Department, which would conduct constant Platts-oriented marketing research. Platts is a daily bulletin of global market prices for oil products (see Chapter 5). As stated in Chapter (5), “the Commercial Department provides proposals that may increase RefCo’s returns and/or reduce costs, which can be achieved through a package of procedures” (ParentCo’s resolution)\(^31\). These procedures are exemplified thus:

“[I]n preparation for market research that identifies a range of products that are in high demand and achieve great returns and/or incur less cost for the organisation according to market prices”.

However, getting a Commercial Department involved in marketing research requires daily examination of the global market prices for oil products that are presented in *Platts*. According to ParentCo, this examination is meant to identify:

(a) which crude oil suits RefCo’s conditions and needs to be purchased from the global and/or local market; and

(b) which oil products are most worthy of being produced for the global market.

\(^{31}\) ParentCo’s resolution and commercial rules are also interchangeable terms that outline the new definition of the business relationship between ParentCo and RefCo.
In other words, conducting marketing research means that the Commercial Department is committed to undertaking two sub-rules that relate to (1) the commercially-oriented inputs of raw material (COM hereafter), and (2) the commercially-oriented outcomes of products (COP henceforth).

Correspondingly, the structure of the Commercial Department is designed to 'encode' the new rules of COM and COP (Burns & Scapens, 2000). As these rules need to be adhered to on a daily basis, the Commercial Department was structured around two divisions, namely: Sales & Products Follow-up Coordination (SPFC thereafter); and Importing & Raw Material Follow-up Coordination (IMFC hereon), as shown in the following Figure (6-2):

**Figure 6-2 Organisational structure of RefCo case study**

More specifically, the SPFC division consists of a co-ordinator, a third class specialist in products, two fourth class specialists in accounting, and an economics specialist, and a bookkeeping accountant. The same structure applies equally to the IMFC, with one exception: the third class specialist is in raw materials, instead of in products. Indeed, the SPFC is assigned the task of COP, whereas the IMFC is responsible for COM. According to ParentCo, the COM rule requires the undertaking of a feasibility study that examines raw materials (crude oils), taking Platts into consideration, in order to identify which of these are the most suitable and profitable for RefCo.
In contrast, the COP rule emphasises two tasks: that there be continuous marketing research around products, and the choice of the oil products that should be produced in the foreseeable futures should be forecast. ParentCo supposes that these forecasts will guide the Technical Department in changing operational settings accordingly. As RefCo engages in commercialisation, it becomes important to focus on the feasibility of inputs (COM) and the profitability of outcomes (COP).

The Figure (6-2) also shows that the SPFC and IMFC are both accountable to the Director of the Commercial Department. The latter is, in turn, accountable directly to the Chairman of the Management Committee of RefCo, instead of the MCM of FI & AA. This approach to accountability may suggest not only conformation to the commercial rules, but also the extent to which RefCo is keen to legitimise their conformity in the eyes of ParentCo, in order to continue to receive funds (Powell & DiMaggio, 1983; Oliver, 1991). This form of accountability results in obligating the Director of the Commercial Department to report, present and discuss RefCo’s commercial activities, both internally and externally, on a regular basis (see Appendix No. 3).

The Commercial Director regularly presents and offers deep discussion on these reports at the level of the Management Committee members, including senior managers and managers. One section of these reports summarises RefCo’s actual performance. The ParentCo is also reported to on a regular basis in terms of commercial activity, which is quite similar to what is presented at the Board level. Importantly, 2008’s First Quarter Report clearly stresses the “acquiescence” of RefCo to the commercial rules (Oliver, 1991), i.e., the first paragraph of 2008’s First Quarter Report emphasises the compliance of the Commercial Department with the undertaking of its competencies, which are addressed by the commercial rules. A commercial accountant who was interviewed explained that:

_The primary reason for pressurising the Commercial Director to produce commercial reports on a regular basis is to ensure that performance is aligned with the commercial rules._

Paradoxically, the performance in the first year, 2008, after the implementation of the commercial rules, was the worst in RefCo’s history. It became clear that
neither the Co-ordinator of IMFC, who was involved with the rules of COM, nor the Co-ordinator of SPFC, acted on the rules of COP. The SPFC attributed this to the fact that “ParentCo retained the authority of marketing vital products leaving RefCo non-valuable products to be marketed” and agreed that this activity is conditional on the establishment of a skilful staff and the achievement of satisfactory performance (see Chapter 5). However, although a Platts-oriented forecast task still falls under the authority of the Commercial Department, it has also not been ‘enacted’ by the Co-ordinator of SPFC; he justified this thus:

*It is not the role of SPFC to conduct sales forecasting for the next year... because conducting product profitability analysis needs great effort, especially with out-dated refineries on one hand, and as this process is centred around two parts... one that is purely technical and the other commercial.*

This quotation indicates that undertaking COP rules needs a staff with technical knowledge and skills, and one that is empowered by familiarity with the level of technology currently being used at RefCo (cf. Nelson & Winter, 1982; Scapens, 1994; Ahmed & Scapens, 2000). The same reasoning applies equally to the non-conduction of COM by the Co-ordinator of IMFC. Alternatively, fieldwork and documentary observation show that the Co-ordinator of SPFC and IMFC, and their subordinates, are acting as bookkeepers, whereas the SPFC staff record and follow up the actual quantities sold by ParentCo. The IMFC staff is involved in following up the actual quantity of additive material imported from abroad.

Importantly, although the involvement of the Commercial Department in a bookkeeping role apparently showed no real transition to commercialisation, reports of this role have presented significant figures that have been 'politically exploited' (Oliver, 1992; Hardy, 1996; Burns, 2000). The Commercial Director’s presentations in his reports at Board level, especially on the 2008 performance, created ‘political pressure’, which brought into question the suitability of the institutionalised organisational practices of production planning and the costing system (Oliver, 1992; Hardy, 1996). Such critiques helped to politicise and pass on the task of COM and COP rules to the Operations Department, due to the lack of technical and commercial knowledge and skills. The process around this
is discussed in the section that follows, whereas the process of operationalising these rules (COM and COP) and their implications for CAS are discussed in section (6.2).

6.1.2 Organisational performance crisis

There is no doubt, in terms of the responsibility of Commercial Department staff, of the worst performance in RefCo’s history. As SPFC emphasised, staff apparently lacked (a) commercial knowledge, (b) skills, and (c) collaboration with other departments, in order to operationalise the new, COM and COP, commercial rules that had been introduced by ParentCo (Nelson & Winter, 1982; Ahmed & Scapens, 2000; Hodgson, 2008). On the other hand, the Commercial Director attributed this poor performance to (a) the lag in cost accounting practices, and (b) the technical practices applied to processes within the Operations Department. In other words, while RefCo was experiencing change from a technical to a commercial orientation, the practices of production planning and cost accounting systems remained unchanged in relation to the commercial rules imposed by ParentCo. As Hardy (1996) argued, the Commercial Director was able, through his frequent reports, to seed doubt about these practices through influencing the perceptions of the Management Committee (Board) members (see also Burns, 2000). He frankly criticised the ‘values’ and ‘appropriateness’ of the CAS and production planning practices for the following reasons (Oliver, 1992):

First, the Commercial Director’s report emphasised “the structure of the outcomes process”. The biggest proportion of the refining process outcome is of heavy fuel oil product, which amounted to 27% of the total. However, the selling price of this product, according to Platts, is always the lowest in comparison to others, according to the reports of commercial activity. Furthermore, it is also lower than the cost of raw material (crude oil) before it has undergone any sort of process or the addition of additives. As such, the commercial reports suggested solutions centred on technical development, and the role of accounting information in tackling poor performance. Technically, the report does recommend adopting additional crack units to re-process less valuable oil products (e.g., heavy fuel oil) into more valuable light products. However, producing more light products, such as jet fuel, do not necessarily provide an
appropriate indication of profitability. This is attributed to the technical fact that the more light products, the more processes are needed, and the more additional costs that will be incurred. Put differently, the Commercial Director argues that “there is much that can be done by developing accounting practices to identify the cost of each final/ oil product”. These convincing justifications from the Commercial Director, in terms of RefCo’s performance crisis, created the political conditions where the suitability of the institutionalised CAS was seriously brought into question (Oliver, 1992). The Director was, for instance, able to mobilise the Management Committee (board) members on the need for fundamental change into commercialisation, even in the accounting divisions; and the processes by which institutionalised CAS was ‘de-established will be discussed later in Section (6.2.2).

Second, the Commercial Director brought into question the quality of some products, particularly car petrol. The reports attributed some of the organisation’s loss to the additives used to enhance car petrol products. Simply, the report shows that the cost of each ton of this enhancement is higher than the selling price of car petrol as a final product. Alternatively, it recommended engaging in negotiation with ParentCo and the National Standards Centre (NSC henceforth) regarding product quality, through dispensing with these additives, or otherwise increasing the final product’s selling price. This meant that as long as RefCo was forced to follow commercial rules, no product was exempt from questioning, even car petrol, which was the fundamental reason for RefCo’s foundation (see Section 5.1.2). Importantly, the key achievement of the Commercial Director was to ‘attract the attention of Board members’ to the product cost structure (Hardy, 1996; Burns, 2000). Under these circumstances, RefCo started bargaining with external constituents, especially NSC (Oliver, 1991). The Technical Director explained that “we started bargaining with NSC to produce car petrol to the lowest approved standards by dispensing with a material called petrol enhancement”. “[I]n the case of accepting dispensing with petrol enhancement, RefCo will annually save between 40 and 50 million Libyan Dinar (LYD)” (Director of Purchase Department). According to the Commercial Director, this amount represents only the total cost of the enhancement being used, in the car petrol product alone, while the cost of this material in the product unit is beyond the scope of the existing CAS.
Third, the report stressed the importance of “collaboration” across divisions with the Commercial Department of RefCo. The figures from the commercial reports show miscommunication between the Commercial and Technical Departments, as an example, while crude oil prices were increasing in the global market, especially in 2008, the Technical Department did not respond to these changes by re-scheduling the inputs (COM) and outputs (COP) of the refining process, as stipulated in the commercial rules of ParentCo. Nevertheless, all commercial activities relating to the purchase of crude oil and final products’ sale prices are given by the Platts index. The Commercial Director pointed out that Platts had not yet become ‘effective’ in the ‘mentality’ of production engineers (actors), as their daily meeting still focused on technical issues (Burns & Scapens, 2000). The Commercial Director brought the attention of the Management Committee to the “good practices of collaboration and accountability” so as to monitor the effectiveness of the commercial ‘way of thinking’ and ‘performing’ production planning for the oil refining process (ibid).

Overall, the emergence of the Commercial Department shows the need for an ‘encoding process’ of the commercial rules in the RefCo context (Burns & Scapens, 2000). Regardless of the first year’s performance, compliance itself involved RefCo in institutional transformation from tariff- to commercially-oriented operations (Oliver, 1991; Burns & Scapens, 2000). Nevertheless, this performance was anticipated earlier by ParentCo, which considered the first year following commercial rules’ implementation to be a learning period (see Section 5.3.1). The ‘performance crisis’ in this period (2008), and the ‘critiques’ of the Commercial Director, created self-awareness at the Board level about how to think commercially, as explained by the MCM of FI & AA (Oliver, 1992; Hardy, 1996; Burns, 2000):

*In the past, we did not care about orienting the production process towards a group of products, because we received crude oil from ParentCo and refined it through adding some materials […] before handing it back to ParentCo as refined products against a tariff for each ton of crude oil. This situation has changed since 2008. Now, there is a commercial sense from all RefCo officers and members of the Management Committee, especially in the regular formal meetings of the organisation. The organisation’s interests and profitability have become a standard direction, where we hold ourselves accountable for it, as long as we always urge the Manager of*
This quotation shows that the Chairman and members of the Management Committee sat back to think about the procedures needed to address the concerns raised in the commercial reports (Oliver, 1992; Hardy, 1996). The Chairman made a decision to address these issues, specifically regarding the cost accounting practices and collaboration across principal departments that related to commercialisation. The Chairman convened three committees, namely (a) a visiting committee to be delegated to the counterpart organisation, (b) a Design Committee for the CAS; and (c) a Commercial Committee. While the first two committees were purpose-oriented, as will be respectively discussed in Sections (6.2.1) and (6.2.2), the Commercial Committee is permanent and was still active during the data collection period. Its competence is explored in the following section.

6.1.3 New forms of collaboration and accountability

Collaboration across key RefCo departments, in terms of commercialisation, has become a daily practice. As noted, the fourth pillar of the commercial rule stipulates the need for collaboration between the Technical and Commercial Directors by forming a collaborative team (see Section 5.1.3.2). Similarly, the recommendations of the Commercial Director’s report for progressing the commercial rules also urged this direction. In this sense, the Chairman of RefCo has taken two initiatives to make the implementation of the commercial rules more effective, each of which represents collaborative team work across organisational divisions. The first initiative expanded the proposal of ParentCo by forming a committee to consist of five Directors instead of two; the Commercial and Technical Directors. This team was called the Commercial Committee. The second collaborative team was called the Technical Team, and drew from actors in the Operations Department, which will be discussed in detail in Section (6.2.1).

The Commercial Committee is drawn from principal managers who are related to commercialisation. It is chaired by the Purchase Department Manager along with four other Managers, namely those responsible for (a) finance, (b) internal audit, (c) technical, and (d) commercial. More specifically, the last two Directors
are considered key players in infusing organisational values and rules, as explained by the Chair of the Commercial Committee:

_We are required by the Management Committee to follow up profitability by increasing one product at the expense of others that are selling at lower prices. But, this is the task of the Technical Department Manager 32 as a decision-maker in deploying the Co-ordinator of Processes Engineering Co-ordination to change the operations’ settings according to the implications of market research conducted by the Commercial Director._

This quotation shows that the key to the role of formalising the Commercial Committee is to infuse and ensure the implementation of the commercial rules at the operational level. As the Commercial and Technical Directors are accountable to the Commercial Committee, the Chair of the Commercial Committee commits these Directors to collaboration, as explained by the MCM of FI &AA:

_We control RefCo’s operation through focusing on profitable products; it was difficult to reach what we have reached now. In so doing, there was constant co-ordination between the Managers of the Commercial and Technical Departments, oriented by Platts under Commercial Committee supervision._

The Commercial Committee’s role is to undertake some commercial tasks. This may suggest an overlap with the competencies of the Commercial Director. As both are accountable to the Chairman of RefCo, their competencies are clearly outlined. While the Chair of the Commercial Committee invites customers to bid and make contracts for products authorised by ParentCo, the role of the Commercial Director is to execute these contracts. The Commercial Director is also monitored by the Chair of the Commercial Committee, and the rationality of double control is attributed to the “awareness of not falling into any sort of corruption” (Chair of the Commercial Committee). Similarly, the Chair of the Commercial Committee also pressurises and monitors the Director of the Technical Department in operationalising the commercial rules, including COM and COP, into his subordinate divisions, whereas the Commercial Director executes the recommendations of the Commercial Committee.

32 Executive Operation Officer
To sum up, the above structural changes explain the “encoding process” by which commercialisation is infused into the organisational values and norms in the context of RefCo (Burns & Scapens, 2000; Scott, 2008). These values and norms are materialised/embodied in new business objectives, organisational structures and forms of accountability. Importantly, these changes are designed to mediate and channel the commercial “way of thinking” into the operational level at RefCo, i.e., the oil refining process (Burns & Scapens, 2000). In particular, both the Chair of the Commercial Committee and the critiques of the Commercial Director put much pressure on the Director of the Technical Department and on CAC to infuse a commercial, instead of a technical, way of thinking, as explained in the following section.

6.2 Infusing commercialisation into the operational level

The previous section addressed the process of implementing the commercial rules at the broader organisational and managerial levels of RefCo. As has been argued, this context was important in understanding the conditions through which institutionalised organisational practices, in particular, production planning and CAS, were brought into question (Scapens, 2004; Parker, 2012). By drawing on these conditions, this section aims to present a complementary understanding that focuses on the micro-processes of change in relation to the practices of production planning and the costing system (Burns & Scapens, 2000). It explores the roles of engineers and accountants in making commercial rules actionable at the operational level (Miller & Power, 2013). In so doing, it is necessary to explore how actors from the Technical Department have operationalised the COM and COP rules and made them actionable so that the CAS was affected in order to make sense of such change (Burns, 2009; Hodgson, 2008; Miller & Power, 2013). These changes are explored in the subsequent sections.

6.2.1 Commercially-oriented production planning practices

As noted above, the task of applying COM and COP rules was politicised, and became an integral part of the Technical Department’s responsibility. This was monitored by both the Commercial and Management Committees (see Section 6.1.2). This section aims to discuss how these rules (COM and COP) were
implemented by the Technical Department’s actors and, importantly, how this adds to the political conditions, and the technical pressure through which the appropriateness of institutionalised CAS reached a crisis (Oliver, 1992; Modell, 2002; Hodgson, 2008; Burns, 2009).

In this respect, the process of operationalising COM and COP rules can be understood through the (inter)action amongst actors from the Operational Department (Oliver, 1992). As illustrated in Figure (6-3), below, The Operational Department is constituted of four divisions, namely: (a) Inspection Co-ordination, (b) Laboratory, (c) Quality Control Co-ordination, and (d) Operations Engineering Co-ordination.

**Figure 6-3 Structure of the technical department**

The role of the Technical Director is to act as the key communicator with the managerial level, represented by the Management Committee. He holds daily meetings with his subordinates, the Directors of the above divisions, to discuss technical issues. When, for instance, the interview with the Technical Director was due to start, his subordinates had just been discharged from the meeting. On the other hand, the Operations Engineering Co-ordinator leads an executive
team consisting of the supervisors of three shifts. His role is to act as a communications link between the Board at the Operational Department and the frontline supervisors of the operations process (executive level). Once the Technical Director’s meeting is over, the Operations Engineering Co-ordinator immediately chairs a meeting with operation specialists and supervisors, including the Production Planning & Follow up Co-ordinator (PPFC thereafter). However, these daily meeting routines never involved in commercial issues, i.e. COM and COP, rather they reinforced the technical/tariff-oriented operations as an institutional ‘way of thinking’ (Burns & Scapens, 2000). This situation continued until 2008, the year commercial rules were introduced.

The two sub-rules of commercial orientation together, i.e., COM and COP, represent commercially-oriented production planning (CPP henceforth). The primary initiatives on how to operationalise CPP on a daily basis could be referred to the Operations Engineering Co-ordinator. The latter is the most knowledgeable actor, who understands the process of the enactment of COM and COP rules, without neglecting his role as Technical Director. In order to illustrate this, the researcher interviewed the Operations Engineering Co-ordinator, with this aim in mind, to grasp only technical knowledge about the operational process. However, the researcher was surprised at the Operations Engineering Co-ordinator’s explanations, during which he was craftily blending technical knowledge with business language. Having questioned this, the Operations Engineering Co-ordinator’s response was that this experience was acquired over time by exploring Platts. Unfortunately, it was not possible to observe the everyday action of the Operations Engineering Co-ordinator after (2009), when the CPP rules were passed on. Alternatively, four interviews were successfully conducted within the Operations/ Technical Department to reconstruct the process of operationalising the CPP rules, including COM and COP. In addition, the researcher used an organisational archive, including performance and annual reports, as complementary material from which to reconstruct the process of operationalising and routinising CPP rules. These sources are used to reconstruct the process of acquiring and experimenting with commercial knowledge and skills, as they are respectively discussed in the two subsequent sections:
6.2.1.1 Process of acquiring commercial knowledge and skills

By getting the Technical Director and Operations Engineering Co-ordinator involved in 2009, they attempted to operationalise CPP rules via developing procedures and routines to explain how to manage the operational process in a commercial manner. Paradoxically, neither the Technical Director nor the Operations Engineering Co-ordinator had any idea about how to operationalise CPP rules at that time. As a consequence, and similarly to 2008, the lack of commercial knowledge and skills resulted again in poor performance in the second year (2009) after the implementation of commercial rules; this performance did not satisfy ParentCo (MCM of FI & AA; Annual Report). The poor performance was attributed to the lack of appropriate attention being given to the most demanded and lucrative product in the global market, according to Platts (Commercial Reports; Annual Reports). This may suggest that while formal change had already taken place, in terms of how RefCo’s business was managed, the Operations Engineering Co-ordinator still, as is usual, discusses only technical problems with his subordinates, and therefore Platts is not yet part of the Operations Engineering Co-ordinator’s task and there is no resistance, although there is this lag (Burns & Scapens, 2000). Alternatively, the Operations Engineering Co-ordinator seemed to still be driven by the mentality of tariff-oriented operations as a way of thinking and managing operational engineering co-ordination (Burns, 2009).

The above emphasises the importance of commercial knowledge and skills at the very early stages. Indeed, neither the Operations Engineering Co-ordinator, nor the Technical or Commercial Directors have the capacity or business knowledge to enact COM and COP rules (Nelson & Winter, 1982; Ahmed & Scapens, 2000; Hodgson, 2008). Acquiring such knowledge about how to operationalise these rules could be “submerged repertories”, enabling both the Operations Engineering Co-ordinator and the Technical Director to act in future (Hodgson, 2008). Under such circumstances, there is less potential for the Operations Engineering Co-ordinator and the Technical Director to act upon COM and COP rules, even though they have the intention of acting in a commercial manner. This is not to deny that there was no production planning routine prior to the commercial rules. Rather, the rules and routines of
production planning are technically-oriented and do not pay attention to the feasibility of raw material (crude oil) or processed products. The daily meeting that was either held by the Technical Director and/or the Operations Engineering Co-ordinator or, twice a week, was held by the Management Committee, discussed, for instance, only the technical problems encountered by the supervisors of frontline processes (MCM of FI & AA).

By having a performance crisis in both 2008 and 2009, the organisational archive of RefCo shows that the Chairman took an initiative that called for the forming of a committee to visit Ras-Lanuf (RLCo hereafter) as RefCo’s counterpart. In the Chairman’s words, “there are two reasons behind the selection of RLCo that are: (a) it is the only counterpart organisation operating in refining crude oil; and (b) it is viewed by ParentCo as a successful model” (Rowan & Meyer, 1977; Powell & DiMaggio, 1983). The overall purpose of delegating this committee to visit RLCo was to “acquire knowledge and skills of know-how” in terms of how they dealt with CPP (see Ahmed & Scapens, 2000; Oliver, 1991; 1992). More specifically, the visiting committee was advised to explore what strategies had been followed for controlling cost product structure and/or achieving profits? For these reasons, the committee was chaired by the Operations Engineering Co-ordinator along with three members, namely (a) the General Accounts Co-ordinator; (b) the Cost Accounting Co-ordinator; and (c) an accountant from the Commercial Department. This course of training and the exploration of RLCo’s experience influenced the perception of the visiting committee, especially the Operations Engineering Co-ordinator. The visiting committee addressed a report to the Chairman of RefCo that summarised the critical factors, as described by the Chair of the Committee, that they believed were behind the success of RLCo. The implications of this visit in relation to emerging new rules and routines for production planning practices are discussed in the subsequent section.

6.2.1.2 Experimenting with Platts in production planning rules

The conclusion of the visiting committee illuminated the understanding of the Management Committee, Technical Director and Operations Engineering Co-ordinator in terms of how RefCo’s business should be managed. It was understood that the commercially-based production planning rules (CPP
hereafter) should involve two communicative roles to operationalise and perform COM and COP rules. First, the Technical Director should act as a communicative link between the Management Committee of RefCo and the Technical Department, not only in relation to technical issues, but also to commercial concerns. The purpose of the Management Committee meeting was to review the alignment between technicalities and commercialisation, and whether or not daily operational schedules reflected changes in global market prices. This review, however, comes from a daily meeting held by the Technical Director with his subordinates, including the Operations Engineering Co-ordinator. In this meeting, both the Operations Engineering Co-ordinator and the Technical Director try to understand what Platts means for them, and how they can develop procedures that operationalise COM and COP rules and make them actionable (Miller & Power, 2013). For this reason, the Commercial Department was advised to pass on Platts data daily to the Technical Department, as stated by the MCM of FI & AA:

[…] we urge passing the Platts Bulletin to the Technical Director on a daily basis, where they can reschedule RefCo operations towards the global market prices addressed in Platts.

In this situation, discussing the potential changes in operational settings in line with the Platts Index has become part of the meeting agenda chaired by the Technical Director. Prior to this, the Operations Engineering Co-ordinator was committed to checking Platts every day before attending the morning meeting, which is chaired by the Technical Director (Burns & Scapens, 2000). For instance, the researcher noted that the Technical Director holds a daily meeting to discuss other technical issues, and whether or not they needed to re-schedule production planning, according to Platts. Once the Technical Director opens the discussion, the Operations Engineering Co-ordinator is given considerable time in the meeting to offer his reflections on Platts’ changes for COM and COP. This task is a daily routine, which continued through the course of data collection. The discussion of this daily meeting revolves around whether or not to re-schedule production planning according to Platts (Hodgson, 2008; 2009; Burns, 2009). This potentiality examines (a) commercially-oriented product outcomes (COP), which underline the necessity of, and how to change operational settings towards valuable products, in line with Platts changes; and
(b) commercially-oriented raw materials (COM) indicates how the structure of inputs (a mixture of crude oil) can be changed in accordance with Platts.

Second, it is the role of the Operations Engineering Co-ordinator to act as a communicative link between the middle management level, represented by the Technical Director, and the frontline level, exemplified in the supervisors of the three shifts. In the case of making a decision for change at the Technical Director’s meetings, this means that the Operations Engineering Co-ordinator chairs his subordinates, supervisors of the production department, including PPFC, to discuss how to “act out” operational re-setting/change that is discussed with the Technical Director (Hodgson, 2008; Johansson & Siverbo 2009; Burns, 2009). Here, the Operations Engineering Co-ordinator is acting as a co-ordinator between PPFC and the supervisors of frontline processes. In this meeting, while the role of PPFC is to give an overview regarding the availability of spaces in storage tanks for each type of final product, the role of supervisors revolves around how to change operational settings to fill the tank spaces and follow Platts’ changes, as explained by the Technical Director:

I follow-up Platts daily and modify operations in accordance, after making arrangements with the Operations Engineering Co-ordinator & Production Planning and the Follow up Co-ordinator. Accordingly, the Operations Engineering Co-ordinator modifies the operations process for particular products suggested by the Commercial Department. This also requires arrangements with Production Planning and the Follow up Co-ordinator for programming these shipments in terms of tanks and tankers; otherwise, the production would slow down.

The Operations Engineering Co-ordinator elaborated on this: “we daily align operations towards prices from Platts by commanding operation units alongside other technical commands”. At the very early stages, the Operations Engineering Co-ordinator discussed operational settings with his subordinates to produce a particular ‘production output structure’, i.e., the percentage of each product from the final oil refining process. This discussion over meetings establishes the grounds for future changes, as the operations settings only need to be adjusted by increasing one product at the expense of another. This may suggest that the process of operationalising COM and COP rules came through ‘choice and action’ undertaken by the operational team, including the
Technical Director, the Operations Engineering Co-ordinator and the supervisors (Scapens, 1994; Burns & Scapens, 2000).

Importantly, the tendency to “act out” CPP rules can only be seen in the case of taking the decision to re-schedule production planning, for either COM (inputs) and/or COP (outputs) (cf. Englund & Gerdin, 2008; Burns, 2009; Johansson & Silverbo, 2009). The opposite case does not mean that the CPP routine has disappeared forever. The CPP routine has “endurance and remains actionable” when it is necessary, as long as ParentCo’s commercial rules are still effective (Burns, 2009). Such a case could be exemplified by weekend days (Saturday and Sunday) in London, when Platts is not issued, while RefCo is operating continuously. In such a case, there is no discussion over Platts at meetings chaired by the Technical Director and/or the Operations Engineering Co-ordinator, but this does not mean that the CPP routine has disappeared forever. Rather, it might be acted out again whenever the CPP routine is subject to product contribution change and Platts is only one aspect of this (Hodgson, 2008; Burns, 2009).

Cost accounting information is the complementary aspect of the product contribution that may trigger the potentiality of acting out the CPP routine. As stressed by the Operations Engineering Co-ordinator, “various options are open to acting out, and the possibility of each option depends on: (a) local needs; (b) the capacity for storage; (c) Platts; and (d) product cost”. These conditions may or may not trigger the action of re-planning production inputs (COM) and/or outputs (COP), but as long as these circumstances emerge from one day to another, the CPP routine is more likely to appear again (Burns, 2009).

Having discussed the implication of Platts as a requirement of the commercial rules, it is important to turn our attention to the CAS of RefCo. This system is financially oriented, being shaped by the tariff-based operation discussed in Section (5.1.3). CAS is expected to aid decision makers, such as the Operations Engineering Co-ordinator and the Technical Director. However, RefCo’s existing institutionalised CAS was designed only to identify the tariff/fees of operations processes. The tariff process is a result of aggregating operation costs divided by the output quantity of processed crude oil. In other words, CAS is only concerned with the cost of crude oil (raw materials) plus the
operational costs, without being concerned with outcomes. As such, CAS is not ready to provide information about the product cost at the final point of the process.

These conditions give rise to the potential response, from either the Operations Engineering Co-ordinator and/or the Technical Director, to certain triggers from a particular situation with particular action(s) (Burns, 2009; Burns & Baldvinsdottir, 2005). More specifically, the CAS of RefCo is also part of the organisational system which is expected to give meaning to day-to-day routines undertaken by the Operations Engineering Co-ordinator and the Technical Director (Scapens, 1994; Burns, 2009; Hodgson, 2008). In the subsequent section, we discuss how CPP rules and routines contribute to the political pressure on the Commercial Director, and the technical pressure by which the ‘appropriateness of institutionalised’ CAS was brought into question (Oliver, 1992).

6.2.2 Commercially-oriented cost accounting system

RefCo’s CAS was financially-oriented and concerned only with the total operational cost at the level of the production bunch (more details are presented in Section 5.1.3.1). Such a system was designed to serve external financial reporting, especially for ParentCo. However, this orientation of CAS has been changed. The necessity for this change was to meet the requirements for cost information needed by the decision makers due to the introduction of a commercial ‘way of thinking’ to manage the operations process (Burns & Scapens, 2000). Such information is exemplified in the product contribution, which is a comparison between the selling price and the direct product cost. While the former is shown in the Platts’ Index, the product cost of the individual unit is the significant challenge that encounters the CAS, which is pivotal to this section’s discussion. However, it is not the purpose of this research to outline which cost accounting techniques were adopted when commercialisation was introduced. Rather, it is intended to focus on cost accounting practice per se by elaborating on the processes through which the objectives of CAS changed in order to support a commercial way of thinking within RefCo (cf. Scapens, 1994; Burns & Scapens, 2000). These processes are non-linear and complex, as they
are involved in an inter-play of power, politics and organisational coherence, as will be explained (cf. Burns, 2000; Hodgson, 2008; 2009; Burns, 2009).

It has already been explained that political pressure was put on the Commercial Director through which the ‘appropriateness’ of (financially-oriented) institutionalised CAS rules and routines were brought into question (see Section 6.1.2). However, such critiques did not give much detail about how RefCo’s CAS should be. Only after instilling commercial rules into production planning, did the CAS come under ‘functional pressure’, which added sense to the critiques of the Commercial Director, and illuminated how CAS should bring sense to the institutional practices of commercially-based production planning (CPP) rules and routines (Nixon et al., 2011), and how (a) these functional conditions created pressures that triggered (Oliver, 1992, Hodgson, 2008; Burns, 2009); (b) processes whereby an institutionalised (financially-oriented) costing system was de-established to create a new “institutional basis” (rules and routines) to add sense (cf. Scapens, 1994, p. 301; see also Scapens & Roberts, 1993) to commercially-oriented operations activity. This reflects the specific purposes of this section. Furthermore, unfolding this interconnectedness between rules and routines within the institutional system (production planning and CAS) provides a context that promotes our understanding later, in Section (6.3), which addresses the “rationality of resistance” against the CAS-related changes proposed by the consultants (Scapens & Roberts 1993, p. 1).

6.2.2.1 Conditions of cost accounting system change

Generally speaking, two demands give rise to change in CAS particularly the development of Cost Allocation Practice (CAP hereafter) to determine products’ cost (Scapens, 1991; Drury, 2008). The first demand was internally triggered by the Technical and Commercial Department Directors through monitoring by the Commercial Committee. The latter was also required by the Management Committee (at Board level) and ParentCo to ensure all operational processes are aligned with Platts, especially COM and COP (see Section 6.1.3).

The implications of implementing the above rules and of acting daily upon them created a challenge to the fundamental objectives and scope of CAS. This
change required CAS to be commercially-oriented rather than financially-oriented, in order to make sense to CPP. Organisational actors, especially the Operations Department, are concerned with the contribution of outputs (the final products) of the oil refining process, as stressed by the Director of the General Accounts Department:

After changing to a new business relationship [from tariff-oriented operation to commercialisation], it becomes necessary to give attention to costs

This need for cost accounting information is to undertake COM, which aims to identify the appropriate raw materials; while COP aims to identify products’ contribution. Such rules question the principal objective of CAS to address this institutional change. However, determining the contribution of each product underlines the need to know: (a) the selling price, and (b) the cost of each product. While the former could be identified through Platts on a daily basis, the product cost is a challenge for CAS, and its provision is the responsibility of the Cost Accounting Co-ordination. In this sense, Scapens (1994, p. 301) portrays accounting as a:

[…] routine [that] creates understandings of activities according to particular sets of accounting rules and procedures, which enable decision to be made and activities undertaken in a complex and uncertain world.

This focuses the discussion on the exploration of the technical conditions by which institutionalised CAS has come under “entropy pressure” and then arrived at a “dissipation” process (Oliver, 1992, p. 566-7).

The method of conducting feasibility studies by the Operations Engineering Co-ordinator exemplifies technical pressure, brought by the Operations Department, on “the appropriateness of [the] institutionalised cost accounting” system (Oliver, 1992). In 2010, the Operations Engineering Co-ordinator conducted two feasibility studies to experiment with the inputs and outputs of the refining process, taking into consideration several constraints, namely: Platts; cost information; product specifications and technical conditions. As stressed by the Operations Engineering Co-ordinator, these studies aimed to assess: (a) which raw material (crude oil) fits the refinery’s conditions (COM); and (b) the feasibility outcomes, and all are priced by Platts (COP).
These feasibility studies were conducted for the first time ever, and became the starting point from which to ‘embody’/materialise the ‘commercial way of thinking’ about how to undertake the CPP routine, including COM and COP (Burns & Scapens, 2000). They capture the thinking of the Operations Engineering Co-ordinator for the available alternatives of production, the aim of which is to avoid the cost of future assessment (see Nelson & Winter, 1982; Scapens, 1994). Both studies were accessed and the observations underline the skills in blending technical knowledge with business language; for instance, how to reduce the operational cost of certain products and/or increase the production capacity for lucrative (light) products. Crucially, the regularity of the conduct of these studies is the focal point in demanding cost information as being, amongst others, the cause of the potential to re-schedule COM and/or COP.

Externally, RefCo is also obligated by the commercial rules to report to ParentCo on a regular basis, as they are the owners and regulators of the oil sector (see Section 5.1). More specifically, the Commercial Director has to report regularly to ParentCo on commercial activities from a Platts perspective (see Section 6.1.1); and the Cost Accounting Co-ordinator has to report to ParentCo on monthly, quarterly and annual product costs. The purpose of this is to show the actual costs and expenditures of RefCo. ParentCo is interested to ensure that the performance of RefCo was aligned to the commercial rules during the first three years of their implementation.

Indeed, the outcomes of operationalising the CPP process put technical pressure on CAS. In this sense, Scapens argues that “as existing [institutionalised CAS] is challenged, purposive action and conscious choice are more likely because new [accounting] routines have to be established and a new truce negotiated” (1994, p. 315). As such, RefCo’s CAS would be expected to experience adaptation in relation to transformation from the technically-oriented to a commercial way of thinking, if the organisation wished to “maintain organisational coherence and give external legitimacy” (Scapens, 1994, p. 315; see also Oliver, 1992; Burns & Scapens, 2000). In other words, the CAS is under pressure to develop practice that aims to determine product cost, as shown in Figure (6-4), below:
Figure 6-4 Challenges of cost accounting system

Practically, the objective of determining the product cost for internal and/or external purposes has become a challenge to the existing institutionalised CAS for several reasons. Referring back to the Figure (6-4), the cost of products from the refining of crude oil requires the identification of: (a) the direct costs of the crude oil; (b) the indirect manufacturing costs, such as six units of utility services; and (c) the administrative expenses. Furthermore, each of these should be assigned to the beneficiary cost centres before forwarding to the products. However, the refining industry is complex, as characterised by the many split-off points (cf. Scapens, 1992; Drury, 2008). For instance, the process of refining crude oil produces a variety of products and it is unknown how to allocate the cost of this crude oil amongst these outcomes (see Figure 6-5). CAS thus came under political pressure (from the Technical and Commercial Directors) on one hand; and the difficulties of the industry’s complexity (technical pressure), on the other (Oliver, 1992). However, how to allocate crude oil costs and utility services costs to final products in order to determine
the cost of products, was a significant challenge for the Cost Accounting Co-ordinator, as he explained:

*By the beginning of 2008, RefCo had shifted to a commercial organisation, though we were not ready to deal with such a situation. At that time, the cost documentation cycle was not ready in terms of item cards or pricing, etc., to accommodate the new business relationship. Therefore, RefCo, especially Cost Accounting Co-ordination, remained scrambling for a period of time, but later became able to know how to steer the enterprise.*

This quotation shows the evident challenge for RefCo, especially to Cost Accounting Co-ordination, around how to develop CAS to determine the product cost. Importantly, the outcomes of any attempt at development should ‘embody’ the rules and routines of CPP as they become ‘local instantiation[s] of a commercial way of thinking’ (Burns & Scapens, 2000). In this situation, the Cost Accounting Co-ordinator seemed uncomfortable that the existing CAS would achieve the above objectives; he explained:

*Basically, there was no CAS prior to 2008 for the purpose of determining product costs, and it may be difficult to design CAS to embody CPP rules and routines, unless the process of operating a crude oil refinery is understood … such an aim could be achieved through having co-ordination with the Operations Engineering Co-ordinator; inviting a consultancy organisation, or forming an in-house committee to address how to determine the cost of finished products at RefCo.*

As a consequence, and as argued by Oliver (1992), there is significant agreement across RefCo, including in the Cost Accounting Co-ordination, regarding the need to re-think the existing CAS. The rationality of this agreement is attributed to the assumption that the new CAS would deliver a wide range of benefits, not least, by addressing the criticisms of senior managers, as explained by the Cost Accounting Co-ordinator:

*We need a system to devote to special analysis. For instance, in the last week, there was a presentation in terms of refinery development, and there was an embarrassing situation, when they asked for the cost and returns of each refined barrel. Further, the General Manager of Finance always criticises the Cost Accounting Co-ordinator when requesting cost accounting information, because most of the Cost Accounting Co-ordinator’s time is spent in the daily routine*
work of tracing and classifying cost information. We must be freed up to conduct deep analysis that supports decision-making. We should act as a consultant or analyst, rather than bookkeeping.

The challenge of product cost, as an objective of the new CAS, underlines the core problem of the oil refining industry that requires the blending of technical knowledge, in terms of split-off points, with business knowledge regarding CAP (see Figure 6-5); and, hypostatically speaking, cost allocation practice (CAP hereafter) concerns with "situations in which a particular cost is allocated to two or more cost objects" (Scapens, 1991, p. 165).

Figure 6-5 Commercially-oriented CAS’s scope

Referring back to the Figure (6-4), there are two situations that are encountered by Cost Accounting Co-ordination that forces the need for CAP. The first situation concerns the cost of crude oil as the outcomes of the refining process produce five petroleum products, as outlined in section (5.1.2). To act upon commercial rules, the decision makers of RefCo and ParentCo alike want to know the cost of these final products so as to ensure the alignment of organisational performance with the commercial rules. The challenge for CAS is

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33 Again, the figure was taken from internet at early stages of data analysis, but later was disappeared. The aim is to explain the focus of RefCo’s CAS in relation to requirements of ParentCo via commercial rule.
in how to allocate the cost of crude oil amongst the output in order to obtain the cost of final products, and how to assign incurred crude oil costs, which is called CAP for joint costs (cf. Scapens, 1991; Drury, 2008). According to the cost reports of RefCo, for instance, the proportion of the crude oil cost in relation to the total cost of diesel, as a final product, accounts for 88%\(^{34}\). This means that the majority of the product’s cost structure is direct cost (crude oil). This percentage justifies the interest of the Chair of the Commercial Committee, and also the Directors of the Technical and Commercial Departments and the Operations Engineering Co-ordinator, in developing CAP to assign the joint cost of crude oil amongst output products.

The principle problem of the joint cost allocation of crude oil at RefCo is that “the products are inextricably linked- one product cannot be produced without the other product(s)” (Scapens, 1991, p. 167). Refining a single source, such as crude oil, produces various outputs (see Figure 6-5). However, such outputs are not yet final products. Rather, it requires further processing in order to be ready for consumers. The point at which the joint products of refining crude oil become separate products is known as the split off-point (Scapens, 1991, 167). From the accounting perspective, all of the incurred costs of crude oil up to a particular split-off point are identified as a joint cost. The way to assign this joint cost of the crude oil into the outputs is the essence of CAP for joint cost. This situation has emerged, in association with CPP rules and routines, as the Directors of the Commercial and Technical Departments are interested to know the cost of a particular product at each split-off point in order to decide whether to carry on processing, or to sell it at such a point. For external purposes, ParentCo wants to know the cost of final products so as to decide the amount of subsidy that is needed for fuels used in Libya.

In a similar vein, the second situation concerns the complexity of assigning the cost of utility services. The plant consists of six units, each of which provides services to themselves, as well as to the operations plant (refining crude oil) within RefCo (Scapens, 1991, P. 166). The challenge was in how to develop procedures to guide the task of assigning utility services’ costs to final products

\(^{34}\) This was extracted and calculated from cost reports that were accessible for the present researcher.
in order to obtain the cost of those final products; and the way to assign these incurred utility service costs is called *CAP for common cost* (see Scapens, 1992; Drury, 2008). Such cost frequently needs to be allocated amongst the operational plant and the six units of utilities themselves.

The cost of the utility services, in some cases, could be supplied through outsourcing. This was the case with RLCo35, as a joint venture organisation, which seems to consist of two companies operating on the same site. While the foreign business partner undertakes the refining process, the supply of utility services is undertaken by the Libyan business partner. As such, common/ utility cost does not matter, as these services are supplied by outsourcing, since they are the final products of the Libyan business of RLCo and are not difficult to price. In contrast, the case of RefCo is more complex. The processes of refining oil and the utility services needed are undertaken by the same organisation on the same site. Utility services are centrally produced at RefCo to serve the refining process. In particular, the challenge for the Cost Accounting Coordinator is how to assign common/ utility service costs to the refining process outputs, on the one hand, and in how to identify the cost of these services due to interchangeable services, on the other. As Drury (2008) has argued, it is necessary to find a common base from which to allocate joint and common costs. RefCo accountants however had no particular procedure that explained how joint costs and utilities’ costs could be assigned to final products. Such procedures are, however, important to “both maintain organisational coherence [within RefCo and CPP, in particular] and to give external legitimacy” for ParentCo (Scapens, 1994, 315).

Having explored the technical pressure alongside the political pressure, it is difficult for Cost Accounting Co-ordination to resist these challenges. Rather, the Cost Accounting Co-ordinator himself attempted to set up a framework (CAP) as a guideline that explains how to assign joint and common costs into final products (Drury, 2008). This framework aims to establish an “institutional basis”, represented in a set of rules, procedures and routines that provides an understanding of the commercially-oriented rules and routines of operational

35 RLCo is the counterpart of RefCo, and is also a refining industry specialist, e.g., in polyethylene.
activity (Scapens, 1994, p. 301). As Burns & Scapens (2000) maintain, any attempt to develop CAP should “embody” the aforementioned challenges, especially the technical ones. This promotes further discussion concerning the process of inter-connectedness between CPP rules and routines that had already taken place, on one side, and the development of CAP as a new institutional basis, on the other side.

6.2.2.2 The Process of cost accounting system change

It is argued here that CAP procedures and routines are ‘institutionally induced’ (Modell, 2002, p. 655). Modell uses the term ‘institutionally induced’ as an indication that cost allocation practices are forced by an external institution (e.g., a parent company). This research modifies this term to denote internal institutional forces, as exemplified in the CPP rules and routines through which CAP was ‘encoded’ (cf. Burns & Scapens, 2000; Hodgson, 2008; Burns, 2009). Again, it is not intended to outline which practices of cost allocation have been adopted. Rather, this subsection aims to explore the complex processes through which CAP was designed, with the aim of making sense of the organisational rules and routines in the commercial way of thinking and doing things (Scapens, 1994). Such an understanding is supposed to lead us to address the second research question, which concerns why and how less institutionalised practices of CAS show reluctance to conform to the best practice-based rules that were introduced by consultants of ERPs.

As noted in Section (5.1.3), ParentCo left the task of designing CAS, including CAP, to RefCo. In this sense, Modell (2002, p. 664) argues that:

*Under conditions of greater levels of [technical pressure], institutionally induced cost allocations are more tightly coupled with operating controls where the adoption of such techniques are voluntary and not coercively imposed on organisations.*

The reason for such a hypothesis could be attributed to the necessity for CAS to provide an ‘interpretive scheme for making sense’ of operational activities (Macintosh & Scapens, 1990), where CPP is a way of thinking commercially and managing the business. In other words, the outcomes of such a process should form the institutional basis from which to determine product cost, as
urged by the RefCo decision makers, e.g., the Directors of the Technical and Commercial Departments.

Under the above circumstances, and in the space of independence given for choosing whatever CAS, the Chairman of the RefCo convened a committee. In so doing, the committee’s work involved identifying the principals and, if possible, then designing an in-house CAS, which was necessary to establish new meanings in order to bring sense to operational activities (cf. Scapens, 1994); as explained by the Cost Accounting Co-ordinator:

*The committee of CAS aims to specify fundamentals whereby cost accounting co-ordination would be able to determine product costs. The committee began with members acting in their own way to find a basis for determining products’ costs. Some members went searching the Internet and others through books.*

In order to ensure consistency, the committee was chaired by a senior accountant, while three members were the Operations Engineering Coordinator, the Cost Accounting Coordinator and the Commercial Accountant. However, committee members, at that time, had neither the knowledge nor the skills to develop CAP that would bring sense to CPP rules and routines. Then, RefCo’s Chairman attempted to use the same strategy as that adopted for developing CPP rules and routines. He tasked the committee who were designing CAS to visit RLCo. The key reason was to acquire knowledge and skills about how to design a CAS that fits the complex operational process at RefCo in order to enable Cost Accounting Co-ordination to make sense of their own actions and the actions of others, as mentioned above (Powell & DiMaggio, 1983, Oliver, 1991; Scapens, 1994). Unfortunately, this strategy was not workable, as explained by the Cost Accounting Co-ordinator:

*We visited RLCo because they are operating in the same industry. Unfortunately, RLCo was also suffering from the same problems regarding determining the cost of products.*

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36 Unfortunately, the researcher was unable to interview the Head of the committee, because he passed away during the Libyan revolution.
It could be emphasised that there was an intention, at managerial and operational levels, to re-think the existing CAS. At the same time, there was no clear idea about how to change and/or re-design CAS in line with CPP rules and routines as the local instantiations of the commercial rules. This was thought of rather than “dissipation” (Oliver, 1992). It is a ‘fundamental disruption’ to the existing CAS rules and routines, and any attempt at CAS change should embody technical complexity; the external (ParentCo)’s and internal (organisational decision makers’) demands were addressed earlier (Burns & Scapens, 2000). On the other hand, cost accountants have no formal procedures to guide actions in assigning joint and utilities costs to final products for the purpose of determining unit costs. Developing new rules and routines for CAS is necessary to ‘co-ordinate’ the actions of cost accountants, on one hand, and to give ‘coherence’ to CPP rules and routines, on the other (Scapens, 1994, Burns & Scapens, 2000).

Both the Operation Engineering and Cost Accounting Co-ordinators are champions of the CAS Designing Committee. The Operations Engineering Co-ordinator, in particular, believes that it is necessary to understand the operational process as the first step before going ahead with the design of CAS and/or CAP; he stated:

_We must understand how the technical/operational process is running first, and then we can judge how we should allocate these costs between refined products. These costs must be distributed based on the proportion of consumption._

Referring to section (6.1.2), the Operations Engineering Co-ordinator was a member of the CAS Design Committee and this helped the Cost Accounting Co-ordinator to acquire a deep understanding of how the oil refining process operates. This knowledge, at least, clarified the main principles around what practice should be, as he explained:

_The idea of the CAS committee was great; at least we understood the stages of crude oil refining. We now know what raw material is involved in the mixture of the output of the refining process and how the process is going, such as adding pressure, steam, temperature ... etc. There are end products, which are taken from the main tower and delivered to storage, while other products need to be reprocessed. From this point of view, we understood that we should have stages-
based accounting, which calculates product cost at each stage of the operation process.

This quotation may support the suggestion that some organisational practice, such as CAP, involves a degree of practical knowledge, skills and/or know-how, which can be acquired and routinised over time (cf. Nelson & Winter, 1982; Ahmed & Scapens, 2000). Both the Co-ordinators of Operations Engineering and of Cost Accounting were attempting to design CAS, but after establishing a technical understanding in terms of the refining process. Such an understanding is tacit knowledge, which can only be acquired through the minds of the Operations Engineering Co-ordinator and/or his subordinates.

Interestingly, both the Operations Engineering and Cost Accounting Co-ordinators bring technical and accounting knowledge into one place: the MS/Excel sheet. Gaining access to this work after several attempts, the Operations Engineering Co-ordinator mapped out in great detail the process of oil refining on an Excel sheet. This description includes receiving the crude oil through a pipeline, heating up the crude oil before it enters the distillation tower, split-off points for separating crude oil, additives and blending products at final points (tanks). Alongside this, the Cost Accounting Co-ordinator adds sense to the operation process map with the aim of assigning joint costs incurred at each split-off point for final products, as outputs. In so doing, the CAS Designing Committee identified various methods of cost allocation that were being used in the refinery industry and the responsibility of this committee, especially of the Cost Accounting Co-ordinator, was to assess these methods in line with the requirements of CPP rules and routines presented by the Operations Engineering Co-ordinator (Burns & Scapens, 2000).

Essentially, choosing the best method of cost allocation practice did not come from the consultants’ recommendations. Rather, the Co-ordinator of Cost Accounting went through textbooks outlining all of the methods of joint cost allocation that they reveal, namely: Net Realisable Value; Relative Weight, Produced Quantities, Quality Density and Quality Calories…etc (cf. Drury, 37)

The main reason behind this is copyright, which was one of the obstacles to copying established practices undertaken by companies in the industry.
According to the Cost Accounting Co-ordinator, the problem with these methods is that they all criticise each other (Drury, 2008, p. 127), but they felt comfortable with the method of relative weight, as the Cost Accounting Co-ordinator justified:

*The method of produced quantities was perhaps fairer than others, where we can trace produced quantities of finished products that are sent to storage, and the amount of semi-manufactured products that have been used to produce others in the second stage, third stage, and so on. Further, we can trace from one stage to another, what and how much additive was added.*

From the consultants’ perspective, the most appropriate cost allocation method considers the cause and effect criteria (cf. Drury, 2008). In practice, it was difficult for the Cost Accounting Co-ordinator and the Operations Engineering Co-ordinator to recognise the direct relationship between the occurrence of the joint cost of crude oil and the final products. The Cost Accounting Co-ordinator, in particular, “blames textbooks of management accounting for recommending the method of net realisable value as the best method in the case of split-off point” (cf. Scapens, 1991; Drury, 2008). This was attributed to the difficulties incurred in estimating the net realisable value in an industry such as oil refining, where there are numerous subsequent further processing stages and multiple split-off points. This implies that the worthwhile assumption of continuing to process crude oil that would be suggested by Net Realisable Value, might not always be the case. This could be ascribed to the limitations in the technology being used at RefCo. For instance, heavy crude oil that makes up the major proportion of outputs, cannot be taken for further processing to extract valuable light products.

Unlike textbook advocacy, the Cost Accounting Co-ordinator stressed that the relative weight of products’ method was highly recommended by the Operations Engineering Co-ordinator as being the best method for assigning crude cost into outputs, albeit that it does not reflect the operation process exactly. This was attributed to the technical fact that the process of refining crude oil involves it in being separated into several products across different temperatures, and the total relative weight of inputs is equal to the weight of outputs. Such a technical justification supports Modell’s (2002) hypothesis, mentioned above.
Equally, this problem applies to the common cost of six units. The latter provide services to: (a) themselves; (b) the operational plant/ division; and (c) others (the Service Department). However, the first and second beneficial users are a fundamental matter for RefCo. The challenges are: (a) how to measure the cost of mutual services among six units of utilities; and then (b) how to assign the cost of these services into products, either at the split-off or final points.

As a consequence, the CAS Design Committee followed the same strategy for developing CAP on joint cost. The Operations Engineering Co-ordinator and the Cost Accounting Co-ordinator spent a while understanding interchangeable and supplied services to six units. They granted each unit of utility service a cost pool. The latter has been used for aggregating all direct and indirect costs. Again, the main challenge for the Cost Accounting Co-ordinator was the *interchangeable services* between these units, which do not have a price in the market (Scapens, 1991). In order to identify the cost of each unit produced by the utility service units, the accountants in Cost Accounting Co-ordination were able, with collaboration from information technology staff, to design sophisticated procedures/equations that take simultaneous services into consideration. Such equations reflect the understanding of both the Cost Accounting Co-ordinator and the Operations Engineering Co-ordinator about how the six units of utilities are operating. Whereas, this section has discussed how cost allocation practices are clearly encoded, the imposition by ParentCo of commercial rules, the “enactment”, “reproduction” and “institutionalisation” processes of these practices, in association with CPP practices, are discussed in the subsequent section (Burns & Scapens, 2000).

### 6.2.3 The routinisation of commercial thinking and practices

Frequently, commercial and annual reports are artificial items that provide a stack of information representing the commercial way of thinking (cf. Johansson & Siverbo 2009; Burns, 2009). Analysing these reports (since 2008) in terms of format and content, showed a significant change in the role of accounting information. For instance, the Commercial Director has become involved with two kinds of reports, namely: target reports that capture targets of all of the divisions of RefCo; and actual reports, which compare these pre-determined targets with actual performance. This practice of reporting RefCo’s commercial
activity was never undertaken before the introduction of the commercial rules. Overall, the outcomes of the analysis of these reports could be classified into two categories: (a) statistical and (b) analytical information (see Appendix No. 3). The category of statistical information focuses on the quantities of purchased and refined crude oil, as well as on the products sold; and all are priced according to the Platts Index. The category of analytical information is exemplified in integrated key performance indicators in the form of: (a) tables; (b) charts; and (c) graphs. This information emphasises the type of raw material used and the final products; the quantity; and their values at domestic and global market rates. The purpose of these indicators seems to be to show the feasibility of raw materials, the profitability of products and worthy markets. Importantly, these reports also show indicators of the relative weight of each product in relation to the total amount of the final products (outputs). This content of information gives a basis for discussion between the Directors of the Commercial and Technical Departments with the potential to leverage some products at the expense of others.

At the operational level, fieldwork observations show that the tendency to change operational settings is not triggered by rigorous examination of the Platts Index. The latter is only used as an indicator for whether or not the action of changing operational settings is needed. For instance, the Operations Engineering Co-ordinator stressed that “even in the case of re-setting outputs, (COP) could drift in comparison to what has been planned” with the Commercial and/or Technical Director(s). Nevertheless, this seems to be a purely technical task. This task is driven by commercial thinking, as the Operations Engineering Co-ordinator’s interview evidences:

[…] changing the product basket may be possible in some cases, but the general rule is to extract as large an amount of expensive products [light products] as possible from their crudes. We do the best possible under the current conditions. For instance, if there is still 2 metric tons of Diesel in heavy fuel oil; I raise the temperature to extract those, because the price of diesel is $700 per ton, while fuel oil is worth only $500 per ton. The orientation of technical operations is directed by global market prices (Platts).

This quotation emphasises that there is an implicit rule through which operational actors work. They call it a “golden rule”. According to the Operations
Engineering Co-ordinator, the golden rule is that “the more light products, the more profits the organisation can make”. The continuum of light-heavy or profitable-loss making products ranges from products of kerosene, e.g., jet fuel, to heavy fuel oil (see section 5.1.3). Interestingly, the golden rule indicates both technical and commercial ways of thinking (cf. Busco & Scapens, 2011). This could be one possible interpretation of the absence of resistance to the commercial rules forced by ParentCo. The operational actors, including the Technical Director, the Operations Engineering Co-ordinator and the frontline supervisors, found ‘congruence’ between commercial and technical ways of thinking (Burns & Scapens, 2000; Busco & Scapens, 2011). They seem to have translated commercial thinking, instantiated by profitable products, into technical understanding, as exemplified by light products. By repeating the following golden rule, the behaviour of the Operations Engineering Co-ordinator may become programmatic, based increasingly on tacit technical knowledge that associates a commercial way of thinking and managing the operational process for producing light products (Burns & Scapens, 2000). Further, such a rule seems to have become recognisable amongst actors in the Operations Department, as understood from the Technical Director’s expression:

\textit{If the National Standards Centre specified that the final point of Kerosene is at 260° and it is found at 250°, it gives an indication to take corrective action to extract the greatest amount of Kerosene, which is one of the lightest products.}

Similarly, the golden rule for undertaking COM is that the more heavy crudes, the more profit the organisation can make. The Operations Engineering Co-ordinator explained that the heavier crudes mean cheaper raw material. Importantly, the golden rule could be considered as an artefact of the commercial business way of thinking. As Burns & Scapens (2000) have argued, the widespread recognition of the commercial way of thinking could be underlined in the speech of the MCM of FI & AA:

\textit{Now, there is commercial sense from all RefCo officers and members of the Management Committee, especially in the regular formal meetings of the organisation. The organisation’s interest and profitability have become a standard direction, where we hold ourselves accountable for it, as long as we always urge the Technical Director to orient the steering wheel in line with the organisation, RefCo’s, interests.}
The above quotation may indicate that the CPP rule seems to be becoming routinised. To illustrate this, the dismissal of the Operations Engineering Co-ordinator by the MCM of Operations for unknown reasons, exemplifies the persistence of CPP routine over time amongst individuals within RefCo (Burns, 2009). Alternatively, another specialist in the refining process has been appointed to act as the new Operations Engineering Co-ordinator. The researcher had the opportunity to conduct comparative observation of both the former and new Operations Engineering Co-ordinators. They were also interviewed and addressed with quite similar questions. The new Operations Engineering Co-ordinator shares similarities with his predecessor in relation to the knowledge and skills about how to operate the refining process according to commercial rules. The new Operations Engineering Co-ordinator still carries out the daily routine of: (a) checking COM and COP with Platts; (b) attending the daily meeting chaired by the Technical Director; and (c) leading a subsequent meeting with his subordinates, for instance. Crucially, he is using the same golden rule, in relation to Platts, as an indicator of what needs to be produced, as he explained:

*Heavy fuel oil is not economically valuable, as the market price is lower than the price of crude oil itself. The golden rule is that the more minimisation, the more profits we will get, especially with the relative weight of heavy fuel oil ranging between 25-27% of outputs.*

Importantly, the process of operationalising (encoding) COM and COP rules, procedures and routines, discussed in Section (6.2.1), were performed by the former Operations Engineering Co-ordinator, as well as by the Technical Director. The former Operations Engineering Co-ordinator may have been aware of what he was doing about how to operationalise COM and COP. This is not necessarily the case with the new Operations Engineering Co-ordinator, as he says “it is pointless to ask why you want to extract more light products. This is the golden rule of making a profit for the organisation” (Burns & Scapens, 2000). This shows that although the new Operations Engineering Co-ordinator is aware of how to use technical knowledge to extract more profitable products, he did not know where and how the golden rule came about. The golden rule may reflect the understanding and stock of knowledge of the former Operations Engineering Co-ordinator in guiding his actions, the way things are, towards
commercialisation. In other words, acting COP and COM rules and routines seem to be institutionalised and are seen as a way to do things, but have become ‘disassociated’ from the original historical premise, as developed by the former Operations Engineering Co-ordinator (Scapens, 1994; Burns & Scapens, 2000).

The above discussion draws attention to the regularity of the production planning routine as a “recurrent event” (van der Steen, 2011). The CPP has the tendency/ potentiality to be re-enacted not only whenever Platts is issued, but also when taking action is necessary (Burns, 2009; Hodgson, 2008). Arguably, the routine of CPP can only be observed from its artefacts, such as the performance of production planning (Johansson & Siverbo, 2009). However, it is hard to know from the first ever action of CPP, if it has become an organisational routine. It was only through the repetitive meetings chaired by the Technical Director and the Operations Engineering Co-ordinator that we knew that CPP had become a daily routine. More specifically, production planning is a daily routine as long as there is the potentiality of re-engaging in the same tendency to act out such a routine in procedures that are determined by the Operations Engineering Co-ordinator and the Technical Director; and the CPP routine is the immediate phase before performing the production planning rescheduling, which can easily be observed.

RefCo’s CAS witnessed dual processes of change in relation to production planning practices. First, institutionalised CAS (financially oriented) was triggered to change by the new rules and routines of commercially- based production planning (CPP). Second, cost accounting information, as well as others forms of information, is one of the elements that gives rise to the regularity of re-planning inputs (COM) and/or outputs (COP).

In this sense, the researcher observed the role of the accountant who was involved in assigning joint and common costs. This accountant collects data daily from the Technical Department regarding the quantity of:

(a) raw material (crude oil) that has been processed, and;
(b) the utility services consumed to operate the refining process.
This data, alongside (overhead administrative) costs, is processed by the CAP accountant. The outcome of this process is that the cost of each type of product is determined; the Technical Department is one of the users of this information. The purpose of this demand is to examine the product contribution in light of Platts before concluding whether or not there is a need to re-schedule the operations’ settings (production planning). Drawing on Burns (2009), there are several factors that foster the continuity of CPP and the cost allocation practice over time, as follows:

- The extent of the procedures that underpin the cost allocation practice are embedded, such that both the Co-ordinators of Cost Accounting and of Operation Engineering know what, when and how to act upon the commercial rules;
- There is relative stability in the relationship(s) between CPP and CAP routines and other organisational processes;
- There is consistency over time between the Cost Accounting Co-ordinator and the Operations Engineering Co-ordinator, on one hand, and the Directors of the Technical and Commercial Departments, on the other, who are all implicated in the process, or have continuity in the knowledge that underpins commercialisation;
- There is reasonable stability in situations between ParentCo and RefCo to maintain commercially-oriented practices.

These circumstances become ‘normative-type statements or technologies’, which give rise to the potential to apply CPP and CAP in a particular way in order to respond to certain triggers from a particular situation with particular action(s) (Burns, 2009; Burns & Baldvinsdottir, 2005). These institutional rules, procedures and routines are enacted and reproduced day-to-day by the cost accounting co-ordination staff, the Operations Engineering Co-ordinator and the Technical Director (Burns & Scapens, 2000; Burns, 2009); they are ‘monitored’ by the Commercial Committee and governed by ParentCo (Oliver, 1992). However, the complexity of these practices, especially CAP, for (a) joint cost and (b) common costs, pose fundamental challenges to the best practice-based rules recommended by the ERP consultants, as discussed in the subsequent section.
6.3 The process of resistance to cost accounting system change

This section explains the interface between, the above, institutionally induced rules and routines of CAS, and the best practice-based CAS rules that were introduced by consultants as part of the ERP project. As noted, the existing CAS-related rules and routines of RefCo became commercially-oriented, which relates to cost information provision, not only at the final product point, but also at split-off points. Further, these rules, procedures and routines of CAS have become part of the institutional system of RefCo, as they are interconnected with production planning practices. Altogether they represent the commercial way of thinking. However, such practices are considered complex, and do not exist within ERPs as a package. Alternatively, although the consultants' proposal provides for the computerisation of daily tasks relating to accounting rules and routines, best practice-based CAS rules integrated within ERPs would take RefCo’s CAS back to square one, i.e., to a financially-oriented costing system.

The insistence of consultants that the existing CAS be simplified to go through this interface process involved politics and power mobilisation (Hardy, 1996; Burns, 2000). These elements were used by both: (a) consultants, to advance the process of implementation, including CAS change, and (b) accountants, to protect institutional interdependence, especially between the rules, procedures and routines of the cost allocation practice (CAP) and other organisational rules and routines (e.g., CPP). This section thus intends to address the concerns of the research questions about how and why change may not occur in less institutionalised CAS. The first sub-section unfolds the conflict between consultants-accountants over the ‘rationality’ of the existing CAP (cf. Robert & Scapens, 1993) and the subsequent section explores the processes by which accountants have championed the conflict by drawing on the institutional

38 This is a consultants’ view rather than the view of the present researcher
interdependence of CAP with CPP; and a large part of this process has facilitated by power mobilisation and politics.

6.3.1 Conflict over the rationality of the cost accounting system (CAS)

Introducing the ERPs involved forming two teams to manage the project implementation (see section 5.2.3.3). The first team represented RefCo and it included the ERP Project Manager (ERP-PM thereafter), accompanied by seven members as representatives of the Finance, Information & Communication Technology, Materials, General Accounts, Human Resources, and Procurement Departments. The consultancy organisation (implementer) also formed a team, based on-site, for the: financial module; human resources module; and the supply chain management module.

The primary task of RefCo’s team members was to support the implementation team in the process of ERP implementation. Each representative of RefCo’s team was to introduce the existing business processes, including rules and routines, to the implementation team. It was thus necessary to ensure that the key criterion for the selection of those representatives was that they be “active and expert actors” (Hardy, 1996). As such, RefCo’s team was called the champion team. In this respect, the documentation shows that the ‘champion team’ was expected ‘to dominate and exert influence over subordinates’ participation’ to achieve the process of ERP implementation, as it was planned by the consultants (Hardy, 1996).

Paradoxically, the resistance started from the champion team members themselves. This is not surprising if power over the process is expected to be confronted by limitations, and when the norms and values that underpinned the ERP-embedded rules showed inconsistencies with the behaviour of the champion team’s representatives (Hardy, 1996). However, the pitfall was not that RefCo’s Management Committee, or ERP-PM, nor the ERP implementation team realised that resistance might arise from the champion team members, as explained by the financial module (FI hereafter), consultant:
Instead of RefCo’s champion team helping us to solve the barriers and resistance; we were astonished at the resistance from members of the champion team itself.

However, the FI consultant assumes that the resistance to ERP implementation is attributable to the lack of mobilisation of RefCo’s staff with integrated knowledge, as he pointed out:

RefCo’s users were not mobilised well from the legacy (old) system to the ERP project. For instance, when users were moving between these environments, they could not easily cope with the many possibilities provided by ERP, and, here, resistance occurred, because it is easier to use the old system, rather than the complexity of ERP.

Following the FI on-site consultancy’s recommendations, the ERP-PM designed and managed training programmes. Their aim was to grasp knowledge about integration, which was expected to minimise the resistance to ERP implementation. Some types of resistance were dissipated by intensive presentations and real-environment training, by which the ERP-PM was able to influence “users’ [accountants’] perception and cognition that the accountants’ role under the ERP environment would be as business analysts, rather than book keeping” (ERP Project Manager). The real environment training strategy aimed to teach accountants the core ideas of ERP, as the ICT Manager stated:

The training programme has smoothly changed the impression of users about the ERP project, which seemed to become more acceptable and popular. This experiment really clarified the mechanism of the processes in ERP, such as general accounts co-ordination practices and salary or personnel affairs. The view was significantly different after training, where things were ambiguous, at the least, for users. Further, the users have become more confident and comfortable with ERP.

Such a strategy could be positioned in the context of the power over meaning, exercised by the ERP-PM, which influenced accountants’ perceptions, cognitions and/or preferences in accepting the ERP project. As such, accountants perceived the best of the ERP-embedded best practices to be ‘desirable’, ‘advanced and integrated’, ‘rational’ and ‘legitimate’ (cf. Hardy, 1996; Burns, 2000). Having convinced the financial accountants, only the representative of general accounts co-ordination stood alone in opposing the ERP project. However, the resister was dismissed from the ERP-PM. As Hardy
(1996) argued, the ERP-PM derived power from (a) commercial rules imposed by the parent company, which require an advanced information system, such as ERP, to determine the cost of products and to prepare financial reporting in real time; and (b) power over meaning to undermine the resister for being non-collaborative in the eyes of the Director of the General Accounts Department; the latter explained this:

*The General Accounts Co-ordinator was not fully co-operating with the team, and was replaced by another person… Meanwhile, by delegating the General Accounts Co-ordinator to do a particular task in […] he was replaced by another person, who is Head of the General Accounts Division.*

Paradoxically, resistance to CAS change remains unresolved. As training sessions and implementation progressed, it became more obvious to the Cost Accounting Co-ordinator and his subordinates that there was inconsistency between: (a) the best practice-based cost accounting rules as imperative values and norms embedded within the ERP package; and (b) the commercialisation-oriented CAP. Neither the existing CAP for the joint cost of crude oil, nor the CAP for the common cost of the utility services could be carried into ERPs, as shown in the following Figure (6-6). Observing progress reports on the ERP implementation shows technical inconsistency. It was found that there was misalignment between the existing CAP, still being applied by the Cost Accounting Co-ordination, in comparison to the best practice that can be offered by the ERP package. More specifically, the reports stressed that the existing “cost allocation practice for the joint cost of crude oil requires heavy customisation and the recommendation [of the implementation team] is to drop this into future stages”.

**Figure 6-6 Misalignments of CAS-related practices**

![Diagram showing misalignments between CAS scope and ERP functionality](image_url)
The reason for this decision, as the reports emphasise, is that: “the workflow of cost allocation practice [designed according to operation processes], is too complex”. Equally, the response of the implementation team applies to the cost practice of assigning common cost to the utility service. The “practice requires heavy customisations and the [implementation team’s] recommendation is [that] although the feature of utility cost is available, it does not support the allocation of interchangeable services among utilities within RefCo” (see Section 6.2.2.2). This means that if the case of RefCo were similar to that of RLCo, which consists of two partners, CAP embedded within ERP for common cost would fit.

On the other hand, the key aim of the ERPs’ demand was only to computerise the existing daily accounting routines (see Section 5.2.3.2). The ERP was expected to be helpful in terms of how to allocate joint and utility service costs to final products, as the accountant of cost allocation mentioned:

*I believe that ERP is not clear enough or mysterious; it is unknown what it will provide or where it will take us. I expected ERP to provide more logical methods in terms of assigning utility costs, which is my responsibility. I assumed ERP would give me accurate results and eliminate daily routine work, which is mainly concerned with accounting and classification costs. The time factor is very important for us in order to get more free time for undertaking consultative roles and providing in-depth analyses, as well as follow-up and updating the rates of distributing joint cost and indirect costs, etc.*

Similarly to the Cost Accounting Co-ordinator, both the Operations Engineering Co-ordinator and the Technical Director need ERP to identify the contribution of each product required in order to compute both the Platts and product cost for enacting either the commercially-oriented material inputs (COM) and/or the commercially-oriented product outputs (COP). Such tasks require advanced information technology (IT hereafter), as the Technical Director explained:

*I expect the new system (ERP) to have a model, whereby profitability can be analysed by feeding the database with the quality and properties of crude, operating conditions, prices from Platts, capacity and other factors, and then run an analysis*  

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39 The term workflow is interchangeable with business process. In this context, it means the process of allocating crude oil costs associated with the process of refining crude oil (cf. Modell, 2002).
where the system should give me the best product bunch that maximises profits. Further, the model/system can be fed by Platts and the forecasts for the coming days, including the details on the premium that reflect the quality of the product.

The evidence of the Technical Director’s interview shows the limitations of the human capability to process significant amounts of information in a changeable environment (Nelson & Winter, 1982; Ahmed & Scapens, 2000). In such a situation, IT is needed to process the massive and changeable data of Platts, together with cost information to rationalise the decision making process. This is not to say that the Technical Director and the Operations Engineering Co-ordinator are pursuing the optimal point for producing the best COP (outputs) from the best COM (inputs), which might not be possible in a changeable environment. Rather, the Technical Director and the Operations Engineering Co-ordinator are doing their best in particular circumstances, as argued by Dobbin (1994, p. 135) that:

*Technical criteria are indeterminate, as utility functions have multiple maxima, and so there is more than one way to be rational […] technical criteria may constrain organisational structure, but they cannot determine a unique optimal point, because no such point exists. They [actors] can only provide a set of available alternatives.*

Additionally, the Technical Director has further expectations of ERP in the computerising of the COM and COP rules. He expected, from ERP, to have a model that gives answers in the case that the proportion of Heavy Oil (invaluable products) is reduced from 26% to 25%, and what the product bunch and profitability will be. He continues by emphasising that feeding the model/system with all the parameters gives the best combination of crude oil (COM). The Technical Director admits that if these calculations were conducted manually, it would definitely take a long time. For these reasons, the Technical Director expected ERP to help decide the best course of decision making, which would give the optimum profit under particular conditions and at a specific time.

Having explored the ERPs’ scope of work, the Cost Accounting Co-ordinator would transfer in-house designed CAP, for either the joint cost of crude oil
and/or the common costs of utility services, into the ERP system without adaptation. As mentioned above, these practices have been developed by the CAS Design Committee, supported by IT programmers (see Section 6.2.2.2). However, there is no facility within the ERP system for the CAP of joint and common cost, nor is it possible to convey the existing practices of CAP, that were developed in-house, as the Cost Accounting Co-ordinator stated:

*Through discussion with the ERP core teams, we found that the requirements of cost accounting co-ordination regarding the documentary cycle and assigning cost of utilities, especially mutual services, are not all included within the scope of work in the ERP contract.*

Paradoxically, instead of the Cost Accounting Co-ordinator criticising the ERPs for not configuring the programme for existing practices, both teams, including the ERP Project Manager (ERP-PM) criticised the Cost Accounting Co-ordinator for not adopting “simple practices” that are consistent with ERP requirements, as the representative of finance in the champion team commented:

*If ERP does not support CAS, either directly or indirectly, current practices of the cost accounting system should be changed, otherwise writing an extension programme that reflects current cost practices is very complex, especially in calculating the utilities cost ....we do not expect ERP to resolve this issue, although we still feel that a cost accounting system is very important for calculating cost or pricing.*

Additionally, customising ERP to support existing cost accounting practices is a strategy that the ERP-PM does not favour; he mentioned: "I always do the best to reconcile the practices embedded in ERP and those at RefCo, but the priority is to keep alignment with ERP standards when there is conflict".

As a consequence, the ERP teams doubted the rationality of the existing CAP when it was compared with the ERP-embedded best practice. For instance, the ERP-PM-led campaign, including its team members, aimed to undermine the importance of the existing CAS, especially CAP. They drew on complexity as a reason for doubting the accuracy of the outcome information. Furthermore, the

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40 More details of how these practices were designed are presented in Section (7.3.2.2)
ERP consultants\textsuperscript{41} believe that “cost accounting practices embedded within ERP are best practices, and their effectiveness has already been proven in western countries” (ERP project manager).

The debate between the Cost Accounting Co-ordinator and the ERP-PM over the rationality of the existing cost practices put RefCo’s CAS under two pressures. The first pressure is the interconnectedness between the rules and routines of CAP and CPP. The second pressure is the best practice-based cost accounting rules that were being suggested by the consultants as part of the ERP project. In such a situation, it is the responsibility of the Cost Accounting Co-ordinator to adapt CAP to ERP-embedded practice which is, by contrast, inconsistent with the CPP rules and routines; and the latter is a ‘local instantiation of a commercial way of thinking’ and of managing RefCo’s business (Burns & Scapens, 2000). This means that the changes proposed by the ERP consultants posed a fundamental challenge to the existing CAP. However, accepting the consultants’ change implies a challenge to institutional achievements over the three years since the imposition of the commercial rules by ParentCo. In this sense, it is argued that “change which conflicts with the existing rules and routines [of CAP and CPP] and institutions [commercial way of thinking] is likely to be much more difficult to implement” (Burns & Scapens, 2000, p. 16-17).

Consequently, there was ‘intentional’ “reluctance to conform to new modes of thinking and [doing]” in relation to the cost allocation rule introduced by the consultants (Burns & Scapens, 2000, p. 16). This reluctance was not an automatic response. Rather, it was backed by exploration via presentations, training, and implementation of the capabilities of the ERP-embedded best practices of cost accounting. Importantly, it was understood that changes proposed by the ERP consultants posed a threat to existing cost accounting practices, especially CAP, which was institutionally induced in line with the rules and routines of CPP that were imposed by ParentCo; and which had been socially developed in collaboration with the Operations Engineering Co-

\textsuperscript{41} The term ERP consultants indicate implementation team of ERP and the champion team represents RefCo in supporting the implementation team.
ordinator and IT staff. As the accountants have what they wanted in the existing CAP, the challenge from the consultants was eventually resisted by the accountants. The primary reason for the reluctance to conform to ERP changes was to protect the stability that comes from long and progressive change in developing CAP in line with CPP rules and routines (Siti-Nabiha & Scapens, 2005). Ironically, the consultants portrayed the resistance of the cost accountants who opposed the ERP practices as being “irrational behaviour” (Scapens & Roberts, 1993, p. 2).

As a consequence, the accountants also led an “overt” campaign to undermine the proclaimed best practice that was embedded in ERP (Burns & Scapens, 2000, p. 17). They perceived that changes by ERP consultants were a challenge to the “mental allegiance” of CAP to recent institutional changes, especially to the CPP rules and routines. Importantly, this resistance was led by the Cost Accounting Co-ordinator, who mobilised key RefCo players against ERP implementation as long as the existing rules and routines of CAP were not met, and this was ‘overtly’ addressed by the ERP-PM:

*The Cost Accounting Co-ordinator wants a system operating in the same manner as existing practices. When it turned out that there was a lack of their own practices in ERP, the Co-ordinator of Cost Accounting tried to emphasise that ERP does not serve the practices of the cost accounting system, such as accounting, the classification and allocation processes of manufacturing costs, and therefore ERP would be ineffective from the Cost Accounting Co-ordinator’s point of view.*

Interestingly, the contradictory pressures of the ERP consultants’ changes and the commercialisation-based institutional system’s interconnectedness were ‘played off against each other’ due to the difficulty of accommodating both (Carruthers, 1995). This involved formal and overt resistance (Burns & Scapens, 2000; Siti-Nabiha & Scapens, 2005), the mobilisation of power and politics (Hardy, 1996; Burns, 2000; Yazdifar et al., 2008) by both the ERP-PM and the cost accountants, who were led by the Cost Accounting Co-ordinator. Through the power mobilisation of resources, the decision-making/ process and meaning, the ERP-PM attempted to frustrate the resistance, but was also confronted by the unfolding politics and power of the Cost Accounting Co-
ordinator. These sources and forms of resistance to the consultants' proposed changes are further discussed in subsequent sections.

6.3.2  Power mobilisation and resistance to change CAS

The “rationality” and “complexity” of the existing cost allocation practices became a focal point of the debate between the Cost Accounting Co-ordinator and the ERP-PM. Nevertheless, the Cost Accounting Co-ordinator was convinced of the benefits of the existing cost accounting practices. He was powerless, in comparison to the ERP-PM, in protecting CAP from the ERP changes. Importantly, the CAP inter-connects well with production planning rules and routines, which are the instantiation of the commercial way of thinking and managing RefCo’s business (Burns & Scapens, 2000). This interconnectedness was the focal point of the Cost Accounting Co-ordinator’s resistance. However, the sole power of the institutional system (rules and routines of CAP and CPP) was insufficient to counteract the influence of the ERP-PM (Burns, 2000). The reason is that the ERP-PM derives his power from (a) a member of the Management Committee of Maintenance, Services & Loss Prevention, who is very keen for ERP to succeed; and (b) the support of the institutional demands (of ParentCo) for financial reporting and the commercial rules (see Section 5.2.3.2).

In contrast, the commercial rules forced by ParentCo were the focal point for objections to the attack on the ERP-PM. The Cost Accounting Co-ordinator was able to draw on the *inter-connectedness* of CAP with CPP to politicise this conflict, over CAP, to powerful actors at the top level of management. The Cost Accounting Co-ordinator was seeking an actor(s) who (a) was open minded enough to understand the background of CAP, which came from a long process of in-house development, in line with ParentCo’s requirements; and (b) had power over resources to stop the attack by ERP-PM and maintain CAP, and CAS in general, as a stand-alone system. The researcher observed the existence of the conflict between the ERP-PM and the Cost Accounting Co-ordinator over the rationality of CAP. It was possible to access formal correspondence that showed the “overt and formal” resistance of the Cost Accounting Co-ordinator to the ERP system and the response of the ERP-PM (Burns & Scapens, 2000, p. 17) as follows:
The first objection of the Cost Accounting Co-ordinator was in regard to the domination of financial accounting over cost accounting within ERP. The Cost Accounting Co-ordinator will be forced to access the General Ledger (GL) in order to extract cost accounting information when ERP goes live. However, the main point of the Cost Accounting Co-ordinator is that there is no need any longer for the domination of the financial accounting system (see Section 5.1.3.1). Alternatively, the Cost Accounting Co-ordinator wants to be able to extract straightforward cost information and undertake the processes of assigning joint and common costs to determine the cost of products. In contrast, the view of the ERP team is fundamentally different. They still assume that General Ledger, the core module of the ERP finance track, is the main source of CAP calculations. Such a suggestion takes CAS back to square one, as the system was dominated by financial accounting prior to the introduction of the commercial rules. Further, such a view was also objected to by the General Accounts Co-ordinator as being interventions into his competencies, despite both divisions being accountable to the same Director of the General Accounts Department.

The second objection by the Cost Accounting Co-ordinator was in regard to the allocation of joint and utility services’ costs to final products. The Cost Accounting Co-ordinator realised that this objection posed a challenge to the ERP-PM, which underlined the power of the institutional system (the interconnectedness of CAP with CPP); the Cost Accounting Co-ordinator expected that such a challenge might convince the ERP-PM to understand where CAP for common cost came from (Hardy, 1996; Burns, 2000). However, the response of the ERP-PM was that the Cost Accounting Co-ordinator had to develop procedures/practices and give a clear process, rather than this complexity. For the Cost Accounting Co-ordinator, this was not possible as such practices had just been developed in line with CPP rules and routines.

It is evident that CAP was under attack by the ERP-PM’s power and CPP rules and routines. As such, the Cost Accounting Co-ordinator suggested maintaining CAS, especially CAP, as a stand-alone system. In so doing, the Cost
Accounting Co-ordinator was able to access the General Manager of Finance and report to him what was going on:

We reported this problem to the General Manager of Finance, and he suggested defining Cost Accounting Co-ordination business requirements. Then, we would call specialists, who are qualified, just to know how much it would cost. Then, we can decide whether to take the negotiation ahead to modify the ERP system; purchasing a stand-alone system, or call ICT to design an in-house stand-alone system.

This quotation shows that the Cost Accounting Co-ordinator attempted to “play off” against each other the power of the ERP-PM and the General Manager of Finance (Carruthers, 1995, p. 324). The rationality of reporting to the General Manager of Finance could be understood as the Cost Accounting Co-ordinator seeking support for his proposal in terms of maintaining the existing CAS, especially CAP, in a stand-alone system. The Cost Accounting Co-ordinator attempted to politicise the “interconnectedness of the institutional system” (the rules and routines of CAP and CPP) as “organisational values”, in order to convince, if not mobilise, the General Manager of Finance against the ERP-PM. This mobilisation emphasised that these organisational rules and routines (CAP &CPP) are encoded by commercialisation that had been forced by ParentCo, and it would be difficult to lose such “organisational achievements”.

The case for the Cost Accounting Co-ordinator involving and mobilising the General Manager of Finance represents a collection of power over meaning and resources (Hardy, 1996). The rationality of choosing the General Manager of Finance to whom to report the challenge of the ERP team could be attributed to two reasons. First, the General Manager of Finance, similarly to the Commercial Director, always criticises Cost Accounting Co-ordinator for the lack of real time cost information availability, as explained by the Cost Accounting Co-ordinator:

[T]he last week there was a presentation on terms of refinery development and it was an embarrassing situation when they asked for the cost and returns of each refined barrel. Further, the General Manager of Finance always criticises the Cost Accounting Co-ordination when requesting cost accounting

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42 The General Manager of Finance is the same as a Chief Financial Officer.
information, because most of our time is spent in the daily routine work of tracing and classifying cost information. We must be discharged from conducting deep analysis that supports decision-making. We should act as consultants or analysts, rather than book-keeping.

Such critiques have been used as a source for convincing the General Manager of Finance to oppose the ERP-PM. The General Manager of Finance has the power of decision making over payments; about whether to pay for the ERP customisation, or to include existing cost accounting practices, or to purchase a stand-alone system. However, most importantly, for the Cost Accounting Co-ordinator, in both cases he then ensures his two objectives of (a) keeping the same rules, procedures and routines for CAP; and (b) computerising these into the new system to meet real time access to cost accounting information.

In contrast, the view of the ERP-PM is different from that of the Cost Accounting Co-ordinator in terms of a stand-alone system. As the Cost Accounting Co-ordinator is relying on the power of the General Manager of Finance, the ERP-PM followed the same strategy. The ERP-PM’s response to the stand alone system was that this “proposal requires a decision from the Chairman of the Management Committee to (a) abandon the implementation process of ERP in relation to practices of cost accounting co-ordination; and (b) give permission to purchase a stand-alone [programme] for CAS”. The ERP-PM seemed to be beating the Cost Accounting Co-ordinator by mobilising staff at higher levels than those of the Cost Accounting Co-ordinator’s sources. In addition, the ERP-PM clearly threatened the Cost Accounting Co-ordinator for not looking to a stand-alone system as an alternative solution; otherwise such an issue would be reported to the Chairman of RefCo (Hardy, 1996; Burns, 2000). The disadvantage of this case was that it gives a negative impression, at high organisational levels, about the non-co-operation of the Cost Accounting Co-ordinator with the ERP project. The ERP-PM thus expects to obtain the pre-determined outcomes of the ERP project.

There is no doubt that the conflict between the Cost Accounting Co-ordinator and the ERP-PM had become overtly obvious at RefCo’s high management levels. This seemed to be a battle and a challenge through the involvement of more powerful actors in ERP implementation in order to secure or challenge the
rationality of the existing CAP. While the Cost Accounting Co-ordinator is dissatisfied with the ERP project and doubts the ERPs’ capabilities, the ERP-PM is trying to do all he can with his “strengths not to derail the project, even though minimising the importance of the Cost Accounting Co-ordinator’s requirements” (ERP Project Manager). Finally, each party became more insistent, while the Cost Accounting Co-ordinator claimed that there was no procedure to determine the cost of products in the ERP system; the ERP team claimed not only that these possibilities existed, but also that they were more advanced.

Indeed, the Cost Accounting Co-ordinator was able to convince the General Manager of Finance about the stand-alone system, rather than changing the existing rules and routines of CAS, in particular CAP, as the Cost Accounting Co-ordinator said:

*Finally, we agreed on the last option for designing an in-house system that covers all aspects of CAS. Further, the design of the system should be flexible in order to be linked in future with ERP. We reached this conclusion after explaining all of the Cost Accounting Co-ordination business processes, and supplied them with all the documents and reports. In other words, ICT will design a stand-alone system according to the Cost Accounting Co-ordinator’s perception.*

Similarly, it was also reasonable for the General Manager of Finance to accept a proposal to buy a stand-alone system as being easier, cheaper and quicker than customising the ERP. The Cost Accounting Co-ordinator, in beating off the attack of ERP-PM, was drawing upon two dimensions of power: that of mobilising actors who have power over resources, and of “countervailing” (Hardy 1996); and the power of inter-connectedness with the CPP rules and routines as instantiations of the commercial rules. Ultimately, this was concluded by agreement that there would be a stand-alone system. According to the ERP-PM, the challenge encountered by the ERP team in relation to CAP, for both joint and common costs, was in the difficulty in handling it in the ERP system.

Overall, the case of RefCo shows that the ERP consultants experienced difficulties when they proposed changes that were incongruent with existing rules and routines. Such institutional elements act as local instantiations of the
commercial way of thinking and of managing the business (Burns & Scapens, 2000). Rather, prior to the implementation of the ERPs, CAS in particular, this should have been given serious consideration in the local institutional context of RefCo (Burns, 2000), as explained by the Information and Communication Technology (ICT) manager:

*We have not given enough time to studying and analysing the existing business processes of RefCo to exclude all non-added value to the organisation and keep the rest, which has hindered the project. It is a great pitfall that RefCo fell into that we had not introduced business processes undertaken by RefCo in detail.*

Ideally, the ICT Manager supposes that the business processes, rules and routines of RefCo should have been described in detail prior to the ERP implementation. Then, it would have been possible to invite IT specialists to give recommendations on what the best modules to cover these processes would be, or otherwise to adapt them to RefCo processes. Practically, the existing organisational system had been given little examination when ERPs' implementation was launched (Burns & Scapens, 2000). Instead of this, the ERPs team should have overlooked at the context of RefCo so as to address the new rules and routines forced by ParentCo, and the potential conflicts and challenges for change that would be introduced by the ERPs system (Burns & Scapens, 2000).

6.4 Concluding remarks

By using institutional theory, this chapter has discussed the dynamic process of RefCo’s CAS, that is, how change and resistance occur respectively in high-low institutionalised practices of CAS. The institutional interdependence (inter-connectedness) was an insightful explanation factor for both the processes of change and resistance. The institutional interdependence means that inter-relations across components of the institutional system; i.e., institutions, rules, procedures and routines. The institutional interdependence explains both the occurrence of change and of resistance, respectively, in high-low institutionalised practices of CAS.
First, this interconnectedness was created indirectly in relation to ParentCo’s requirements. This change has forced RefCo to become commercially-oriented. As such, new rules, procedures, and routines were evolved to support commercially-oriented production planning (CPP) (Burns & Scapens, 2000; Burns, 2009; Hodgson, 2008). These changes created technical conditions, alongside early political pressure, that have brought the suitability of institutionalised CAS, financially oriented, into question.

As part of the organisational system, CAS was under pressure to develop practices to act as an institutional basis from which to make sense of day-to-day organisational life, especially for the new CPP rules and routines. As a consequence, the institutionally induced practices (rules and routines) of CAS were evolved in order to support commercially-oriented operational activities (Scapens & Roberts, 1993; Scapens, 1994; Modell, 2002; Hodgson, 2008; Burns, 2009).

Instead of embeddedness, the interconnectedness of the CAS-related rules and routines with others was a pivotal point of the objections to the best practice-based rules that were recommended by the consultants as part of the ERP project (cf. Ribeiro, 2003; Ribeiro & Scapens, 2006; Scapens, 2006). The ERP-embedded best practice rules were inconsistent and unfeasible, from the accountants’ perspective, with the existing CAS-related rules and routines. Paradoxically, although the cost accountants were powerless in comparison to the ERP consultants, they were able to object to CAS-related consultancy changes by exploiting technical matters (inconsistency) in the ERPs, and politicised and mobilised powerful actors at RefCo. More specifically, the accountants politicised this issue at RefCo’s highest organisational level and thus mobilised powerful actors (decision makers) to protect the interconnectedness between the rules and routines of CAS and CPP.

Finally, the suitability of highly institutionalised CAS was brought into question and was changed top-down via political and technical pressures. In contrast, low-institutionalised CAS exhibited a reluctance to change from the bottom-up, via technical-political pressures; and seemed to be locked-in, and immune from further change. This theoretical interpretations of the case study story in terms of change, and resistance to change, in CAS, offer reflections in relation to prior
literature, institutional theory and practitioners alike. These implications are discussed in the chapter that follows.
Chapter 7 - CONCLUSION, CONTRIBUTION & IMPLICATIONS

7.0 Introduction

This chapter presents the summary of a research project that was set up to explore why and how the institutionalised practices of cost accounting systems persist, or are changed, in the context of ERPs. The implications and limitations of this investigation are also discussed, and the chapter ends by offering outlines and opportunities for future research. This chapter is structured around four sections. The first Section (7.1) outlines the study’s position in relation to prior literature, institutional theory and research choice, and this is followed by the general findings of this study, discussed in the light of prior literature. The implications/contributions of these findings at the levels of theory, research methodology and practice, are discussed in Section (7.2). Section (7.3) underlines what needs to be done in attempting to outline the research’s limitations and the opportunities that its findings offer for future research, and this is followed by the final remarks, seen in Section (7.4).

7.1 Research summary, position and findings

This section summarises the research’s position and its findings in relation to prior studies. The first two subsections, (7.1.1) and (7.1.2) respectively, provide a summary of the research gap and the limitations of institutional theory, in particular the limitations of Burns & Scapens’ (2000) framework, in explaining the processes of change and resistance in high-low institutionalised practices of CAS. The subsequent Section (7.1.3) outlines the methodological choice utilised in this study. Importantly, the general findings of this thesis are articulated in Section (7.1.4).

7.1.1 Study’s position in relation to extant literature

This study was motivated by two contrasting results from prior research on ERPs and cost accounting (Scapens, 2004; Baxter & Chua, 2008; Lukka & Modell, 2010). The first evidence supports the capabilities of ERPs in terms of information processing (Booth et al., 2000; Granlund & Malmi, 2002; Hyvönen, 2003). The second conclusion, in contrast, undermines the capabilities of ERPs to embrace innovations in cost accounting that is already in use, and this was
drawn from cases where CAS practices are found to be misaligned and operating in stand-alone (specialised) systems, rather than being integrated into the ERPs (Granlund & Malmi, 2002; Hyvönen, 2003; Grabski et al., 2009). While some researchers have followed Granlund & Malmi’s (2002) argument by referring this to the complexity of ERPs (Scapens & Jazayeri, 2003; Hyvönen, 2003; Granlund & Mouritsen 2003; Rom & Rohde, 2006), others, albeit limited in number, examine this complexity in the context within which CAS becomes institutionalised (Soh et al., 2000; 2003; Soh & Sia, 2004; Kholeif et al, 2007; 2008; Jack & Kholeif, 2008). The prior literature also argues that the more deeply institutionalised CAS is, the more difficult it is to change; and when and how institutionalised CAS may change seem to be an unanswered questions. In contrast to prior studies, this thesis has explored the conditions and processes through which CAS became (de)institutionalised and then misaligned with ERP. More specifically, the study aimed to address specific research questions as follows:

**RQ1:** In high institutionalised CAS practices; when, how and why can change occur?

**RQ2:** In low institutionalised CAS practices; when, how and why may resistance occur?

### 7.1.2 Methodological choice of the study

The research paradigm adopted in this study is inspired by the Middle Range Thinking (MRT thereafter) that was suggested by Laughlin (1995). This paradigm deals with study choice and level in terms of theorisation, change and methodology. First, the viewpoint taken in this study was a social constructivist one, giving consideration to the context within which CAS operates. It considers the projection of human minds as the main source for gaining knowledge about the conditions and processes through which the institutionalised practices of CAS persist or may change (Creswell, 2014, p. 8). An interpretive approach, in particular, a qualitative research methodology that drew on interpretive case study research, was then used. This choice is also supplemented by interviews; observations, access to organisational archives and documentation, which are used together as methods of data collection.
7.1.3 Study’s position in institutional theory

The analysis process on the data collected is informed by an institutional theory-based theoretical framework that is outlined in Chapter (3). This framework drew on ‘deinstitutionalisation’ and ‘institutionalisation’, which were respectively introduced by Oliver (1992) and Burns & Scapens (2000); and these were supplemented by the notion of politics and power mobilisation that was suggested by Hardy (1996). This framework has been used as a lens through which to make sense of change and resistance to change that respectively occurred in the high-low institutionalised practices of CAS. The process of a theoretically-informed analysis case study provided a conclusion that challenged the notion of embeddedness and that suggested institutional interdependence as an alternate factor that explained both processes. This conclusion also includes several findings and is linked to prior research, as presented in the following subsection.

7.1.4 Research findings and discussion

In this subsection, the salient findings of this study are outlined and discussed in relation to prior literature. However, their implications for institutional theory, research methodology and practitioners in management accounting will be discussed later, in Section (7.2). This study extends existing knowledge in relation to: (1) the misaligned practices of CAS, (2) the complexity of the tight coupling process across (non-) accounting practices, and (3) the processes of change and resistance.

First, this study extends research knowledge in regard to the conditions and processes of CAS misalignment. At a broad level, this study clarifies the role of ERPs as a driver of change, or to reinforce existing cost accounting practices (for more details: see Section 2.1.3.2). As shown in Figure (7-1), ERP may drive change when organisations intend to respond via practices that

43 See (Spathis & Constantinides, 2003; 2004; Doran & Walsh, 2004; Spathis & Ananiadis; 2005; Spathis, 2006)

44 See (Booth et al., 2000; Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Hyvönen, 2003; Rom & Rohde, 2006)
change in the direction of misalignments. In such cases, a high level of business process (re-engineering) change is needed to reconcile misalignment. Similarly, ERP may act as a stabiliser when organisations are satisfied with existing practices that have exhibited misalignment with ERPs. In such cases, the organisation responds via ERP customisation towards the practices of misalignment in order to maintain the practices as they are. This customisation is usually done in a way that supports existing practices. Alternatively, a specialised stand-alone system is a solution in the case of the consultancy organisation is neither willing to go for customisation nor the implementing organisations keen to change existing practice to conform ERPs.

**Figure 7-1 Process of interplay of ERPs with management accounting**

The Figure (7.1) demonstrates that the role of ERPs depends on the original motivations and reasons for adoption. Referring back to Chapter (5), ERPs was principally needed so as to improve information accuracy and the financial accounting cycle and to speed up the timely production of financial reports, which are demanded regularly by external constituents. ERPs' adoption was thus more about financial procedures than cost accounting. ERPs therefore neither supported nor drove change in the CAS of RefCo. Rather, CAS was the most fundamental challenge to, and then become misaligned with ERPs. As a consequence, CAS was kept in stand-alone systems and this supports earlier conclusions in that regard (Granlund & Malmi, 2002; Hyvönen, 2003; Rom & Rohde, 2006; Grabski et al., 2009).
This study, however, investigated the misalignment of CAS in depth, rather than describing changes that are outlined as part of the perceived research gap (see Section 2.1.4). It explored the conditions and processes by which CAS misalignments come about. In contrast to prior literature, the context (extra- and inter-organisational) within which CAS operates was the main source of misalignment, rather than the complexity of ERPs (see, for example, Fahy & Lynch, 1999; Maccarone, 2000; Booth et al., 2000; Granlund & Malmi, 2002; Hyvönen, 2003). The extra-organisational pressure was exercised by the parent company, but this targeted production planning practices rather than CAS. Such pressure resulted in change in these practices, which created functional pressures for CAS change. The interrelationships between CAS and production planning practices challenged ERP. So, the study also suggests that the fundamental misalignments are in those functionally-related practices and, in particular, in CAS and operations control procedures (Soh et al, 2000; 2003; Soh & Sia, 2004). This study, however, extends the existing knowledge by explaining the processes and conditions under which CAS and production planning challenged the ERP.

The interrelationships between CAS and operations control is more complex than prior literature has suggested (Cooper & Kaplan, 1998; Soh et al, 2000; 2003; Soh & Sia, 2004). This complexity requires practice-based system design, rather than the adoption of generic systems. In this sense, Cooper & Kaplan (1998) have argued for the need for different (specialised) systems for different purposes. RefCo needed a system to support its existing CAS practices and its interrelationships with production planning, unless the new system could offer something superior to what was already in use. This concurs with Granlund & Malmi’s (2002) research on a case that transferred their CAS practices into ERPs without any change.

Second, this study extends existing knowledge of the interrelationships between CAS and operations control. This study elaborates not only on the forces, as prior literature did, but also on the processes through which cost allocation practice (CAP) and operations control become tightly coupled (Modell, 2002; Drury & Tayles, 2006; Al-Omiri & Drury, 2007). This process is more complex as it is non-linear and thus it would be difficult to explore it via survey.
questionnaire (Drury & Tayles, 2006; Al-Omri & Drury, 2007). The process of CAS change and resistance involve in power, politics and technical forces. Politics was used as a strategy to de-stabilise RefCo’s institutionalised financially-oriented CAS. Power was utilised to protect the tight coupling between CAP and operations controls. Functional/technical pressures were the critical sources of change for CAS, and became tightly coupled with operations control. Furthermore, prior studies have proposed institutional and technical factors by which CAP could be institutionally or voluntarily induced (see Section 2.3.2.3). The process of developing the existing cost accounting system was thus aligned to make sense with the production planning rules and routines. However, it is difficult to identify a clear division between voluntarily & institutionally induced CAP. The latter was voluntarily developed, but it was originally institutionally induced in relation to changes in operations control that were imposed by the parent company.

Third, this study also extends research knowledge in respect of the change and resistance processes. It supports the claim that change and resistance are not mutually exclusive processes (Siti-Nabiha & Scapens, 2005; Lukka, 2007). Importantly, the study suggests that revolutionary-evolutionary change is a continuum. It is unnecessary for revolutionary change to become evolutionary because, as suggested, the revolutionary change could be inherited by existing rules and routines due to inconsistency (Burns & Scapens, 2000; Soin et al., 2002; Busco & Scapens, 2011).

Alternatively, this study challenges the notion of embeddedness that is suggested by Burns and Scapens (2000) in order to understand the processes of CAS change and resistance to change. Focusing on embeddedness means that we may fail, by ignoring the implications of extra-organisational conditions, to understand the processes of change and resistance. More specifically, the use of Burns & Scapens’ (2000) framework could not explain two issues, namely: (a) why high-institutionalised, financially-oriented, CAS were easily changed without any resistance, in line with ParentCo’s changes; whereas (b) less institutionalised, commercially-oriented CAS encountered significant resistance to changes that were suggested by the consultancy organisation. As a consequence, this study adopted Oliver’s (1992) theoretical work in order to
overcome the aforementioned theoretical limitations. This study thus supports Ribeiro’s (2003) work, which challenges the notion of embeddedness as a source of change and resistance. Ribeiro found that management accounting rules and routines were held in place by power, rather than by taken for granted assumptions.

In contrast with power circuits, this study suggests institutional interdependence as the key interpreter in explaining change, and resistance, in order to maintain organisational coherence. Similarly to Nixon et al.’s (2011) case, CAS played a sense making role across components of the organisational system, that is, a commercial way of thinking as institution and commercially-oriented production planning (CPP). CAS provides information to operation managers that allow them to take corrective actions as a result of changes in Platts.

Change and resistance, to change, were triggered by interdependence across institutional system components, especially the interrelationships between CAP and production planning. Furthermore, institutional interdependence advances understanding as change and resistance occur respectively in high-low institutionalised CAS. The process of change in high institutionalised CAS followed a top-down pathway in the RefCo case study. This path of change involved political-technical mobilisation. A large part of this change in institutionalised, financially- oriented CAS was initiated by political agreement, through which the value of CAS was questioned. The political pressure for change was followed by the emergence of new rules and routines for commercially-oriented production planning. Both conditions created a need for change in the existing institutionalised CAS in order to make sense of, and to support, commercial decision making.

In contrast, in the case study, resistance to change in less institutionalised CAS followed a bottom-up pathway. This path of resistance involved functional-political mobilisation. While changed outcomes of CAS and production planning rules and routines were less institutionalised, interconnectedness across these rules and routines was the focal point of resistance. However, this was insufficient to cope with changes introduced by the consultancy organisation, and this resulted in the use of politics and the mobilisation of powerful actors.
Overall, the role of CAS change and resistance in order to maintain organisational coherence can only be understood in the context of the dynamic interactions among all of the components of the institutional system of RefCo that support and sustain the commercial way of thinking (Burns, 2000; Burns & Scapens, 2000; Al-Omri & Drury, 2007; Drury & Tayles, 2006; Nixon et al., 2011). The contributions of the aforementioned findings are further discussed in the section that follows.

7.2 Research contribution

This section discusses the implications of the findings, outlined above, for institutional theory, methodology and practice, respectively.

7.2.1 Theoretical contributions and implications

This section discusses the contribution and implications of the case study observation at a theoretical level. These implications make generalisations for institutional theory, rather than for contexts. As Lincoln & Guba argue:

*The only generalisation [in case-based research] is [that] there is no generalisation* (1985, p. 110).

It is a ‘reciprocal relationship between theory and case-based research’ (Humphrey & Scapens, 1996); i.e., while theory informs research, it is developed by case study observation. As shown in Figure (7.2), the institutional framework used in this study was regarded as an essential starting-point for RefCo, as a case study, but this was challenged and refined as a result of case study observation.

These refinements deal with the concepts of rules and routines, as a minor contribution, in Subsection (7.2.1.1). This helps to introduce institutional interdependence, instead of embeddedness, as the major contribution of this research, and this is outlined in Subsection (7.2.1.2).
7.2.1.1 The refining of institutional concepts

This section addresses the study’s contribution to institutional theory, based on fieldwork observations at RefCo. More specifically, it provides a refinement to Burns & Scapens’ (2000) framework in terms of the concepts of rules and routines; and adds *procedures* to bolster two routes to the institutionalisation process, as outlined in their framework. It is argued here that procedures were also a central concept, alongside the rules and routines that mediated the process of the institutionalisation of RefCo’s commercially-oriented rules.

It is the fundamental point of Burns & Scapens’ framework that it conceptualises management accounting practices as being organisational rules and routines that have the potential to become institutionalised. In Burns & Scapens’ framework, it is argued that: “[…] it is important to view rules and routines as interacting between the realm of action and the institutional realm”; and, importantly, rules are not routines. While their framework set out with a distinction between both terms, these terms were conflated when they conceptualised the process of management accounting institutionalisation (Englund & Gerdin, 2008; Johansson & Siverbo, 2009; Burns 2009; Quinn, 2011, 2013). On one hand, routines describe “programmatic rule-based behaviours […] the way in which things are actually done” (Burns & Scapens, 2000, p. 6). Here, the definition of management accounting routines as “behavioural patterns” is closer to the action realm, if it does not actually portray...
action itself. On the other hand, they have argued that “routines are more abstract than rules and therefore closer to the institutional realm” (2000, p. 10). They hint that routines are not actions *per se*, but reproduce or change in a sphere which is largely tacit and which influences and guides actual management accounting practices.

The above argument risks conflation by portraying management accounting as structure and action (Englund & Gerdin, 2008). This may cause things to become confusing and potentially contradictory (Quinn, 2011). Burns & Scapens have defined rules as a “formally recognised way in which things should be done” and as “formalised statements of procedures” (2000, p. 7). These definitions brings both rules and procedures into one term, i.e., they use the budget as a practice to illustrate the definition of rules and routines, and budgeting procedures are denoted by “a set of rules laid down in the budgeting manual” (2000, p. 6). However, changing the form of budget preparation from backward to forward-looking does not mean that the budget has been abandoned. Rather, the obligatory use of the budget as a technique is still effective, but only the manual/official procedures that guide the course of possible actions are changed.

As the fieldwork progressed, rules on how things should be done did not help the researcher to understand the process of implementation of the commercial rules that were being imposed by ParentCo. These commercial rules neither elaborated the manual procedures that explained to RefCo how commercially-oriented production planning should be conducted, nor did they attach clarity to how CAS should be, i.e., how to assign (in)direct costs to products for the purpose of commercial decision making. Instead, ParentCo left to RefCo the responsibility for: (a) infusing commercial rule into CAS, and (b) developing manual procedures for production planning and CAS.

As such, the case evidence emphasises the need to make a distinction between rules and procedures so as to preserve the duality between the realms of institution and action. Figure (7-3), below, explains the process of the evolution of rules, procedures and routines for production planning and CAS practices at different points of time, within RefCo.
Commercial rules were only a concept that underlined ParentCo’s obligation, which stipulates the necessity to adopt commercialisation into production planning practices. By contrast, the outcomes of the operationalisation process for commercial rules are procedures. These procedures form a documented representation that reflects the official actions, for practices of CAS and production planning, that guide day-to-day routine. So, in the context of management accounting, procedures comprise the manuals that explain the official steps by which to undertake a particular technique.

**Figure 7-3 Institutionalisation process of CAS**

The argument above gives rise to explicit-implicit rules and procedures as a continuum. Rules might be “understood to be more or less fluid (incomplete) and subject to a practical dynamism” (Morgan & Olsen, 2011). Equally, the association between the implicit and the dynamic is also addressed by Burns & Scapens, but still suffers from the problematic of combining rules and procedures into one term. They outlined this thus:

*In various types of organisational activity, routines may emerge which either have deviated from the original rules, or were never explicitly set out in the form of rules. In such cases, it may be decided to formalise the established routines in a set of rules, e.g., in a manual of procedures (2000, p. 7).*

They argue that rules are not always elaborated in detail, if they exist. In such a case, Quinn defines rules as “a physical representation of a routine, which are
formalised in a documented fashion and serve to guide action” (2011, p. 344). These definitions are informed by the assumption of an absence of rules.

Alternatively, the commercial rules by which RefCo is obligated to take up commercial means to manage their business are explicitly articulated. Such rules, in contrast, lack manual procedures that explain how business should be managed in a commercial manner. This study thus suggests that the introduction of rules, as a generic scheme, does not necessarily mean that they are implicit. Rules can be explicit, such as the imposition of the transformation from being technically-oriented to becoming commercially-oriented, even though this transformation is carried out without detailed procedures.

This study also contributes to recent debate on the definition of routine. By drawing on Hodgson’s (2008) argument, Burns defines routine as a “propensity to act rather than action per se”, which draws on a distinction between potentiality and actuality (2009, p.1). This did not help the empirical research to examine routine, because the potentiality to act may or may not become action. It is therefore difficult to observe routines unless we have seen their artefacts (Johansson & Siverbo, 2009). Even then, when we observe the course of acting out as routines’ artefact, it is hard to know when the first ever time that practice became an organisational routine was. Alternatively, a ‘recurrent event’ is an important property which underlines organisational practice that has or has not become routine (van der Steen, 2011). Only through repetitive meetings that were chaired by the Technical Director and the Operations Engineering Coordinator, we understand that checking production planning with Platts, the representation of commercial rule, had become a daily organisational routine. Similarly, this applies to the cost allocation practice (CAP) for assigning (in)direct cost to products to help commercial decisions.

Crucially, Hodgson (2008) warns against the conflation of routine as “recurrent behavioural patterns” that emphasise “actuality”, and as “rules, procedures and dispositions” which underline “potentiality”. In this sense, there are threefold definitions of organisational routines, namely: “recurrent behavioural patterns”; “rules or procedures” or “dispositions” (Becker, 2004; 2008). However, recurrent behaviour is not recurrent dispositions, nor is it the potentiality to act. While the former stresses repetitive action, the latter underlines endurance/ a propensity
to act that depends on a set of conditions by which this potentiality can become the form of action. This is consistent with Hodgson’s (2008) argument that repeated behaviour is important in establishing a routine, but that routine and behaviour are not the same. Here, routine is a collection or group of individuals’ habits. So, repetition is important in establishing routine. As such, this study defines routines as the potentiality to re-engage in the same tendency to act out such a routine upon procedures, as noted above. Further, routine is the phase immediately before acting out a particular procedure, but it is not action per se. Commercially-oriented production planning and the assigning of direct cost to the final products have the tendency/ potentiality to be re-enacted when there is the necessity to do so.

Prior to establishing organisational routines, this study would emphasise the importance of acquiring knowledge in order to act out an accounting routine. It was noticed that neither the daily routine of commercially-oriented production planning, nor the cost allocation practices (joint and common), could be performed prior to the acquiring of commercial knowledge and skills. In this sense, some argue that routine is “a potentiality or capability” to act (Cohen et al., 1996, p. 683 cited by Hodgson, 2008). Cohen et al. have portrayed a routine as being “an executable capability for repeated performance in some context that [has] been learned by an organisation in response to selective pressures”. However, the potentiality to act is not the same as the capability to do so, and the latter is conditioned by the need to acquire knowledge and skills. For instance, although the engineers and accountants of RefCo had the consciousness to perform commercially-oriented production planning and CAP, it was difficult for them to do so in the absence of guidelines from ParentCo (manual procedures), as well as the lack of knowledge and skills. As Hodgson suggested, a routine is “a generative structure or capacity within an organisation. Routines are “organisational dispositions to energise conditional patterns of behaviour within an organised group of individuals involving sequential responses to cues” (Hodgson, 2008, p. 21).

Supporting Hodgson’s suggestion, this study suggests that there are three factors that trigger the potentiality to act, namely: (a) the consciousness to act; (b) the conditions to act, and (c) the capability to act. Individuals may or may not
have the capacity to act. In the very early stages, neither the Processes Engineering Co-ordinator nor the Technical or Commercial Directors had the capacity to operationalise commercially-oriented production planning (CPP). Lack of knowledge was the main pretext. This means that “submerged repertoires” are capacities which represent the knowledge and skills by which the potentiality to enact the CPP routine may be possible, are dependent on a set of conditions. So, the capacity to act is not the same as the potentiality to act. This is consistent with Nelson and Winter, when they describe routine in terms of a capacity that is the “organisational analogue of individual skill” (Nelson & Winter, 2002, p. 30). In the case of a lack of the capacity (knowledge and skills) to act, it is hard to expect the potentiality to enact CPP or CAP. In other words, the process of acquiring knowledge and skills is important before discussing the potentiality to act out routine.

Having developed the concepts of rules, procedures and routines by drawing on case study observation, the following section discusses how these elements have shaped each other in constituting the institutional system that defines tight coupling across its components. The inter-relation across rules, procedures and routines of CPP and CAS is the matter of the change and resistance, discussed in the section that follows.

7.2.1.2 Interdependence across the institutional system

This subsection aims to explain: (a) what is meant by institutional interdependence45; (b) what was the key understanding of both processes of CAS change, and resistance to change; and the implications for institutional theory.

Institutional interdependence defines inter-relations amongst organisational practices, including rules, procedures and routines within an organisational system; and the latter is governed by an institution. This was the major contribution of this study, to explain the processes of change, and resistance to change, that occurred, respectively, in the high- and less institutionalised

45 Organisational coherence, interdependence and inter-connectedness are using as interchangeable terms
practices of CAS. In Burns & Scapens’ framework, institutionalisation explains the process of embedding a particular practice of management accounting, and this embeddedness is examined in terms of a group of individuals’ habits, as an organisational routine. The following Figure emphasises this:

Figure 7-4 Embeddedness of practices

In contrast to Burns & Scapens’ institutional interdependence, this study dealt with the inter-relationships between production planning and the costing system, as a group of organisational practices (rules, routines and procedures) that together constitute an institutional system, shown in the following Figure:

Figure 7-5 Interdependence across practices

This suggests that institutional interdependence represents power across the components of an institutional system, rather than the power of embeddedness in each individual practice within an organisational system. This interdependence was the key understanding of (a) the occurrence of change in high- institutionalised CAS, in relation to ParentCo’s initiative, and (b) significant resistance to change in CAS, in relation to the consultants’ initiative.

As previously discussed, CAS was financially-oriented and was designed to serve the financial reporting that was needed by ParentCo. This was shaped by the accountability relationship between ParentCo and RefCo that focused on tariff-based operations. This technical way of thinking had influenced the scope
and objectives of CAS since the establishment of RefCo, but was brought into question by the imposition of ParentCo’s commercial rules. Importantly, ParentCo is the owner and the only source from whom RefCo can obtain funding. Such an accountability relationship undermined any chance of resistance.

Additionally, ParentCo committed RefCo, through the commercial rules, to structural changes. These changes aimed to ensure the process of infusing commercialisation into the operational level, and especially into the operations and cost accounting divisions. This transformation required that production planning be a commercially-oriented, instead of tariff-based operation. The continuation, for a while, of the use of financially-oriented cost practices, resulted in a performance crisis due to which their suitability became subject to disagreement amongst the decision makers (Oliver, 1992). As such, it was pointless for accountants to resist the change to the cost accounting system, since the decision makers were concerned with commercialisation. This implies that the commercial rules have fundamentally disrupted the existing financially-oriented cost accounting rules and routines (Burns & Scapens, 2000); but, surprisingly, this need for fundamental rethinking did not encounter resistance to change. Importantly, the ParentCo left to RefCo the task of designing the cost accounting system, including the cost allocation practices, to fit the operating processes.

In the absence of guidelines, e.g., manual procedures, RefCo urged a committee, drawn from both the technical and accounting departments, to design the cost accounting system. As such, CAP was voluntarily adopted and the process by which these practice developed resulted in early and deep involvement, both by engineers and cost accountants. However, it was a difficult task for the accountants to develop a practice for assigning direct costs to final products. While the role of the engineers was thus to elaborate in detail how the operations processes were undertaken, this forced the accountants to develop new rules: the needs to develop cost allocation practices; procedures; to outline how to allocate joint and common costs at each split-off point for individual final products, and routines: to stress the situations where CAP needed to be enacted. In so doing, both accountants and engineers brought their knowledge
into one place: a spread sheet. Through social (inter)action between engineers and accountants, they were able to develop CAP that is tightly coupled with the operational processes through the engineers’ knowledge.

This contributes in two ways to the notion of the power of the system (institution) that was suggested by Hardy (1996), and developed by Burns (2000). First, this study suggests that the power of the system could be expanded to include both: (a) the power of individual components in terms of embeddedness, and (b) the power of cross components in terms of interdependence. Second, this study also suggests that the influences of power’s dimension are not equal. While Hardy (1996) assumes that a collection of power dimensions need to be mobilised against the power of the institution, this study has revealed that such a dimension was not so powerful, as it needed to be supported by power over resources in order to resist the consultants’ proposed changes.

This also responds to calls made to study inter-relations between accounting and other organisational routines (cf. Scapens, 1994). The notion of institutional interdependence fleshes out Scapens’ (1994) advice to explore the role of accounting in providing an institutional basis, rather than rationality, as he suggests:

Rather than providing the basis for rational economic’ choice, accounting provides some of the routines which both maintain organisational coherence and give external legitimacy. […] in this context it is important not to assume that accounting necessarily has the central role in organisational routine.

While CAS was encoded by the outcomes of change that made the production planning practices commercially-oriented, acting out the latter is, in turn, fed by cost information. This tight coupling underlines the power of interconnectedness across these components of the institutional system, which matters both to the processes of change and of resistance to change. It is argued in this study that these practices acted collectively, whether in change or resistance processes. The interdependence across this collection of organisational practices (rules, procedures and routines) was triggered by the institutional pressure of ParentCo, on one hand, and their development, which weighed together in opposing the consultants’ changes, on the other.
Additionally, the interdependence of the institutional system provides an addition to the institutional definition of accounting that was suggested by Scapens (1994, p. 301), that is:

*It is argued that accounting as institutionalised routine creates understandings of activities according to particular sets of accounting rules and procedures which enable decisions to be made and activities undertaken in a complex and uncertain world.*

The interdependence of institutional system components also represents both functional/technical and institutional pressures of change, as Oliver (1992) suggests. However, the functional pressure underlines the operational process, rather than efficiency. These functional and institutional pressures are found to not only be inseparable, but they may also be two sides of the same coin (Hopper & Major, 2007; Yazdifar et al., 2008). In this respect, Modell (2002) advances six hypotheses under which cost allocation practice (CAP) may be tightly/loosely coupled to the operations process (see Chapter 2). However, Modell’s study did not provide a detailed account of the process by which CAP becomes (de)coupled. Further, the six hypotheses that Modell suggests were drawn from antecedents outlined by previous literature. As such, these hypotheses may not be the case, as the business environment is not similar.

In contrast, this study has provided a detailed account of the micro-processes of inter-relationship between operations control and cost allocation practices. The notion of inter-connectedness also advances our understanding about why, how and when CAP becomes (de)coupled from, or coupled with the operational controls/processes. More specifically, this thesis has examined the interplay process between CAP and production planning in detail by conducting a case study. So this study bridges a research gap by suggesting the notion of institutional interdependence between two types of organisational rules: the procedures and routines of cost allocation practices and production planning practices in a highly complex industry.

Institutional interdependence is the focal point of revolutionary change in RefCo’s CAS which did not meet resistance. It should be noted here that revolutionary change does not mean advanced CAS techniques. Rather, it is a
fundamental change in the way of thinking which has shaped the process of changing CAS (Burns & Scapens, 2000).

7.2.1.3 Institutionalised practices versus taken for grantedness

The institutional interdependence also contributes to Burns & Scapens’ framework in terms of ‘revolutionary’ versus ‘evolutionary’ change. It is argued that technical accounting change (e.g., a change in the cost systems) will likely be ‘easier’ and less troublesome when the new ‘rules’ (i.e., new cost systems) do not conflict with, or challenge, the existing and dominant organisational routines and institutionalised ways of working (Burns & Scapens, 2000). Conversely, they add, technical accounting change which conflicts with existing routines and institutions is more likely to cause problems and have more chance of failing to reach its intentions. In the Burns & Scapens’ (2000) framework, there is a great deal of emphasis on the strength and inertness of established institutions, and, in particular, on their unquestioned and taken-for-granted qualities, in ensuring that new innovations which do not align sufficiently with the embedded institutional base are likely to be difficult to implement. It is difficult to deal with the existing components of the institutional system that is being disrupted through revolutionary change, and the active influences that change to become evolutionary. Burns & Scapens’ framework did not deal with conditions in which taken for grantedness can be questioned (see Oliver 1992; Seo & Creed 2002).

In contrast, in the RefCo case study, we have observed occurrences which appear to question some of Burns & Scapens’ (2000) important conclusions. That is, in RefCo, when the parent organisation imposed changes aimed at instilling a greater (and fundamentally different) commercial orientation to CAS, the transition was actually smooth, and there was virtually no resistance. The (potential) resistance from the embeddedness and taken-for-granted nature of (settled and) institutionalised ways of working in RefCo, as highlighted in Burns & Scapens (2000), did not apply in this case. Equally, the outcome of changes that were later recommended by the external consultants also seemed to contradict what is suggested in Burns & Scapens’ (2000) framework, i.e., although the proposed (ERP systems-based) changes from the consultants seemed, on the face of it, to be quite complementary to the new commercially-
oriented routines and ways of working, the organisation actually experienced considerable resistance and conflict. Moreover, it was the accountants who, in particular, mobilised their power to resist such changes being ‘sold’ to the firm by external consultants. In other words, the RefCo case appears to suggest that even when cost accounting systems are deeply institutionalised, a ‘revolutionary’ change that aims to alter the underpinning institutional basis of that practice, can actually happen in a relatively smooth and a-resistant way.

The above evidence challenges the conclusion that management accounting rules and routines can be held in place by taken for granted assumptions. This study suggests the notion of the inter-connectedness (interrelations) of the institutional system as an alternative key with which to interpret the process of change in high institutionalised practices of CAS, and resistance to change in less institutionalised practices of CAS. The tight coupling between the practices (rules, procedures and routines) of commercially-oriented production planning and cost accounting practices was, for instance, the source of change and resistance processes. In contrast to Hardy (1996), the power of the system (taken for granted) was neither sufficient to cope with the needs of ParentCo, nor with the consultants’ change initiative. Rather, a large part of these processes of change and resistance was triggered by the power of interdependence within the institutional system, but was facilitated by mobilising power over resources and politics. Such a contribution comes with Ribeiro’s (2003) conclusion, which found that accounting rules and routines have been held in place by circuits of power, rather than by taken for granted assumptions (see also Scapens, 2006; Ribeiro & Scapens, 2006).

The above discussion may suggest a distinction between institutionalised and taken for granted practice (assumption). Passing knowledge through time, from one generation to another, could represent this distinction. Institutionalised practices underline a shared understanding of the appropriateness (functional consistency) of accounting practices. These practices were used in a conscious way in the early stages, when actors were able to justify and defend what they were doing because they were aware of such practices’ background (Oliver, 1992). The former Co-ordinator of Engineering Operations was, for instance, aware of why, how and what he was doing: commercially-oriented production
planning. This also applies to the accountants, who showed overt resistance to changes that threatened them with a commercially-oriented cost accounting system, although it would be less institutionalised but would be tightly coupled with CPP. In other words, institutionalised practices emphasise how significantly and deeply an accounting practice is inter-connected with other organisational practices.

By contrast, the above is not the case for the new Operations Engineering Coordinator. Using Burns & Scapens’ logic, questioning commercially-oriented production planning undertaken by the new Operations Engineering Coordinator was understood as an illogical question, similar to “we do [commercially-oriented production planning] because we have always done [it]; it is an unquestionable aspect of our day-to-day organisational life” (2000). Such a case could explain what is taken for granted that underlines the dissociation of the historical background of commercially-oriented production planning between the former and the new co-ordinator, since the latter unconsciously enacted commercially-oriented production planning (Burns & Scapens, 2000). In other words, institutionalised practices emphasise inter-relations between components of the institutional system, whereas taken for granted assumptions represent the advanced stages of institutionalised practice due to passed-on knowledge and to doing things in an unconscious way (see also Burns & Scapens, 2000; Scapens, 2006).

7.2.2 Methodological contributions and implications for emerging researchers

This section draws on the experience of the present researcher as a PhD student in suggesting how to manage qualitative (management) accounting research, especially a case study, as an iterative process. These implications are also extended to discuss the advantage of computer-assisted qualitative data analysis software (CAQDAS), focusing on NVivo. It addresses how NVivo can be used (a) for data management; and (b) to fulfil recent calls for consideration of new criteria for qualitative research, namely: ‘authenticity’;

7.2.2.1 Managing case-based qualitative research

Undertaking theoretically informed qualitative research at PhD level in the field of management accounting requires high skill levels and attention to time management; case study based research is especially time consuming (Scapens, 2004).

It should be clear that the process of case based qualitative research intertwines several strands that need to be closely managed. These strands are, namely: the research gap; the theory; and empirical work. Although each of these is no less important than the other in leading the research journey forward, they interplay in an iterative manner. Unlike quantitative research, case based qualitative research is a backwards and forwards process, and it is difficult to move from one well-established strand to another. Once a researcher identifies a research gap in the previous literature and designs a theoretical framework, these two may become disconnected from the fieldwork by being focused on issues that are more interesting than the original starting point. Some of the time span of a PhD course is thus lost in irrelevant issues. This contrasts with science based subjects, in which there is laboratory (experiments) based research. In this kind of research, it is easy to identify clear cut lines between laboratory work and reporting (writing up) the experiments’ results. In other words, the design of a PhD course of three years full time, plus a year for writing up, is more influenced by scientific research. Such a research problematic needs to be given serious time management when undertaking case based qualitative research.

Drawing upon my experience, case based qualitative research for a PhD should be professionally planned and managed. The first year might be divided into four parts: concern; literature review; pilot study; and theory. A researcher may need to allocate no more than four months to familiarising him/herself with

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46 Again, this was a workshop organised by the European Network Research of Organisation Accounting Change (ENROAC) as part of its 6th summer school.
previous studies, and what it is that has been left unanswered needs to be explored. In the meantime, it is important for a researcher to think about the subject of the case study fieldwork, because the process of negotiating case study access is not an easy task (Berry & Otley, 2004). Another advantage of this is to assess whether that case study is suitable for exploring or narrowing the intended research’s purposes and questions, otherwise seeking an alternative case is the only option. Following this process may keep literature review quite relevant to what will be explored. In order to gain access, a researcher may need to conduct an exploratory visit to the case study site as a pilot study, but more than two months might be an overestimation. This is not only to conduct initial observations to see what is going on there, but also to establish and develop relationships with the organisational actors who will be the future interviewees for the case study research. Then, it is time to sit back and think deeply about the empirical puzzle. However, it might be difficult for a first year PhD researcher to think critically unless s/he is engaging in theories which advance our understanding by giving ‘a way of seeing’ why something is happening (Humphrey & Scapens, 1996). As such, it is important for a researcher to engage in a course of six months’ of reviewing both the methodological approaches and the commonly used theories in his/her research area. This should result in a report on the methodological choices and fundamental ideas and key aspects of commonly used theories. In the meantime, while reviewing theories, a researcher may need to think about the data collected during the pilot study. There are at least two advantages to this process, namely; the researcher will not become biased towards a particular theory; and the researcher will become confident with theoretical choice by familiarising him/herself with the limitations of others. Having designed a theoretical framework, a researcher may need to think: what is next?

The second year of the PhD is very critical and might be divided into four parts, each of which lasts for about three months. The first three months of this stage should be assigned to intensive fieldwork that includes conducting interviews and observations, as well as collecting documents. In the meantime, it might be good practice for a researcher to transcribe immediately the interviews conducted. There are three major advantages to this process, namely; (a) playing back interviews and reviewing fieldwork notes reveals critical issues and
key actors that were un-noticed, as a researcher is engaged in note-taking and/or observation; (b) transcribing interviews is time consuming, especially if they are conducted in a different language from the study’s language (see Chapter 5); and (c) the advantage is that this narrows down the researcher’s questions and focus on a particular issue. However, the process of preparing data for analysis may take no less than three months of hard work. The above process may involve a researcher with a massive amount of data, the challenge is in how to deal with this to extract a consistent story. In the meantime, while analysing research data, a researcher may need to think critically about the data, informed by the theoretical framework designed earlier. However, it is not surprising if the research question and purpose change (Ahrens, 2004). At this stage, NVivo might be helpful in data management and analysis, as will be explained in the following section (see Chapter 5). The last three months of the second year of the PhD course may need to be devoted to writing up empirical work in an analytical manner.

The third year of the PhD course could be messy, and the case story can dominate a research process. This process is entirely iterative: where a research direction is forwards and backwards. It might be reasonable to allocate between six to eight months to infuse/ integrate theory into the case story. This process is the most challenging task of the PhD thesis and once it is fairly conducted; the PhD’s pressure is over. As seen, the theoretical framework was designed according to pilot study observation and it informed the case study story. By contrast, the research process may move backwards as the theoretical framework may still need to be updated, and the same applies to the literature review. This iterative process may continue until the fourth year and its burden depends on the extent to which the direction of the research process has drifted from the literature review and theoretical framework.

7.2.2.2 NVivo in supporting qualitative research

As noted, data collection and analysis are very critical stages of a research project and need to be professionally managed (Berry & Otley, 2004). NVivo is helpful software for data management, visualising a consistent case study story, and making a theoretically informed case study analysis. These purposes meet, respectively, three criteria that have recently been suggested, namely:
authenticity; plausibility; and criticality, as will be discussed (see Baxter & Chua, 2008; Lukka & Modell, 2010; Scapens, 2004). NVivo is a “software [that] supports qualitative and mixed methods research […] lets [a researcher] collect, organise and analyse content from interview, focus group discussions, surveys, audio, social media and web pages”

Authenticity concerns the relationship a researcher has with the fieldwork undertaken (Baxter & Chua, 2008). This relationship should emphasise three issues in relation to the fieldwork: the presence of the researcher; the length of the course; the character and quality of evidence. All of the aspects of authenticity underline one function of NVivo, that is, data management. It is argued that case study research requires the researcher to be very well organised, both when collecting evidence and when synthesising the results into the building of a database (see Scapens, 2004; Berry & Otley, 2004). Berry & Otley (2004), in particular, believe that this raw material of data constructs a case record which is the initial step in analysis, whereby a holistic and comprehensive picture may be developed, but it needs to be managed carefully (see also Scapens, 2011). From an ethical perspective, it is important to protect confidentiality agreements by ensuring that data is stored securely so as to meet commitments and keep promises (Gagnon, 2010). NVivo therefore helps to meet the requirements for the collection, organisation and the ensuring of confidentiality by keeping data in one secure place (Anderson-Gough, 2004; Hutchison et al, 2010).

Plausibility is about making field research sensible and believable (Baxter & Chua, 2008). NVivo facilitates many aspects of qualitative research as an iterative process, in terms of theory and transparency which, ultimately, enhance the study’s validity (Hutchinson et al., 2010). It addresses validity threats by (a) interrogating interpretations for sound inquiry, (b) scoping data for a well-founded analysis, (c) establishing saturation for robust explanation, (d) maintaining audit and log trails, and (e) using visual representations to rule out validity threats (Siccama & Penna, 2008; Kikooma, 2010).

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47 (QSR International: http://www.qsrinternational.com/products_nvivo.aspx)
Criticality concerns the theoretical generalisation that increases the external validity of the study’s findings. NVivo helps a researcher to develop theoretically informed explanations that draw on available theoretical and empirical knowledge. In so doing, it allows the building of thoughtful interpretations through closely linked analysis of qualitative data (see Kikooma, 2010; McKenna, 2010). More specifically, it is a place where personal thoughts, theoretical ideas, and any concerns relating to a research project can be recorded. Another feature of NVivo allows the visualising of the case study story, which helps to track consistency (see Chapter 5).

Overall, NVivo is an appropriate tool for qualitative research, which provides a place for secure data management and an alternative option to manual analysis (Auld et al., 2007; Walsh 2003). It is a communicative tool in the research process (Anderson-Gough, 2004). One advantage of keeping the research journey in one place is that it allows for links to relevant documents and nodes to be created in the programme.

### 7.2.2.3 Interpretive (processual) approach

Using a processual approach is fruitful in understanding management accounting maintained in a stand-alone system, rather than in ERPs. Such an approach focuses on the process of interaction between ERPs and management accounting as an ongoing process, rather than by using a survey to identify the techniques that have been adopted. This involves the researcher in raising questions such as “how?” and “why?” there is misalignment, which enables him to trace back to the sources and processes of these misalignments. Introducing ERP into RefCo revealed a significant misalignment between what it could provide and what was needed from the ERPs in terms of cost accounting. Such misalignment resulted in significant conflict between the consultants and accountants. Whereas the consultants perceived the objections of accountants to ERPs changes as being ‘irrational resistance’ (Roberts & Scapens, 1993); the accountants were getting what they wanted from existing accounting practices, and their only need was to computerise these practices to save time. A processual approach, however, allowed the researcher to undertake a deep exploration of both views. It was found that interaction between ERP and management accounting is a complex process and difficult to
explore by survey.

7.2.3 Practical contributions and implications

This section discusses the importance of the research findings for accounting practice, including the implications for academics and practitioners, as well as thinking about what should be considered when managing change (Scapens, 2012a).

7.2.3.1 ERPs and management accounting change

This thesis adds to prior studies by presenting a processual account that explains why and how CAS practices operate in specialised/stand-alone systems, rather than being integrated into ERPs. As noted, previous studies that have examined the impact of ERPs on management accounting change have been organised into two groups (see Chapter 2).

The first group is technically-oriented and assumes management accounting change is a function of ERPs and vice versa is unacceptable (Granlund & Malmi, 2002; Hyvönen, 2003; see also Section 2.1.3). This is attributed to the imperative of the ERP package, which is built around so called ‘best practices’; and it is illogical from the view of these studies to imagine that accounting practices that are subject to change are superior. As such, the complexity of the current version of ERPs is outlined as the key point to explain the finding that accounting techniques are maintained in stand-alone systems. In fact, this group of studies failed to give attention to examining accounting practice per se, rather than making comparison between the status of management accounting before and after ERPs implementation (Scapens, 1994). As argued, the resistance to accounting change that results in maintaining accounting practices in stand-alone systems might be rational had the studies above examined the institutional context of the practices that were subject to change (Scapens & Roberts, 1993).

The second group of previous studies draws on an institutional framework to understand the existence of misaligned practices in CAS that are embedded in the ERP package and in the implementing organisation (Soh et al., 2000; 2003; Soh & Sia, 2004; Kholeif et al., 2007; see also Section 2.2). These studies have
advanced our understanding about how the institutional and organisational contexts may hinder the process of ERPs' implementation, which challenges institutionally induced accounting practices. However, they did not examine voluntarily adopted practices (Kholeif et al., 2007; 2008; Jack & Kholeif, 2008); or explain why voluntarily adopted accounting practice was neither adapted nor configured into ERPs (Soh et al., 2000; 2003; Soh & Sia, 2004). Further, although the role of negotiation between consultants and organisations was considered, they did not present the micro-processes of these negotiations. While these studies have advanced our understanding about how, voluntarily, practice becomes tightly coupled to operational processes, they did not provide a micro-explanation of how such voluntary practice becomes tightly coupled (Modell, 2002)

This study bridges the research gap explained above, that is, the role of ERPs can range from being the driver of change to being the stabiliser that sustains existing management accounting. Attention should be given to the purposes of ERPs’ adoption, rather than to the outcomes of implementation. The ERP system computerised the financial accounting processes as it was intended it should. For instance, the primary reason for its adoption was to produce the timely financial reports that were demanded by ParentCo. In such a case, the ERP system enforced the existing financial accounting practices without change, with the exception of the real time access they offered. By contrast, the scope of ERP at the time of adoption was not designed to cover accounting that attended to cost accounting.

‘Best practice’ is a contextual and global concept. Contextual, in this sense, denotes an organisational viewpoint, whereas ‘global’ represents a consultancy viewpoint, that is, ERPs works and succeeded in a ‘Western’ countries; and this it should work elsewhere even though conditions and norms are entirely different. So, this research contributes to prior studies that research the interplay process between ERP and management accounting practices, but it should not be assumed that one is superior to the other. On one side, best practice based ERPs could be viewed as being superior and could be assumed to be drivers of change. On the other hand, organisational best practice could
also be viewed as being superior and ERPs are needed as stabilisers for existing practices, rather than as drivers of change (Scapens & Roberts, 1993).

Most of the prior studies conclude that there is no association between ERPs and business process re-engineering (BPR hereafter). In contrast to prior studies, the findings of this case study show that BPR is associated with misalignment in ERP implementation, rather than with the introduction of ERPs (Granlund & Malmi, 2002; Hyvönen, 2003; Scapens & Jazayeri, 2003). BPR involves a degree of organisational accounting practice change. Regardless of whether these practices are imposed and/or voluntarily adopted, the BPR should be viewed as a way to reconcile the practices that are embedded in the ERP package, and the organisational context that is subject to implementation (Soh et al., 2000; 2003; Soh & Sia, 2004; Kholeif et al., 2007).

This study noted the lack of prior research that has examined the association between operational control and the cost accounting system, especially in the oil refining industry (Modell, 2002; Al-Omiri & Drury, 2007). This study, however, has provided a detailed account of why, when and how, the practice of cost allocation is voluntarily adopted and becomes tightly coupled with operational control over the oil refining process. Instead of linearity, the study has elaborated the complexity of implementing CAS that involved power and politics.

More specifically, this study has contributed to filling a research gap that isolates technical from institutional pressures. Some studies of this research body observe political and social aspects of accounting, whereas others examine the technical aspects of accounting practices. However, they do not explain how social and political dimensions are mobilised to protect issues such as interconnectedness between operational processes and cost accounting practices. This view is supported by Oliver (1992), who suggests functional pressure should not be isolated from institutional pressure.

The prior studies made calls for exploration of the role of accounting as sense making (see Chapter 1). More specifically, this study explains how accounting creates an institutional basis that advances decision makers’ understanding of operational activities (Scapens, 1994). It has also presented processes by
which the cost allocation practice has been developed in line with institutional (commercial) rules to add sense to day-to-day activities in that operational process.

This study has also confirmed the findings of earlier studies in terms of the co-existence of change and stability (Siti-Nabiha & Scapens, 2005; Lukka, 2007). As noted, the CAS of RefCo was subject to two change initiatives, which were introduced by ParentCo and a consultancy organisation; and the latter was part of the ERP project. Whereas CAS was significantly changed in line with the commercial rule forced by ParentCo, CAS exhibited resistance to further change that was introduced by the consultancy organisation.

### 7.2.3.2 Issues to consider when managing change

This subsection addresses the implications for practitioners (implementers and implementing organisations) in the change process. These implications are drawn from the results of exploration of the interplay process between ERPs and CAS at RefCo. Burns et al. (2003) have recommended that the following questions should be asked when embarking on a programme of management accounting change (Burns et al., 2003, p. 45):

- What are the organisation’s taken-for-granted ways of thinking, and how internally consistent are they?
- Where do these taken-for-granted ways of thinking come from?
- How are these ways of thinking reproduced and reinforced, i.e., are they encouraged by existing incentive schemes?
- Who are the powerful groups within the organisation, and what are their taken-for-granted ways of thinking?
- Are these taken-for-granted ways of thinking potentially incompatible with the new systems within the change programme?

This study emphasises the importance of understanding best practice in its context. Consultancy organisations view best practices as those whose effectiveness has been proven in organisations that operate in a Western context. However, this effectiveness might not necessarily be the same in the global context. Instead of viewing best practice in regard to how advanced a
particular accounting technique is, it is the organisational view that concerns the extent to which that practice fits other components of the organisational system so that organisation is given what it wanted (Scapens & Roberts, 1993).

Interdependence across the organisational system, e.g., rules and routines, is the key to the understanding of the interplay process between ERPs and CAS. The findings from exploring RefCo suggest that ParentCo has interests and influence over elements of the institutional system, such as production planning and CAS (see Chapters 5 & 6). Regulated organisations, e.g., RefCo, which are willing to implement change, or that are exposed to imposed change, e.g., commercial rules, thus need to take into account the importance of these external constituents. At the micro-level, the politics and dimensions of power, including the power of system interrelations, are also important, since they have a direct impact on the success or failure of the change process (Burns et al., 2003).

This also brings us to the importance of understanding inter-relationships across organisational practices, including rules and routines (Scapens 1994; Burns 2009). The case of RefCo suggests that CAS, which was subject to change in relation to the ERP project, showed significant resistance that was led by accountants. While this resistance involved power and politics (social and political dimensions), technical inter-relations between CAS and production planning were the focal point of this resistance. The institutional interdependence of organisational practice(s) that is/are subject to change need(s) to be given strong consideration. Organisations need to think of that practice, cost accounting allocation, whether it is institutionally forced or voluntarily adopted, and how such change may affect other organisational practices.

Giving attention to organisational actors involved in the change may be more important. Influential organisational actors are argued to have power over the process to bring change forward (Hardy, 1996). By contrast, the powerless actor, e.g., the accountants, were able to assemble power by politicising powerful decision makers in order to protect inter-relations between cost allocation practice that was subject to further change by the consultants and production planning practices. This may suggest that attention needs to be
given to the involvement of accountants who undertake practices that are subject to change and who practise relations with other organisational rules and routines. So, the earlier the involvement of accountants’ practices that are subject to change, the less likely it is that the implementer will have to face resistance to change.

The impact of involving accounting in the change process may be negatively affected by behavioural habits and taken for granted assumptions. These elements may be difficult to explore in advance of change implementation (Hardy 1996). This study therefore suggests that training programmes are a fruitful strategy through which to expose contradictions in values and norms (Burns et al., 2003; Yazdifar et al., 2008). The more intensive presentations and real environment training programmes are, the less likely the change process is to encounter resistance to change.

7.3 The study’s limitations and opportunities for future research

As outlined, a research process is a series of choices made by researchers (Tomkins & Grove, 1983; Ryan et al., 1992). These choices include the selection of the research puzzle; the theoretical framework; the research design; the case study and the subjective interpretation driven by theory. These constraints are shaped by the researchers’ knowledge and limits of available resources, including time, cost, effort, case and information access, and skills. Taking one direction therefore inevitably closes off the possibility of other research choices. Such limitations may not necessarily be the same for other researchers. Rather, they may offer an opportunity for future research, and these limitations are discussed as follows:

First, the literature review of this study sought to understand misalignments of cost accounting practices in relation to ERPs implementation. It investigated the conditions and processes through which these misalignments came about and how this was particularly affected by interdependence between practices of operation control and cost accounting system. In future research, this important topic could be approached from different perspectives within the literature such as national and organisational culture (Hofstede, 1993); and/or management control systems (Nixon & Burns, 2005; Berry et al., 2009) to understand the
process of accounting change and/or stability. Future research inquiry might explore the influence which national culture (including social beliefs and symbols) might have upon management and costing practices. More specifically, that research might explore the role of costing systems in linking operational control with organisational beliefs (Simon, 1990).

Second, the adopted theoretical approach has been very focused, in particular leaning on an (NIS and OIE-informed) institutional framework. In particular, significant use was made of the concepts of deinstitutionalisation (Oliver, 1992), institutionalisation (Burns & Scapens, 2000) and power mobilisation (Hardy, 1996). However, these concepts in turn have their own limitations, as was discussed in Chapter (3). More specifically, the theory adopted represents only one possible framework of commonly used perspectives on management accounting change. This is a limitation in itself which could be addressed in future research by drawing upon different theoretical perspective. For instance, future research may use Actor Network Theory (ANT) to understand how the same object such as commercial rules, in particular Platts, as path-dependence might be interpreted by different agents and then have different implications for organisational change (Lounsbury, 2008; Rautiainen & Scapens, 2013).

Third, this study has investigated the conditions and process of revolutionary change in CAS of oil refining organisation in relative short-time. However, this change was not initiated by organisational actors per se; rather, it was imposed by the parent company. Therefore, relatively less is unknown or understood about how the embedded agents came to recognise the need of change (Englund & Gerdin, 2013).

Finally, this study was based on a case study that used semi-structured interviews and documentary observations as a strategy for its data collection methods. These methods have their own limitations in that they are costly and time consuming. Furthermore, there is a possible bias on the part of interviewees and the interviewer in interpreting social reality of change in costing system (Creswell, 2014). Although the above methods of data collection complement each other, shortcomings are still there in that they are subjectively understood and interpreted.
7.4 Final remark

This thesis explored the conditions and processes by which change occurs, or does not occur, in high-less institutionalised practices of CAS. Using an institutional framework, the study explored these themes in the case of an organisation operating in Libya. It challenges the notion of embeddedness in explaining change and resistance. Alternatively, the study found that interdependence across components of the institutional system, i.e., production planning, was the key understanding of processes of change and resistance, to change, in cost accounting systems.
### APPENDICES: APPENDIX No. (1): INTERVIEWS

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<th>Date</th>
<th>Position</th>
<th>Minutes</th>
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<tr>
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<td>20.11.11</td>
<td>Joint Interview of ERP-PM &amp; Internal Auditing Manager Department</td>
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<td>ERP-PM</td>
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<td>21.11.11</td>
<td>Accountant at Cost Accounting Co-ordination</td>
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<td>22.11.11</td>
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<td>5.</td>
<td>23.11.11</td>
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<td>23.11.11</td>
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<td>24.11.11</td>
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<td>24.11.11</td>
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<td>27.11.11</td>
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<td>27.11.11</td>
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<td>12.</td>
<td>28.11.11</td>
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<td>28.11.11</td>
<td>Operations Engineering Co-ordinator</td>
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<td>ERP-PM</td>
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<td>20.</td>
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<td>21.</td>
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<td>26.</td>
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<td>Joint Interview of Two Materials Specialists at Material</td>
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<td>05.12.11</td>
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<td>32.</td>
<td>06.12.11</td>
<td>Chairman of RefCo</td>
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<td>33.</td>
<td>16.12.11</td>
<td>ERP Finance Module OnSite (by Skype)</td>
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<td>34.</td>
<td>21.12.11</td>
<td>Joint Interview of Accountant at Sales &amp; Products follow up Coordination &amp; Co-ordinator of Importing &amp; Raw Material Follow up Coordination (Skype)</td>
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**Total Minutes of Interviews**: 1964  
**Total Hours of Interviews**: 32.73
APPENDIX No. (2): ORGANISATIONAL ARCHIVE AND DOCUMENTATION

GROUP (1): ORGANISATIONAL ARCHIVE

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<td>2.</td>
<td>Documentary Cycle of Commercial Department</td>
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<td>3.</td>
<td>Documentary Cycle of Materials Accounts Division</td>
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<td>4.</td>
<td>Flowchart of Materials Accounts Division Process</td>
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<td>Responsibilities of Commercial Department</td>
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<td>6.</td>
<td>Responsibilities of Cost Accounting Co-ordination</td>
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<td>7.</td>
<td>Responsibilities of Engineering &amp; Technical (Feasibility) Studies Dept.</td>
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<td>8.</td>
<td>Responsibilities of Finance Department</td>
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<td>Responsibilities of General Account Co-ordination</td>
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<td>14.</td>
<td>Responsibilities of Technical (Feasibility) Studies Co-ordination</td>
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GROUP (2): RESOLUTIONS, REPORTS, PLATTS

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<td>2.</td>
<td>Diagram of Refining Crude Oil Process</td>
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<td>4.</td>
<td>Feasibility &amp; Product Profitability Study of Crude Oil Mix-Blending</td>
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<td>Report of Visiting Ras-Lanuf</td>
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<td>Stock Accumulation Report</td>
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<td>Study for Reducing Refining Cost (Petrol)</td>
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**GROUP (3) ORGANISATION REPORTS**

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<td>Daily Production Report</td>
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<td>7.</td>
<td>Monthly Report for RefCo Management Committee</td>
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**GROUP (4): ERPs-RELATED DOCUMENTATION**

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<td>2.</td>
<td>Presentation of ERP Oracle App of Procure to Pay Life Cycle Overview</td>
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<td>3.</td>
<td>Presentation ERP Oracle App of Order Management</td>
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<td>4.</td>
<td>Presentation of Oracle E-Business Application Suite Implementation</td>
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<td><strong>4.2 Documents related to ERP Contract</strong></td>
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<td>Part (1): Introduction and Agreement Statement of ERP system</td>
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<td>6.</td>
<td>Part (2): Scope of Work &amp; Final Quotation of Contractor</td>
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<td>Part (4): Attachments</td>
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<td><strong>4.3 Documents related to ERP implementation process</strong></td>
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<td>Payroll Created Mar-09 &amp; Updated April 09</td>
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<td>Master Document of Application Extensions Functional Design of:</td>
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<td>Bank Reconciliation Report</td>
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<td>CAPEX Budget vs. Actuals Report</td>
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<td>Journal Voucher Form</td>
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# APPENDIX No. (3): CONTENT ANALYSIS FOR COMMERCIAL REPORTS

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