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The relationship between Management Accounting, profitability and operations in an uncertain world. Evidence from literature and practice

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The relationship between Management Accounting, Profitability and Operations in an uncertain world. Evidence from literature and practice

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ABSTRACT

At the heart of many core Management Accounting (MA) practices there is a potential mismatch between the assumption of a materially predictable future operating environment, and the reality of an uncertain and unpredictable world. Practices such as budgets, product costing, investment appraisal and financial projections, aimed at facilitating the achievement of profitability goals, are based on the assumption that the future is sufficiently stable and predictable to benefit from analytical calculation. However, we live in a world where the future can be uncertain, unstable and unpredictable. Does this mean that when operating conditions become unstable, unpredictable and uncertain many MA practices lose their core modus operandi?

This thesis addresses this issue through an interwoven mix of a longitudinal case study and literature reviews spread over three projects. The case study was longitudinal and based on in depth participant observation. The firm involved was a £38m UK logistics company. The study benefited from totally unrestricted access to all strategic, financial and operational activities and data, because of the author's senior role in the firm. The literature review was conducted using a targeted systematic review (Tranfield and Denyer, 2003) supported by additional narrative reviews. This synoptic paper provides a reflective synthesis of the findings and the contribution of the three projects which together constitute the research.

Four core interlinked findings emerged from the study, based on the assumption that the achievement of profitability goals is the primary goal of the organisation.

First, building on the proposals of (Otley, 1999) a framework showing the relationship between MA, profitability, operations and uncertainty is proposed. It demonstrates how MA financialises operations by creating a parallel financial space to the operational space; how profitability outcomes result from the financial consequences of operational actions; how the role of MA is to inform and control operational actions in a manner that achieves profitability goals; and how uncertainty has a critical impact on MA functionality.

Second, the differing dimensions and implications of uncertainty are distinguished. The principal distinction is between external and internal uncertainty. External uncertainties arise from unanticipated changes from customers, suppliers and the market and thus affect the predictability of the future on which plans and targets are based. The data gathered during the course of this research suggests that external uncertainty tends to be typified by pockets of instability oscillating with periods of relative stability. Internal uncertainties occur in relation to management effectiveness, reporting validity and choice of appropriate accounting perspective (five are identified - Product, Customer, Throughout, Process, Financial Accounting). The external uncertainties magnify the impact of the internal uncertainties by potentially changing and thus de-stabilising the requirements of management, the validity of reporting and the appropriateness of the accounting perspective used.

Third, Management Accounting Systems (MAS) respond to external uncertainties, and the aspirations of external financial stakeholders for increased profitability, by operating

in two differing modes – the first is fixed/control (Fixed), the second is inform/flex (Flex). Fixed is the default mode and assumes conditions of relative certainty; the role is to control the achievement of agreed plans and targets. Flex is intermittently initiated when, signalled by feedback, the impact of external uncertainties or profit pressures trigger the need to change original plans and targets. Calculative analysis informs revised operational plans aimed at maintaining the achievement of profitability goals; targets are flexed to reflect the changes. The intent is to develop a revised position of relative stability in which the achievement of profitability plans and targets can be controlled via reverting back to Fixed. The process is therefore continual, but appears to be typified by an uneven series of oscillations between the two modes.

Four, the Financial Accounting (FA) profitability measure, with the goal derived from external financial stakeholders, provides partial responses to the three internal uncertainties by introducing for each an element of certainty. For management effectiveness uncertainty, the profitability goal provides a relatively certain external referent which can be cascaded down the organisational structure, and against which performance can be evaluated. For reporting validity uncertainty, FA standards provide an authoritatively accepted definition of profitability, so that reported profitability is treated as if it were 'true and fair'. For multiple accounting perspectives uncertainty, four perspectives (Product, Customer, Throughout, Process) make up a range of MA tools for developing actions to achieve target profitability levels, and the fifth (FA) provides the definition of profitability; all five are complementary and compatible as their differing aggregations are composed of the same underlying financial transactions. These responses, however, are only partial as the aspirations of external financial stakeholders are in themselves substantially self referential and liable to change, and the underlying uncertainty of FA reporting validity still exists, even if treated as if it does not.

The study contributes to the further development of MA theory. It extends the Otley (1999) framework towards linking operations and profitability through parallel operational and financial spaces, and incorporating the central role of uncertainty. It adds to the debate in MA research on uncertainty by providing a classification of its dimensions, and its impact on triggering a requirement for differing MA modes. It highlights the central role of profitability in providing a stable certainty of purpose as a counterbalance to inherent internal and external uncertainties. It provides a clear identification of the differences and complementarities between MA and FA, FA defining the quantum of profitability achieved, MA facilitating the achievement of profitability goal. Finally the study inputs to a wide range of issues addressed by MA research which at their heart reflect the impact of uncertainty (Budgeting, Accounting Representation, Costing Perspectives).

The study contributes to practice by proposing a set of ten tenets designed to provide guidelines for MAS development, implementation and evaluation. These are drawn from a cross sectional deconstruction of the four findings, viewed as a whole, aimed at identifying the specific factors that have direct implications for practice. The intent is that these tenets provide a bridge between theory and practice, based on the premise that, since MA theory was drawn from practice, the test of MA theory development is its applicability and relevance to practice.

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This thesis has only been completed because of the help and support I have received from the faculty and staff at Cranfield School of Management, the management and staff at Hammond Logistics and the support of my family.

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Philip Smith,

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SYNOPTIC DOCUMENT

September 2007

1 Introduction

At the heart of many Management Accounting (MA) practices there is a potential mismatch between the assumption of a materially predictable future operating environment and the reality of an uncertain, unpredictable world.

The central role of MA is concerned with 'providing the information and control mechanisms needed to achieve organisational objectives' (Ittner and Larcker, 2001). The information element is provided by using techniques, such as product costing, customer profitability analysis and investment appraisal, to assess and plan management actions to meet organisational goals, normally defined in terms of profitability. The control element is provided by using techniques, such as budgeting, to develop targets and internal financial reporting to give feedback of variances of actual versus targets, and thus initiate remedial actions to be implemented where there are adverse variances. The overall process is therefore dependant on plans and targets being realistically achievable; however, this requires that the assumptions made about the future operating environment are materially accurate, and therefore that the future is relatively predictable and certain. Yet, while these core practices of MA are based on assumptions of future stability and certainty, the future is not stable and certain. Organisations and operating environments are in a constant state of flux. New customers may or may not be won; existing customers may be lost or change either their volume or service requirements; suppliers also change their services and prices; operating environments change under the impact of new competitors, changing technology and the impact of national and global economic conditions. Consequently, the future is not predictable and stable, but generally uncertain. How therefore can MA, based on assumed future predictability and stability, be used to control and inform actions so that they meet organisational objectives, when the future on which the plans and targets are based is uncertain and in a state of flux?

The importance of this issue has been recognised in a variety of differing contexts by a range of studies, but there have been few proposals on how the issue should be resolved. For example, (Hartmann, 2000), reviewing the uneven findings of Reliance on Accounting Performance Measures (RAPM) studies, specifically highlights the uncertainty paradox as being a central issue behind the uneven findings (the control role of MA being of least use under conditions of uncertainty, when it is most needed). (Goold and Quinn, 1990), in a similar vein, conclude that control systems are difficult to use when there is strategic uncertainty. (Chapman, 1997), reviewing accounting contingency studies, concludes that a focus on uncertainty has more potential than aiming to develop a comprehensive contingency theory. Such studies identify the problem, but limit their contribution to defining the issue, not proposals for its resolution. This issue also provided the stimulus for the author to undertake this research. He has used MA practices, based on variations of the practices discussed above, over a range of sectors, including direct sales, sporting clubs and logistics over the past 25 years. Generally, the companies that the author has been involved with were privately owned medium sized companies. In each case optimisation of profitability was specifically recognised as the primary organisational goal, and the author had full board responsibility for the development and use of MAS focussed on the achievement of

profitability goals. This practical experience raised for the author a continuing paradox. On the one hand, he assessed that the use of MA practices to inform future actions through future financial projections drawn from the analysis of past performance seemed to be of central importance to the achievement of profitability goals. On the other hand, the utility of the use of analysis of historic performance and the accuracy of these future projections was continually being challenged by the change in the future compared to experience in the past.

Both theory and personal practical experience therefore indicate that at the heart of MA there is a potential mismatch between the assumption of a materially predictable future operating environment and the reality of an uncertain and unpredictable world. This leads to the 'uncertainty paradox' that the utility of MA is potentially of least relevance when (in conditions of uncertainty) the need to inform and control actions is most required. Yet, despite this apparent paradox, MA techniques continue to have widespread use. This extends the uncertainty paradox into the context of practice as well as theory - why are MA practices so widely used if, at their heart, they are based on an assumption of stability and certainty when in reality the world is uncertain?

The purpose of this study is therefore to respond to this apparent paradox. Specifically, the study focuses on researching the extent to which MA can be used to guide operational actions to achieve profitability goals in an uncertain world, leading to the first part of the thesis title, 'The relationship between MA, profitability and operations in an uncertain world'.

The thesis adopts a twin track research approach – an in depth longitudinal case study and a targeted literature review. The in depth case study was adopted on the basis that, in order to unpack the factors underlying the apparent uncertainty paradox, in depth research had to be undertaken at the operational level so that the that the impact of uncertainty on the development, implementation and outcomes of MA uses could be assessed. The case used was an in depth longitudinal case study over a 30 month period on a medium sized logistics company with sales of £36m. The study benefited from total access to all financial and operational aspects of the company as a consequence of the author's role as Executive Chairman and Finance Director. This allowed the researcher to access at all organisational levels all aspects, both planned and actual, of operational actions, financial data and profitability outcomes. The targeted literature review was adopted to ensure that the research findings could be positioned within the context of prior relevant research. The core of the literature review was based on the systematic review process (Tranfield & Denyer, 2003) aimed at providing the identification, analysis and synthesis of prior research which specifically relates to the research issue identified. The systematic review was supported by general narrative review to both scope the field of research and respond to and expand specific issues and rolling developments.

The research was conducted over three projects with an intertwining of the case study and the literature review phases. This synoptic document aims to provide a reflective synthesis of the three projects. The aim is to draw out and synthesise from the three projects an overall assessment of the research issue being addressed, summarising the relevant findings, and assessing the contribution provided to both theory and practice.

The synoptic document therefore views the three projects as an integrated whole. The intention is to use the benefit of this reflective overview to draw out findings and conclusions which are of greater significance to theory and practice than achieved by the more localised findings of each of the projects. This has led to a reassessment and reinterpretation of some of the earlier assessments and conclusions made during the three projects. Where this has occurred these reinterpretations are specifically acknowledged and explained.

The structure of the synoptic document is set out schematically in Figure 1. Section 2 provides an overall review of each of the three projects; it assesses the overall research philosophy and the particular methods, principal findings of individual projects, interrelationships and conclusions of the three projects. Section 3 presents the key findings of the thesis in relation to the research question; this is based on a reflective synthesis and, in some cases, reinterpretation of the evidence and findings of the individual projects. Section 4 discusses the implications of the findings for the research question, placing and reassessing these implications within the context of the detailed project literature review research work; it also assesses the limitations of the work. Section 5 provides the conclusion. Figure 1 shows the structure of the document, highlighting how the synthesised findings are reassessed in a double loop manner in the context of the individual project research work.

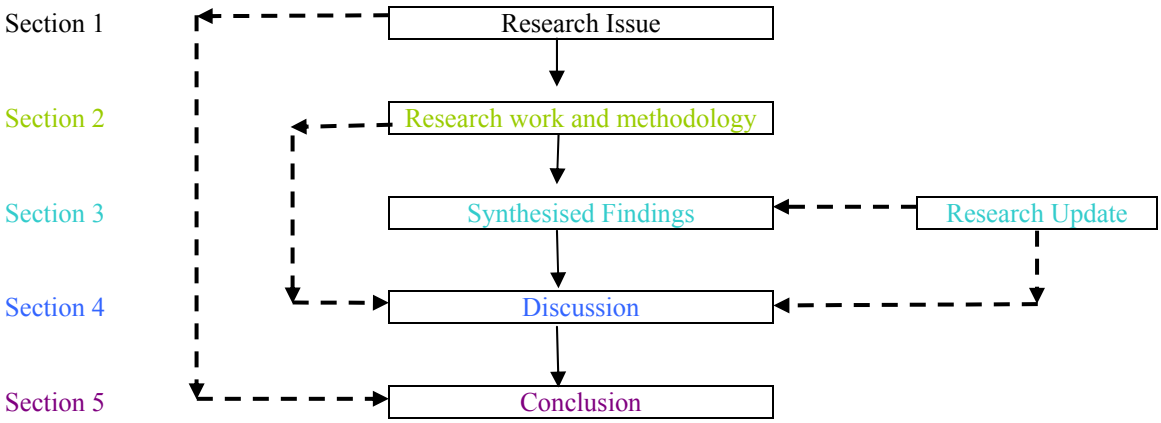

Figure 1-1: Structure of Synoptic Document

2 Review of the three projects

This section provides a reflective synthesis of the findings and contribution of three projects that were undertaken between September 20002 and November 2006. The projects are an intertwined mixture of an in depth case study and literature review. The three projects are presented in the same format and with the same content as when they where individually finalised. They have not been modified to produce an updated whole as they were undertaken intentionally to provide a development process addressing the overall research issue of how to use MA to facilitate the achievement of organisational financial goals. In particular, the process led to a rolling clarification of the nature of the specific research issue as the finding of one project fed into the scoping of the research issue for the next project. This process continued into this synoptic document which has provided the opportunity for a distanced reflection of the finding of the three projects, and thus a consolidation of the specific finding of the three projects with the intent of producing a coherent set of research finding and a final, further, more focussed specification of the research issue. Figure 2 shows a schematic representation of the development and interrelationship of the three projects and the synoptic document.

The first project (P1) represented the first stage of the in depth case study and was framed from an initial broad literature review. It was an exploratory study that explored how management source and use management information to achieve financial objectives. It was undertaken from September 2002 to May 2003. It concluded that the role of MA was to provide financial analysis that enabled the instigation of operational actions designed to result in financial outcomes that meet financial objectives. The second project (P2) aimed to place these findings in the context of prior research using a systematic literature review (Tranfield and Denyer, 2003). It was undertaken from June 2003 to November 2005. Building on the framework developed by (Otley, 1999), P2 proposed a conceptual framework that showed how financial outcomes can be linked to operational actions. The third project (P3) was an extension of the P1 case study. The research focus was changed to test the operation of the P2 framework in practice, crucially using an assessment of actual financial outcomes against planned and targeted intent, and against the impact of operational factors. It was undertaken from November 2005 to November 2006. From the findings, uncertainty was identified as the principal factors that impacted on the effective operation of MAS; the dimensions of uncertainty were identified through an analysis of the data collected, and the impact of responses to uncertainty were assessed.

This synoptic document aims to synthesise the findings of the three projects against the underlying doctorate research issue of how to use MA to improve profitability. The literature reviews included in P1 and P2 are supported by the introduction of further recent literature from a narrative review of research published in recent years after the first two projects were completed. This additional literature is introduced to provide an additional external counterpoint against which the finding can be assessed. The synthesised findings are then assessed for fit against prior research. The intended outcome is an assessment of the overall contribution of the doctorate for both theory and practice. This process means that there is an element of repetition as findings and evidence are both re-introduced in the synoptic document as well as in their original

form in the projects. This is unavoidable as it results from the process of reflective synthesis leading to the reassessment of the findings in this synoptic paper.

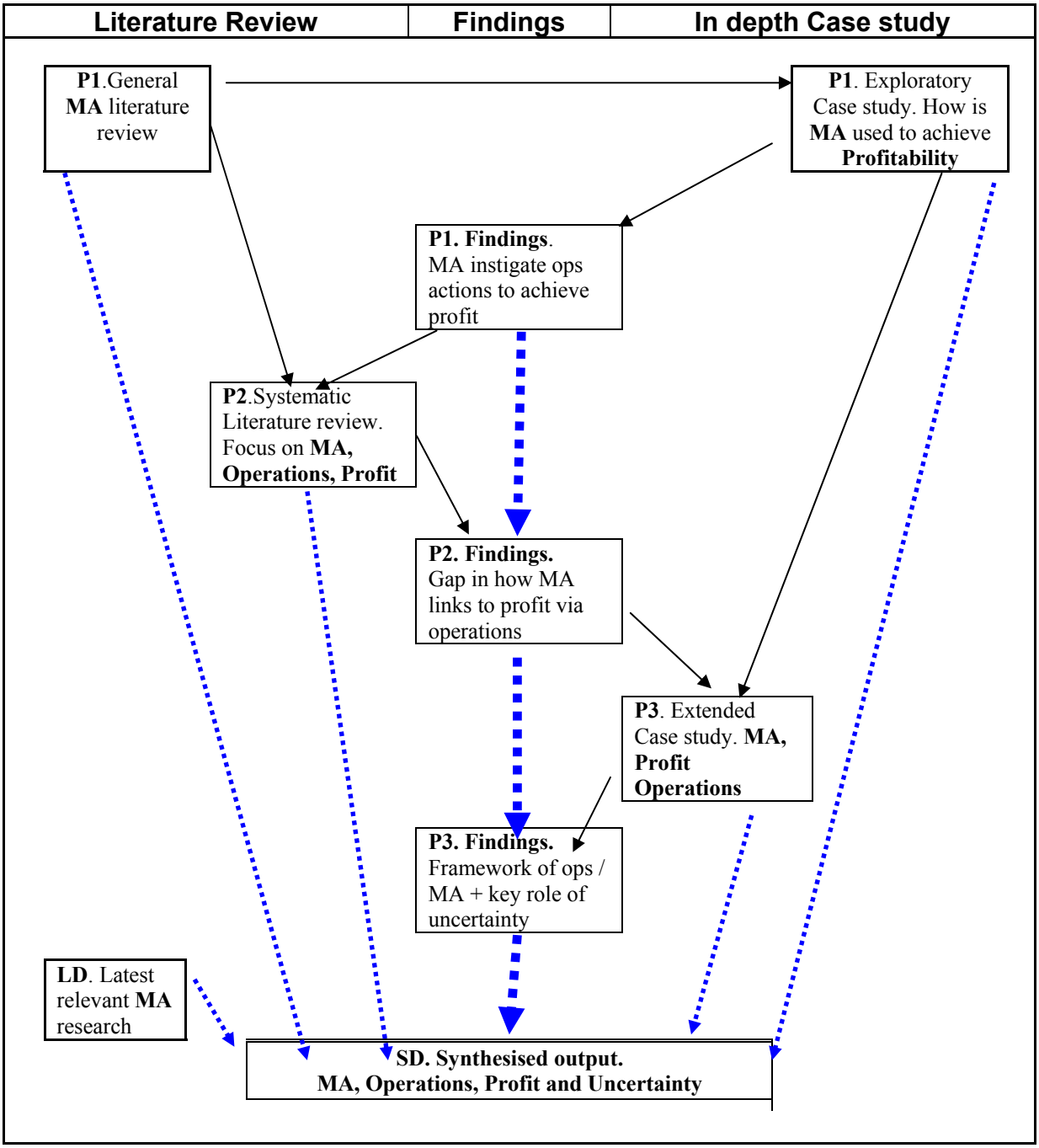

Figure 2-1: Schematic relationship of Projects

The philosophical stance adopted is phenomenological and realist (section 8.1), together with an inductive approach to theory formulation. The research is essentially theory development as it builds on the findings of prior studies, a suitable basis for a case study approach (Modell, 2005). The study follows the argument that case studies give better insight into accounting practice than survey (Mouritsen and Hansen, 2006), and

responds to the calls over recent years for more cases, especially in management accounting (Otley, 1999; Zimmerman, 2001; Hartmann, 2000). The core research method used was participant observation, with the author closely involved with the case company, a £35m logistics company, as Executive chairman responsible for all financial matters. To counteract the endemic potential for subjectivity, a structured approach to data collection and analysis was undertaken, following the guidelines proposed by (Huxham, 2000) and the proposals relating to the nature of data collection proposed by (Otley and Berry, 1994).

3 Synthesised Key Findings

3.1 Introduction

This section presents the core findings of the thesis developed from the reflective synthesis of the findings of the three projects, within the context of a review of recent new relevant literature. The findings address the central research issue of this thesis - the extent to which MA can be used to guide operational actions to achieve profitability goals in an uncertain world They are made up of a package of four interlinked findings as follows:

1) A conceptual framework that identifies the key functions of MA and positions them in relation to operational activities, uncertainty and the profit goal. This maps the overall context of the central uncertainty paradox

2) A delineation of the differing dimensions of uncertainty as they impact on the use of MA, and an assessment of their impact on the potential for MA to achieve its profit goal role. This provides a drill down of the content and nature of uncertainty as it relates to MA.

3) Identification of the twin modes MAS – fixed/control and flexible/inform as providing the two central responses to the impact of external uncertainty

4) Identification of the profitability goal as providing the central response to internal uncertainty by providing a unified unit of measurement, certainty of purpose and connection to external referent.

The section expands and explains separately each of these four core interlinked findings, linking them to the evidential sources in the three projects from which they were drawn. Finally, the section assesses the findings as an integrated whole.

3.2 Conceptual Framework

The first finding is a generic conceptual framework of a MAS. This identifies the key MA functions and their interrelationship with operations, profitability and uncertainty. The intention is to provide a base framework directly addressing the thesis research issue. The framework was developed by pulling together and reflectively reinterpreting separate but interrelated key findings from each of the three projects, as detailed below. It is presented in Figure 3-1, with each box referenced from A to P from left to right for ease of reference. The three findings that follow then address critical issues arising from its implications.

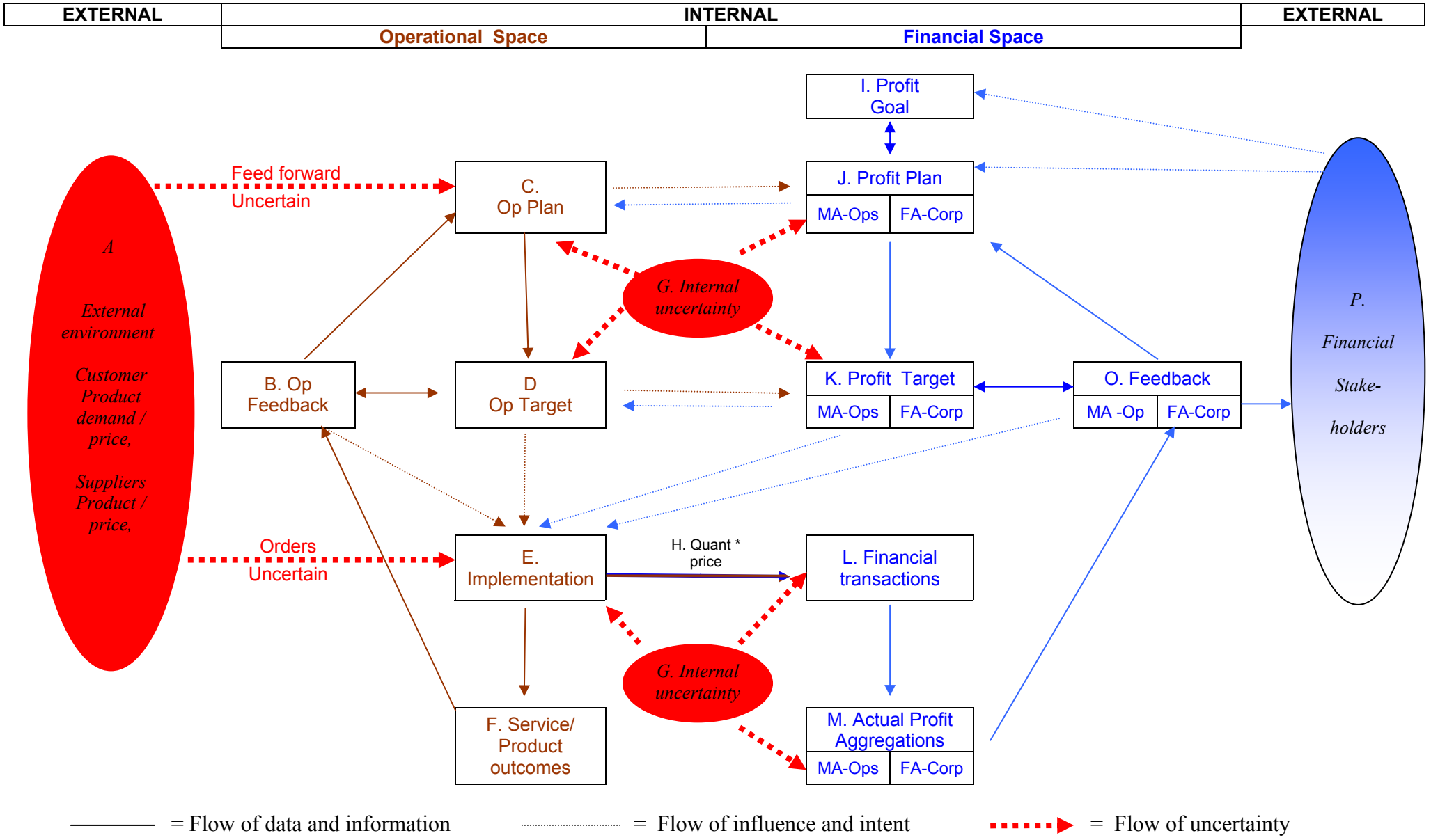

Figure 3-1: Framework of relationship - MA, Operations, Profitability, Uncertainty

The framework is based on the premise that the role of a MAS is to facilitate the achievement of the organisational profitability goal, following a central conclusion of P2. The profitability goal is therefore placed at the apex of the framework (box I). The core structure is provided by the distinction between operational and financial space. The operational space represents the organisational activities required to produce an organisation's physical output of goods or services. The financial space represents in a parallel manner the financial dimensions of projected and completed operational activities; its role is to inform and control the development and implementation of operational actions to achieve profitability outcomes that meet the organisational goal.

Inputs come from the external environment (A). These come via both feed-forward of assessed likely future trends in sales and purchase to inform planning, and the receipt of actual sales orders and the placing of purchase orders to trigger the actual implementation of production and services provision processes (B,C,D,E,F). The direct link between the operational and financial space is provided by the quantification of the financial consequences of operational implementation (E) to create financial transactions (L) via the formula quantity * price (H). These financial transactions are then aggregated to produce actual profit outcomes (M). Profit outcomes are aggregated at two levels – operational and corporate. Operational aggregations are equated to MA with the internal focus of reporting actual performance to allow the production of feedback comparing actual versus target (O versus K). Corporate aggregations are equated to Financial Accounting (FA) with the external focus of reporting achieved profitability to external financial stakeholders (e.g. shareholders and commercial funders) (P). As both levels are aggregations of the same underlying financial transactions, their outcomes are compatible, although the analysis and level of segmentation will be different, with more segmentations at the operational level to match the diversity of the underlying operations. The aggregation relationship is shown in Figure 3-2, demonstrating how multiple operational perspectives are aggregated to the overall corporate perspective.

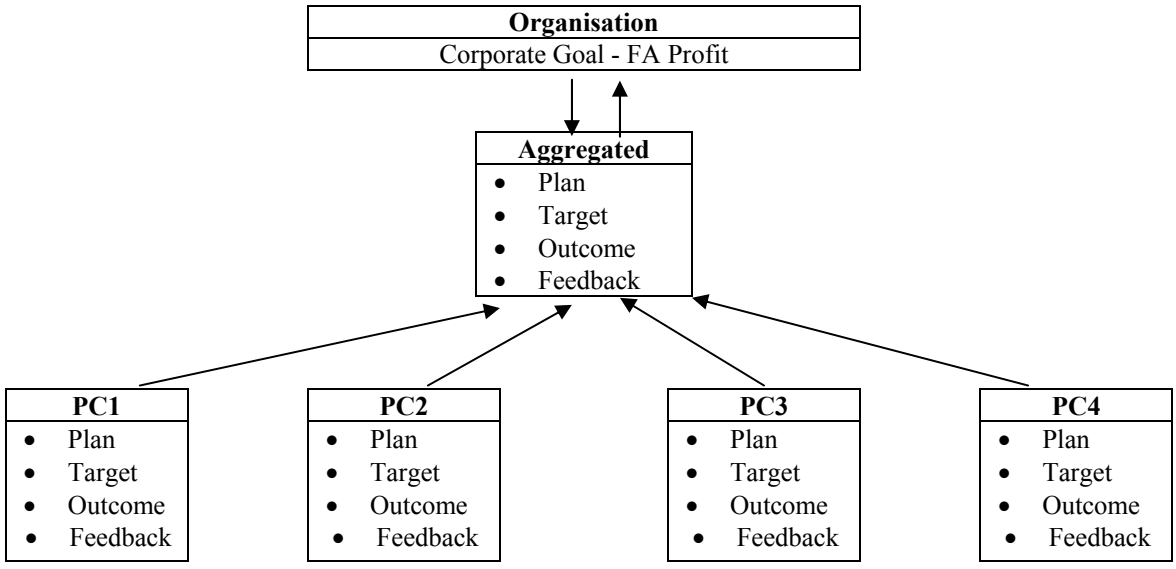

Figure 3-2: Aggregation of operational and corporate levels in the financial space

The framework presents the MA role as providing the means of informing and controlling an organisation's operational activities through planning, targeting, feed-forward and feedback. The inform function can come from both feed-forward and feedback; feed-forward when future changes are signalled (e.g. new customer terms) or feedback when actual demand or supply is different to that assessed from the feed-forward; changes here will trigger adaptive internal changes. The control function is provided by feedback which provides a measure for controlling performance via assessment against target, triggering remedial action (e.g. management changes, process changes) if performance is out of line. The process of target setting can thus be defined by the following formula.

Past results (feedback) +/- assessed likely external changes (feedforward) +/- planned internal changes = Target future results'

The formula demonstrates how the achievability of future targets is dependant on inputs from the external environment being accurately predicted via feed forward or feedback assessments, and internal processes being planned and implemented in a manner that achieves target outcome. However, while these are both materially feasible, in many circumstances they are not certain. Externally, as highlighted in Section 1, actual demand and supply may be different to the assessed feed-forward and feedback; internally, there is no certainty that plans and targets will be developed or implemented in a manner that optimises profitability. Further, as feedback is the medium for signalling both internally and/or externally caused variances from plan and target, external and internal causes can be become intermingled, thus making interpretation difficult and uncertain.

Therefore, while the formula demonstrates the central role of feedback and feed-forward, uncertainty problematises its potential to achieve this role and raises the requirement for an additional response over and above reliance on mechanistic calculative analysis, leading with certainty to the achievement of target outcomes. Thus, the impact of uncertainty and the responses that can be developed to it are central to the potential for a MAS to effectively be used to achieve its goal. These issues are addressed by the next three findings. The second finding (section 3.3) delineates the content and impact of both internal and external uncertainty. The third and fourth findings detail the consequent responses required in the use of a MAS (section 3.4 and 3.5.). To reflect this central importance of uncertainty, the two dimensions of uncertainty (external and internal) are incorporated in Figure 3-1, with external uncertainty shown by arrows flowing from the external environment (A) and internal uncertainty by the inclusion of box G and arrows showing the flow of uncertainty.

The framework was principally drawn from a synthesis of the core model of a MAS from the P1 exploratory case study (see section 10, Figure 10-2), and a conceptual framework of a MAS, initially developed as a central finding of the P2 systematic review (see section 17.9, Figure 17-4), updated in P3 to incorporate the new P3 research evidence (see section 24.4, Figure 24-3). In addition, two key elements of the framework have been introduced that were not covered directly in the projects: the distinction between differing financial and operational spaces which provides the base

structure, and the concept of feed-forward. The distinction between the two spaces was drawn from (Ezzamel, Lilley and Willmott, 2004) and (Mouritsen and Hansen, 2006) out of the research update; however, while the terminology is new, the underlying concept fits closely the relationship between operational actions and their financial consequences identified in the P1 model. The concept of feed-forward (A to C) is drawn from further reflection on the proposals of Otley (1999) which provided the analytical framework for P2, and the basis for the functions of the framework. It relates to a more precise clarification of the role of feedback. Its incorporation allows a clearer distinction to be drawn between assessed future trends for demand and supply which initially informs future actions (feed-forward), and actual historic outcomes which provide feedback of actual performance against target.

Table 3-1 identifies the specific sources from the P1 model and the P2/3 framework. It demonstrates the synthesis has full cross coverage except operational feedback (B), service outcome (F) and profit goal (I). Operational feedback and service outcome are included to demonstrate the logical operational flow and are not the main focus of this study. Profitability is included as a specific element, whereas in the projects it was treated as providing an overall context, such as the finding of P2 that it was one of the two factors, along with feedback of critical importance to the functioning of a MAS

Synthesised Framework (Figure 3-1)		**P1 Model (Figure 10-2)**		**P2/3 Framework (Figure 24-3)**
A	External environment	S'holder	Customer negs	Customer changes
		S'holder	Demand	Market uncertainty
		S'holder	Supply	Not covered
B	Op feedback	Not covered		Not covered
C D	Op Plan Op target	Ops	Influences	Not covered
E	Implementation	Ops	Actions	Not covered
F	Service outcomes	Not covered		Not covered
G	Internal uncertainty	Man	Classification	Reporting validity
		S'holder	Compliance	Not covered
				Management effectiveness
H	Quant * Price	Non acs	Fin transactions	
I	Profit goal	Not directly covered		Not directly covered
J	Profit plan	Man	Man intent	Plans –corp, ops, transacts
		Acs	Ext projections	Not covered
K	Profit target	Non acs	Fin Targets	Targets – corp ops
L	Financial transactions	Non acs	Fin Transactions	Act wk, mth, annual - transacts
M	Profit aggregations	Non acs	Fin reports	Act wk – corp, ops
		Acs	Reporting	Act mth, annual – corp,
		Acs	Accounts	Act mth, annual corp
O	Feedback	Non acs	Performance v Target	Feedback – corp, ops
P	Financial Stakeholders	S'holder	Ext funding	Not covered
		Acs	Cash flow	Not covered
		Man	Cash flow assess	Not covered

Table 3-1: Cross comparison of framework functions against P1 and P3 sources

The overall significance of the framework is that it demonstrates: how profitability outcomes are the financial consequence of operational actions; how the role of MA is to inform and control operational operations in a manner that that can lead to the

achievement of profitability outcome; and how uncertainty is the central factor that impacts on how this can be achieved, leading to the next three findings.

3.3 Dimensions of uncertainty

This section delineates the nature and content of the dimensions and sub dimensions of uncertainty as they relate to the functioning of a MAS, building on the core distinction made in section 3.2 between external and internal uncertainties. It identifies the source of this delineation by referencing the evidential sources from across the three projects. Finally, it reviews the significance of the findings for the uncertainty paradox identified in the introduction (section 1) and the consequent significance on the functions of a MAS.

External uncertainty arises from uncertainty over the forward assessments of inputs from the operating environment. Three core sources are identified – customers, suppliers and the regulatory environment - with customer uncertainty being split between price and volume uncertainty. It equates with the 'uncertain world' element of the uncertainty paradox. Its impact occurs as MAS plans and targets are based on assessment of future external inputs. If the actual external inputs are different to assessment (e.g. type or volume of services required, price to be paid) the underlying assumption behind the plans and targets will not be met. This will lead to a mismatch between the assumptions under which plans and targets were set, and the actual conditions of implementation. This will impact on the achievability of targeted profitability to an uncertain extent, depending on implications of the mismatch for the financial consequences of implementation.

Internal uncertainty arises from uncertainty over the effectiveness of internal processes and activities, providing an additional layer of uncertainty over and above external uncertainty. Three sub dimensions are distinguished – management effectiveness, reporting validity and aggregations perspective. Management effectiveness uncertainty arises because of uncertainty over the effectiveness of management in undertaking all the functions and activities covered by the conceptual framework in a manner that leads to the achievement of the profitability goal. Reporting validity uncertainty arises over uncertainty on the ability of a MAS to produce consistent and accurate financial information that reflects profitability arising from physical operational actions; three aspects to reporting validity uncertainty are identified – cost identification (i.e. costs incurred but not recognised), period allocation (i.e. uncertainty over to which period to allocate) and profit centre allocations (i.e. uncertainty over which profit centre to allocate costs). Aggregation perspective uncertainty arises because there are multiple perspectives for the MA financial analysis, all of which are potentially relevant, but their appropriateness depends on context which is by no means certain; four core aggregations perspectives are identified that can be used for MA analysis (Product, Customer, Throughout, Process) together with a fifth (Financial Accounting) for external reporting of profitability.

This delineation was drawn from a synthesis of findings and evidence from across all three projects, as summarised in Table 3-2.

Uncertainty Dimensions	P 1 Findings	P2 Findings	P3 Findings
External			
Customer (Price and volume)	• Changes in customer demand identified as critical constraint to be addressed (11.2) • Demand external inputs (Figure 10-2) • Wild card examples (Appendix SD-A)	• Uncertainty identified as the future is unknown (Context uncertainty - section 17.8)	• Customer changes (price) and market factors (volume) identified as two dimensions • Wide range of examples (e.g. PC 20(b), Figure 23-3).
Supplier	• Supply external inputs (Figure 10-2) • Wild card examples (Appendix SD-A)		• No direct evidence
Regulatory	• Compliance external inputs (Figure 10-2) • Wild card examples (Appendix SD-A)		• No direct evidence
Internal			
Management effectiveness	• Uncertainty about the optimum way of meeting the service required by the customer identified as critical issue (section 11.2) • Wild card examples (Appendix SD-A)	• Uncertainty identified over what management approach is most appropriate. (Process uncertainty - section 17.8)	• Identified as key dimensions. Evidence implicit rather than explicit (section 24.2).
Reporting validity	• Difficulty in ensuring the completeness of information identified as critical issue (11.2) • Factor affecting utility of reports (10.4) • Period allocation identified as conceptually problematic (7.4) • Wild card examples (Appendix SD-A)	• Diverse views reported on validity of accounting representation (section 17.7)	• Identified as key dimension. Three issues identified – cost identification, period allocation, profit centre allocation • Evidenced and analysed in detail (24.2 and Figure 24-1)
Multiple perspectives	• Issues relating to classification of costs generally identified (10.4) • Wild card examples (Appendix SD-A)	• Five different aggregation perspectives distinguished – Product, Customer, Throughout, Process and Financial Accounting (17.8) (Content uncertainty 17.8) • In depth assessment and restaurant example (section 17.1)	• Evidence of use dependant on context (22.6)

Table 3-2: Cross comparison of uncertainty dimensions against Projects

The Table illustrates how the uncertainty was identified as a major issue in all three projects, with the differing dimensions of uncertainty being identified and categorised on a rolling basis. In P1, the issues were identified but not classified as uncertainty; however, the wildcards identified in P1 equate to uncertainty dimensions and sub dimensions developed later, and have been reclassified as such. They provide in depth examples of both internal and external uncertainty in practice (Appendix SD-A). The findings of P2, drawn from the Systematic Literature review, drew a general central conclusion that a MAS operates in a situation of endemic uncertainty (Abstract, section 17.8), classified in terms of context, content and process (section 17.8); however on reassessment these fit the classifications developed in this section and are re-interpreted as such in Table 3-2. Further, P2 provided specific findings on multiple perspectives, reflecting a central concern of MA research and which were assessed in detail (see sections 17.1 and 17.8). P3, from case study evidence, also concluded that the operation of the MAS was fundamentally determined by the impact of uncertainty (Abstract). It provided a preliminary classification with the identification of four dimensions of uncertainty – customer changes, market changes, reporting validity and management effectiveness (section 24.2, Figure 24-2 Table 24-1). The current reassessed classification split these P3 four dimensions between internal and external uncertainty, as demonstrated in Table 3-2. Customer changes and market changes are reinterpreted as sub dimensions (price and volume) of customer uncertainty; reporting validity and customer effectiveness make up two of the three sub dimensions of internal uncertainty, the third multiple perspectives being drawn mainly from P2, although also evidenced in P3. P3 also introduced the finding that uncertainty is reflected in unexpected changes which occur transiently and asymmetrically, leading to pockets of time with apparently relatively high certainty interlinked with periods of changes, thus causing oscillations between periods of certainty/stability and uncertainty and instability (P2 Abstract, section 24.3, section 25.1). However, it does not provide significant evidence on the impact of supplier and regulatory evidence.

The uncertainty paradox defined in the introduction (section1) was constructed in terms of a mismatch between a changing external world and the implicit assumption of stability and certainty underpinning core MA practices, here classified as planning, targeting and feedback of actual performance versus target. These findings on uncertainty both narrow and widen this assessment. It is narrowed by the finding that uncertainty occurs transiently with pockets of stability interspersed with pockets of instability and change; this indicates that the operating environment is not one of continual uncertainty, but a mix of periods of apparent certainty and stability and periods of change and instability. Consequently, for the periods of stability, there is no mismatch and therefore no paradox. However, the paradox is widened by the introduction of internal uncertainties. Their consequence is that a MAS that has to respond to external uncertainties is in itself endemically infiltrated with uncertainty – about how effectively it is managed, the nature of the perspective used for analysis, and validity of the information reported. The uncertainty paradox is thus widened as both the operating environment and the effectiveness of MAS functions are potentially uncertain. Specifically, this problematises the interpretation of feedback variances, as they can arise from external either/and/or internal uncertainties (e.g. change in customer profile and/or ineffective implementation and/or inappropriate MA analysis and/or invalid reporting). The implications of these findings are that an MAS must have the

capacity to respond to both conditions of stability and unexpected change, and have an approach mechanism for responding to the impact of the internal uncertainties. The next two findings address these issues.

3.4 External uncertainty and the twin MAS modes

This section presents the MAS response to the impact of external uncertainty. This response is built around the finding in section 3.3 that the consequences of uncertainty impact intermittently, with periods of stability interspersed with periods of change and instability. This leads to a requirement for a twin mode MAS – Fixed and Flex: Fixed provides the ability to control the achievement of target profitability in the periods of stability between changes; Flex allows for the development of a response to the impact of unexpected change. Fixed is the default mode as it is this mode that profitability goals are achieved. Flex is the more complex mode of operations given it is operating in a state of flux

The principal distinctions between the two modes are in the nature of targets used and the interpretation of feedback. Fixed (control/fixed) is based on the assumption of relative certainty and stability of commercial relationships. Targets are relatively fixed and feedback is used to control their achievement. Flex (inform/flexible) provides the response to the impact of unanticipated events arising as a consequence of the uncertainty dimensions identified in section 3.3. Feedback is used to inform calculative analysis aimed at identifying revised operational approaches leading to the achievement of profitability goals. Plans and targets need to be flexed to respond to evolving operational conditions. The trigger to move from Fixed to Flex is fed by the identification of variances from target assessed as arising from changes in operational requirements. A second additional trigger is internally driven initiatives to improve profitability; these arise independently from uncertainty, based on pressure for increased profitability from corporate management interpreting the requirements of outside financial stakeholders. The aim in the Flex mode is to develop revised stable plans and targets that will achieve profitability goals, and then return to Fixed, subject to no further requirement for change arising from uncertainty. However, before this can be achieved a period of conjecture/test/learn approach may be required to assess an effective response. This may include developing new adaptive commercial approaches that enable an automatic response to external change, thus creating relative stability for operating conditions which had previously been assessed as uncertain. An example is pricing ratchets, which can flex price changes to demand levels in a manner that maintains the achievement of profitability goals, despite changes in volume or service requirement. The process is therefore a continual, but uneven, series of oscillations between the two modes. Figure 3-3 outlines the principal elements of the two modes and the oscillating relationship.

Three key implementation requirements arise. First, targets and actual reporting have to be based on sub units that match operational realities, to ensure responses can be based on feedback that reflects the financial consequences of operational uncertainty impact. Second, again to maintain connection to operational realities, this has to be done in a timescale that reflects operational cycles; this is likely to be based on weeks, not

calendar months, given a normal 7 day operating cycle. Third, information flows must be in real time or near real time, both to minimise the reduction in profitability that will generally occur prior to a response being developed and, again, to provide a direct connection to operational realities. As a consequence of these implementation requirements, a MAS has to be set up to quantify the value of financial transactions arising from operational actions as they are incurred, not to collect the data from the double entry based general ledger, as this can only provide lagged information. This further leads to the consequence that the principal target setting systems cannot be based on traditional monthly corporate budgets, as these are traditionally linked to the general ledger. A further overall implication is that the requirement for a real time system and the additional complexities of the Flex mode 2 place a heightened dependency on internal capabilities, thus increasing the potential negative implications of the internal uncertainties; the response to this is reviewed in the next section.

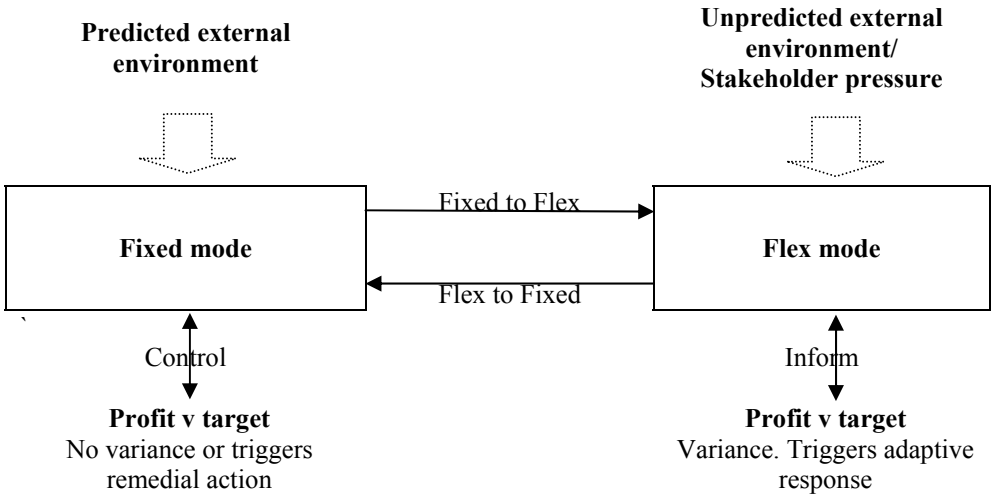

Figure 3-3: Oscillation between MA modes

A final aspect relates to the relationship of the twin mode MAS to overall corporate planning. Figure 3-2 demonstrated how overall corporate performance is an aggregation of individual operational sub units. The aggregation of the differing sub units feed into the overall corporate targets. However, at the corporate level there is the benefit of the portfolio effect which will smooth the impact of uncertainty when external uncertainty impacts locally, although not if uncertainty impacts all organisational activities. The twin mode systems thus provide a rolling feed to overall corporate planning, with the default Fixed mode assumption that trends will continue, but the availability of triggers for overall change if the cumulative external impact indicates a step change. In this way the twin mode feeds into the overall corporate process of continual adaptive planning.

The specific evidence for this finding is principally drawn from a reflective reinterpretation of findings from P3, building on and consistent with earlier findings from P1 and P2.

The P1 findings, from the initial exploratory element of the case study, were a precursor to the final findings. It concluded that the role of a MAS was to trigger responsive action when performance is out of line with intention. It also highlighted that, where the

level of demand fluctuates, the connection between operational actions and financial consequences is often not clear, but that nevertheless, if performance was below target, some response that was assessed as having the potential to be effective action was required (section 12.1). These findings reflect the core modus operandi of the twin Mode MAS (trigger responsive action), and the requirement to respond to externally driven changes (fluctuations in demand). It also provided clear evidence of the direct relationship between financial outcomes and underlying operational realties (Figure 10-2).

P2 identified the central importance to the MAS of feedback and the profit target - the two factors whose differential treatments defines the difference between the Fixed and Flex modes (P2 abstract, section 18.2). It also identified the two operating modes of these two factors - fixed versus flexible for target and control versus inform for feedback. These are drawn from two of three endemic tensions identified as critically impacting on the utility of a MAS (P2 Abstract). However, for the twin mode finding, they have been reassessed as not being in tension, but as in sequence the one feeding the other. The third tension (centralised v devolved) is also reinterpreted not as a tension, but as part of either Fixed mode control or Flex mode adaptive response. A final input from P2 was the potential significance of real time systems for the operation of a MAS (section 17.8).

P3 built on these earlier findings by providing in depth evidence of how a MAS operated in practice, within the context of a conceptual framework developed from P1 and P2. The finding that the default operation of a MAS was fixed/control/devolved moving in stages to flexible/inform/centralised as a response to the impact of customer changes and the need to ensure management effectiveness (sections 22.5 and 24.3, Table 22-13), provided a forerunner to the twin mode finding. Along with P1 and P3 it provided evidence of how targets and feedback can be gathered directly from operational data in a weekly near real time basis, split by Profit Centres (PC) that match operational realities (sections 10.2 and 22). The findings at a corporate level also showed the impact of the portfolio effect which led to a smoothing of overall corporate performance (section 23.2 and 23.3). P3 also provided detailed evidence of practice which was used developmentally to iteratively test the twin mode finding for validity. This new analysis is shown in Appendix SD-B and illustrates visually oscillations from Fixed to Flex. It is valid as the conditions behind the two modes (response to uncertainty triggers) are present, even if at the time of the initial research the two mode functions had not been proposed. It led to reassessment of the concept of fixed as relating to fixed commercial relationships (i.e. service requirement and price) rather than fixed profit; therefore, volume changes that do not lead to operational changes do not trigger a movement to Flex mode (e.g. when volume changes lead to profit changes, but the margin is in line with target (e.g. PC4, 20(b)). Similarly, it led to ‘inform’ being reinterpreted as informing the instigation substantive operational change, as a response to changed commercial relationships (i.e. not inform about effectiveness of control (e.g. PC4, 22)). A further more semantic reassessment initiated was that pre-trading negotiations are not treated as evidence of Fixed mode although they were classified as inform/flex in P3 (e.g. PC4, PC21). The analysis also provides evidence of Fixed mode being the default, and that in some cases a long period of Flex mode is required when an acceptable solution cannot be identified.

This third finding therefore provides a core response to the uncertainty paradox. However, for it to succeed in its role it is dependant on the impact of internal uncertainties which are covered in the fourth finding.

3.5 Internal uncertainties and the unifying role of the profitability goal

The success of the twin mode response in achieving the profitability goal is dependant on the effectiveness of implementation. However, three internal uncertainties - management effectiveness, reporting validity, and multiple perspectives – potentially have a critical impact on the potential for effective implementation (section 3.2 and 3.3). The unifying role of profitability, as computed using FA reporting standards, provides a partial response by reintroducing a level of certainty, albeit in a circular and self referential manner.

Management effectiveness uncertainty is addressed through the FA corporate profitability goal providing an external referent against which performance can be evaluated. Without this single unifying measure, there can be no external measure to assess management effectiveness, given the often conflicting pressures of multiple operational activities, decision options and behavioural considerations. The level of the profitability goal is provided by profitability aspirations of the external financial stakeholders, principally shareholders (see Figure 3-1); their interest is the achievement of maximum profitability outcomes. This profit aspiration provides a pressure point for management to set overall corporate profit goals at the maximum level they and the external stakeholders agree is feasible. The overall goal is broken down and cascaded to the operational level via the use of MAS units and sub units. This provides the link between profitability and operational management effectiveness via the finding that overall corporate profitability is the aggregation of the financial consequences of operational actions (section 3.2). The principal strengths of this approach are that it provides an element of externality and a single unit of measurement linked in to underlying operational activities. The principal weakness is that this externality is in itself based on a self referential assessment by external stakeholders who are at a distance from the underlying operational activities. Their profit aspirations are in themselves uncertain and may be sub optimal or excessive, and their capacity for intervention is limited. Against this, their profit aspirations can be informed by the profit potential of equivalent organisations, and they do control the powerful option of instigating management change. Behavioural factors and short termism provide two further significant problematic issues. The behavioural factors occur as internal staff at all levels will often not see their interests as being aligned with maximising profitability for external stakeholders; this, however, is an endemic issue of capitalism that in this study is viewed as a constraint to be addressed by senior management through control, using a mixture of remedial responses to sanction assessed underperformance (e.g. management change) and rewards to motivate performance. The short termism issue arises as a focus on profitability and can be argued as encouraging a short term focus that disregards long term potential. The response intrinsic in the findings is that the distinction between long and short term is false, as the future is a continuum with all

plans and targets being projections into the continuum based on interpretations of feedforward; the intent is to optimise overall future profitability through all future timescales. This fits to the twin mode process, feeding overall corporate planning, as discussed above (section 3.4)

Reporting validity is the second internal uncertainty (section 3.3). The unifying goal of profitability addresses this through FA standards introducing a level of perceived certainty to profitability computations. Despite intrinsic uncertainty over validity (for detailed review see section 24.2, Figure 24-1), FA accounts are produced as if they are valid (true and fair) and are accepted as being institutionally authoritative. This is achieved by agreed standards, sanctioned by external auditors, providing legitimised treatment of problematic cost identification and period allocations issues. This treatment (e.g. treating deprecation as if it were an objective cost) then flows through to MA reporting, as MA aggregations are compatible with and can be reconciled to FA reports, being aggregated from the same building blocks – financial transactions (section 3.2). This, however, is subject to a key implementation issue arising from the near real time requirement of MA compared to the lagged nature of FA reporting. The real time requirement of MA means that the base data of financial transactions cannot be drawn from the general ledger systems because of time lags in processing financial instruments (e.g. invoices). Consequently, MA financial aggregations are produced directly from costed operational data outside the double entry system. As such, their validity cannot be assured by financial controls systems linked to cash receipts and payments, and there is no time for the reassessment of period allocations and cost timing achievable by lagged FA reporting. The response is to use a mixture of estimations, where necessary, and retrospective validation to FA, using the common base of financial transactions as the basis of the reconciliation; FA reports are normally represented by traditional monthly accounts, but with financial transactions aggregated in a manner that is consistent with MA analysis. This allows for rolling feedback to retrospectively assess the validity of MA accounts, and trigger the rolling update of cost recording and where necessary estimating processes that will produce aggregations that have sufficient material validity for effective use; the test is not their precise accuracy but being sufficiently valid for their use in controlling and informing operational actions. The role of FA monthly accounts thus moves from being a management accounting reporting tool to being a method of validating MA reports, providing interim reports to external financial stakeholders and providing the link to the annual accounts and thus the authoritative record of profitability earned.

Multiple perspectives are the third internal uncertainty. In section 3.3, five separate accounting perspectives - Product, Customer, Throughout, Process and Financial Accounting – were identified as adding an additional layer of uncertainty. However, from the viewpoint that the unifying role of profit requires an analysis of the profit potential and outcome for planning, targeting and feedback, the five differing perspectives cease to be a cause for uncertainty, but rather a range of tools which can be used, depending on circumstance, to give an insight into what actions need to be instigated to achieve target profitability levels. Four of the perspectives – product, customer, process and throughput - can be used as MA techniques to inform and control; the fifth, Financial Accounting, becomes the means of reporting achieved profitability. The fact that they are based on different transformations of aggregations of

the same underlying component, financial transactions, is an advantage as it means that all perspectives are inherently compatible.

The evidence for the central role of profitability flows consistently through all three projects. The central conclusion of P1, as restated in P2, was that the primary objective of the use of a MAS was to facilitate improved profitability (section 13). This approach was consistent with the author's pre-understanding of the organisation as a cash machine (section 8.5), and the interpretation of the views of the company's external private equity shareholders (section 10.6). The analysis of the P3 research again confirmed the central role of the goal of profitability (section 24.2). These case findings were supported by the findings of the P2 systematic review, where the majority of studies (72%) assumed a financial goal, principally in terms of profit optimisations, with the balance either assuming no goal or a related goal, such as strategy (section 17.2). This flowed through to the P2 synthesised finding which concluded that profitability was one of the key factors, along side feedback, driving the functions of a MAS (section 18.2).

The direct evidence behind the management effectiveness findings comes principally from the P1 and P3 case findings. The role of external financial stakeholders providing the external referent, albeit distanced, is reflected throughout (e.g. section 8.2, Figure 10-2, section 10.3, section 23.3, section 25.1). The cascading of the external referent of the profitability goal to operational sub units is demonstrated by the focus on the profitability performance of the up to 35 profit centres (Table 8-4, section 22.2). In depth evidence is provided on the use of profitability feedback to assess effectiveness, and to trigger internal interventions using the MA information to inform analysis, utilising the link back to the operational sources (section 23.2). The P2 literature review provides input on behavioural factors and short termism (section 18.3, section 18.4).

The response to reporting validity, via the role of FA reporting producing profitability reports that are institutionally authoritative, is drawn from both case evidence (section 10.6) and literature (section 18.2). Evidence from literature is also used to inform the finding on real time information (section 17.8) and the trade off of speed versus accuracy (quick and dirty versus detailed and precise – see section 18.3) The implementation issue of validating of MA information through reconciliation to FA reports is evidenced in detail by the P3 Case study (section 23.2). This also provides a partial caveat to the authoritative nature of FA, by providing direct evidence of the susceptibility of FA results to reporting validity issues. This evidence covered differing computations of FA results for the year to March 2005, varying from £920k profit to £1.6m loss, depending on differing interpretations of standards, principally by the old and new shareholders following the company acquisition (section 23.2, Appendix P3.C6). This concerned reporting validity issues, including period allocations (e.g. for property dilapidations), or costs triggered (e.g. by the company disposal in itself, such as professional fees, pension payments). The caveat is only partial as the make up of the differences were understood by all relevant parties; this common understanding allowed them to be used to inform the company valuation during the disposal due diligence process, thus confirming their authoritative nature.

The use of multiple perspectives as tools to assist the achievement of the profit goal is evidenced in the P3 case evidence. This shows how the customer profitability perspectives provide the default measure of reporting performance, process analysis is used to inform reassessments in response to external changes, throughput thinking is used to inform responses where there is a core fixed cost and optimising throughput will optimises profit. Finally, FA is used to produce authoritative measures of profitability (section 22.6).

The profitability goal therefore provides an overall certainty of purpose, unified means of measurement and an element of exogenous certainty to counteract the uncertainties of management effectiveness, reporting validity and multiple perspectives. The exogenous certainty is provided by the profit aspirations and requirements of external financial stakeholders; Financial Accounting provides an authoritative definition of profitability against which management effectiveness in meeting external profit aspirations can be evaluated; and the multiple perspectives provide a range of options for the analysis of the financial consequences of operational actions.

3.6 Findings as a whole

These interlinked findings are the outcome of a reflective reassessment of the evidence and findings of the individual three projects aimed at addressing the overall research issue of the relationship between Management Accounting, Profitability and Operations in an uncertain world. They thus represent both a synthesis and a development of the individual projects findings. Table 4-1 provides a cross reference of how the findings of the individual projects have been incorporated in the overall synthesised findings. Consequently, the synthesised findings supersede those of the individual projects, although drawn from the same evidential base. By using evidence drawn from a mix of new research and prior research, the intention is to develop findings that benefit from both in depth drill down research based on practice and the more general context of wider research.

The first finding covers the overall content, context and processes of a MAS by providing an overall conceptual framework of a MAS. It identifies its core goal as being to facilitate the achievement of organisational profitability goals. It identifies its core structure as being based on a distinction between operational and financial spaces; they run in parallel and reflect differing perspectives of the same underlying organisational activities. It identifies the core functions of a MAS as being a development of the proposals of Otley (1999) - planning, target setting, recording actual outcomes, proving feedback of actual outcome against plan and target - within the overall context of intent to achieve the goal of improved profitability. Finally, it identifies and locates the two dimensions of internal and external uncertainty as being the critical factors impacting on the potential of the MAS to be used to achieve the profitability goal.

The second finding then builds on this framework by delineating in detail the content and nature of the two critical factors of external and internal uncertainty. It identifies external uncertainty as being the central direct dynamic element impacting on the ability of a MAS to fulfil its role as it creates the core issue of uncertainty as identified in the

introduction (section 1) and classified as the 'uncertainty paradox'. It identifies internal uncertainty in the three sub dimensions of management effectiveness, multiple perspectives and reporting validity; these provide an additional level of uncertainty that critically impacts on the effectiveness of the functionality of a MAS; internal uncertainty does not therefore in itself create the uncertainty paradox, but it has a critical impact on the effectiveness of the response.

The last two findings provide the response of a MAS to these two dimensions of uncertainty. Finding three provides the direct response to external uncertainty through the proposal for a twin mode MAS – a fixed mode to ensure profitability goals are achieved in periods of stability and a flexible mode which allows adaptive response to the implications of uncertainty. Finding four provides an indirect response to the consequences of internal uncertainty via the unifying role of the goal of profitability. However, both these responses are partial, providing some way of addressing the endemic impact of uncertainty. They do not propose that a MAS can be operated in a mechanistic manner to optimise the achievement of the goal, rather actions must be based on a rolling set of management initiatives (section 18.3) based on assessment of rolling feed forward and feedback.

Thus, the findings taken as a whole provide an integrated proposal on the interrelationship between Management Accounting, Profitability and Operations by identifying the core structure and functions of a MAS, and the key factors that critically impact on its potential of meeting the goal of facilitating improved profitability.

Principle Findings from individual Projects	Conceptual Framework (Find 1)	Uncertainty dimensions (Find 2)	Twin Mode MAS – external uncertainty response (Find 3)	Profitability Role – internal uncertainty response (Find 4)
Project 1				
• Central role of financial objective (Abstract)	Provides goal reinterpreted as profitability		Provides goal reinterpreted as profitability	Reinterpreted as profitability
• Detailed model showing direct link between operational actions and achievement of financial outcomes via financial transactions (Figure 10-2)	Core source	Identifies problematic issue of demand changes		
• Conclusion that role of MAS is to instigate operational action to achieve financial goals (11.2)	Provides role of MAS		Central basis of operations	Provides unifying role of profitability
• Specific in depth evidence of key elements that make up an MAS (Appendix P1:B to E)		'Wildcards' give detailed examples of uncertainty		
Project 2				
• Introduction of Otley (1999) framework (17.1)	Core basis of framework			
• Four key themes impacting on MAS (17.8)				
1. Multiple perspectives (product, customer, throughput, process, financial)		Include as uncertainty factors		Unified through common base in financial transactions.
2. Endemic tensions (central v devolved, fixed v flexible, control v inform)			Fixed/Flex and control/ inform reinterpreted as part of finding. Central v devolved as part of response mechanism	
3. Endemic uncertainty		Incorporated		
4. Potential for real time systems			Identified as a key element	
• Conceptual Framework (17.9)	Core source			
• Critical factors impacting on conceptual framework (18.2)				
− Financial goal providing a certainty of purpose	Central to framework			Incorporated in finding

Principle Findings from individual Projects	Conceptual Framework (Find 1)	Uncertainty dimensions (Find 2)	Twin Mode MAS – external uncertainty response (Find 3)	Profitability Role – internal uncertainty response (Find 4)
– Feedback linking ops to financial	Central to framework			
• Other relevant factors (18.3)				
– Quick and Dirty				Trade off in reporting validity
– Need for management initiative				Core requirement
– Rewards				Response to management effectiveness
– Long term v short term				Incorporated as major consideration
Project 3				
• Evidence of practice relating use of P2 MAS framework to profitability outcomes (22,23)			Data used to test validity	Data used to test validity
• Fundamental impact of uncertainty with four dimensions (24.2)				
– Customer changes		Reinterpreted as part of external uncertainty	Core trigger of movement	
– Market factors				
– Reporting validity		Reinterpreted as part of internal uncertainty		FA provides authoritative record
– Management effectiveness				Profit provides basis for evaluation
• Development of P2 conceptual framework from evidence of practice (24.3, 24.4)	Core source		Finding further developed by reassessment	

Table 3-3: Cross comparison of Project findings to synthesised findings

4 Discussion

4.1 Introduction

This section discusses the implications of the section 3 findings for research and practice – in effect answering the 'so what?' question. This is undertaken by reintroducing the prior research and theory which informed the projects and this synoptic document, and reviewing the synthesised findings against this prior research. The intention is to assess areas of fit, friction and development between the synthesised findings and prior research, and from this draw out some conclusion on the extent to which a contribution is made to the body of academic MA research (see Figure 1-1 for a schematic outline of the process). Next, a range of implications for practice is drawn from the theoretical analysis and evidence of practice; these are based on the premise that, as MA theory is drawn from and rooted in practice, theory and practice must be complementary to retain validity. These have been synthesised into a set of ten tenets designed to provide guidelines for the development and implementation of a MAS aimed at facilitating the achievement of the profit goal. Finally, the limitations of the research are discussed, with the particular intent of placing the work within it's, by definition, restricted position in the very wide and deep field of MA research and practice.

4.2 Contribution to theory

This section discusses the principal elements of the synthesised findings against strands of research against which the findings are assessed as being either directly or indirectly relevant. The first two elements are the core building blocks of the conceptual framework (3.2) - the distinction between operational/ financial spaces, and the development of the Otley (1999) proposals. The next element is external uncertainty, as positioned in section 3.2 and delineated in section 3.3, and its direct response - the twin mode MAS as explicated in section 3.4. The final three elements are the three sub dimensions of uncertainty (management effectiveness, multiple perspectives and reporting validity), again as positioned 3.2 and delineated in 3.3, each within the context of the unifying role of profitability providing a response, as explicated in 3.5. Finally, all the elements are pulled together in a discussion of how the definition of the role, content and function of MA implicit in the findings, viewed as a whole fits earlier definitions of MAS in prior research. The relationship between the elements and findings is shown in Table 4-1.

The prior research against which this discussion is made is drawn from the literature reviews of P1, P2 and the research update (see Figure 1-1). It is not intended that the research cover is comprehensive, as it is restricted to research covered by the three projects and the research update (18.5). The mass of research for each strand is too wide to be fully covered, and also subject to alternative interpretations of relative significance and classification.

Elements	F1. Frame work	F2. Uncertainty	F3. Twin mode	F4. Profit
Operational / financial space	Yes	Yes	Yes	Yes
Otley proposals	Yes	Yes	Yes	Yes
External / twin mode	Yes	Yes	Yes	
Management effectiveness/FA profit goal	Yes	Yes		Yes
Reporting validity / FA profit goal	Yes	Yes		Yes
Multiple perspectives / FA profit goal	Yes	Yes		Yes

Table 4-1: Cross reference of key findings to linking elements

Financialise operational space

The close interrelationship between MA practices and the management of operational activities, and the use of MA to thus inform and control operational actions, has been traced back to the earliest capitalist relationships, continuing up to the present time, suggesting an innate and embedded link (Walsh and Stewart, 1993; Heier, 2000) (Hopwood, 1987). (Miller and O'Leary, 1987) report on the specific influences in the first three decades of the 20th century of the concepts of scientific management on the core MA practices of annual budgets and standard costing, leading to the inference that such core MA practices are rooted in the underlying assumption that operational actions are programmable and controllable, implicitly in a stable environment. This fits with a quotation from 1919 that 'costing is the 'X-ray' of commerce', used by (Loft, 1986) in her study of the origins of the UK Institute of Cost and Works Accountants (now CIMA), a name which in itself demonstrates the close link between MA practices and operations.

Current studies confirm the continuation of this theme to the present. (Ahrens and Chapman , 2006) conclude on the need for financial information to provide 'enabling control' to 'establish a positive link between performance measurement and skilful practical activity'. In a similar vein, (Ahrens and Chapman, 2007) configure MA as a 'resource for action' leading to 'skilful practical activity', highlighting the importance of the financial perspective and rejecting the prevailing view of 'hero sociology', and report how for management the main use of past performance evaluation lies in its potential to help construct future lines of action. Similarly, but using different language, (Mouritsen and Hansen, 2006) highlight the pressure of capital markets for the optimisation of financial performance and conclude that 'MA and operations management meet in the lateral space and provide different - sometime complementary – explanations of how value creation occurs'. (Ezzamel et al, 2004), also using the concept of space, conclude how MA measures were deployed to create spaces of representation to create a new organisational reality to stimulate operational actions to improve financial performance.(Scapens, 2006) sees the role of accountants as being to analyse the financial implications of operational decisions, but goes on to argue that this takes the accountant away from being a pure accountant and a bean counter to be a 'hybrid accountant'.

On a more specific technical basis, often drawn from operational research, many of the studies that informed P2 provide a range of evidence of the use of the guidance of

financial assessments to guide operational actions towards the achievement of financial goals (Helden, Meer-Kooistra and Scapens, 2001);(Kulmala, Paranko and Uusi-Rauva, 2002)(Azofra, Prieto and Santidrian, 2003; Carr and Ng, 1995; Cooper and Slagmulder, 2006; Dawood and Marasii, 2001; Banker and Morey, 1993; Chen and Lan, 2001; Suwignojo, Bititci, and Carrie, 2000; Inderfurth, 2002; Kogan, 2004; Low and Sorensen, 2004; Jazayeri and Hopper, 1999; Bayou and Bennett, 1992); (Bhattacharjee and Ramesh, 2000; Collier, 2005). This theme is updated into the use of ERP systems (Quattrone and Hopper, 2005; Chapman, 2005).

The concept of the financialisation of operational space is thus supported by a range of prior research. However, it provides a development of research by placing it as a central element in a conceptual framework for a MAS.

Otley Functions (Otley, 1999)

The core functions of the conceptual framework were developed from proposals made by (Otley, 1999). This paper argued that any approach to managing organisation performance must address effectively the five central issues of objective, planning, targets, reward and feedback, and that the issues are interlinked as 'a complete control system involves each of the five elements (issues) identified both separately and in combination' (pg380). The paper also proposed that the framework could be developed further in the analysis of management control practice, and that 'case-based, longitudinal studies provide the best route to this end'. This thesis responds to this call for further development. Initially, the proposals were used to provide the base framework of analysis in P2 and P3. This led to their providing the core functions of the conceptual framework (Figure 3-1), subject to changes and developments arising from the findings. The principal changes were the addition of a function to cover the recording of actual outcomes, and the exclusion of rewards element. The revised content and relationship of the Otley elements (issues) is demonstrated in Figure 4-1

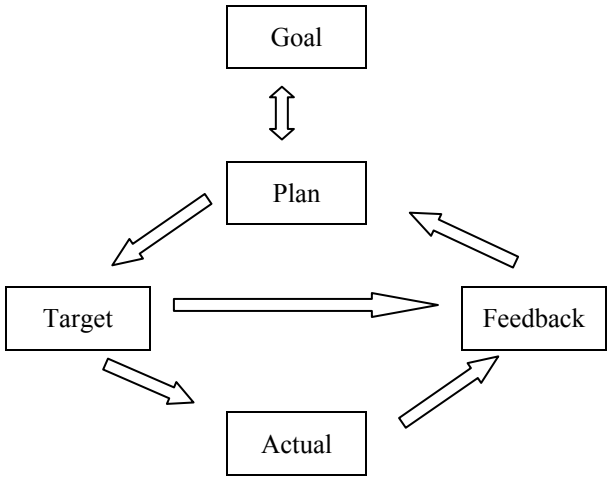

Figure 4-1: Revised relationship of Otley (1999) elements

An actual outcomes function is included as it provides a core link in the circular flow of planning to target to actual performance to feedback back to actual performance.

Reward is excluded as a key function as it is not part of the flow, but a mediating factor aimed at stimulating the achievement of target outcomes; objective is included as it defines the overall context of the process. The rationale for this revised relationship is demonstrated in greater detail in the conceptual framework finding (section 3.2). It demonstrates that the recording of actual performance is in itself a complex function, covering the conversion of operational output to financial transactions which are then aggregated to provide the recording and analysis of profitability outcomes (see Figure 3-1), potentially using the range of accounting perspectives for analysis (section 3.5). Reward is excluded from this development of the Otley (1999) proposals as it is not part of the flow of a MAS.

A further development in the use of the proposals relates to the definition of objectives. This study assumes the specific narrow financial objective of profitability for the benefit of financial stakeholders, for the reasons identified in section 3.5 and discussed below. This is different to the (Otley, 1999) paper which asserts that performance is 'capable of no simple definition' (pg 364) and that the measurement of goal attainment should be in terms 'of meeting all stakeholder aspirations' (pg 366). However, the findings of section 3.5 aim to show how the financial goals provide a unifying unit of measurement that is linked back directly to operational activities. This extension of the profitability goal back as a unit of measurement of operational performance is further evidenced by interdependency between the operational and financial space shown in Figure 3-1. This approach is consistent with the call of the paper that 'the management accountant needs to understand the operational activities of the organisation' (Otley, 1999) pg 381).

The findings thus provide a significant development of the Otley (1999) proposals. They convert the proposals from an analytical framework to providing the core functions of a conceptual framework of a MAS. This leads to the inclusion of an 'actual', the removal of the 'rewards' and the identifications of the goal with the unifying measurement role of profitability, in terms that provide a direct link between operational and financial realities

Twin Mode MAS

The default Fixed mode MAS is directly consistent with the approach adopted by the core MA practices of standard costing and fixed annual budgeting, which have their roots in scientific management (Otley, 1999) (Miller and O'Leary, 1987). Its wide use is reflected by the statement of (Otley, 1999) (pg 370) that the fixed annual budget is 'traditionally the central plank of most organizations control mechanism as it is one of the few techniques capable of integrating the whole gamut of organizational activity into a single coherent summary'. However, its limitations as the sole mode of operation, as reflected by the 'uncertainty paradox', have been identified and addressed by a range of studies. This section discusses the twin mode MAS against streams of research that address this issue.

The RAPM (Reliance on Accounting Performance Measures) studies represent a major stream of MA work that directly addresses the issue. It was originally formulated by (Hopwood, 1972) in terms of aiming to identify why many accounting reports and budgets caused 'dysfunctional decision making'. The issue was raised in terms of

whether a profit conscious or budget conscious performance appraisal style created the most effective outcome, with the conclusion that focus on actual profitability, not budget performance, would produce more effective performance. The stream of work that followed this, generally using survey methods, focused on aiming to provide evidence of consistent relationship between the style of use of budgets and their organisational (and behavioural) impact, although with the general conclusion from meta reviews that no consistent conclusion has emerged (Otley and Fakiolas, 2000; Chapman, 1997; Hartmann, 2000; Otley and Pollanen, 2000). Reviewing these inconclusive findings, (Hartmann, 2000) identified uncertainty as a factor behind this outcome, formulating the 'uncertainty paradox' used in this study. This conclusion drew on similar conclusions about uncertainty drawn from related contingency based studies (Chapman, 1997; Burchell, Clubb, Hopwood, Hughes, and Nahapiet, 1980), a theme continued by (Chenhall, 2003), and (Otley, 2006) who raised the issue of whether budgets can be used in uncertain conditions. The twin mode findings fits this lack of consistent pattern to the findings, as its implications are that both budget conscious (equated to Fixed mode) and profit conscious (Flex mode) can be most appropriate depending on the incidence of the impact of external uncertainty. It also implies that any MAS response must be adaptive to uncertainty, and that it is not possible to develop a standardised approach which can be implemented contingent on a particular specified operating environment. Finally, it adds in depth case study evidence linked to actual financial outcomes to this strand of work, as against the survey format of much of the research. This follows the calls of recent meta reviews of the RAPM stream of work (Hartmann, 2000) to provide an in depth research, rather than survey. This is of particular importance in a field of research which covers conditions which are uncertain, evolving, messy and complex.

The BBRT proposals (Hope and Fraser, 2003; Hope and Fraser, 2001) address the issue in an alternative manner by proposing to abolish annual fixed budgets and replace them with a range of adaptive systems. In effect their proposal is to move to a continuous Flex mode. While this raised a high level of interest in particular among business consultants e.g. (Fanning, 2000; Mackenzie, 2001; Accenture, 2001; CLG, 2001; Fisher, 2002), the findings of research are that few businesses abolish budgets (Scapens, 2006). The twin mode finding provides an explanation as to why this is so by highlighting the benefits of the fixed target being used in the default norm of stability to allow, between periods of instability, the achievement of planned profitability targets. The twin mode findings are also consistent with research findings that there is a move to more flexible budgeting process (Neely, Sutcliff, and Heynes, 2001), and in particular rolling forecasts to year end (Scapens, 2006), as this provides some level of response to the impact of external uncertainty.

The findings also have implications for studies that aim to link MA and corporate planning. The findings of sections 3.3 and 3.5 were that the future is a continuum, and that operational plans and targets feed into overall corporate plans; short and long term merge as plans based on extrapolations into the future only requiring change when revised information causes a need to change assessment of the future external environment. Consequently, the development of 'long term' strategy is subject to continual adaptive responsive reassessment. This conclusion is in line with (Hope and Fraser, 2001) (Hope and Fraser, 2003) for strategy as a continual development, and

Neely (2001) to link budgeting with planning and strategy, but not the distinction of Johnson and Kaplan (1987) between short term processes and long term product development. It places the MAS as supplying the potential of providing continual input to strategy in conditions of instability when it is most needed but most difficult (Hoskin, Macve, and Stone, 2006) or, following Simmons levers of control classification (Simons, 1995) providing 'diagnostic and interactive' control when there is high environmental uncertainty (Henri, 2006).

The twin modes findings also have implications for a range of other issues in MA research. The need to have a high degree of tolerance in the interpretation of what is fixed, given the innate level of environmental noise reflects the finding on the potential beneficial use of budgetary slack (Davial and Wouter, 2005) (Van der Stede, 2000). It fits the real options approach by providing a mechanism to respond when future projections do not fit with initial plan (Benaroch, 1999) (Hennell and Stiles, 2002). It highlights that, in the perspective of contract model of an organisation (Baiman, 2006), it is essential to build in the potential to renegotiating contracts in response to unexpected changes (Sunder, 2002) and suggest the danger of this approach if inflexibility is built in to organisational contracts. The responsive use of feedback fits with the conclusions of (Mintzberg, 1994) on the use of information to communicate and control. It highlights the danger of using a fixed budget to apparently eliminate uncertainty, which can be attractive to staff (Marinson and Ogden, 2005), but which may cause changes to be explained away, thus inhibiting the potential for adaptive response. It fits the conclusion of (Collier and Berry, 2002) that risk is generally not in built into targets, and provides for an alternative method of responding to risk. It fits the distinction between more mechanistic (Fixed) and more organic (Flex) form of management control systems (Chenhall, 2003), although with the conclusion that the uncertain impact of uncertainty means that both modes are required, and it is not possible to define a specific fit, contingent on a specific operational environment.

One aspect of the findings which does not generally seem to have been addressed by the prior research is the differing but equivalent sources for MA and FA aggregations. A core element of the twin mode findings (section 3.4) is that MA aggregations should be drawn from quantifications of the cost and income consequences of operational actions as they occur; this is distinguished from FA aggregations which are drawn in a lagged manner from the double entry based general ledger. This distinction in effect places MA aggregations in a half way house between FA aggregations and non financial performance measures, such as BSC. The equivalence with non financial performance measures is that the underlying data is drawn from operational data; the equivalence with FA is that the focus is on profitability and the information is potentially reconcilable through the common source of financial transactions. This distinction between the source of FA and MA information in itself raises issues of implementation (section 3.5) to be addressed particularly in relation to practical issues of implementation, as covered in section 4.3.

The overall implication of the twin mode finding is that the 'uncertainty paradox' does not in reality exist. Much of the time operations can be undertaken in a context where there is relative stability; when there are changes a flexible approach is a necessary response – thus an approach based on an assumption of stability will not be appropriate.

Further, the finding implies that this approach is what is in fact undertaken in practice. This discussion suggests that specific aspects of this finding have been recognised by prior research, but that they are not generally pulled together as a single concept. The fixed/ control mode was drawn from Scientific Management and its potential benefits in conditions of stability are recognised by its continual use. The RAPM work recognised the conflict but much of the work tried to identify a structured resolution of the issue, rather than recognising that because the conflict arises from uncertainty, the response is situational dependant on context. Thus, an approach relying on surveys to prove or disprove a specific hypothesis will intrinsically be unable to draw a firm general conclusion. The BBRT proposals recognised the problems associated with the fixed/control mode, but not the benefits, reflected in their limited take up. Other studies recognise aspects of the issue, but only in relation to their specific focus.

Management effectiveness and Profitability Goal

The finding of section 3.5 places the unifying role of profitability as a response to management uncertainty, via cascading down the overall externally derived organisational profitability goal to operational levels. This introduces the external referent of external financial stakeholder's profitability goals to internal evaluation of performance. Performance can be evaluated as good if it meets the aspirations of external financial stakeholders and not good if it does not. This then can trigger adaptive responses and thus provide some measure of assessing management effectiveness.

While, as demonstrated in section 17.2, research generally accepts the importance of profitability goal, it does not generally identify it as a response to internal uncertainty. A mix of studies identify the potential role of the profit goal to provide a general measure to assess management effectiveness and to trigger responses to external change, although often reported in terms of the measure being imposed through financial distress (Vámosi, 2000; Gurd, Smith and Swaffer, 2002; Gurd2, Smith and Swaffer, 2002; Hope and Fraser, 2001; Hopwood, 1987; Radcliffe, Campbell, and Fogarty, 2001; Ezzamel and Bourn, 1990)(Dugdale and Colwvn Jones, 1998). Other studies also report that the use of financial goals is often linked to firm individual pressure (Granlund, 2001; Euske and Riccaboni, 1999). Relating to this, (Euske, Lebas and McNair, 1993) introduce the useful concept of senior operational management providing a 'hinge' role by converting overall organisational objectives into performance criteria at the operational level; this fits the requirement for management judgement to interpret and respond to external changes and internal uncertainty. Similarly, (Marinson and Ogden, 2005) conclude on the benefits of a fixed budget being useful in focussing management on achieving the goal by creating an apparent goal certainty; this fits with using the Fixed mode approach to control management effectiveness, but with the proviso of the potential danger that it can reduce the potential for flexible response if external uncertainty challenges the certainty assumptions. Again, the use of general profitability goals to ensure management focus is also in line with the proposals for the need to initiate interventions to counteract lack of focus by management (Argyris, 1990).

The use of rewards provides a key factor in reinforcing the alignment of management interests with the achievement of organisational goals (Otley, 1999). As reviewed in the Thematic Findings (section 17.5), the normative view is to link rewards in some way to

financial performance, but with the particular problematic issues of bonuses being linked to fixed budgets which become unrealistic as a consequence of the impact of external uncertainties (Kerr, 1995). The P3 case evidence generally fits this approach (section 24.3) with the restriction that bonuses should be linked to targets over which the recipient has an influence, and subject to two main limitations: firstly, relating to the requirement to keep raising the bar if profitability is to be improved, becoming a disincentive; secondly, on the use of profitability calculations being subject to reassessment because of the reporting validity issues. These findings provide an extension to the problem of bonuses providing motivation in conditions where unanticipated factors arising from uncertainty have a greater impact on performance than management effectiveness.

From a contrary point of view, several findings report on the dysfunctional impact where there is no MAS focussed on profitability. For example, (Seal, 2001) in his research into Marconi (previously GEC) reports how, following the change from the previous Weinstock narrow focus on profitability to a wide range of multiple measures, organisational performance rapidly deteriorated, finally leading to effective bankruptcy; Fernandez-Revuelta Perez & Robson (1999) report on continual corporate failure when there is no clear focus on actual profitability achievement; (Jones, 1985) reports how inappropriate disruptions to MAS following an acquisition led to adverse outcomes

Overall therefore, while much of the research supports the central role of the profitability goal, it is generally not presented as providing a response to internal uncertainty. This finding therefore provides a further contribution by highlighting the role of the goal of profitability as a response to management effectiveness through the introduction of the external referent of financial stakeholders' profitability aspirations.

Reporting validity and the profitability goal

In section 3.5 the partial response to reporting validity uncertainty was based on the characteristics of FA, the external reporting perspective, based on the detailed findings of P3 (section 24.2). This provides a classification (Figure 24-1) and examples which demonstrate how accounting outcomes are rooted in reality through the link to operations via financial transactions, but with endemic uncertainty over reporting validity because of issues relating to cost identification and period and profit centre allocation. As reported in section 3.5 this endemic uncertainty is partially addressed by treating reporting profitability under FA standards as if it were true. These finding contribute specific evidence to the debate over accounting representation, where the tendency is for the debate to be in conceptual philosophical terms, not rooted in practice. In this debate the findings fit and reflect the conclusions of (Mattessich, 2003). This study argued that accounting does have a referent with reality, but identifies period allocations as a central problematic issue. It argued that, while absolute organisational profitability performance cannot be assessed until the organisation has ceased trading and all financial transactions which it has instigated have been accounted for, FA accounting rules could be used to allocate income and expenditure to intermediate periods and thus provide reporting values that have an authoritative character. Equivalent conclusions are expressed by (Mouck, 2004) using different language. This study argued that, while all accounting is drawn from double entry roots,

the differing components of the Balance Sheet have different epistemological roots; underlying reality can therefore only be confirmed by rules allowing for these epistemological variations. From this the study concludes that accounting is only a reality in as much as a football game is a reality, but if the rules are accepted the game can be treated as a reality and participants can make assessments on the basis of this reality; overall accounts can only be a fuzzy indicator. Other studies e.g. (McSweeney, 2000; Phelan, 1997) make related points about period allocation but do not go on to address the consequent implementation implications.

The findings do not fit those studies that argue accounting outcomes have no referent in reality and their only relevance for use is in the creation of a separate socially constructed reality or other. For example, (Macintosh, Shearer, Thornton and Welker, 2000), in a paper that triggered the response of (Mattessich, 2003), argue that accounting does not reflect an objective reality but instead circulates in a self referential model, although then arguing that accounting does impart a sense of exogeneity and predictability through a sense of socially constructed reality and does therefore 'have real material and social consequences'. (McKernan, 2007), in a similar manner, argues that accounts are not representational and only have use because people using them believe them to be correct; again this is based purely on a philosophical assessment and is not grounded on the core functions of aggregations of financial transactions. Again (Johnson, 1992) uses Plato's imagery argues that accounting represents reality only 'as a shadow on the wall' and that therefore performance measures have to be based on operational not accounting realities.

Other studies provide evidence that relate to specific aspects of reporting validity. (Helden et al, 2001) report an in depth case study into issues of transfer pricing. They conclude that there is no objectively 'best' approach, but that agreement on a consistent basis that is agreed to be acceptable can provide stability for decision making. Thus the issue of profit centre allocation (see Figure 24-1) which is not a concern of FA is in a likewise manner treated as valid if all parties agree to a standard treatment. Other studies provide evidence that focuses principally on the problematic aspects of reporting validity. (Kulmala et al, 2002) report on the difficulties in identifying objectively internal costs in a network. In relation to systems, (Cooper and Kaplan, 1998) report on the dangers of real time systems, in effect reflecting the timing issue of cost identifications; this issue is also reflected by (Granlund and Malmi, 2002) in relation to the use of ERP systems, and (Dechow and Mouriten, 2005) highlighting the dangers of systems blind spots.

Overall therefore the study findings contribute to debates on accounting representation by providing evidence of how profitability outcomes while being rooted in reality have inherent issues of validity, which can be partially addressed by using FA standards and internal cost allocation protocols to treat computed profitability as if it was true.

Multiple perspectives and Profitability Goal

The third dimension of internal uncertainty to which the profitability goal provides a partial response is multiple accounting aggregation perspectives. As discussed in section 3.3, uncertainty potentially occurs as a consequence of the variety of perspectives for

the aggregation and analysis of financial information, all of which are potentially valid. There is therefore uncertainty as to which dimension is the most appropriate to use. This is reflected by the prior research in a range of studies that aim to assess which approach is most effective. For example, (Dugdale and Colwvn Jones, 2002) review the conflicting experience and use of Activity Based Costing concluding that it is 'a melange of competing and contradictory practice', a view supported by (Malmu, 1997; Armstrong, 2002; Lukka and Granlund, 2002; Lebas, 1999). There is the perennial issue of the appropriateness of absorption costing e.g. (Lucas, 1999), and assertions over the particular benefits of a throughput approach (Goldratt and Cox, 1984). The difficulties associated with the varying potential perspectives is reflected by studies that report on actual implementation difficulties (Ness and Cucuzza, 1995) (Nicolini, 2000) or acknowledge conceptually the difficulties of implementations (Meyer, 2002), and the difficulty of interpreting multiple performance measures (Lillis, 2002).

The conclusion of this study, as demonstrated in the restaurant example (section 17.1), is that the differing aggregation perspectives all reflect perspectives that are equally valid – there is not one approach that is intrinsically better than the other. The choice of which to use is therefore dependant on the test of which one will provide information in a manner that will allow plans and targets to be set which will lead to the achievement of profitability goals – an assessment that cannot be answered with certainty. However, the linking factor of all the differing perspectives is that they represent differing ways of aggregating financial transactions, and that these financial transactions will also be aggregated to provide the assessment of profitability using the FA perspective, which will define the level of profitability. Viewed from the stance of the profitability goal, the differing perspectives can provide tools for the achievement of profitability. This then leads back to the conclusion that the test of which perspective is most appropriate is governed by an assessment of which approach leads to the achievement of profitability goals. If profitability goals are not being achieved, it is a potential signal that a response may lie in reassessing the most appropriate perspective on which to base the MAS.

This assessment therefore implies that any studies aiming to identify which approach is intrinsically the best is flawed. What is most appropriate is dependant on context, and this can only be undertaken by the judgement of the management making the assessment, validated by the test of whether the information produced can lead to the achievement of the profitability goal. As with management effectiveness there can be no absolute definition of this, only a self referential assessment of what is 'good enough'

Goal, role, functions and processes of a MAS

The four integrated findings viewed as a whole provide a tight definition of the role, content and functions of a MAS, as set out in section 3.2. The goal is to facilitate the implementation of operational actions where the financial outcomes will lead to the achievement of profitability outcomes that meet the aspirations of the external financial stakeholders. The role is to create a financial space parallel to the operational space used to inform and control the development and implementation of operational actions towards the achievement of the goal. The functions of a MAS are a range of calculative techniques used to plan, target, report and feedback the financial consequences of

operational actions. The processes are the implementation of the functions in a manner that oscillates between the modes of fixed/control and flexible/inform dependant, based on the assessed evidence that external uncertainty impacts intermittently, with periods of relative stability and certainty being the general normal, and periods of change occurring intermittently and in no certain manner. The overall potential of the MAS to fulfil the goal is subject to the impact of the internal uncertainties of management effectiveness, multiple perspectives and reporting validity; however, in a circular manner the feedback of the level of achievement provides an external referent using a common means of measurement against which performance can be evaluated and any required response identified.

The findings therefore provide a mix of concrete MAS definition and imprecise subjective self referential implementation. The overall definition of goal, role, functions and processes are concrete, built around an economic goal, drawn from and rooted in the evidence of practice. However, implementation is driven by the requirement for flexibility in response to external uncertainties, and the need for the self referential goal of profitability to providing the level of certainty to counteract the impact of the internal uncertainties.

The tight definition of MA is at odds with the findings of prior research which has generally not agreed such a tight definition. For example, (Hopwood, 1987) concludes that there is no 'primeval essence', (Ittner and Larcker, 2001) conclude that the accounting research shows 'an uncertain body of knowledge', (Zimmerman, 2001) that there is 'no substantive body of knowledge' and Horngren (1995) that there is no overall magic solution. However, there are consistencies with the finding that MA is made up of a collection of 'calculative practices' (Miller, 1998) that have evolved over time (Miller, 1998; Ittner and Larcker, 2001; Johnson and Kaplan, 1987), often in response to new and evolving situations (Hopwood, 1987; Chenhall and Langfield-Smith, 1998) but with the core practices of budgeting and standard costing which were drawn originally from concepts of scientific management (Miller and O'Leary, 1987). There is also compatibility with the elemental value chain (Meyer, 2002) (section 17.3), the identification of the central importance of profit goal in addressing uncertainty, particularly with explosion of information (Bhimani, 2006; Meyer, 2002), and the role of MA in 'providing the information and control mechanisms needed to achieve organisational objectives' (Ittner and Larcker, 2001).

This study's finding can be considered in detail by a reassessment of the findings of one of the classic (Brown, 1996) accounting studies 'the archaeology of accounting systems' (Hopwood, 1987). This was based on the study of change over time of three accounting systems, with a general conclusion that accounting is subject to continual change and reformation, and thus has no underlying essence. The findings of this study provide a different interpretation, concluding that there is an underlying essence which is based on the economic intent of the use of MA, and that the changes highlighted by (Hopwood, 1987) reflect flexible responses to external and internal uncertainty with the effectiveness of these responses being assessed by reference to the level of performance achieved against self referential targets. In particular, this is illustrated by the first of the three examples used based on historical research of the use of financial calculation by Wedgwood in 1772. This example has very clear parallels to the evidence provided by

the current case. The Wedgwood case reports how in 1772 the market for pottery collapsed, leading to a collapse in profits. This led to a stimulus to assess better the profitability of the sale of vases, via the development of systems for product costing and profitability assessment. However, initially a variance was identified between planned profitability and that actually recorded. This led to a reconciliation of the difference which highlighted the cause as management ‘inefficiency, theft and profligacy’ - i.e. in the terms of this study, management efficiency. Management changes were made and a system of weekly accounts was introduced including reconciliation of product and organisational profitability; use of this information to inform and control operational actions resulted in a return to target profitability, and the assessment that the organisation ‘had been colonised by economic facts', a clear parallel to the concept of the ‘financial space’. Other striking parallels include the need to respond to external market forces, the choice of accounting perspective (product profitability), the impact of management effectiveness, the key role of profit versus intent feedback, the unifying role of profitability, and issues over reporting validity.

The second example, code named M, which occurred in the 1970s, provides evidence that can be reinterpreted in a similar manner. After years of good profitability, sudden unexpected intense competition from Japan led to pressure on pricing and profitability. This triggered a need to respond which was undertaken by a reassessment of the measured notions of costs which led to a change in production processes, reporting arrangements and organisational structure. The reported consequence was a reduction and elimination of unprofitable products and by inference, although not explicitly stated, an improvement in profitability. Reassessing the case of M in relation to the conceptual framework Figure 3-1, there is clear evidence of how the impact of unexpected change is signalled via feedback of profit variance. This led to a need for a response which included changes in operating practices, which then flowed through to a reassessment of the accounting perspectives used. The figure describing this process has clear parallels with elements of the core conceptual framework figure (Figure 3-1) and is reproduced here as Figure 4-2 . The market change equates to the external environment and the accounting mediations reflects the MA functions which lead to feedback. This triggered responsive actions clearly triggered a Flex mode type requirement for a change in previous processes, leading back implicitly to a further stage of stability. The distinction between this example and the integrated findings is that the case infers that the requirement for flexibility was imposed by the consequences of the unexpected market changes. The twin mode finding, however, proposes that the potential to change should be in built into a MAS with a direct connection to underlying operational realities; the aim would be to achieve a swifter and more effective response than that evidenced by the case of M.

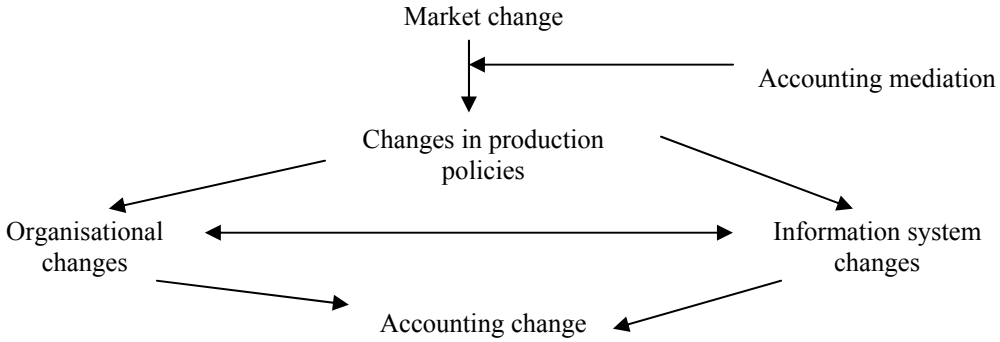

Figure 4-2: Reproduction of Fig 1 from Hopwood (1987)

The findings also have implications for the clarification of the scope of MAS and its relationship with the scope of other organisational management system terms, such as Management Control Systems (MCS) or Performance Measurement Systems (PMS). The distinction between financial space and operational space, with the MAS defined as creating the financial space, means that other performance systems will be concerned with organisational outcomes in non financial terms. This fits with using the term MCS to relate to all aspects of organisational control, including financial controls (Chenhall, 2003; Ditillo, 2004) and the term PMS to relate to the use of all appropriate data to inform organisational decisions (Neely and Adams, 2001). The role of using the functions of the financial space to plan the financial implications of operational actions also fits with the strategic MA role, which places accounting in an overall strategic position in an organisation (Shank, 2006).

This definition means that non financial performance measures, such as BSC, TQM and JIT, are placed outside the scope of management accounting. This does not fit their inclusion as MA by some studies (Chenall, 2006), or the implications behind the BSC (Kaplan and Norton, 2001; Kaplan and Norton, 1996), which was developed to counteract some aspects of the defined weaknesses of MA (Johnson and Kaplan, 1987). It does, however, fit a definition of 'narrow scope MA', which can be compared to the definition of broad scope MA (Gordon, Loeb, and Tseng, 2006) as including non financial measures. It is also consistent with (Meyer, 2002) who compared the combined measures of performance provided by profitability against the array of dissimilar measures provided by BSC. This distinction highlights the need for performance management systems for the operational management running parallel to a MAS. The need for parallel but consistent financial and operational performance management systems is consistent with the view of (Otley, 2001) concluding that a specific focus on optimising shareholder financial value is too narrow and should consider other stakeholders. It however places concern for the sociological implications of MA practice, e.g. (Baxter and Chua, 2006), as being only of relevance for their impact on management effectiveness in achieving the goal of profitability, but not of direct relevance in themselves.

Overall therefore the study has implications for a range of MA research strands. These are summarised in Table 4-2

Elements	Related research strands	Contribution
• Financialise operational space	• Mixed research linking operations and MA	• Positioned as a central plank of MAS conceptual framework
• Development of Otley (1999) proposal	• Otley (1999) proposal	• Redefine proposals as providing MAS functions • Exclude reward and include actual
• External uncertainty and twin mode responses	• Scientific management • RAPM • BBRT • Range of MA studies	• Dissolves the uncertainty paradox • Pull together as one concept disparate views • Brings theory into line with practice
• Management effectiveness and role of profitability	• Range of MA studies • Rewards	• Positions profitability as unifying measure of management effectiveness
• Reporting validity and role of profitability	• Accounting representation	• Specific classification of the nature of reporting validity uncertainty • External referent of FA performance levels provides a level of certainty
• Multiple perspectives and role of profitability	• ABC, process, customer, throughput and Financial Accounting	• Places apparent disconnected perspectives together in one framework
• Role, content and function of MA	• Definitions of MA	• Provide tight definitions of MA.

Table 4-2: Summary of theoretical contribution to MA research strands

4.3 Implications for practice

Prior research of the development of MA demonstrates that MA has developed over time as a response to the requirement and pressures of practice (Miller, 1998; Ittner and Larcker, 2001; Johnson and Kaplan, 1987; Hopwood, 1987; Chenhall and Langfield-Smith, 1998). MA theory is thus firmly drawn from and rooted in practice. Practice and theory must therefore be complementary and consistent. The findings of theory should therefore be able to benefit practice by providing guidance and insights to approaches that will be effective in practice. Following this path, a set of ten tenets aimed at guiding the use of MA in practice are drawn from the findings and the discussion of the implications for theory. These are set out in detail in Table 4-3 and are summarised here.

1) Goal is profit; role is to financialise operational space
2) Four Functions – plan, target, record, feedback
3) Split organisation into profit centres
4) Plan using process analysis; target and record using product, customer or throughput.
5) Timescale to fit operational patterns (e.g. weekly not monthly)
6) Two modes for target setting – fixed and flexible
7) Data from operational sources not double entry system
8) FA report profit; MA facilitates profit; both must be compatible

9) Separate targets for MA and external reporting.
10) No 'right' answer. Judgement and decisions required supported by MAS

They are to be read by reference to the revised conceptual framework (Figure 4-3). This revised framework is as per Figure 3-1 except that the internal dimensions of uncertainty have been taken away so that only functions and relationships which are directly involved with implementation are included. The implications of uncertainty are dealt with as part of the components of the tenets. The Table providing the details of the Tenets (Table 4-3) identifies the main elements of the tenets together with the rationale for their inclusions, their limitations and reference to the evidential source from which they were drawn. The discussion below highlights some the key issues relating to their inclusion, expanding on the reference to the evidential source. The aim is to ensure that the tenets are firmly rooted in the findings of valid research. It is intended that this in itself will have consequences for practice as implementation will be more effective if it works with the grain of the underlying causative factors. The tenets were also informed by the author's personal experience in a wide range of organisations and are presented on the basis of this experience.

The **first** 'Goal and role' set out the profitability goal which underpins all the assessments and conclusion of this study, and fits the author's experience of practice. It also introduces the concept of financial space as a means of clarifying the direct interrelationship between financial outcomes and operational actions, again following the evidence of the case study. The **second** tenet identifies the four functions of Plan, Targets, Actual Profitability and Feedback as being the central function of the systems, as developed from Otley (1999) and reflected in practice by the case study. The **third** proposes that MA aggregation analysis must be segmented in a manner that reflects the organisational operational structure as shown in Figure 3-2; this was evidenced in the case where performance was segmented into 35 Profit Centres (Table 21-2) with all the MA perspectives being used depending on context (section 22.6). A key problem in achieving this relates to the allocations of costs between profit centres which are jointly incurred. This is reflected in the cost allocations uncertainty, identified as a sub dimension of reporting validity uncertainty (section 3.3). There is no absolute solution and the issue is essentially an ABC issue, with the solution being to allocate the cost by reference to the cost driver or by reference to market rates. The **fourth** introduces the four differing MA accounting perspectives, as identified as an internal uncertainty in section 3.3, but here reinterpreted as options to be used depending on the underlying operational nature of the organisations **(**i.e. if it is contract, product or fixed cost led). The FA accounting perspectives is not covered as it is dealt with separately below. The **fifth** introduces the timescale, proposing that for MA to keep its connection to operational reality it must reflect the operational timescales. This is unlikely to be monthly - the normal period of monthly accounts from the double entry general ledger - as months are of varying length and do not match weeks. The **sixth** introduces the twin mode MAS (section 3.4), as being the principal response to the uncertainty paradox; however, in the context of practice it is introduced not as a response but as a central element required by a MAS for it to fulfil its role; this is in line with the evidence of P3 which showed a movement from fixed to flexible as a natural response to external change. The **seventh** tenet argues that MA data is best sourced from quantified incurred transactions to give the necessary speed and flexibility that is not achieved by FA

aggregation produced retrospectively from financial instruments processed through the general ledger; this was the process used in the case. This issue is central to practice performance as is evidenced by the case study. It reflects the author's experience directly, and the production and analysis of MA aggregation in a manner that is relevant is a central concern to MA practitioners, and one which is in many cases not achieved. The **eighth** relates to the relationship between MA and FA. This is of critical importance because while MA produces the information to facilitate the achievement of profitability goals, it is FA reporting that determines what the level of profitability achieved is. Thus, MA information is not valid unless achievement in profitability, reported in MA aggregations, flows through to be reported in FA aggregations. This can be achieved because all the perspectives are aggregated from the same underlying transactions; the parallel is the 'transformer toy' where the same core building blocks can be transformed into different identities. The **ninth** responds to the problematic issue that MA and FA accounts are unlikely to be fully compatible as a consequence of FA having the benefit of lag to reassess cost timing identification and period allocations issues; it therefore proposes that MA targets will be separate and distinct from projections given to external stakeholders. This in effect proposes that organisations need to produce two targeting/ budgeting systems because of the different roles between MA and FA reporting. The **tenth** highlights the theme that runs through all the findings - that there is no absolute certainty, only relative certainty that is essentially based in a self referential way on judgment. The basis of action is therefore driven by management decisions based on judgement, although the consequences of these decisions and actions can be evaluated back against profit aspirations, although these too are based on subjective assessments.

MA tenets	Rationale and limitation	Source
1) Goal is profit; role is to financialise operational space a) **Goal**. To provide information that enables management to instigate operational actions that result in the achievement of profitability outcomes that meet the aspirations of the external financial stakeholders. b) **Role**. To create a financial space parallel to the operational space used to inform and control the development and implementation of operational actions towards the achievement of the goal	• Profit goal provides a single unifying goal for an organisations which fits the requirement of the capitalist systems • Creation of financial space provides the necessary link between operational actions and financial outcomes as the level of profitability is the financial consequence of operational actions	Conceptual Framework (3)
2) Four Functions – plan, target, record, feedback a) **Plan** what operational actions will lead to optimum profitability – information from feed-forward from customers b) **Set targets** for profitability to be achieved by operational activities c) **Record actual** profitability outcomes at both operational and corporate level d) **Feedback** variances of actual performance vs. target. Variances caused either by unanticipated changes in requirement from customers or by shortfall of implementation against plan and target	• Description of functions used to develop and control implementation of actions intended to lead to the achievement of profitability goal.	Conceptual framework - development of Otley (1999) (3.2)
3) Split organisation into profit centres a) Functions will be implemented in organisational profit centres which reflect natural organisational operating units b) Plans, targets, recording actual and feedback will be undertaken at each profit centre. c) The overall results of the profit centres to be aggregated to provide the overall organisational performance	• Major limitation is where costs are shared between operating units (transfer pricing issue). This required agreed formulas to be set for the allocations of costs /income between profit centres/ operating which reflect	Conceptual Framework (3.2)
4) Plan using process analysis; target and record using product, customer or throughput. a) Process analysis will provide a means for analysing which operational process will lead to optimum levels of profitability. b) Target actual and feedback results will be aggregated using either product, customer, or throughput which ever is the most appropriate c) Overall organisational performance will be aggregated in terms of FA profitability	• Which perspective is appropriate will depend on the nature of operational activity. E.g. if the trading is contract based it is likely to be customer; if it has a large fixed cost with variable income such as a multi user warehouse it will be throughput	Profit goal as response to multiple perspectives (3.5)
5) Timescale – normally weekly not monthly a) The timescale for target and reporting will match the normal operational cycles b) In many case this will be weekly reporting periods and quarterly target periods as weeks fit normal activity cycles, and 4*13 fit the annual cycle. c) From an MA perspective it is unlikely that monthly will be most appropriate as months are uneven and do not fit the normal weekly cycle	• Setting targets at an operational level overcomes the long time horizons required traditionally for producing full budgets at the corporate level.	Twin mode functions (3.4)

MA tenets	Rationale and limitation	Source
6) Two modes for target setting – fixed and flexible a) **Fixed target /feedback as control.** This is the default mode and assumes conditions of relative predictability. Variances from target indicate management ineffectiveness and trigger remedial action. It is in this phase mode where profitability is maximised. b) **Flexible target /feedback as inform**. This is required when operating environment is unstable or changing. It will be signalled by variances from target not caused by management ineffectiveness. This will require changes to operational actions to be implemented to respond to the change leading to a need for re-planning and new target. c) **Movement between modes.** The aim is to recreate positions of stability by developing operational responses to the change. Then a movement can be made back to a fixed mode. Where possible build in responses that creates stability through mechanisms such as price ratchets that can respond to unanticipated change.	• Fixed/ control is the default mode during which profitability achieved. Actual operating environment stable and fits assessment and targets identifiable as achievable. • Flexible/ inform provides the ability for adaptive response when the operating environment changes leading to new plans and targets	Twin mode finding (3.4)
7) Data from operational sources not double entry system a) MA aggregations of actual performance can be created from quantification of value of financial transactions at point of initiation (order). **b)** Financial transactions represent the financial consequences of operational actions calculated by the formula quantity * price. c) Financial quantification is normally agreed when the order is initiated (order), and incurred when the operational action is undertaken (implementation) d) This allows for a direct connection to be maintained with operational actions as financial consequences are quantified in a parallel time zone to operational implementation. e) As targets are developed from data directly linked to operational realities they can be more easily flexed than budgets drawn from general ledger data.	• Feedback therefore needs to be as valid, clear and close to operational realities as possible to allow for interpretations. • For MAS to capture all cost and income as it is incurred it is essential to have a sales recording and purchase order system that captures the income and costs arising from operational actions as they are implemented. • The potential for achieving this has been greatly enhanced by the development of ERPS and other data base based IT systems	Conceptual framework (3.2)
8) FA report profit; MA facilitates profit; both must be compatible a) Organisational profitability is reported to external stakeholders in FA terms that must meet the 'true and fair' audit test. b) To maintain the connection between MA information used for operational decisions and final organisational profitability the profitability of all MA aggregations must be compatible with overall FA profitability c) This can be achieved by reconciliation of individual financial transactions which underpin both aggregations via the general ledger codes. As the financial instruments that make up FA aggregations (e.g. invoices) are produced from customer and supplier purchase order being implemented, FA financial transactions should generally match MA financial transactions as they are both reflecting the same underlying operational actions. d) This is best done by traditional monthly management accounts providing the link between MA operational based profitability analysis and annual audited profitability	• Financial transactions provide the building blocks of all financial aggregations. • For effectives reconciliation to be made between MA and FA their underlying financial transactions must be recorded using coding systems that are equivalent and cross reference, thus creating a continuity in the costing of the individual financial transactions • Thus if the financial transactions that make up both MA and FA aggregations are equivalent, the compatibility of the overall aggregations can be confirmed by reconciling their underlying financial transactions • There is a mismatch between MA and FA time cycles. MA should follow operational activities which normally work	Profit goal as response to reporting validity (3.5)

MA tenets	Rationale and limitation	Source
e) In a minority of cases income/costs cannot be identified at initiation (lagged income/costs), and therefore have to be estimated. There will therefore never be a full reconciliation as the lagged nature of FA reporting enables missed costs to be recognised retrospectively. Nevertheless strong financial control are required to ensure that reconciliations are as comprehensive as possible.	on a weekly cycle and is required on a near real time basis to provide a direct connection to operational actions. FA follows payment cycles which works on a monthly cycle. This means that reconciliations need to be done at the financial transaction level as cut off differences will occur between MA and FA reporting	
9) Separate targets for MA and external reporting. a) MA reporting is not suitable for reporting to external stakeholders FA reporting will be compatible with MA reporting it will never be equivalent because of the lagged identification of cost, and the potential for reassessment of period allocation following FA standards. b) Consequently targets produced as separate budgets are required for external financial stakeholders as their focus is on overall organisational performance, not specific operational segments. Overall corporate profitability may benefit from a portfolio smoothing effect arsing from multiple profit centres. Overall performance and strategy may appear stable, whereas at individual operating units or segments may need to change the specific operational strategic approach.	• Absolute precision is a goal that is unattainable, given the innate difficulties of cost and income recognition, particularly in a situation where speed of information is key. • Real time can only may be subject to change and reinterpretation to fit FA standards • FA aggregations have to be produced principally from an organisations general double entry ledger which records financial instruments. Production is thus intrinsically lagged	Profit goal as response to reporting validity (3.5)
10) No 'right' answer. Judgement and decisions required supported by MAS a) There is no right answer, no optimum level of profit. However there are outcomes that meet stakeholder expectations. Therefore all decisions are based on judgement. b) The MAS support these judgements as the outcomes of targets are tested through feedback of variance of actual vs. target. c) Interpretation of variances are based on analysis of the cause as interpreted by management judgement. This will lead to either control actions if under performance is assessed (stay in Fixed mode) or adaptive responses through process analysis (move to Flex mode). A further trigger is if earlier performance is reassessed as sub optimal for example by external stakeholder pressure or changed management. d) While these assessment can be informed by analysis of the underlying commercial drivers, their interpretation can only be a matter of management judgement. e) However the final reported FA profitability provides a measure of the outcome of the judgement.	• If variances assessed as it is management effectiveness, often not clear if caused by problems arising from individual competency, organisational factors or underlying planning • Feedback variance can signal a range of things – change in operational environment, management in effectiveness, inappropriate system or reporting validity, or the a short term blip which is not a significant trend	Management effectiveness/ Central role of profitability (3.5)

Table 4-3: Ten Tenets to guide the development and use of a MAS in practice

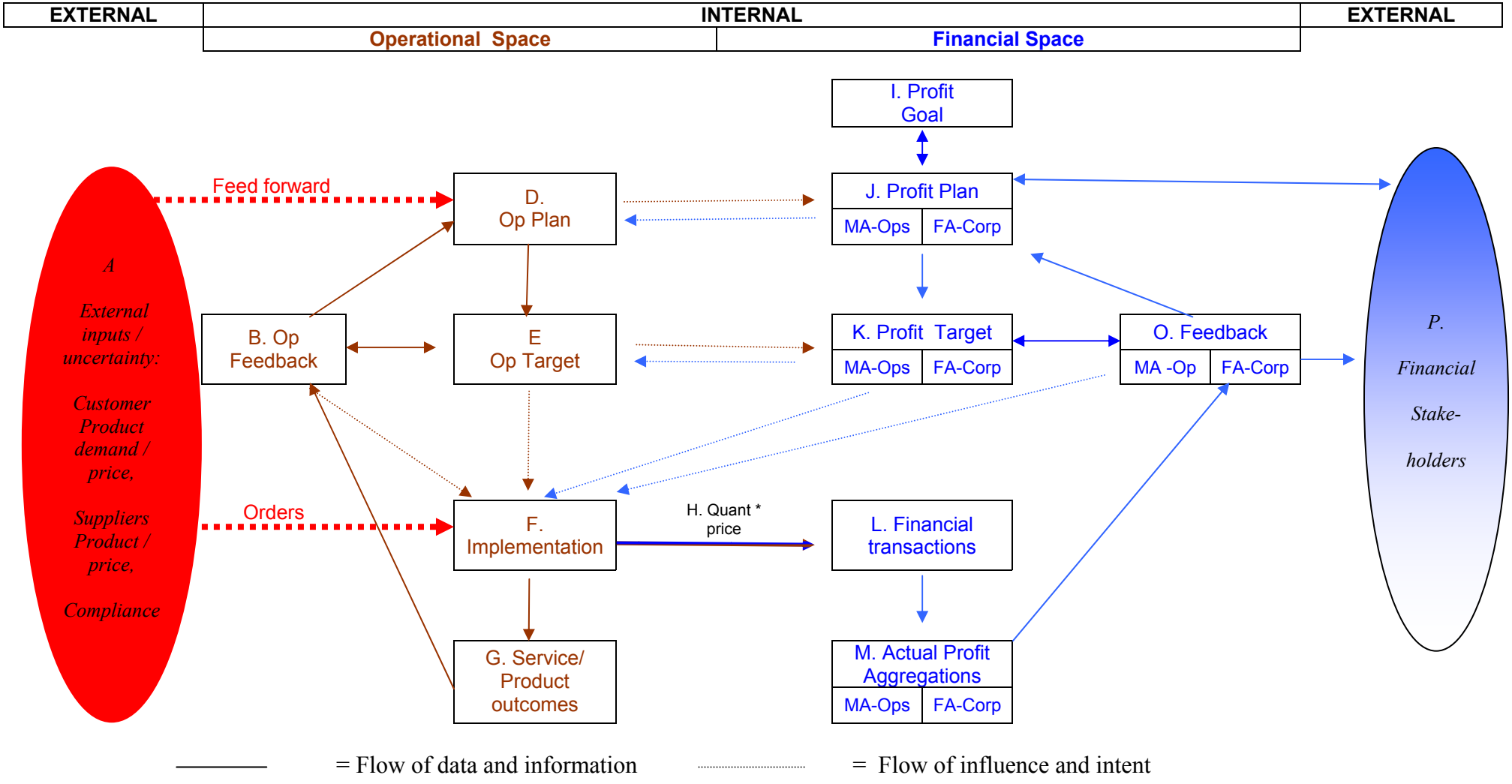

Figure 4-3: Conceptual framework adapted to 10 tenets

4.4 Limitations of the Study

The findings of this study have to be assessed within the context of a range of limitations. While the research methodology has been structured to reduce the impact of these limitations wherever possible, the scope and purpose of the research means that there is a restriction to the extent this can be achieved.

The first limitation relates to the very wide scope of the study, which covers all aspects of MA, and means a limitation on the depth of the research undertaken. Many of the individual aspects in themselves provide fruitful topics for research, for which more in depth or wider research could be undertaken. (e.g. role of profitability as an organisational goal; use of twin mode MAS; in depth study of the impact of uncertainty and/or its specific sub dimensions such as reporting validity; role of external financial stakeholders; role of management judgement in interpreting MAS output; use of operational derived data vs. general ledger derived data) However, the wide scope is unavoidable given that the purpose of the study covers the relationship between profitability and MA; to achieve this, all aspects had to be covered otherwise the scope of the research would be incomplete. A consequence is that the literature review for differing aspects has a narrower cover than if the research focused on one specific aspect (e.g. budgeting, accounting representation, uncertainty, management evaluation). However, the intention has been able to counteract by the use of the Systematic Review methodology as the basis for the central literature review to provide a focused and structured approach to the identifications of relevant studies.

A second limitation is that the treatment of the literature review is circular. The findings from the review both inform the findings in P1 and P2, and then are used as the basis for discussion and assessment. This is mitigated by two factors. Firstly, by the introduction of additional literature to inform the final synoptic discussion of the findings, although here again some concepts (e.g. financial space) were incorporated in the final synthesised findings. Secondly, the research was undertaken on a rolling development basis with the aim of producing findings that had developed from the original research data from a synthesis of both original and prior research. The final findings are intended to show a development from the original prior findings. The double loop process of discussing the final findings within the context of the original research provides the potential for a reflective assessment of the findings, and an identification of the areas of development.

The third limitation covers the use of a single case study to inform the new research. There is a significant limitation to the potential general relevance of the findings beyond the boundary of the individual case. However, this limitation is partially mitigated by the universal coverage of MA, and the twin track research approach of case study and structured literature review. MA and accounting in general are universal practices in western capitalist society, as evidenced by the spread of international accounting systems, and the universality of payments and receipts procedures processed through the double entry systems. Consequently, findings of a single case are made within the context of global practices. This is reinforced by the twin track approach of the

structured literature review, with the universality of the issues being addressed, allowing the specific case findings to be placed in the wider context of other research.

A final further potential limitation also related to the single case approach is that the author's personal involvement may hamper objectivity due to the level of preconceptions which he will bring to the interpretation of the evidence. The corollary of this, however, is that the author's position gave him total unrestricted access to all strategic, financial and operational activities and data, thus allowing the research to be undertaken at a depth that is difficult for independent researchers to achieve; this is particularly in relation to profitability outcomes, which in many organisations would be treated as confidential, especially to the extent covered in this study. Nevertheless, in order to address this limitation a highly structured approach was adopted at the outset (section 8) which was maintained throughout, strengthened where feasible by the inclusion of third party evidence, and as discussed above by adopting a twin track approach based on the structured literature review.

4.5 Reflections on context and general applicability

This section provides a further reflection on the extent to which the findings are applicable beyond the operational and governance contexts of the case study, providing a more detailed consideration of the reservations about the general applicability of single case study findings raised in section 4.4. It was informed by the author's personal professional and management experience interpreted within the context of the case and literature analysis presented in the thesis. It was undertaken in three stages.

For the first stage an assessment was made of characteristics specific to the case context which affected the design of the MAS described in P1 and P3. These specific characteristics were considered from reflection under three broad umbrella categories – sector, organisational profile, ownership and capital structure. From this an assessment was made on how these characteristics flowed through to the synthesised findings of section 3 and the ten practice tenets of section 4.3. The second stage consisted of a reflection for each characteristic of the impact of alternative operational and governance circumstances to the applicability of the findings and ten tenets to other contexts. The third stage consisted of a holistic reflection on the first two stages, from which emergent themes were drawn about applicability of the findings to other circumstances. This stage focused on the tenets, not the conceptual framework and related findings, as they provided a more direct link to specific differing operational and governance circumstances, having been developed to represent the operationalisation of the framework. However as the tenets were drawn from and are compatible to the framework, themes relevant to the tenets will also be relevant to the framework. The overall process is demonstrated by Figure 4-4

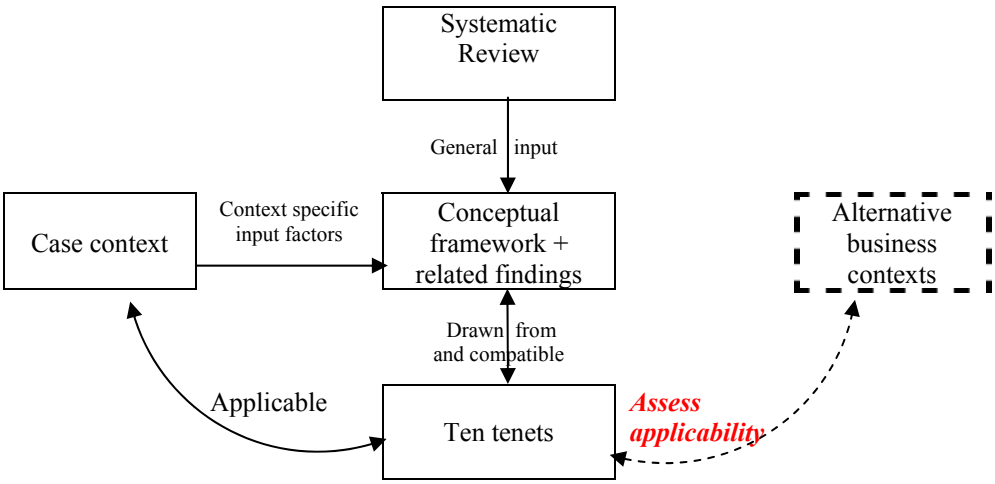

Figure 4-4: Reflective process considering generalisability of findings

The outcomes of the first two stages are shown in Table 4-4. The specific case characteristics are shown in column A referenced (a) to (n). The stage 1 assessment of their impact on the case MAS and flow through to the findings and tenets is shown in Columns B and C, with the applicability to the tenets cross referenced in column C. The stage 2 reflection of alternative context characteristics, and their alternative applicability to the findings and tenets, is shown in columns D and E, again cross referenced .

	STAGE 1		STAGE 2	
Case context specific input characteristics	**Impact on Case MAS (P1 and P3)**	**Flow through to findings and tenets (T numbers)**	**Alternative context characteristics**	**Applicability of tenets to alternative contexts (T nos)**
A	**B**	**C**	**D**	**E**
Sector				
(a) Large market, low margin commodity pricing, stable technology, limited competitive advantage.	− Planning based on the assumption of stable future economic environment. − Limited focus on significant new innovation. − Focus of fine grained financial control as low margin enhances profit impact of relatively small variances.	− Enhances feedback significance for tight financial control (T2) − Reduces significance of feed-forward for long term planning (T2) − Large impact of small variances emphasises issues of reporting validity. (T9)	Niche markets, high margin, changing technology, competitive advantage	− Greater emphasis on planning, less on short term operational control (T2) − Less emphasis on reporting validity (T9)
(b) Traffic planning multi dimensional and complex	Difficult to assess optimum traffic planning – leads to using profit as the measure	Use MA profit measurement to assess operational effectiveness (T10)	Defined product with clear margins	Profitability likely to move to confirmation rather than prime measure of operational effectiveness (T10)
(c) Weekly profile	Weekly accounts, earn or lose	Weekly accounting (T5)	Other cycles – e.g. annual, project delimited, academic	Change reporting period horizons (T5)
(d) Business cycle is tendering, pricing, implementing and monitoring outcomes	Strong fit to Otley (1999) framework – plan, target, actual feedback	Support Otley framework (T2)	Long term / high investment horizon may increase importance of planning	Otley framework holds but with different emphasis (T2)
(e) Customer and supply contracts ranges from long term via semi dedicated to ad hoc.	− All costing perspectives applicable − High level of change leads to need for fix/flex move	− Supports differential use of multiple perspectives (T4) − Emphasises need for fix flex oscillation (T6)	Customer and supply contracts similar i.e. all long term or all ad hoc	− Single costing may be relevant (T4) − Change in need to oscillate depending on stability (T6)
(f) High repair element (trucks, warehouses)	Highlights issue of cost identification	Emphasises issue of reporting validity (T9)	Cost identification clear	Less emphasis on reporting validity (T9)
Organisational profile				
(g) Operating in one sector – logistics	MAS has to match the operational profile of sector	Organisational structure defined by characteristics of sector (T3)	All other sectors	MAS to match specific characteristics of sector (T3).
(h) Single division	MAS structured to follow organisational structure	No input of multi division structure (T9)	Multi divisional structure	Potential split FA corporate vs. MA operational reporting (T9)

	STAGE 1		STAGE 2	
Case context specific input characteristics	**Impact on Case MAS (P1 and P3)**	**Flow through to findings and tenets (T numbers)**	**Alternative context characteristics**	**Applicability of tenets to alternative contexts (T nos)**
A	**B**	**C**	**D**	**E**
(i) Multi profit centre with differing operational profiles	Need differing plans/targets fix flex oscillations for each profit centre	Need for separate operational linked planning and feedback systems (T7)	Single profit centre/ less operational complexity	Less richness required – potentially simpler but still required (T7)
(j) Lack of professional trained management	Premium on making report simple	Emphasis on simple reporting (T10)	Professional trained management	Judgement required on reporting complexity (T10)
(k) Author had power and motivations to champion MAS, and to maintain its high profile and rolling adaptability.	Development of comprehensive operationally based MAS closely matching operations, easing oscillation between fixed/ flex, allowing flexibility on planning cycles and compatible to FA	Highlights importance of MA coming from operational sources, allowing for swift response to changes via fix/flex move, and flexible planning cycles and operational structure (T7)	Financial management less authoritative role	No impetus to implement comprehensive operational reporting system (T7)
			Rigid MA rules and defined management roles, not changed when obsolete	Operating reporting system becomes rigid and unable to respond to changed environment (ref T7, impact T3,4,5,6)
Ownership and capital structure				
(l) Mix owner managed with additional external private equity investors	− Goal congruence supporting importance of profit (T1) − External investors want feedback that is consistent with audited standards (T8)	− Importance of integrity of external reporting accentuated − Profitability goal accentuated	Only non management shareholders	− Agency factor dilutes primacy of profit goal (T1) − Importance of external reporting confirmed (T8)
			Only management shareholders – no financial pressure	− Lifestyle can become more important than profit (T1) − Importance of external reporting reduced (T1)
			Not for profit organisations	Not focus of this thesis
(m) Goals of maximising cash distribution to shareholders limits potential for high capital investment	No planning that involves major capital investment.	Role of planning that is capital intensive minimised	Business model based on long term capital investment	Increase importance of planning (T2)
(n) Viability of the business dependant on meeting bank covenants	Importance of profit goal accentuated	Importance of profit goal accentuated (T1)	No financial pressure	Life style requirement may dilutes primacy of profit goal (T1)

Table 4-4: Outcome of reflection on generalisability of findings

From consideration of the first two stages, in stage 3 three themes emerged about the applicability of the tenets to alternative contexts, each consisting of a groupings of tenets. These themes were operational implementation, the nature of MA information, and overarching considerations. Each is considered separately cross referenced to Table 4-5 from which the reflection is dawn.

The first theme - operational implementation - covered tenets 2-6. These were assessed as having general applicability, but with the major proviso of requiring differing emphasis of implementation depending on context. **Tenet 2** proposed the four functions required by an MAS – plan, target, record, feedback - based on Otley (1999) proposals. In the case context, the low margin commodity type environment caused an emphasis on short horizon target setting and feedback assessment; the relatively stable overall operating environment and the limited investment funds availability also reduced the importance of long horizon planning. In an alternative context of high margin/ high product differentiation / high investment funds availability, the implementation emphasis would be likely to change to an increased focus on long term planning, and reduced emphasis on short term control (a, d, m). **Tenet 3** proposed that MA aggregation analysis be segmented in a manner that reflects the organisational operational structure, with evidence from the case context indicating this was driven by the characteristics of the logistics sectors; alternative contexts would therefore be likely to trigger alternative analysis segmentation that reflected the characteristics of the operating sector (g). **Tenet 4** identified the four differing MA costing perspectives as options to be used, depending on the underlying operational nature of the organisations. In the case context, all were relevant as a consequence of the differing profiles of the profit centres. In alternative contexts, the utility of each perspective will again be determined by the profile of the relevant operational sector (e). **Tenet 5** proposed that the timescale must reflect the operational timescales to keep its connection to operational reality it. The case timescale was weekly, but other contexts may have different cycles (c). **Tenet 6** introduced the twin mode MAS, and the need to oscillate between fix/flex as a response to changes in the external environment. In the case context, there was need to be able to move continually; in other contexts (e.g. where there is long term stability or continually change), modes varying from continually fixed to continually flexed would be appropriate (e).

The second theme covered those tenets (7 to 9), which relate to the nature of MA information and its relationship to FA. The emergent outcome is that they also seem to generally applicable to other contexts, but with the proviso that implementation is dependant on the context of management motivation and capability. **Tenet 7** argued that MA data is best sourced from operational information via quantified incurred transactions, not from the general ledger (i, k). The thrust of the rationale is that general ledger information is lagged and too slow, and tends to be distanced from operational reality, a critique similar to that presented in Relevance Lost (Johnson and Kaplan,1987). In the case context, the author, who championed the system, had the motivation and the organisational power to drive through implementation, and ensure that it was able to respond to the requirements of tenets 2-6. In alternative contexts, there may not be a champion with the power and motivation, leading to difficulties in implementation (k). **Tenet 8** built on tenet 7 by arguing that it is critical to maintain compatibility between MA and FA information. While MA produces the information to

facilitate the achievement of profitability goals, FA reporting records the level of profitability achieved. Thus, for MA information to be of use, MA reported profitability must materially flows through to FA reported profitability (l). Again, as for tenet 7, in the case context this process was championed by the author; in other contexts, without a champion with the necessary power and motivation, this may not be achieved. **Tenet 9** provides the caveat to Tenet 8, highlighting that while MA and FA have to be compatible, they are unlikely to be equivalent as a consequence of reporting validity issues. Consequently, MA accounts and targets need to be separate and distinct from those given to external stakeholders. This issue was enhanced in the case company, where low margin and high repairs (a, f) accentuated the significance of cost reporting validity issues. In alternative contexts, such as where there are high margins or clear cost identification, the materiality of cost reporting issues in relation to profit will be less; however, in multi divisional contexts with a range of varying operational contexts consolidated to one corporate result, MA and FA are unlikely to be equivalent (h). Thus, the significance of tenet 9 will be depend on context. Again, however, where it is significant, maintaining the integrity of separate accounts and targets is dependant on management power and motivation, as the concept of two differing sets of targets and accounts, which are compatible but not equivalent, can be seen superficially to be problematic.

The final theme is overarching considerations, covered by the first and last tenets, which are considered together. **Tenet 1** related to the role of the profitability as a unifying goal, and that of an MAS to financialise operational space. In the case context, the significance of the unifying profit measure was enhanced by senior management and shareholders having the same profit based goal congruence (l, n). In alternative contexts, the primacy of the profit goal may be reduced where, for example, the is a separation of management and shareholders (agency issue), or where there are no external financial pressures (e.g. bank covenant), or where shareholder lifestyle aspirations are more important than profit performance (l, n). Such situations loosen the primacy of the profit goal, and thus the utility of using profit achieved against target as a means of introducing some level of certainty into performance evaluation, albeit self referential. This then impacts on **Tenet 10,** which argued that MA implementation and use is driven by management decisions based on judgment, whose effectiveness cannot be assessed with absolute certainty (j); however, some relative level of certainty of evaluation can be provided by the measurement of the achievement of profit targets, albeit sourced self-referentially from external financial stakeholders. In the alternative contexts identified for tenet 1, this may lead to a reduced potential for the use of profit performance to evaluate the effectiveness of the operational implementation (tenets 2-6), and reduced pressure to implementing relevant MA information flows (tenets 7-9). Consequently, in such contexts the general applicability and relevance of the tenets becomes reduced. However, the existence in capitalist societies of external financial stakeholder pressures provides some limitation to this loosening, that will generally, at some time and maybe very lagged, lead to a reassertion of the importance of profit performance (felt through related cash flow consequences). This reassertion will be felt either through financial distress (e.g. triggered by the bank) leading to either liquidation or turnaround of profitability, or by external shareholder pressure refocusing on profitability (e.g. by new shareholders such as Private Equity, takeovers).

The overall conclusion is, therefore, that the tenets are generally applicable, subject to two provisos. First, that they are tailored to be compatible with the differing requirements and pressures of their operational contexts. Second, that the relevance and applicability of the tenets will be substantially loosened if, either the primacy of the profit goal is weakened, and/or the organisation does not have a champion or ethos with the motivation and power to implement MA systems that meet the tenets. This conclusion on general applicability of the tenets is consistent with both the intent of the Otley (1999) proposal which informed the heart of the framework and tenets, and the reassessment and comparison with the case reported by Hopwood (1987) case (pages 35-36).

This reflection therefore provides an assessment of how specific characteristics arising from the case context impacted on both the design of the case MAS, and flowed through to both the framework and related findings (section 3), and the ten tenets proposing the operationalisation of the findings (section 4.3). It then provides a consideration, again based on personal refection, of the applicability of the tenets to alternative contexts and circumstances, and by inference the conceptual framework and findings of section 3, from which the tenets were sourced (as detailed in Table 4-3). It does not cover not for profit organisations (public sector, charities etc), where the profit goal ceases to be the primary goal, and becomes a constraint, as this context is explicitly excluded from the scope of this thesis.

The implication of these conclusions is that the tenets can be beneficially used to assess and provide guidance for the development of an MAS where there is a clear focus on the achievement of profitability goals; further, that its applicability will be relevant across a range of differing contexts and organisational circumstances. However, as this conclusion is based on personal reflection of research data drawn from one case, albeit interpreted within the overall context of prior research, there is a requirement for further academic research to test this applicability. The intended outcome of this research would be further development of the findings and the tenets.

5 Conclusion

5.1 Overall Conclusion

The overall research purpose aimed to assess the relationship between MA, profitability and operations in an uncertain world, centred around the apparent uncertainty paradox that the utility of MA is potentially of least relevance when (in conditions of uncertainty) it is most needed to inform and control management actions.

The study addresses the research issue and the core apparent paradox through its interlinked set of four findings. It identifies profitability as the overall organisational goal for 'for profit' organisations, in line commonly accepted assumptions (section 17.2) and the basis of the capitalist society. It identifies profitability as being a consequence of the financial outcomes of operational actions; the role of MA is therefore to provide a system that produces information which facilitates the development and implementation of operational actions which can result in the achievement of profitability goals. It concludes that the response to operating in environment uncertainty is achieved by having a twin mode MAS, with the Fixed mode being used to control the achievement of target profitability during periods of stability, and the Flex mode being used to provide adaptive responses to periods of change and instability, which inherently occur unpredictably as a consequence of the inherent uncertainty in the operating environment. This leads to the apparent uncertainty paradox dissolving as the MA assumptions of stability provide an ability to control the achievement of profitability in times where there is no impact from external uncertainty, while providing the potential for the development of adaptive responses when external uncertainty impacts.

However, the study also identified that the use of an MAS is also impacted by the consequences of internal uncertainty. Three dimensions are identified – management effectiveness, reporting validity and multiple perspectives. These potentially escalate the impact of external uncertainty as the Flex mode response is necessarily more complex, thus placing a higher dependency on internal capabilities. The study found that a partial response to the impact of these uncertainties was provided by the unifying profitability measure. The aspirations of the external financial stakeholders provide the level of the goal, with outcomes quantified by using FA accounting standards. This partially addresses management effectiveness uncertainty by providing an external referent against which the effectiveness can be evaluated. The goal and evaluation of outcomes can be cascaded down the organisation. This provides a direct connection to, and evaluation of, underlying operational actions, as profitability is produced from an aggregation of the financial consequences of operational actions. It thus provides a level of externality and goal certainty to the assessment of management effectiveness. Without this, goal quantification and outcome evaluation will either be self referential if internally derived, or multiple and potentially conflicting if externally derived. However, the response is only partial as the aspirations of external financial stakeholders are in themselves substantially self referential. The profitability measure also partially addresses the reporting validity uncertainty as FA standards provide an

authoritative measure of profitability, so that profitability outcomes can be treated as if they were true, regardless of the underlying problematic issues relating to their computation. Again, the response is only partial as the underlying issues still remain. Finally, it addresses multiple accounting perspectives uncertainty by reconstituting them as a range of tools which can be used depending on circumstance to give an insight into what actions need to be instigated to achieve target profitability levels, but which are consistent with and reconcilable to FA aggregations.

5.2 Contribution to Theory and Practice

The study contributes to the further development of MA theory. It extends the Otley (1999) framework towards linking operations and profitability through parallel operational and financial spaces, and incorporating the central role of uncertainty. It adds to the debate in MA research on uncertainty by providing a classification of its dimensions, and its impact on triggering a requirement for differing MA modes. It highlights the central role of profitability in providing a stable certainty of purpose as a counterbalance to inherent internal and external uncertainties. It provides a clear identifications of the differences and complementarities between MA and FA; FA defines the quantum of profitability achieved; MA facilitates the achievement of profitability goal; they are complementary and compatible as their differing aggregations are composed of the same underlying financial transactions.

In section 4.2 the contribution of the findings to specific strands of MA was reviewed by reference to the principal elements which flow through the four integrated finding, as demonstrated in Table 4-1. The principal contribution of the findings is expressed in each of the elements, as summarised below in Table 4-2. It is intended that these finding should be disseminated by their further development and publications in relevant academic journals.

The study also has a range of implications for practice which can be drawn from the theoretical analysis and evidence of practice. These have been synthesised into a set of ten tenets designed to provide guideline for the development and implementation of a MAS aimed at facilitating the achievement of the profit goal (Table 4-3). In a self referential manner they are based on the profit goal, in itself providing a certainty of purpose, and a referent against which performance can be evaluated. Within this context, the tenets revolve around the need for an MAS to be directly connected to operational realities, have the ability to respond to operating environment uncertainty, and to be separate but compatible to FA reporting to ensure the results reported in MA terms flow through at the same level of profitability to external stakeholders in FA terms. Consequently, this partially reinforces the practice of assessing management effectiveness via performance against profitability target; a major proviso is that this has to be modified when the MAS mode moves to conjecture/test/learn, and as this is itself a situation of uncertainty that leads to an unavoidable dependency on management judgement. The aim is that these tenets can be used to guide the development and improvement of MA practices over a wider range of organisations. The intention is that this can be undertaken by both guiding developments and implementation in specific

organisations and through their further development and publication in practice orientated publications.

The overall intention is that the study will provides a further development of MA theory with the particular aim that this will also lead to direct benefits for implementation in practice, thus continuing a process whereby theory and practice are mutually compatible and mutually enhancing. An overall summary of the contribution for both theory and practice is summarised in Table 5-1

	Confirmed	**Developed**	**Brand new**
Theoretical Knowledge	• Central unifying role of profitability goal. • Use of Otley (1999) proposals as a framework for analysis.	• Introduction of concept of financial space. • Develop Otley framework to provide MAS functions. • Twin mode MAS to address external uncertainty. • Contribution to debate of Accounting representation. • Codification of multiple accounting perspectives. • Proposal of tight definition of MA, and distinction from FA.	• Identification of specific dimensions of uncertainty as they relate to MA.
Knowledge of practice	• Confirm importance of MAS. • Confirm importance of profitability as a unifying goal.	• Generalised framework for MAS development and assessment. • Ten tenets providing bridge between theory and practice. • Importance of information derived from operational sources.	

Table 5-1: Summary of contribution to theory and practice

RESEARCH PROJECT 1

May 2003

How management sources and uses Management Information to achieve financial objectives.

ABSTRACT

Taking a financial perspective, this paper explores how management source and use management information to achieve financial objectives, an area in which prior literature suggests there has been little in depth work. Using participant observation and semi structured interviews, detailed data was collected over a nine month period in a single company. A model of the financial management information system used by the company was then drawn from the data, starting from a preunderstanding based on practical experience informed by prior theory.

Analysis of this system identified three major uses - to instigate operational actions to achieve outcomes in line with financial objectives, to transform these outcomes into cash flows, and to produce accounting reports that demonstrate the outcomes financially. The paper concludes that instigating operational actions is the critical use, being the driver of the outcomes, and that it is against effectiveness in this area that the success of a system must be assessed, and where there is most potential for further development and improvement.

The paper therefore proposes further work to critique the theoretical effectiveness of the system against prior research, and then to test the conclusions of this critique and the systems effectiveness in achieving its objectives against application in practise.

6 Introduction

The question that this research project intends to answer is:

How does an organisation's management obtain and use Management Information when framing and making decisions that have financial consequences?

Specifically the project will describe from the perspective of top management:

1. How managers obtain information

2. How managers use information

3. What are the intended outcomes

This question has been framed from a literature review of the theoretical background that identifies a gap in the current body of research. The project is designed to fit in a set of three projects where the intention is to provide both a practical and theoretical contribution to the body of knowledge relating to Financial Management Information Systems (FMIS). FMIS is defined by the author as the systems that produce information which management use when framing and making decisions that have financial consequences. The aim of this first project is to provide an exploratory case study which gives a descriptive classification of a live FMIS in detail. This is then used to provide a framework classification of an FMIS, which can then be assessed in second and third projects against both prior theory and against the effectiveness of its application in practise.

The author's interest in FMIS research arose from the difficulties and problems he encountered with traditional FMIS as a practitioner, and his desire to explore the relevance of alternative solutions he had developed. This has led him to the objective of developing through academic research new theory relating to these alternative solutions and to the exploration of the potential for adoption by other organisations. This project reflects the first stage of achieving this objective.

The provision of FMIS is traditionally assumed to be provided through management accounting (Ezzamel, Lilley, and Willmott, 1997) (Horngren, 1977) The importance of management accounting is well recognised academically as indicated by the significant level of research and dedicated Journals, and also in practise as indicated by the existence of major professional bodies in the UK and US, with the Chartered Institute of Management Accountants in the UK having over 50,000 members (Allott, 2000). The term FMIS is used as FMI need not be exclusively provided by accounting systems.

7 Theoretical Background

7.1 Introduction

The starting point is to identify the key findings relating to the mainstream use of management accounting. This leads to the second area, the criticisms of the mainstream approach, and the third area, the new alternative to traditional techniques, developed principally in response to these criticisms. Arising from this review a gap in the research literature is identified which frames the research question.

7.2 Traditional management accounting

Accounting has historically been regarded as 'the major quantitative information system in almost every organization' (Horngren, 1977). It is traditionally split between financial accounting, which relates to providing information to external stakeholders, and management accounting whose fundamental aim is to assist managers make decisions (Horngren, 1977).

The core mainstream technique of management accounting has come to be known as the traditional approach. While this term is often used but not defined (Neely et al, 2001), analysis of textbooks (Horngren, 1977), professional bodies syllabuses (CIMA, 2002) and academic studies (Drury, 1992) (Chenhall and Langfield-Smith, 1998) identify two main elements of the traditional approach:

1) Actual performance is monitored via monthly management accounts with costs analysed under either full absorption or marginal costing techniques

2) Standard costs and budgets provide benchmarks against which actual performance is compared, with differences being identified for subsequent investigation through variance analysis. (Otley, 1999)

The production of monthly management accounts reporting profitability for the period is the central element of this tradition, normally in a manner that is consistent with external financial reporting. (Drury, 1992) (CIMA, 1996) Of the main costing techniques, absorption costing has generally been considered to be the most widely used (Horngren, 1977), especially as it is consistent with accounting concepts accepted for externally reported statutory accounts (Dugdale and Colwvn Jones, 2002) (Drury, 1992). Marginal costing analyses costs as either fixed or variable following the neo classical economic tradition, that pricing should be undertaken based on the marginal cost of production. The evidence is that this is less used than absorption costing. (Horngren, 1977) (Drury, 1992) (Lucas, 1999).

Historical research into accounting (Hopwood, 1987) (Chandler and Deaems, 1979) (Johnson and Kaplan, 1987) reports that while management accounting practices can be

traced to the start of the Industrial Revolution, it was not until the Post War era that the 'traditional approach' of integrated accounts became established.

In recent years, there has been a large volume of research into the empirical use of management accounting with a variety of different themes, but with the definition of management accounting techniques only occasionally defined (Neely et al, 2001). (Burns, Ezzamel, and Scapens, 1999), researching changes in management accounting processes in the UK, reported that changes had occurred not in techniques, with many companies retaining traditional management accounting systems, but in use, with results from traditional systems being interpreted in conjunction with additional information. (Hartmann, 2000) in a survey of RAPM (Reliance on Accounting Performance Measures) literature, also found evidence supporting the continued importance of traditional management accounting but concluded that, in relation to his primary focus RAPM, the current state of theory was limited and small high quality studies were required to fill this gap. (Otley and Fakiolas, 2000) also surveying the RAPM literature, concluded that the literature shows ambiguity concerning conceptualisation, but suggested that this may result from unidentified use by companies of frameworks other than traditional management accounting for performance measurement, and again outlined the opportunity for detailed work to clarify this issue. (Otley and Pollanen, 2000) in a study of the use of budgetary criteria in performance evaluation also came to ambiguous conclusions and called for an in depth study of single organisations to develop explanatory theory. The thrust of these conclusions are supported by other research such as (Chenhall and Langfield-Smith, 1998) who in a survey in Australia found evidence to support the continued wide use of traditional management accounting techniques; (Zimmerman, 2001) and (Ittner and Larcker, 2001) who, in comprehensive reviews of empirical management accounting found no substantive cumulative body of knowledge has been created citing among others the difficulty of gaining detailed information about operational practise; (Chapman, 1997) who, in a review of contingency theory, concluded that the literature has failed to move from describing practice to building theory, and that accounting was often treated as a formal routine technology and not defined; and (Wouters and Verdaasdonl, 2002) who argue that, as little work has been done on how organisations use accounting for decision making, more work needs to be done on better understanding what kind of accounting information operation managers use or would like to use.

The overall conclusion from the review is that there is no clear thread of theory development about the use of management accounting, that traditional management accounting continues to be generally used, but with indications that it is increasingly supplemented from other sources of information. A possible explanation is that, as accounting research does not cover non accounting sources of information, the scope of the research is partial and theory building is difficult with an incomplete picture. This tentative suggestion needs to be tested, confirmed by the strong consensus that further in depth research is required.

7.3 Direct criticisms of management accounting

During the 1980s accounting commentators particularly in North America raised criticisms of management accounting practices (Drury, 1992), with the most influential book being 'Relevance Lost - the rise and fall of management accounting' (Johnson and Kaplan, 1987), further expanded by Journal articles e.g. (Kaplan, 1988). Its importance is still acknowledged by academic researchers, being recently described for example, as 'the focus of discussions and changes' (Lukka and Granlund, 2002) and 'famous treatise' (Dugdale and Colwvn Jones, 2002)

The analysis of the book was based on an historical review, principally American case study based, of developments in management accounting. The conclusions were that current systems provided FMI too late, too aggregated and too distorted because typically one system was trying to meet the following three incompatible key functions:

1) Allocation of costs to periods for financial accounting reporting

2) Provision of process control information to cost centres for short term control

3) Provision of product cost estimates to product and business managers for long term product costing

The book argued that the triumph of the financial accounting mentality had led to the requirements of financial accounting reporting becoming dominant, so the FMI systems were typically being produced to meet the requirements of 1 above (external financial reporting), not 2 and 3 (information for internal management). It therefore proposed that in addition to financial accounting systems, two additional FMI systems were required

1) To provide process control information to cost centre managers on a short-term time horizon (i.e. the time period in which the process occurs), using cost centres reflecting the level of the organization where the process occurs as the unit of analysis

2) To provide long term product cost estimates to product and business managers, with the unit of analysis being the long term product costs

Three separate systems were required as each function has differences in time periods for reporting, categories of fixed and variable costs, degrees of traceability, and audiences.

These criticisms were later expanded by (Johnson, 1992), who argued that, from the 1950s onwards American companies began to use double entry sourced accounting information to control operations 'by remote control', comparing accounting information with reference to the allegory in Plato's Republic (Lee, 1955), to being as equivalent to underlying realities as the shadows on cave wall are to the people who cast the shadow. The implications of these criticisms were that the use of accounting numbers as the main information source is much too narrow, with measures beyond the

financial required. Parallel criticisms of the use of accounting information were made by Goldratt, who argued that the whole basis of cost allocations were inappropriate, and that the central focus of concentration on cash had been lost (Goldratt and Cox, 1984) (Dugdale and Colwvn Jones, 1996).

The importance of the criticisms is seen by the responses, which have led both to the proposal and implementation of new techniques to provide technical answers to the criticisms, discussed in the next section, and to specific research into the implications of the criticisms.

In the UK the leading UK management accounting body, CIMA, commissioned research by Bromwich and Bhimani (Drury, 1992) to investigate the importance and cause of the criticisms. This research came to a qualified agreement with the criticisms, concluding that new technology was making management accounting techniques anachronistic, the dominance of financial accounting was leading to the need for separate management accounting procedures, and the usefulness of current costing practices was questionable, but that wholesale changes were not required and an evolutionary approach and context specific developments should be undertaken. Further research, e.g. (Burns et al, 1999) (Allott, 2000) (Lowry, 1993) (Ezzamel et al, 1997) has used the criticisms as the base point for research, and even for calls for the total reassessment of the role of management accountants (Cooper, 1996).

However, while the response to Relevance Lost (Johnson and Kaplan, 1987) shows the impact of the analysis, no consensus has developed concerning the theoretical relevance of the proposal for three separate accounting systems dependant on context, as the main thrust of the response has either related to the alternative techniques developed in response to the criticisms, or empirical studies investigating current practice, often with uncertain conclusions.

In recent years a different specific criticism of the traditional approach has developed relating to budgeting, with the ‘beyond budgeting’ proposals of the BBRT being the most radical, proposing the abandonment of budgeting and replacement with a behavioural based model (Neely et al, 2001) (Otley and Fakiolas, 2000) (Hope and Fraser, 2001), stimulating a large level of work in the practitioner press, e.g. (CLG, 2001) (Fanning, 2000) (Fraser, 2001) (Mackenzie, 2001) (Accenture, 2001) (Fisher, 2002) (Jensen, 2001). These criticisms propose that wholesale changes need to be made to budgeting, including proposals to abandon the fixed budget approach altogether. Other researchers question such radical solutions, arguing that while the criticisms have validity, budgets have a central importance as the only co-ordinating mechanism most organisations have (Otley,1999). In line with the tendency of academic research to lag practitioner developments (Lukka and Granlund, 2002) (Kaplan, 1998) the academic work relating to this criticism is not as advanced as the response to the criticisms of Relevance Lost.

7.4 Indirect Criticisms of Traditional management accounting

In addition to the direct criticism made in mainstream financial literature, indirect criticisms of the use of traditional management accounting procedures can be made from the nature of accounting information in itself, (McSweeney, 1997)(McSweeney, 2000) (Zambon and Zan, 2000) and inferences drawn from insights given by complexity theory (Allen, 2001c) (Allen, 2001b)

A major problem area arises from one of the key underlying concepts of accountancy, the matching or accruals concept codified in accounting standard FRS 15, which requires costs be matched to the expenditure to which they relate. When expenditure is matched against a future income, that expenditure is carried forward in the Balance Sheet classified as an asset, whereas if it is judged as having no future income against which it is to be matched, it is classified as a cost. (McSweeney, 1997) (McSweeney, 2000).

The classification of expenditure as either an asset or a cost is therefore dependant on the assessment of future value. Complexity theory, however, rejects the potential of any objective assessment of the future, as there are a multitude of future outcomes, with evolving and adapting expectations as the future unfolds (Allen, 2001c) (Allen, 2001b). By inference therefore, as our view of the future is constantly adapting and evolving, accounting numbers which are inherently based on a view of the future must be continually adapting and evolving. This is, however, at total variance of accounting as being able to provide an objectively identifiable assessment of ‘true and fair’ accounting values.

By inference, the use of accounting as a source for FMI to assist management making decisions is problematic, as the accounting values, which are traditionally accepted as reflecting accounting reality, do not reflect reality, reflecting the criticisms expressed by the (Johnson, 1992) cave allegory . This suggests that financial information closer to the actual processes should be used for decision support in line with the proposals of Relevance Lost (Johnson and Kaplan, 1987), not financial information reinterpreted through accounting conventions. This interpretation also potentially provides some explanation of the difficulties researchers have in developing a coherent set of theories in relation to management accounting.

7.5 Alternative new FMI techniques

The third area of literature review covers the variety of alternatives to traditional management accounting techniques proposed and developed in response to these criticisms (Otley, 1999).

The principle direct responses to the criticisms of Relevance Lost (Johnson and Kaplan, 1987) have been Activity Based Costing (ABC), and the Balance Scorecard, both partially developed by one of the authors of Relevance Lost – Kaplan.

ABC was initially developed through a series of articles by Robin Cooper, who collaborated with Kaplan in 1988 (Neely, Gregory, and Platts M., 1995) to address the requirements for long term product cost identified in Relevance Lost. Since the initial proposals, ABC and has been developed by a variety of participants, through various waves of development (Dugdale and Colwvn Jones, 2002). The developments have been principally led by consultants with academic research assessing the developments post hoc (Lukka and Granlund, 2002). Despite a large body of literature, the actual level and type of use is unclear as a consequence of the varying degrees of interpretation (Armstrong, 2002) (Allen, 2001a) (Lebas, 1999) (Tollington, 1998) (Dugdale and Colwvn Jones, 2002), but it is clear the approach does not focus on short term processes being concerned with product costing and not internal control (Otley and Fakiolas, 2000).

The Balanced Scorecard was developed by Kaplan and Norton from 1990 onwards (Kaplan and Norton, 1996) to provide an alternative framework to convert a company's vision and strategy into a coherent set of performance measures, explicitly as a viable alternative to the dominance of the traditional financial measurement systems. As with ABC, this approach has been through various stages of development (Kaplan, 1998), but the basic focus is high level and strategic (Kaplan and Norton, 2001), with the identification and monitoring of crucial measures of performance from four perspectives, – financial, internal business, innovation, and learning and customer. Its perspective is the long term development of the organisation, assessing FMI outputs on a strategic basis. This approach therefore needs to be incorporated with other FMI and is not a replacement (Otley, 1999) - it can be seen as a response to the dominance of financial accounting but not the requirements for short term process control.

The other principal contemporary development (Neely, 2001), resulting from the issues identified initially in (Goldratt and Cox, 1984), has been Throughput Accounting (TA) (Dugdale and Colwvn Jones, 1996) (Dugdale and Colwvn Jones, 1998).While TA has been accepted as a significant management accounting concept, being included in the CIMA syllabus (CIMA, 2002), it reflects a holistic mode of thinking to enable organizations to view their process in terms of time and capacity constraints, but leaves to organizations the responsibilities of developing systems to suitably respond to the demands provided by these constraints (Dugdale and Colwvn Jones, 1998). However it has not led to a significant body of either academic or practitioner research (Tollington, 1998).

EVA, developed by Stern Stewart, a New York based consultancy, has been proposed to provide a more effective way of assessing an organisation's financial performance (Neely, 2001) and focusing managers' actions on maximising shareholder value (Otley, 1999). Its focus is on the analysis of the output of the accounting systems, rather than the production of that information. Again, it is a response to the triumph of financial accounting, giving an alternative approach to the analysis of financial performance, and does not address short term FMI process requirements.

A more recent development is the potential for using real time data to provide FMI via ERP systems (Cooper and Kaplan, 1998), made feasible by the increasing capability of IT systems to collect all data about operations on a real time basis. While the potential has not been fully explored (Kaplan, 1998), it gives the potential for 'a startling and important change in the emphasis of management accounting' (Cooper and Kaplan, 1998), as data can be obtained to support all the three identified requirements of a FMI system (Johnson and Kaplan, 1987). While the potential of this approach is clear, at this stage there is no developed research evidence relating to its development in relation to FMI

7.6 Conclusion and research question

Management accounting has been and still is regarded as the principal source of FMI, and the research indicates that traditional management accounting is the principal form by which this information is provided. The main criticisms relating to the provision of FMI through management accounting have been summarised in Relevance Lost, reinforced in principle by Goldratt, if not in the detail of his analysis. The other recent major criticism relates to budgeting, the benchmark against which FMI is compared.

The specific responses to the criticisms of Relevance Lost (Johnson and Kaplan, 1987) relate to the proposals on long term product costing through ABC, and the problems associated with the 'triumph of financial accounting,' (BSC, EVA). There have been no specific responses to the source and use of FMI at an operational level to inform process decisions with short term direct financial consequences, except for the potential, not yet explored, of ERP systems. Further, no coherent theoretical response has developed concerning the nature of accounting information and its use as FMI, as reflected by the calls for more in depth work on the use of management accounting resulting from the failure of existing research to develop coherent theory. These theoretical difficulties are further supported by the indirect criticisms suggesting that the use of accounting information is problematic as a source of FMI

Therefore, while Relevance Lost and the following related work has identified the use of FMI for operational process decision support as a central issue, little is known as to how companies use FMI at this level when making decisions with short term direct financial consequences. Further work therefore needs to be undertaken to explore this gap, leading to the following question:

How does an organisation's management obtain and use Management Information when framing and making decisions that have financial consequences?

8 Methods

8.1 Research objective and philosophical stance

As discussed above, the overall research aim of the three projects is to provide a contribution to the body of knowledge in relation to FMIS, with the first project being an exploratory study to produce a detailed classification of an FMIS used in practise. This fits into answering the gap in the current theory relating to in depth knowledge of FMIS techniques used in practise (Hartmann, 2000)

This exploratory classification has been undertaken through an in depth case study of an individual company, with the specific focus on identifying how management source and use financial information, and the intended outcome. This single in depth approach lends itself philosophically to a phenomenological stance (Easterby-Smith, Thorpe, and Lowe, 1991) While such phenomenological and exploratory research precludes specific generalisable conclusions, an increase in understanding of existing theory and proposals of frameworks, propositions and avenues for further research are feasible.

Within this phenomenological approach the author adopted a realist perspective (Blaikie, 1993) as his approach to reality is to 'start with observed regularities and propose models of structures and mechanisms to explain them' Blaikie (1993), while accepting that he may need to change his explanation if faced with further information. He finds the concepts of complexity theory (Allen, 2001b) provide a convincing explanation of the limits of knowledge concerning possible futures (Allen, 2001c) and fit his philosophical stance and intuitive trial and error approach to decision making (Hatch, 1997). This leads the author to a qualitative epistemological position, suggesting an internal position, assuming personal involvement and interaction with the subject of his study (DBA course notes), but from a realist perspective.

8.2 Case description and personal involvement

The company where the research has been undertaken is Hammond Logistics Group Ltd, a UK company with sales of around £30m based in Birmingham. Its principal activity is the provision of tailored transport, warehousing and supply chain service to around thirty principle customers, typically under medium term renewable contracts of one to five years.

The organisational intervention on which the research is based has arisen from the author's role in the company as executive Chairman, where externally he has specific responsibility for shareholder and financing issues, and internally responsibility for financial systems, control and reporting. He works in partnership and in equal status terms with the Managing Director who has responsibility for all operational matters, and works jointly with the author on strategy development and implementation. The

author's role gives full access to all aspects of the company and involvement in all key decisions of which he is aware, generally involving three to four days a week work.

The intent of the author's activities therefore relates to the optimisation of the financial performance of the company, and specifically to the financial returns available to shareholders and meeting the financial obligations to commercial funders. This outlook is heightened by his position as a major shareholder, a position which was increased during the research period by a leveraged buy in of other investors which took place on the 17th January 2003.

This restructuring that the author principally negotiated increased both his personal equity interest in the company, but also increased the level of bank debt and thus the level of financial gearing and therefore financial risk. The principle outcomes of the restructuring are summarised below, classified under the traditional classifications of financial investments – greed and fear

	Pre 17/1	Post 17/1
Ordinaries – Greed		
Philip Smith – Chairman	18.75%	35.00%
John Cutler – MD	18.75%	35.00%
Institutional investors	62.50%	30.00%
Total equity	100.00%	100.00%
Minimum financial requirements – Fear £k		
Profit covenant £k	0	833
Unsecured debts £k	750	2,750

The consequence of the restructuring is that the changes in equity have significantly increased the author's interest in the future profitability of the company, thus providing a strong incentive to initiate actions to maximise profitability (greed). The increase in debt, however, together with the related minimum profit and cash flow requirement agreed with the bank, increases the financial risk of the company as a shortfall in profit or cashflow will put the company at risk of the bank withdrawing financial support (fear). There is also a risk to the author's reputation as the restructuring was agreed on the basis of projections and assertions concerning the future prospects and risk for which he was principally responsible.

As a consequence he has a strong personal commitment over and above that implied by his role in the meeting of financial objectives. This has to be taken into account in the design and assessment of the research. It has the potentially beneficial impact of ensuring that his integral involvement in the financial future of the organisation guarantees that he potentially has access to all aspects of the organisation which affect financial performance, but could be potentially dangerous as it might impair his ability to take the detached view and achieve the necessary degree of self awareness and detached reflection required by a researchers (Eden and Huxham, 1996)

8.3 Methodology

The methodology adopted has to fit both the author's philosophical stance and the locus of his research. His aim is to make full use of the potential his role in the organisation gives him to gain the type of in depth data collection called for by the research question, - this is unlikely to be available to an external researcher as a consequence of the requirements of confidentiality and restriction in access.

It is arguable that his role as an employee in the organisation defines him as a participant observer (Easterby-Smith et al, 1991), although his intent to change the organisation could classify him as an action researcher (Eden and Huxham, 1996). The research aim of using an exploration of 'qualitative data for building theory' (Partington, 2002) suggests a grounded theory Glaser & Strauss (1967) approach, although the author's personal role in the organisation means the theory development is 'not simply being 'grounded in the data' in the Glaser & Strauss (1967) sense, but being '*grounded in action'* (Eden and Huxham, 1996), and makes the level of detachment proposed by (Glaser and Strauss, 1967) unrealistic.

All these research classifications are closely linked as they relate to the development of emergent theory from qualitative data. Further authors generally agree that all these approaches require 'a high degree of systematic method and orderliness' (Eden and Huxham, 1996) to enable a high degree of necessary objective reflection to be achieved. This is key if valid emergent theory is to be drawn from data with which the researcher is closely involved, to counteract the strong potential tendency for the researcher, with close involvement in the activity being researched, to draw out theory driven by preconceptions reflecting his role within the organisation, not the rigorous analysis required by his role as a scholarly researcher. The author's very close engagement and commitment to the organisation means that in his position this is a particular danger, although this close involvement also gives the potential to gain in depth insights not available to a detached and less informed researcher, with only limited access to data gathering

While it is arguable that the author's role as an employee on a continual basis classifies him as a participant observer, he has concluded that given his intent to change the organisation rather than solely participate in its management, the action research based approach and framework proposed by (Eden and Huxham, 1996) provides an appropriate overall structured methodology on which to build the research. This approach is also consistent with the theory of Innovation Action Research proposed by (Kaplan, 1998), and has been operationalised by subsequent research projects (Huxham and Vangen, 2000) (Huxham, 2000) (Huxham and Vangen, 2001). The author therefore classify his methodology as participant observation, but using the techniques of the related classification of action research.

This approach is compatible with full involvement in the events being researched and in line with the phenomenological stance adopted, and allows for the potential to collect a wide range of data from different sources. The collection of data in a dynamic work environment gives good opportunities to validate the integrity of the data through

triangulation and draw out differing themes from the differing sources and contexts of the data.

Eden and Huxham (Eden and Huxham, 1996) provide a list of 15 characteristics that in their view provide a standard for action research to be considered research, specifically stating that the list can be used as a check list. The author has used this to provide a check list against which progress can be assessed, and as a guide for actions. Table 8-1 summarises this checklist and provides the response he has undertaken to each of the points.

Summary of Required Characteristics	Response
1) Involvement by researcher with intent to change the organisation	The proposed project is central to the author's role at Hammonds
2) Potential for implications beyond the organisation – could inform other contexts	A key research aim is to have FMI approach which can be used in other organisations
3) Demands valuing theory – theory elaboration and development an explicit concern	Theory development a key aim
4) If generalities drawn relate to tools, techniques and models, design must be explicit and related to informing theory	See models developed from research
5) Concerned with emergent theory arising from data and prior informing theory	Data used to develop and test model.
6) Theory building incremental in small steps	Models, classification and conclusions developed iteratively
7) Description will be prescription – thus need to be clear what consumers will take from it	Project is exploratory to provide classification to inform emergent theory
8) Systematic method and orderliness required re the research data and emergent theoretical outcomes	Data collection undertaken in systematic manner
9) Exploration of data must be replicable and explainable to others	Use of NVIVO software provides good traceability
10) Writing about research outcomes is part of theory exploration as it combines explicating pre understanding and methodical reflection	See this paper
11) 1 to 10 necessary but not sufficient	See below
12) Cannot justify the approach if alternatives can demonstrate the link between data and outcomes more transparently	Internal role essential for full access
13) Fully exploit opportunities for triangulation	Wide access to a full range variety of information gives good potential for triangulation.
14) History and context are critical to interpretation	Need to interpret results in relation to my role
15) Need to disseminate emerging general theory outside action research participants	See paper

Table 8-1: Eden and Huxham (1996) characteristics

The central element of this approach is theory development – see Characteristic 3. Therefore within this overall approach to provide the necessary structured framework for theory development, the authors uses the systematic methodology for theory development proposed by (Whetton, 2002) to provide a structured framework for the development of emergent theory from the data

8.4 Research Design and process

The research design must therefore be structured in a manner which overcomes the potential of the author's closeness to the organisation leading to difficulty in achieving the necessary degree of self awareness and detached reflection required for high quality research. Eden and Huxhan, in their eighth characteristic propose that in order to counteract this potential tendency it is important to ensure that the data is collected and explored in a structured systematic manner.

> *'For high quality research a high degree of systematic method and orderliness is required in reflecting about and holding onto the research data and the emergent theoretical outcomes of each episode or cycle of involvement'*

This is specifically to provide an antidote to the potential difficulties associated with the twin role of researcher and interventionist, which given the author's financial interest in the company being researched is particularly acute. Again quoting Eden and Huxham

> *' Researchers must recognise that they not only have the roles of researcher and interventionist but – because of their role as interventionists – are also part of the situation which is being researched'*

The author therefore developed a structured research design to allow for as much detached reflection and self awareness as is feasible, given the close involvement of my intervention in the organisation. The key phases are as follows

1) Clarify pre-understanding and unit of analysis

2) Collect and analyse data.

3) Explore results.

4) Draft write up, methodical reflection, and tentative conclusions and findings

5) Final write up

This structure is not a time line but a framework for iterative analysis in line with Characteristic 10. The work done on analysis, exploration and methodical reflection leads to a continuous reassessment of earlier interpretations, which leads to further reinterpretations. Further as the study is grounded in action, and the intervention being covered given the authors' role in the organisation continues to be live, there is a constant flow of new data on a daily basis which is subject to interpretation

The framework therefore is used to provide a structure to be brought to bear on the reinterpretations, and enable these constant reinterpretations to be captured in a methodical manner and with the maximum degree of detachment that is feasible given the involved nature of the author's role. The implication of this procedure is that any

findings and conclusions are of their nature work in progress, as there will be always room for further reinterpretations. However, this is in the nature of the type of analysis being undertaken, and Project 2 and 3 give the potential for a further assessment of the findings with the triangulating benefit of a different perspective.

8.5 Pre-understanding and Unit of Analysis

In line with the author's personal focus, this study views an organisation through the perspective of its financial performance – in the crudest terms viewing an organisation as a cash flow machine. That is not to say that this is the intent and perspective of all stakeholders of the company, but it is the author's perspective and is compatible with his role in the organisation as Chairman and major shareholder, his understanding of the perspectives of his fellow shareholders, and is in line with the normative 'shareholder value' (James, 2002) aims of shareholders who have legal ownership of the company – the suppliers of capital in the (Otley, 2001) framework. It is accepted that there are multiple other perspectives possible such as sociological, empowerment, quality of production, but these are not the perspective of this study.

Viewing an organisation in this manner implicitly means that a set of pre-understandings and assumptions are brought to the study. Figure 8-1 summarises my interpretation of the pre-understandings the author brought to the study by showing a generic flow of his understanding of the flow of financial transactions which in aggregate make up an organisation as a financial entity. It is a generic 'wiring' diagram showing the flow of cash and accounting transactions, the relationship and interdependency of operational and financial transactions, and the accounting and accounting entries that arise from these transactions.

This diagram reflects the specific financial transactions between various stakeholders, and is compatible with the stakeholder framework proposed by (Otley, 2001). He identifies separately (a) groups of people on whom operations depend – providers of capital, providers of labour, customers and suppliers (b) Groups of people with an interest in performance such as national government, local communities and (c) management 'whose task is to construct feasible patterns of activity that will satisfy the desires of all interested parties'. From this framework it is clear that those on whom operations depend have a direct relationship with cash flows, while external interested parties and management have a dual role, both in cash terms (e.g. payment of taxes, receipt of salaries, bonus perks) and in interest in performance (e.g. economic growth, increase in shareholders value).

Figure 1 – 'Wiring Diagram' of financial transactions

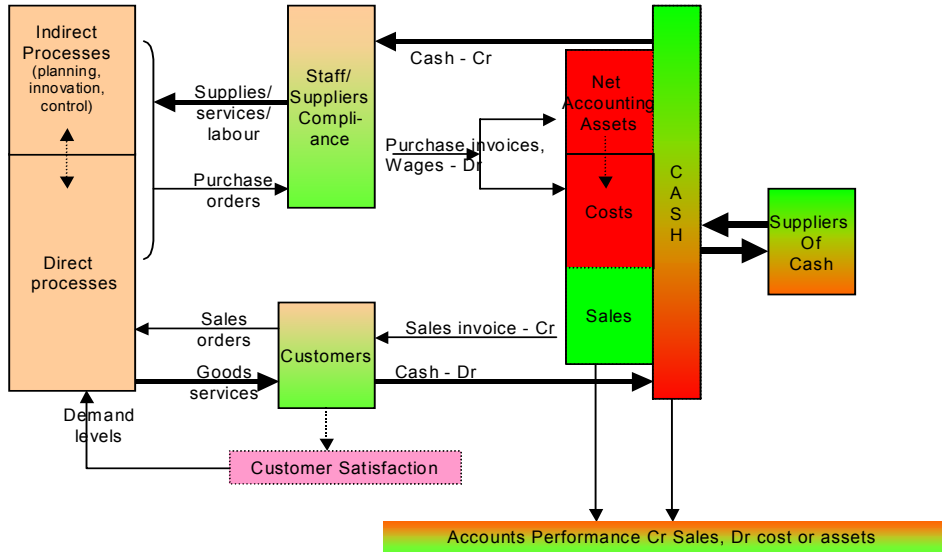

Figure 8-1: Preunderstanding of financial transactions

The relevance of this model fits with the proposals of (Eden and Huxham, 1996) who assert that their approach provides a good way of 'trying out complex theoretical frameworks that cannot be pulled apart for the controlled evaluation of individual theories', and that at its best it is concerned with developing theory in relation to 'systematic relationships' rather than single theories, with the aim of understanding conceptual and theoretical frameworks. The model by explicitly reflecting the author's pre-understanding of the financial frameworks and relationships within an organisation provides the basis for identifying the type of data that needs to be collected for analysis, and a model of systematic relationships on which conclusions of this research can be anchored and against which they can be compared.

It also provides the basis for the unit of analysis of this study - financial transactions. The broad definition of this is the financial dimension to the provision and supply of goods, services and funding, which when aggregated in totality make up an organisation as a financial entity. In specific terms, the definition links directly to the system of double entry accounting universally used as the basis for accounting. This direct relationship to double entry accounting entries is also reflected in Figure 8-1.

Double entry accounting is a system of recording the Income and Expenditure consequences of the provision of goods and services from one party to another, with the seller incurring income, the buyer incurring cost and the financial value of the transaction being calculated by the formula

Price terms * Volume = Financial value of transactions.

Three main stages of the system can be defined

1) The projections of potentially incurred income and expenditure

2) The incurrence of income and expenditure

3) The payment of income and expenditure

Accounting systems record the transactions relating to stages 2 and 3, with stage 1 being essentially the modelling of potential activities in stage 2 and 3. However income and expenditure incurred are only recorded in a accounting system when their existence is captured by the system. If income and expenditure are incurred but not captured by the system, they will only be captured when one of the stakeholders (e.g. supplier or customer) makes the existence of the incurred transaction aware to the other party. Further, the quantification of the transaction may or may not be agreed by the separate parties to the transaction.

When a transaction is captured the organisation will record it, at its interpretation of value, in double entry terms as follows:

	Income	**Expenditure**	**Debtor (customer)**	**Creditor (supplier)**
Incurred				
Sales	Cr		Dr	
Costs		Dr		Cr

Table 8-2: Double entry transactions (1)

The second stage is the cash transactions related to the incurred costs. In this stage, the customer pays the debt incurred at a price agreed and the seller receives payment for the debt incurred. Where total payments exceed receipts it is necessary to fund the shortfall through borrowing. The double entries for these transactions are as follows:

	Income	**Expenditure**	**Debtor**	**Creditor**	**Cash**	**Funder**
Incurred						
Sales	Cr		Dr			
Purchase		Dr		Cr		
Cash payment						
For sales			Cr		Dr	
For purchases				Dr	Cr	
Borrowing					Dr	Cr
Repayment					Cr	Dr

Table 8-3: Double entry transactions (2)

These financial transactions are then aggregated to produce financial statements which assess in various levels of aggregations both the ratio of income to expenditure and the levels of cash flow.

The above transactions in essence cover all potential double entry system transactions,- and provide a link between the incurred cost / income and the cash flow outcome – this is a universally accepted system for recording financial transactions. However while the double entry system processes accounting transactions which reflect the unit of analysis, the accounting entries are not in themselves the unit of analysis, as the unit of analysis also covers the equivalent transactions which have been incurred but not yet captured in the accounting system, or have not yet been incurred but are projected to incur and in whatever level of aggregation. However, the precision, universality and audit trail availability of the double entry system has resulted in accounting based information being normatively treated as the principle system on which to base FMIS.

Financial transactions therefore provide the unit of analysis for the study, and Figure 8-1 reflects the author's preundertanding of the interrelationships of these financial transactions, and with the various stakeholders as identified in Otley stakeholder framework. This clarification of the preundertanding and unit analysis therefore enable a further definition to the supplement to the research questions as follows

- How do managers obtain information *about potential or incurred financial transactions and their aggregations?*

- How do managers use information *about potential or incurred financial transactions and their aggregations?*

- What are the intended outcomes of the use that manager's make *about potential or incurred financial transactions and their aggregations?*

8.6 Data Collection

In order to take full advantage of the opportunities for data collection and to maximise the potential for triangulation to ensure the validity of the data collected, the author used three types of data sources - participant observation, semi structured interviews and documentary evidence. This is consistent in proposals made by (Otley and Berry, 1994) in a study they made assessing management accounting research techniques.

The context of the data collection is best explained by a review of the company's organisational structure which is summarised in Table 8-4.

In his role as Chairman the author's perspective as discussed above principally relates to the objective of optimising financial performance. In fulfilling this role his principal internal interactions are with the Managing Director and the Financial Controller who is responsible for all accounting functions, and to a lesser extent the other senior

management responsible for operational and functional activities, when the author's involvement is driven by specific projects or issues, or in periodic management team meetings. In the normal course he has little involvement with the managers and supervisors who are responsible for the day to management of profit centre operations, and who directly oversee the income and expenditure associated with operations. Externally his involvement is with all professional advisers, funders and investors who have a relationship with the company.

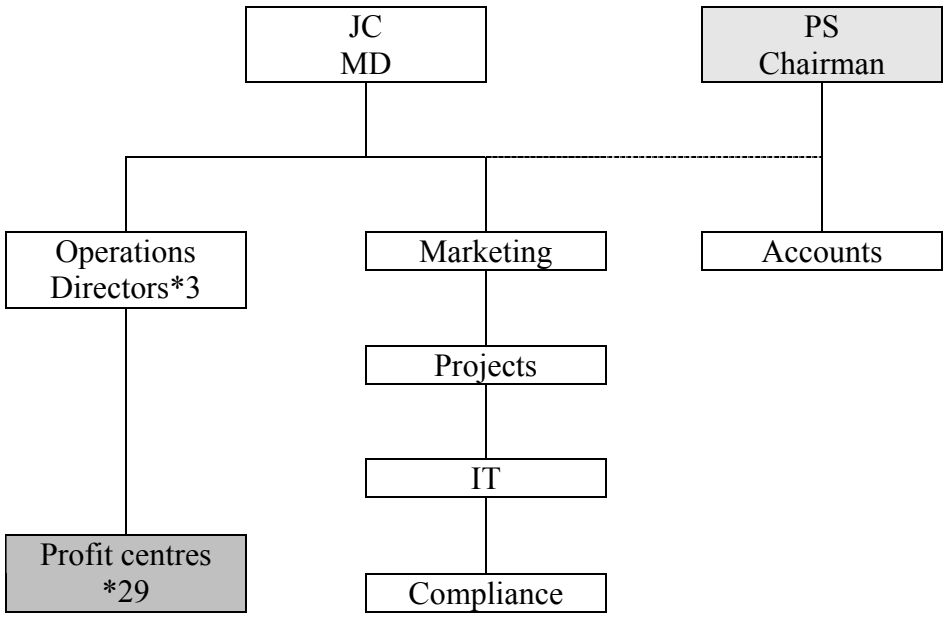

Table 8-4: Organisational Structure

As the research question relates to the use of information throughout the whole organisation – although from the perspective of senior management – the aim of the research design was to ensure that input was received from all areas of the organisation, and to structure the three different data sources to provide these inputs.

1) **Participant observation.** The aim was for this to provide the senior management perspective. The principal formal source of data was captured through keeping a personal diary detailing the involvement in all aspects of FMIS of which the author was aware in his role in the company over a six month period. As his interactions are with external parties and senior management my intention was to record their perspective as part of the diary, with independent support from linking to documentary evidence. In addition to this formal action, the author has continual input of data through his working role. Where appropriate this information is used to illustrate and test findings.

2) **Semi structured interviews.** The aim for this was to provide the operational management perspective by interviewing a sample of contract managers who are at the opposite end of the management structure to the author, and with whom he normally has little contact.

3) **Documentary evidence.** The aim for this was to provide independent support for the necessarily subjective diary and interviews above, providing a source of information separate from the author's own subjective interpretations through documents produced by other managers and external parties, and which have been used in a live environment totally independent of the research process.

In addition to recording direct information a methodological diary was maintained by the author detailing every aspect of what he does, what else he considered doing and the reasons the approach was taken. The purpose of this was to provide a record of the iterative developments in the research process to provide support for subsequent assessments made in the final write up stage.

The data collection was undertaken over the period September 2002 to May 2003, although data from company records and personal recollection prior to this time also informs the study. The work was undertaken as follows

1) **Participant observation - senior management perspective**. The diary covered a six month period for September 2002 to February 2003, with a separate document kept for each month. The diary in total covered approximately 24,500 words and around 85 daily separate entries. While the diary is clearly from a personal perspective, it recorded the results of interactions with senior management and external adviser and stakeholders. In addition the author's role within the organisation has continued and continues throughout the research process, bringing a constant flow of practical examples and of source, use and intent of FMIS. During the data exploration and write up phases concurrent practical examples were reflected on to test the results and conclusions being drawn, and where appropriate these are used as illustrative examples

2) **Semi structured interviews – operational management perspective**. These consisted of semi structured interviews with the contract managers responsible for the day to day operations of the company. These interviews were conducted on the operational premises between December 2002 and April 2003. A total of 8 interviews were undertaken by the author approximately 51% by value of the company sales and 13 profit centres, using an interview protocol developed prior to the research. This was partially amended for the last two interviews to provide greater focus on emerging themes. The interviews were all recorded and typed up as written transcripts.

3) **Documentary evidence – support and triangulation.** This relates to all the written documentary evidence to which access is available and included accounts, business plans, reports, formal and informal minutes, financial projections and scenarios together with all correspondence and reports for external parties. This documentary evidence covers all periods of the company up to the present day, most of which is held independently on the author's personal computer. This fits the objective of making maximum use of the opportunities for triangulation that are a potential major benefit of this approach to research (Characteristic 13).

9 Coding and analysis

9.1 Use of NVIVO – computer assisted qualitative analysis

The approach of using a software tool was adopted to facilitate the coding and analysis of the data. The software package chosen was NVIVO following a presentation on the DBA course as it seemed to fit the requirements of providing a structured approach to qualitative analysis, allowed for rolling reinterpretations to enable the data to drive the analysis, and gave a strong audit trial between the data and the findings. While the author had not used this particular package before, in his work he uses a variety of data base type computer packages, and is confident in their use.

The aim was to use the software to explore the data to develop classifications that answer the research question relating to how an organisation's management obtains and uses information, and to what intended outcomes. The objective was to allow this classification to emerge from the data or in the words of Eden and Huxham 'developing and elaborating theory from practise' building on 'pre-existing theoretical frameworks which are likely to be fragmentary or rudimentary' (Partington, 2000).

9.2 Data coding and analysis

The initial step was to input the transcripts of the interviews and diary into the software. The software uses a system of classifying transcripts into passages and then allocating these passages to nodes, which are (Richards, 2002) defined as 'containers for your thinking about the data, places to keep emerging ideas and their links with the data'. Appendix F shows the number of passages coded and Appendix G gives an example.

To provide a start point and in line with the analysis incorporated in this research proposal, a set of nodes were built up around classifications of source, use and intent in relation to management information, with sub classifications of specific types of source, use and intent. These classifications can be described as constructs, although at this stage tentative. This is reflected in the methodological diary entry of 29 January 2003

'Set up my node structure to fit the initial analysis I did for my last presentations. This will give core nodes of source, use and intention with trees under these. After the initial analysis the data will be explored to find out cross relationships from the nodes. The initial children nodes will be taken from my initial analysis for the latest presentation. However additional nodes will emerge through the analyses'

The transcript was then reviewed and passages allocated from the transcripts to the node classification which it was considered best reflected the type of source use or intent illustrated by the passage. The difficulty of this is reflected by the methodical diary entry of Friday, 14 February 2003

'Had coded most of Thursday – October data diary and found that slow going as the data was asking questions and causing constant refinement of the codes. My hope and expectations is that after I have been through enough data it will settle down'

Following a supervisor review and reflection the structure of the nodes were changed to reflect a flow of information rather than unrelated lists of source, use and intent linked to management levels which was the initial basis. The methodical diary of 27th February captured the author's thoughts at this time

> *'1. New ideas for models - see revised model dated today*
> *2. Making the node structure reflect my new models. This has required quite a re-jigging of the node codes, which means that some of the passage allocations are now invalid as the definition of the contents of the nodes have changed. I suspect will have to go back and recode many of the documents to ensure my thinking is consistent*
> *3. The new node structure includes expanding the source and use classification to reflect the various steps in the source and use of information and also that the situation is cyclical with the source of information being the same as the output of action.'*

The model which is referred to was an initial flow model of the source and use of information developed through iterative use of the NVIVO modelling tool.

This approach to data exploration has underpinned the future analysis undertaken, with a constant development of the flow diagram being developed in conjunction with the node structure. To add further precision descriptions of the nodes (constructs) were developed explaining how the passages provided instances of the constructs reflected in the nodes. The development of the model in conjunction with the node structure provided a logical check on the validity of the relationships between the constructs emerging from the data. Both the node structure and the model were updated iteratively as during the coding process the data was reassessed. When doubt about the validity of the structure emerged the relevant passages coded to the nodes were retuned to and the passages reinterpreted to refine the author's interpretations.

It was found that the NVIVO software proved to be very useful for this process, providing good linkage and access to the passages supporting the node classifications and model, thus enabling the relevant data to be assessed and reassessed as it was considered to be necessary.

The final element of this process of data exploration and theory development was the introduction of a systematic framework, as proposed by (Whetton, 2002) for the model development and theorising. This introduced to the author's analysis the concept of a core sequence of constructs whose relationships are changed by moderators, together with a proposed four step modelling methodology of 'What, How, Why, When/Where/Who', introduced from an earlier article (Whetton, 1989) to provide 'a systematic framework for …. espousing an emergent theoretical perspective'

Using this framework a core sequence was pulled out from the emerging tentative circular model together with the related moderators. The 'What, How' elements of the framework were then used to provide a basis for the descriptive classification of the how information is obtained, used and with what intention, and the 'Why, When/Where/Who elements as the basis for the discussion on the significance of the model for practical and theoretical contribution.

The final outcome of the nodal structure is shown in Appendix P1 A, together with the number of passages allocated to each node and their description, and the model in Figure 10-2. In total 651 passages were identified as reflecting examples or instances of a particular source use or intent of information, allocated initially to a total of 37 child nodes, and in turn summarised into 18 parent nodes. The child nodes reflect constructs of specific types of information, whereas the parent nodes reflect the core constructs included in the model developed in parallel of the overall flow and use of information. For example, the child nodes (constructs) of resource availability, staff terms and supply terms are all different examples of the parent construct of supply, defined as the provision of information about resources required to meet demand.

In the next section the key 'what and how' aspects of the constructs are examined, with the node summary of Appendix A being explored in greater detail using insights from the data to provide a comprehensive answer to the specifics of the research questions, with the implications of the answer for practical and research contribution being discussed in section 11. The results presented are the final assessment following earlier iterations, and earlier versions of the model and node structure are available on request to show the development of the author's thinking.

9.3 Validity of analysis

In line with the personal phenomenological nature of this research the findings are dependant on personal interpretations of the relevance and meaning of the passages analysed and it is accepted that other interpretations may be feasible. The aim of the author has however been to as far as possible maintain validity through a consistent approach checked by the internal logic, consistency and credibility of the findings.

In particular, given the linked and interactive nature of the constructs, passages can generally provide multiple potential instances and examples of constructs, such as the source of information in one construct being the use in another. In the cause of clarity the author has as a general rule allocated passages to one node only, which is the node I interpreted as being predominantly reflected in the passage. He aimed to incorporate the multiple dimensions by ensuring that the content of the passages logically fit the position in the model where the construct (node) is placed, with secondary potential interpretations being reflected by related constructs in the model. Moreover, the clear linkage between the nodes and the supporting passages ensure that this interpretation is specific, and in line with Characteristic 9 of (Eden and Huxham, 1996) capable of explanation to others.

A second significant issue is that the iterative nature of the research meant that the classifications of the data were continually being reassessed, as interpretations and classifications were revisited as the model developed. As the coding of the around 685 passages were undertaken at differing times, the interpretations are unlikely to be totally consistent. However, again the clarity of the NVIVO coding system means that such inconsistencies can be clearly identified, and reliance has been placed on ensuring that the internal consistency and logic of the model provides validation.

Further the phenomenological nature of the work means that the objective is not positivist precision but the identification of emergent themes and where the tendencies rather absolute precision underpins finding and conclusions.

10 Results

10.1 Introduction

The model in Figure 10-2 has been developed with the aim of representing the FMIS system developed and implemented at Hammond Logistics. The intention behind the system is to provide information to enable management to frame and implement decisions which will result in the achievement of shareholder financial objectives. Figure 10-2 shows the flow of information, its use by management, how it is transformed during this flow, and the external influences that impact on its content and therefore use. It is structured following (Whetton, 2002) to show a core sequence, starting at demand and finishing at reporting and cash flow. The Key defines the differing nature of the constructs and the relationship between them. The model was built up from the three data sources - senior management diary, operational interviews and routine data reports. The incidence of the passages allocated to each construct is shown below in Figure 10-1, and the numbers behind this are included in Appendix P1 A.

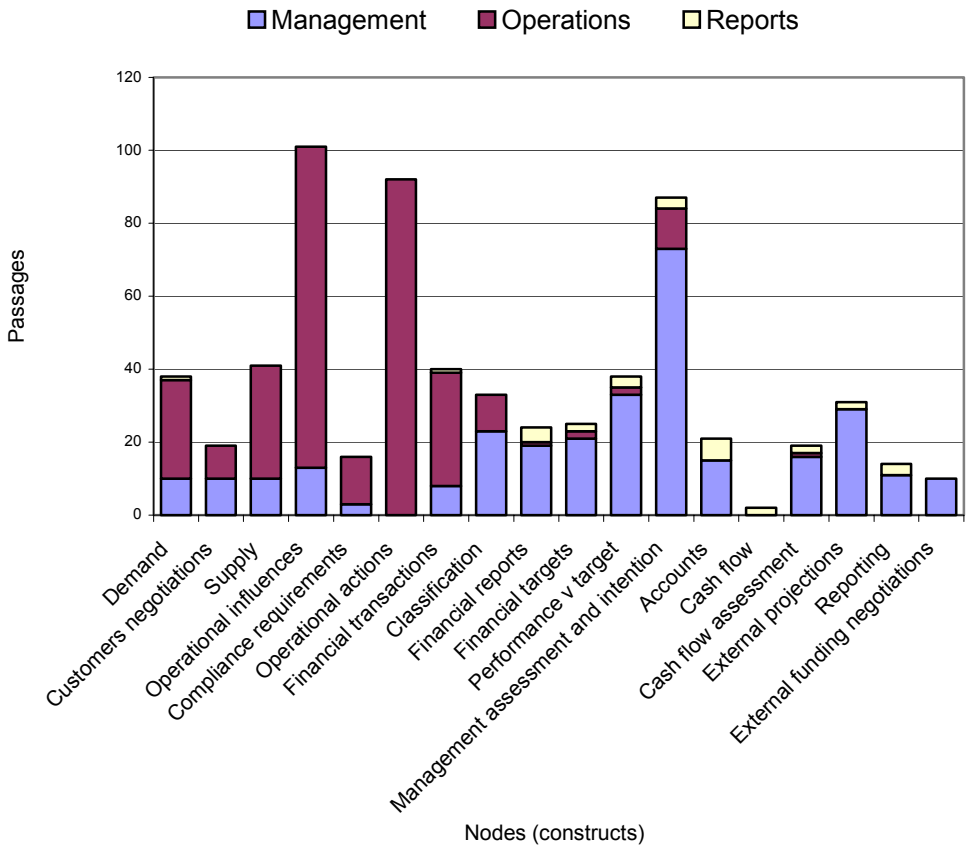

Figure 10-1: Allocation of passages to nodes

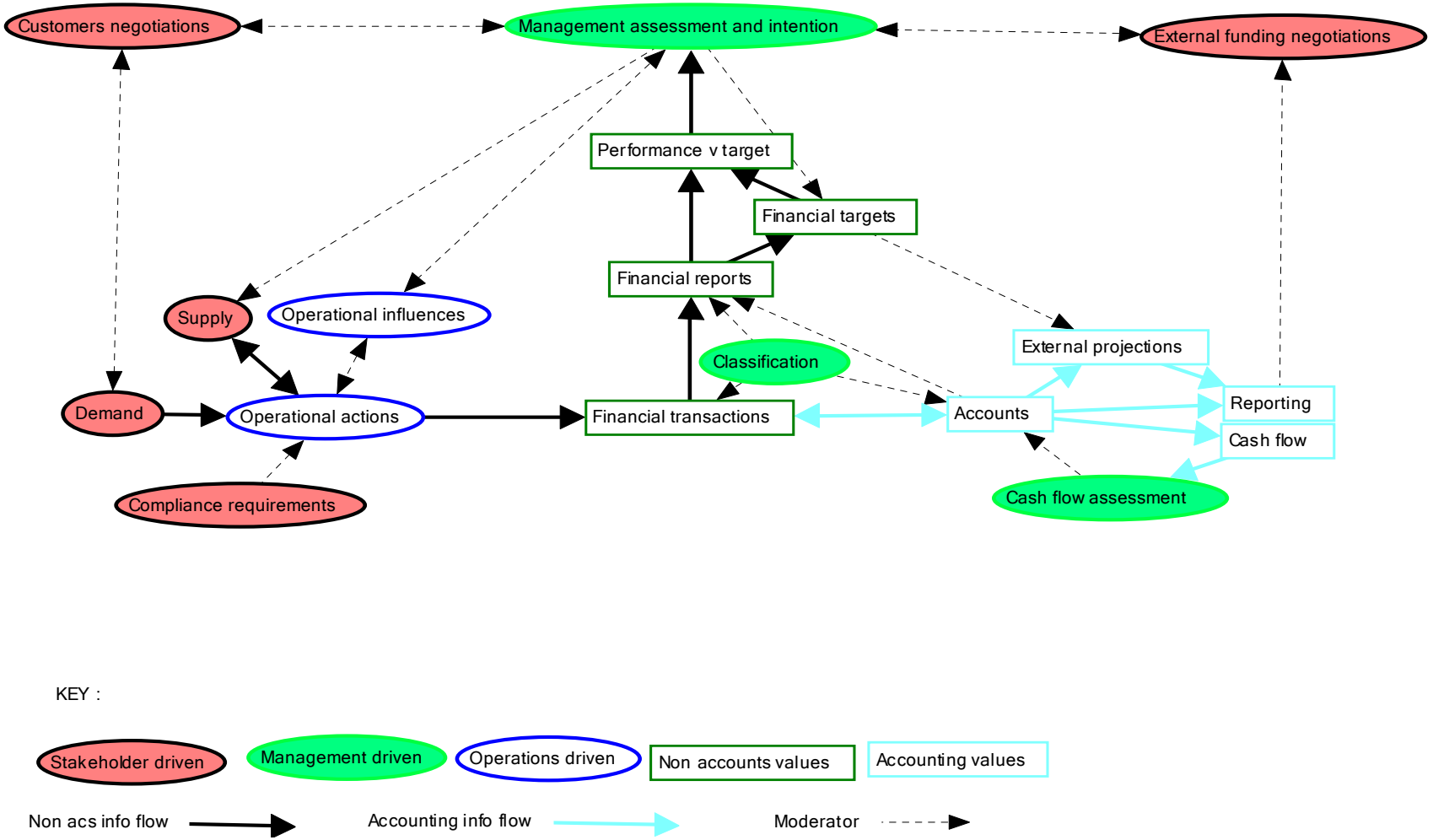

Figure 10-2: Core Model of flow and Use of information

10.2 Overall model

The start point of the model is at **demand** (demand for services by a customer). The operations manager then sources and plans the resources needed to meet the demand (**supply)**. When the service has been undertaken, the income and expenditure is incurred. The sales value is calculated automatically by the traffic systems (e.g. volume of pallets by agreed rate) and the costs incurred are calculated (e.g. hours worked by agreed rate), thus by **operational action** creating **a financial transaction,** the unit of analysis, recorded individually and in aggregated lists as income and expenditure.

At this point, the major feedback loop occurs. The weekly flash accounts **(Financial reports)** are produced on the Wednesday following the week of the activity from aggregated lists of **financial transactions** in line with pre agreed **classifications** to show the profitably for the previous week. This profitability is then compared against weekly detailed **financial targets,** and variance of **performance vs. target** is identified. Senior management then assess **(management assessment and intention**), whether the variances from target are a blip (i.e. fluctuating variance that will even out) or a trend (i.e. a pattern that is likely to continue). If the trend is assessed to be undesirable (i.e. profitability below intention and target), consideration is given to potential remedial or change actions, such as for example negotiating price changes with the customer, changing operational management approach to reduced costs (e.g. replace agency cost with employed staff). This then leads to a change in action and output, which would not occur without this feedback loop.

The core sequence continues from the financial transactions, with both suppliers and the company producing invoices for the value of the financial transaction incurred. These will be collected by **accounts**, checked by comparison to the **financial transactions,** given accounting coding according to pre agreed **classifications,** and entered on the double entry system. From the aggregated values of the invoices allocated to the various codes, consistency with the financial reports are checked (as they are both produced from the same source financial transaction), and accounting reports **(reporting)** of Profit and Loss and Balance Sheets are produced based on generally accepted accounting procedures subject to interpretations made by management. In parallel, cash payment and receipts are made to clear the value of the invoices resulting in **cash flow** movements and the consequent cash balances.

The accounting reports together with future financial projections are sent to external funders who use them to assess the financial performance of the company and, consequently, the level of cash support they will provide, or the cash withdrawals they can anticipate. If cash support is required and funders are unwilling to provide this, the company is unable to pay its suppliers and goes bust. The assessed potential for cash withdrawals provides the basis for assessment of shareholder value.

While this model provides an overall top level description showing the source and use of information and thus an overall general answer to the ‘what’ question, it does not in itself provide insight into the factors and issues which influence and affect **how**

management obtain and use information, only providing a necessary framework to enable this assessment to be undertaken.

To achieve this, it is necessary to go deeper into the data and assess the key factors and issues that affect and influence **how** management source and use information. This detail is reviewed below and is drawn from the author's interpretation of the data with linked Appendices B to E showing descriptions of the constructs, their roles in relation to the research question and intended outcomes. In addition, more subjectively the Appendices B to E include prescriptions drawn from personal experience of the actions and approach required for the system to achieve management's intended outcomes, and identify issues, classified as wildcards, that inherently affect the effectiveness of the system, and which therefore have to be taken into account when assessing its potential to enable management achieve the intended performance.

This review is discussed in the following groupings:

1) **Operational activities** that cause the financial transactions to be incurred. This reviews how demand, supply, operational influences and operational actions result in financial transactions

2) **Financial reports and targets** that provide the financial information used by management to assess performance. This reviews how the financial transactions are converted into performance v target reporting via classification, financial reports and financial targets.

3) **Management assessment and intention**. This shows how management uses information both to assess performance and to influence operational management, customers and suppliers to achieve the intended financial results

4) **Accounting** which shows how cash flow is produced from financial transactions via accounts and cash flow assessment, and how external reporting which forms the basis of external funding negotiations is produced from accounts and external projections

10.3 Operational Actions

This section reviews how the demand, supply, operational influences and operational actions constructs shown in the model results in financial transactions – the unit of analysis of this study and the building blocks for future aggregation of information. Appendix B provides a comprehensive tabulation, relating to these constructs, of how information is sourced, used and with what intended outcome, together with identifying subjective prescriptions and wild card.

The overall intention of the FMIS system is to ensure that the aggregation of income and expenditure financial transactions enable the financial objectives of the company to

be met. Financial transactions are caused by the operational actions of meeting customer demand with the provision of a service, and both income and expenditure values are calculated by the formula - 'Price terms * Volume = Financial value of transactions'.

These operational actions are undertaken within a profit centre structure, with each profit centre the responsibility of an operational manager, although for smaller profit centres an operational manager will be responsible for more than one centre. The aim of the profit centre structure is to provide a method by which the profitability arising from causally linked income and expenditure can be assessed, with the intention that the operational activity of each profit centre will achieve a consistent target margin level which can be monitored and maintained through the use of information produced by the system

The operational actions are undertaken within the context of what is defined in company usage of the business model for each profit centre - how trading is intended to be undertaken, including customer terms, volumes and service levels, resources to be applied and operational management responsibility.

As shown in Figure 10-1, the data source for this grouping is heavily weighted towards operational management interviews, as these managers undertake the operational actions, although working within system controls and procedures developed by senior management.

While it is this area where the actual decisions are made that cause financial outcomes, in practise most of these decisions are made in line with standardised decision making rules. A typical contract manager operates with a set number of vehicles and drivers, and customer demands tend in the short term to be of a similar nature, if of fluctuating volumes. Therefore, much of the time the role of the managers is to repeat similar types of transactions that have been made previously – a delivery has to be planned whether the drop is of 2 pallets or 10 pallets. The research shows the main concern is to meet the customer requirement, with profitability as a secondary consideration. Changes in operational method to reduce costs in relation to income are largely dependant on the pressure being exerted by senior management for change. Applying such pressure can be difficult as the operational management is in a position to assert that he knows better than anyone how to organise the day to day operations. This approach is reflected in the following quotes from the transcripts

> *'**Q**. So it's (the main objective) keeping the customers happy?.*
> *A. Well that's the biggest part'*

> *'**Q.** What about the CLAWS (system) information for vehicle earnings and things like that - how much do you look at the profit of these things?*
> ***A.** Not a lot to be honest because you've got to do the work.'*

> *'I've got to make sure the vehicles earn the revenue and I also have to make sure customer still have a wagon when they need it.'*

'The profit thing to be fair there is nothing I can do with it'

Within this view typically the view of the operational management is that they have no need for further information, and they do not ask for it. The author's interpretation is that this is understandable as since they work in direct contact with the customer they have good access to the customer's requests, and it is that they see as the main objective. Again the following quotes reflect this

'To be fair the information that I have is sufficient to do my job, I don't really need any other information.'

'How do I do it? I don't know!'

*'**Q.** Do you get The Flash weekly figures?*
***A.** No not very often. Gary sends them through when he's got time to send them of the profits and then I can look back and the losses as to how the job has gone. He always tells me that the optimum figure for an artic is £2,000 a week'*

Operational assessments are undertaken by the operational management as part of their job, and are more related to checking that performance is adequate than as proactive analysis to improve performance. The assessment process undertaken is illustrated by the following quote from a contract manager.

'I know that sort of over each 11 grand I can account for we are cooking on gas'.

The operational management are aware of changes that could influence profitability, but it is not automatic that they would instigate such actions:

***Q** . So do you think if we didn't have XXX customer it would be a problem?*
***A**. Yes it would, you would have to reduce the fleet significantly. XXX customer fills it out it really does, XXX fits in nicely it is a good customer to have.*

The collection of this information covers a major part of the day to day role of operational management. Indeed, the time involved in actually collating the information is an issue as operational mangers can see the activity as time consuming and irrelevant to the provision of the service to the customer, illustrated by the following quote:-

'it's just too much and Head Office have been giving us an awful lot more paperwork recently.'

The time consuming nature of this data collection is magnified as the data has to be in effect processed twice. Initially on an incurred basis only, and then subsequently as the related accounting instrument – mainly invoices. Ensuring the completeness of the collection of the incurred income and expenditure, and subsequently tying the accounting instrument back to this, is a major area where the information gathered can

be inconsistent or incomplete. In certain circumstances it is not possible to assess the value with any degree of certainty. A specific example in the research period was a threat by a customer of a stock loss claim of £500k as shown in this passage from the diary:

'Major meeting as our fear has been the proverbial £500k stock claim and the losses of customer XXX in the past and uncertainty in the future have affected both our the accuracy of past projections and the certainty of future projections'

The difficulty was that it was not clear if there was any substance in the claim – however, the large size would have a major impact on assessment of future trading, and the approach that management would take

10.4 Financial reports

This grouping covers how the weekly detailed profit and loss financial reports ('flash accounts' in company parlance) are produced from the financial transactions, and the related targets against which they are compared. The reports are detailed profit and loss statements produced by the accounts department on a standard excel spreadsheet from aggregated reports of income and expenditure incurred. Thus, they are not produced from the company's double entry accounting system. They are produced on the Wednesday of the week following the operations, and have a detailed profit and loss statement for each of the 29 current profit centres (see Appendix H for example layout)

These weekly accounts are the central control system of the company. As shown by Figure 10-1, the data is gained from senior management sources as this is undertaken centrally and therefore does not directly impact on the operational management, although it is dependant on the actions of the operational management as their actions cause the financial transactions which are aggregated to produce these accounts

Appendix C provides a comprehensive tabulation, relating to these constructs, of how information is sourced, used and with what intended outcome, together with identifying subjective prescriptions and wild card**.** As part of the central control system, the accuracy of the information is of prime importance and is dependant on two key elements:

1) **Classification of costs.** The decision of what costs to allocate against what income is central to calculating profitability, and then in assessment of performance, and reflects the constant debate used by accountants in discussion of accounting techniques used. For example central costs are not allocated against profit centres. If such absorption costing techniques were used, profitability levels would change.

2) **Validation.** This covers work done in accounts to ensure that all income and expenditure is captured. For example records of vehicles being operated are cross referred to reported costs of operating the vehicles to ensure that the costs fully account for all costs incurred. This is a central requirement to overcome the difficulties in accuracy and completeness identified in the 'wildcard' comments.

The benchmark against which the financial reports are assessed are the financial targets, which are created quarterly. The plans are based on an assessment of past performance and an assessment of the likely future actions of financial stakeholders. The method of creation are in line with the following calculation:

Average past result +/- planned changes +/- assessed likely changes
= Projected future results

These benchmarks are one dimensional, based on projections on an average level of demand and an average cost of supply to meet that demand.

What this does not include is the impact of changes which happen but are not identified, which will automatically lead to an outcome that is different to that planned. However, as shown by the model, the value of financial transactions is dependant on fluctuating demand from customer being met by resources delivered through operational processes managed by staff for whom profitability is not the primary focus. Invariably the results will therefore be different from planned

The purpose of the targets is therefore to make explicit the assumptions on which future actions have been planned, and then by assessing actual outcomes against plan, shown in the flash v target construct, identify the extent to which the position in practise is different to that which was on average anticipated, which may or may not lead to a reactive response to the changed position. This issue then moves on to how these changes can be implemented, which is discussed in the next section. As performance is constantly being reassessed and operational changes implemented, the targets have to be constantly updated from assessment of ongoing reality to take account of the rolling position.

10.5 Management assessment and intention

This section covers how performance is assessed and intended future actions developed for operational implementation. This grouping reflects the major use of the FMIS and the reason behind the development of the system, as these processes enable the success of current actions to be assessed, and options and decisions for change and improvement agreed and implemented. As shown by Figure 10-1 the research data was principally gathered from the data diary and standard reports, although supplemented by personal knowledge as this is an area of the author's day to day involvement. Under this approach, the role of the operational management is to implement intended actions, and, while providing feedback on potentialities, feasibilities and capabilities, not to drive them.

The financial information input comes from the comparison of actual performance vs. target, with the focus of assessment in particular on determining whether the variances are a blip (i.e. within normally expected tolerances), or a trend (i.e. outcomes are not in line with intentions). This is not always clear as shown by recent experience when customer volumes for a warehouse caused operations to collapse, first because of a

production breakdown, and then secondly because of a panic run on the product – chocolate flavoured UHT milk, – through fear of terrorist attacks during the recent war. This is assessed as a blip as normal trading volumes give good levels of profitability. However, it could be assessed as a trend as the operation is always potentially susceptible to this outcome. The assessment of when change is needed is therefore essentially subjective, although can be better undertaken if informed by information showing the causal link between income and expenditure.

If the assessment is that of a trend leading to a financial outcome that is not in line with desirable financial performance, changes able to bring performance into line are explored, and, if potentially feasible change actions are identified they are implemented. These processes are undertaken in the light of management's interpretation of customers' requirements and flexibility of terms, the cash extractions and /or supply availability of external funders, and, most importantly, operational options, potential and capability. This process depends on what is desirable profitability. There is no absolute answer to this and it is based on whatever the senior management assess it to be, although strongly influenced by the requirement of outside funders for collective performance.

The method for implementing change is normally by developing profit improvement actions, in broad terms achieved by either changing either the price or volume element of the financial transaction equation, or a mixture of both.

The simplest way is to increase the price charged to the customer, by renegotiating customer terms. This is, of course, dependant on the customer agreeing and is most feasible where the variance from intention has been caused by changes in the customer demand profile which result in the price terms no longer being appropriate to cover the service being offered, although this interpretation may not always be agreed by the customer as illustrated by this quote from a senior manager about a customer who is unwilling to renegotiate terms

'I just want to reach across the table and rip his throat out'

The concept of the customer always being right is not universal! However if the assessment shows the customer is not supporting other profit centres through intercompany trading, or locked in under a long term contract (as is the case in the quote above), and the trend outlook is for losses or insufficient profitability a strong negotiating position is established for negotiating increases to bring performance back in line with intended outcomes. This approach has been validated by practical experience, but this is only feasible if the appropriate information showing the causal link between income and expenditure is available.

The second way to improve performance is by changing the mix of the resources used to provide the services to reduce the costs in relation to the income. This is more complex as demand mix and volume fluctuate, as does the skill of the operational managers in managing the mix in a manner that uses the least cost resources, while meeting the service and compliance requirements, and there are often wide variations in the type of resources that can be used to supply the service. The issue then becomes

what are the drivers of financial performance – is it the terms of the contract, the effectiveness of the operational managers, or the type of resources used, and if profitability is in line at one level of demand but not another, what is the sustainable level of demand.

The normal response when change is contemplated is to make assumptions of future volumes and their likely variation and then to make a reassessment of the level of resources required to meet this demand or the operational guidelines to use these resources. Average historical performance is then adjusted to reflect the financial impact of these changes to assess whether they potentially lead to targeted performance. Often this can lead to potentially significant improvement, especially if demand changes have led to core resources on a contract being out of line with projected income. A quote from the data diary again illustrates the approach taken:

> *'Analysis of XXX customer transport seems to suggest a turnaround of £10k per week by using the fleet better'.*

A similar assessment is undertaken for new business when tenders are being put together, where pricing is largely driven by the assessed causal link between the cost of providing the service and the income to be derived form that service.

The intended outcome will then be incorporated, and the FMIS then become relevant by assessing if the outcomes after the changes are in line with target. The system described answers this issue by monitoring on a weekly basis the performance so that, if the activities do not meet profit expectation, the changes have to be reassessed. In this instance, the FMIS is being used in some ways as a 'black box' trigger to identify if the performance is in line with intention, but not necessarily to highlight the cause of the problem or if operational action is being undertaken in an effective manner. The cause of the problem is tackled by actions based to a greater and lesser degree on speculative assessments, but whose outcome can be monitored leading to further changes if not successful.

Practical experience shows wide variations in levels of profitability of the different profit centres, to greater and lesser degrees. The core role of the FMIS is to provide a continual weekly near real time procedure for monitoring performance so that, when performance is deemed to be out of line with intention, actions can be implemented, the success of which can in themselves be monitored. In instances when the causal link between income and expenditure is clear, the impact of remedial actions can be relatively actively assessed (e.g. at the extreme when an empty warehouse is sublet) whereas when the causal link is complex, actions tend to be based on a higher degree of speculation. If financial terms can be agreed with the customer which give changed price terms dependant on volumes, the risk of this complexity can be reduced through changes in resource unit cost as result of demand fluctuation being compensated by changes in income terms

A final use of the information is in strategic assessment. This is principally ad hoc projections and interpretation undertaken by senior management, the main elements of

which are described in Appendix D, along with the tabulated summary of the main elements of the other constructs.

10.6 Accounting processes

This grouping covers the information processed by the company's double entry accounting system. The research data information is mainly drawn from the data diary and the list of standard reports. This reflects the central role of accounting processes, the function of the accounts department for which the author has principal responsibility, although the management control is undertaken by the Financial Controller.

The source of the information, its use, intended outcomes, subjective prescription and wild cards are tabulated in Appendix E. The procedures described tend to reflect traditional accounting procedures which are common to the majority of companies, as they are operated by staff who have experience of traditional accounting procedures and who deal on a day to day basis with the staff of customers, suppliers and providers of funding who operate similar procedures. The following reviews the key issues relating to their use in the FMIS described.

The first principal use is the validation of the flash. This is of key importance as a danger of the flash, as indicated by the wildcards is that all information may not be recorded, with the result that assessments based on flash may be based on incomplete information. This reconciliation provides, albeit retrospectively, the link between the flash information and the recording of the financial outcomes themselves, in particular cash. This reconciliation, however, in practise is not comprehensive as the requirement classification for accounting process does not in all areas fit with the classifications used in the flash.

The second principal use relates to cash flow. Cash transactions are the output of accounting transactions, and both under finance theory and from personal practical experience, 'cash is king', tying in with the perspective of the company as a cash flow machine with the generation of surplus cash for distribution to shareholders as the main objective. On the 'fear' side of the equation, unless the company has sufficient cash availability to meet its supplier obligations, it will be unable to trade. It is therefore of central importance to ensure that the outcomes of increased profitability, which is the intention of the earlier process of the FMIS, flow through in actual cash terms. As the timing of payment from customers and to suppliers is part of the negotiation when agreeing terms, the impact of any agreements needs to be assessed to ensure that timing issues on payment do not cause cash shortfalls breaking external funders covenants and lending limits.

The third principal use is the production of accounts and forward projections for external funders, and to meet compliance requirements. The precision of the double entry system, with its inherent internal checks of requiring that 'the books balance' and cash reconciliation provide, superficially, a firm base for the provision of accurate financial information source. However against this the inherently subjective nature of accounting information discussed in section 7, the need to produce accounts to fit

accounting standards rather than to reflect trading realities, and the lagged and inflexible method of producing accounting reports, provide difficulty for their use as a precise, as opposed to an impressionistic, guide to financial performance. However all financial reporting is undertaken using accounting principles whether it is routine management accounts, audited annual accounts, tax returns or one off corporate finance exercise.

The following examples from a recent corporate finance exercise illustrates the points. This was a 'Financial Assistance' memorandum legally required for the January restructuring discussed in section 7, produced under normal accounting procedures and reviewed by KPMG

> ***1st October 2002 (when doing initial projections) -*** *Very difficult to assess the financial outcome of the dispute could be none or could be say £500k loss. How do I report this to outside shareholders, and how will this play on the whitewash (Financial assistance)*
>
> ***13 December 2002 (review with KPMG) -*** *'Clear acceptance from KPMG was that the key point is to do the work in a manners that ties in with professional and legal requirements e.g. terms of financial assistance. Correctness is defined as meeting the current interpretation of the institutional rules'*
>
> ***16 January (on completion) -*** *'The document (KPMG Financial Assistance memorandum) is strange as it uses projections e.g. end December for period which have clearly been completed, and therefore implicitly accepts that as accounting information is historical it is not able to report on contemporaneous information'*

However, despite these problems with the integrity of reported accounts, the interactions with external funders, such as banks and Venture Capitalists suggest that they view the company solely in financial terms, and the basis of their assessment is the financial information given to them as part of the financial reporting procedures. This is illustrated by the following extract from the data dairy relating to discussion with the bank:

> ***30 September -*** *Feasibility of lending is dependant on profitability; therefore have to assure him that future profits will cover all the bank covenants. Tried to sound positive without guaranteeing the future*

10.7 Introduction of preunderstanding

During the initial coding and analysis and stages, the author consciously attempted as far as possible to suppress the implications of pre-understanding to enable theory to develop from a synthesis of that which emerges from the data (Eden and Huxham, 1996). However, at the stage of formal reflection it is appropriate to tie the emergent theory into the implications of pre-understanding. Therefore the financial wiring diagram Figure 8-1 was compared against the information flow model (Figure 10-2) to

assess the fit between the preunderstanding and the emergent theory arising from the study. From this comparison it is apparent that while Figure 10-2 reflects holistically the flow and usage of information about financial transactions, Figure 8-1 reflects a narrow and partial view of the flow of accounting instruments and transactions which result from these transactions. Viewing information through the accounting instruments gives only a reflection of the underlying operations driving the financial transactions, reflecting the difficulties identified by Johnson in the cave analysis (Johnson, 1992), and the issues raised above.

11 Discussion

11.1 Introduction

Section 10 described what system is used and how it operates. The purpose of this discussion is to address why it is used, who uses it and why management consider it is beneficial in assisting the achievement of corporate objectives. While the conclusions drawn from this discussion can in themselves be only applicable to this particular case, they can provide the basis for critiquing against pre existing theory, and practical testing of their effectiveness in shaping future results and in other contexts.

The perspective taken by this study is of an organisation as a cash flow machine, with an intent to optimise the financial performance, specifically the financial returns available to shareholders. However is not the intent and perspective of all stakeholders of the company, as evidenced above by the focus of much of operational management on meeting customer service requirement, not profitability. The purpose of the system must therefore include influencing and driving stakeholders for whom the financial perspective is not relevant to act in a manner which enables the financial perspective to be met

These financial returns are shown in the model as the output of the core accounting sequence as cash flows in and out of the organisation, and as reported accounting performance. The model demonstrates that these returns result from the aggregations of financial transactions transformed into accounting instruments, and then in cash and accounting reports. The model therefore shows that the key drivers of financial results are the operational actions that cause the financial transactions to occur. The achievement of the financial objective of the organisation is therefore dependant on operational activities, and the system has been developed to enable management to influence the operational activities so that the objective is achieved. Three key objectives of the system can be drawn out:-

1) To provide information that enables management to instigate operational actions to result in financial transactions which, when aggregated, meet future financial objectives.

2) To fully transform these financial transaction into cash flows at a timing which meet funders requirements and management intention for cash flow generation.

3) To transform these financial transaction into external financial reporting and projections in a manner which meets the requirements of accounting standards and the external funders

From this and in line with the (Whetton, 2002) framework for valid theorising, it is necessary to explore why the systems should be capable of meeting these objectives and when/where/who will ensure that this is achieved.

11.2 Instigate operational actions.

The intended profitability outcome of these actions is to optimise the difference between the aggregated costs incurred of supplying the service and the income derived from the customer for the service. These costs and income are calculated by the aggregated value of the financial transactions calculated by the price * volume formula. Four elements therefore govern the profitability of the operational actions:

1) The price of the services provided to the customer

2) The volume of the services provided to the customer

3) The price of the services provided by the supplier or employee

4) The volume of the service provided by the supplier or employee

The management intention, as described in the model, is to ensure that the mix of these four elements achieved during the service implementation produce the desired outcome. The aim is to achieve this by developing a business model expressed financially in financial targets that it is intended will be achieved by operational actions, and then to use the system to monitor success. Variances between actual and intention are then investigated, and, based on management's subjective assessment alternative actions instigated to change performance to bring it back to intention.

The key issue to address, however, is that the financial targets expressing the business model assume one dimension of future possibilities where the reality is of multiple dimensions of future possibilities. The targets are based on assumptions of one set of volumes and prices for both supply and demand, and an assumed level of operational capability in allocating and using resources to meet demand. The reality is that all these factors are intrinsically subject to fluctuation, with fluctuations in customer demand, both in volume and mix, requiring step changes in the resources required to meet demand. For example if a customer changes the delivery profile from 100 pallets to 10 locations to 50 pallets to10 different locations both the income and expenditure calculations change. The income will change because of reduced volume, subject to volume related ratchets, and the resources required to implement the service will change dependant on how many vehicles are required to deliver a lesser number of pallets to the same number of, but different locations.

The solution to this issue by the system is to aim to produce financial targets that reflect the average position, allowing for fluctuations that are blips not trends. This assumes that, in the short term, for the majority of profit centres the general default fluctuation will not be material, i.e. a blip not a trend, especially if pricing terms have been negotiated to ratchet income to reflect cost changes driven by volume changes. Following this assumption, financial targets grounded on historic performance adjusted for planned/assessed changes in line with calculation 'Past Results +/- planned changes +/- assessed likely changes = Future results', or in the case of new business on information provided by the customer, provide a benchmark against which performance can be assessed.

The system can then be used as a trigger to identify where performance is not in line with assumptions,- and remedial action is required. While trend changes will continually occur, and when these occur action must be implemented in response, in the short term relatively stable trading conditions will exist for most profit centres, especially if pricing terms are negotiated to respond to changes in demand The aim is therefore to agree a business model for each profit centre which produces target levels of profitability on the assumption of on average stable conditions, but to identify when trend changes happen, and then implement very quickly remedial action so that no significant harm to profitability occurs. The essential element behind this is the speed, frequency and detail of this assessment, with performance being assessed weekly during the following week, in fine detail by profit centres containing causally linked income and expenditure. This allows for quick response, and is supported by targets being reassessed each quarter at the start of that quarter, thus ensuring that the benchmark for comparison is grounded in recent performance

When changes are required, two potential actions are available and reflected in the model and description of the system:

1) Change the prices terms of the service being provided to the customer, normally linked to the size and nature of order volumes and service requirements as well as simple volumes

2) Change the resources applied to providing the service or the operational method for achieving the service.

The change in price terms provides a closer link between operational actions and the financial projections, as the impact of increasing prices can be relatively easily quantified, subject to changes in demand mix, for impact of the future profitability. The major issue is acceptability to the customer as evidenced by the passages allocated to customer negotiations

The change in resources applied to providing the service is the area of greatest disconnect between the financial projections and operational realities. The issue revolves around the uncertainty in the optimum way of meeting the service required by the customer. The level and resource applied to providing the service to the customer is determined on a day to day to day basis by the operational managers. However, as

evidenced by the passages under operational influences and operational actions summarised in section 10, this is principally driven by the managers response to customers' demand, not by ensuring that customer demands are met at minimum cost subject to meeting the service and compliance requirements.

Where the fluctuation in demand is low, this connect has greater transparency, for example, where a guaranteed service is provided for transport deliveries to the same location each day, or for a fixed level of warehousing facilities for a fixed level of income. Where there are high fluctuations in customer demands requiring varying resource levels to meet the demand, this connect is not transparent on a day to day operational setting as it is often not clear how best or how feasible it is to adjust resources while maintaining target profitability levels - for example when volumes fluctuate daily in volume size and delivery destination, and/or there is cross use with vehicles servicing other customer volumes whose volumes also fluctuate. In practise, simplifying heuristics (e.g. target products per vehicle) or operational gut based on previous experience tend to be used for decision making although the research did not show any consistent application or provide any evidence of a link between these approaches and optimising profitability.

The financial targets discussed above deal with situations of high levels of fluctuation by taking an average of the likely performance, on the basis that on a cumulative basis the fluctuation will even out. However, where there is this level of disconnect between operational actions and financial performance, the role of the financial reports moves to assessing whether the result meets the average intended result, with management generally leaving well alone if they do – effectively a black box approach. It is when results are deemed not to be in line with intention and require changing that assessments are undertaken to develop proposals to change the operational methods to attempt to improve performance. This is normally based on a reassessment based on a one dimensional model in a manner that seems to be operationally valid, often including a simple reduction of available resources to create pressure on operational management to make more cost effective use of the resource available.

The outcome of this implementation is then tested by future results through creating a one dimensional average target to provide a benchmark, going forward against which to assess the success of the changes in meeting intended results, even if the drivers of the results are not clear.

The FMIS described therefore provides management the capacity to test the financial consequences of changes and initiatives even if the links between operational actions and financial performance are not totally clear. Intrinsic in this approach is a back pressure on the operational management that the company may withdraw from providing the service if it is assessed as having no potential for future profitability. This provides motivation for the management to achieve targeted results to retain their position, even if the means by which they do it are not transparent to senior management.

In summary, while in the short term many profit centres provide consistent trading patterns for which a profitable business model can be developed, there is a constant

potential for trend change in demand. This potential requires a constant capacity to pick up on these changes and reassess in response operational approaches or the terms of trade. The principal role of the FMIS described is therefore to provide a continual trigger to identify when these changes cause results to move out of line with intention, and thus when changes are required. This role does not indicate if performance could be potentially improved, but is being assessed by management as satisfactory.

A second linked role relates to whether the activity being assessed is worth doing. If the forward projection show that even after including changes that are assessed as being feasible the target level of outcome cannot be achieved, a decision may be made to withdraw from providing the service, subject to the run on future contractual obligations. This is particularly relevant for loss making operations, but also provides a backward motivation to operational managers to be involved in achieving adequate levels of profitability.

The approach described above is dependant for assessment on the content of the information produced. The content of the information is dependant on its completeness and classification in reflecting the financial transactions. The model and Appendix C highlight the approaches taken to collecting the information, the protocols used for classifying the information, and the control through reconciliation with accounts aimed at ensuring the information is complete and is classified in a manner that reflects the operational reality and causal link between income and expenditure. However, the difficulties and, in some circumstances, impossibility of ensuring that all information is complete, as shown in the wild card comments in Appendix C, and the subjective nature of the classifications means that the all aggregated information must be accepted as partially accurate.

While the management intent is to introduce systems controls and procedures to provide information in as complete and useful a manner as is feasible, the approach accepts that this will not be comprehensive and that, as evidenced in the research the information will always be partial to a greater and lesser degree and always open to reinterpretation. This underpins the requirement for continual reinterpretations, as new information is always becoming available requiring a reassessment of the situation, arising from both changes in assumptions and the emergence of new information.

11.3 Transform to cash flow

The second core objective of the system is conversion of reported profitability into cash flow, which links directly into the perspective taken in this paper is to generate shareholder value which is achieved through the generation of cash flow. The effectiveness of the system is therefore incomplete if it does not provide a mechanism for ensuring that the profitability reported by the operationally based financial reports flows through into cash flow.

As the financial transactions which are used for operationally based financial reporting are also the basis for the production of invoices, wages payments and direct payments,

there is a clear potential link between the financial transactions and the cash flow. The role of the system is therefore to ensure that this conversion takes place to ensure that the reported profitability is converted to cash profitability

The second issue relating to cash flow is the timing of the conversion. If sales invoices are paid earlier, the cash objectives of trading are received earlier, reducing requirements to fund the timing difference from providers of funding. Conversely, if payments for suppliers are delayed, cash availability is also enhanced. Since bank funding is typically leant on a facilities level basis, with borrowing restricted to absolute levels, the management of the timing of cash payments and consequent impact on cash availability has a major impact on cash availability in excess of facilities, and thus availability to shareholders.

11.4 Transformation to accounting reporting and projections

The third core objective is the transformation of financial transactions to accounting reporting. This is critical to the relationship with external funders, as historic and projected accounting reports provide the principal lenses through which the company is assessed. External funders assessments affect their willingness to provide cash, or for shareholders, their assessment of the future value of the company.

However, as discussed, accounting rules for reporting historic results have at best a significant degree of subjectivity, and forward projections are intrinsically subject to uncertainty being dependant on actions from stakeholders which are out of the control the company, and operational processes which have no direct or consistent link to the intended financial outcomes, with success dependant on the continual instigation of change to respond to perceptions of changing demand patterns.

This inherent degree of uncertainty is not reflected in the financial reporting projections, which are undertaken in a style which shows apparent precision. The tendency then is for the projections to be inbuilt as financial performance obligations (e.g. profit/interest cover, dividend payment levels) defining the results that are required. Management therefore has to manage the reporting both of historic information and projections in a manner that enables external funders to set financial obligations which management assesses it has the potential to achieve. Given the high degree of uncertainty and potential fluctuation in performance, the general approach taken is to downplay future projections to give a margin of error, and to apply the flexibility inherent in the accounting standards to ensure that reported results comply with the reporting obligations agreed with external funders. The danger occurs if underlying performance dips below financial obligations as the pressure is on management to create a picture of meeting financial obligations by using accounting principles that maximise profitability and take an upbeat view on future projections.

12 Conclusions

12.1 Introduction

This paper provides a detailed description, for one company, of the system through which management source and use information when making and framing decisions with financial consequences, and the intent behind this use. Assuming a shareholder value objective, it highlights the three uses for the system critical to the achievement of that objective - for operational performance, cash flow and accounting reporting. Of these, the key use is for operational performance, as the cash flow and accounting reporting uses - to report and record the financial outcomes – are dependent and driven by operational actions.

The intention of the system for operational performance is to provide information for management to instigate operational actions to meet the shareholder value financial objectives, as determined by management but reinforced by financial obligations to external funders. The intention is that the operational actions will result in financial transactions of income and expenditure, which when aggregated will produce cash flow and reported financial reports that meet financial objectives. This is achieved by detailed weekly monitoring of performance by profit centre, compared to rolling quarterly target which express management's intended outcomes.

This system provides a trigger for management to instigate action when performance is out of line with intention, and, as it is undertaken on a systematic, near real time weekly basis independent of accounting reports which are used as validators not primary sources, allows for swift response to performance trending away from target. However, where the level of demand fluctuates the connection between operational actions and financial consequences is often not clear. This means that guidelines for operational action to optimise financial performance are difficult to implement, and there is no clear link to show that financial performance is optimised. The simplifying approach taken is to treat the target performance as the optimum performance, only changing this when events demonstrate improvements are feasible. Where results are judged to be below target on a trend basis, a revised operational structure is developed which is judged to be potentially feasible, and this is implemented, and future results monitored.

The system described is a specific system developed with the intention of enabling shareholder aspirations to be met at Hammonds. However the personal interest driving this study relates to whether this system has any generalisable relevance, and if it can be beneficially transferred to other contexts, or improved to enable enhanced performance to be achieved. To achieve this, it is necessary to critique the key elements against prior theory and research to draw out from prior experience its potential strengths and weaknesses, and to develop methods of testing its capacity to provide beneficial results. This will be achieved in linked DBA projects 2 and 3.

12.2 Limitations

The paper is based firmly on a personal and subjective interpretation of a context with which the author is closely involved both as an employee, leader and major shareholder. Therefore despite the objectives of developing a research design which maximises the potential for objective reflexivity, conclusions must to a significant degree be influenced by this close involvement. The corollary of this, is that this position has enabled the author a depth of access and understanding of the context of action which cannot be available to an independent observer.

The semi structured interviews were undertaken by the author as a novice researcher with no previous experience, and the interviewees were effectively his subordinates. As such there will have been a potential for them to say what they wished the author to hear, and a tendency for the author to be inexperienced in conducting the interview, thus limiting the scope of the insights it was possible to obtain. Against this the author's in depth knowledge of the operations under discussion gave him an insight into the issues under discussion and thus an ability to check the internal consistency of the points being made.

The insights gained during the research will have affected the author's thinking about the system. As he is also largely responsible for the system he is researching and has the authority to make changes in its operations, and the system is fluid and open to changes, during the process of the research the system will have changed in response to the thinking. Therefore the description must be somewhat impressionistic, describing the system as it was perceived to be at the time the research was written up, subject to the interpretation of the research data, not reflecting a snapshot of the system at one point in time. However, the use of internal logic checks, in particular in the use of the modelling procedures, aimed to ensure on overall level of consistent authenticity.

12.3 Contribution

This paper provides a contribution to the gap in knowledge identified in the discussion of the theoretical background, particularly as the author's role in the organisation and the participant based nature of the research grounded in action gives access and insights which would not be available to an externally based researcher - which has been the general basis of academic research in this domain. It also provides a contribution to practise by providing a systematic recording and analysis of the system used within the organisation which, from a personal perspective has enabled the system to be developed and used to greater effect, in particular in bringing greater clarity and effectiveness in the link between financial assessment and operational changes.

This contribution however is in itself limited as any theory development can only be applicable in the context of the single context within which the research was undertaken, and no testing of the theory has been consistently undertaken. The aim of the next two projects, however, is to build on this narrow contribution to produce emergent theory on the use and potential benefits of an FMIS which can be utilised in a wider context.

RESEARCH PROJECT 2

November 2005

To what extent can management accounting connect operational decisions and actions with achieving improved profitability? Evidence from a systematic review of literature

ABSTRACT

This study reports on the findings of a systematic literature review that identified 165 studies assessed as relevantly addressing the research question. The studies were analysed using a framework proposed by Otley (1999). Four key themes were synthesised from the findings as having a critical impact on the extent to which Management Accounting can connect operational decisions and actions with achieving improved profitability: multiple perspectives (product, customer, throughout, process and overall financial); endemic tensions (centralised v devolved, fixed v flexible, control v inform); endemic uncertainty; and potential of real time systems.

Building on the Otley framework and drawing on these findings, a conceptual framework is proposed identifying the functions and interrelationships required for a Management Accounting System (MAS) to effectively perform its role. Appraisal of this framework indicates two interlinked factors of critical importance - the acceptance of a financial goal as the overriding objective, and the central role of feedback. The financial goal provides a certainty of purpose; feedback provides a mechanism to connect operational actions to financial outcomes, and to inform necessary reassessments and adaptive responses in a changing, uncertain operating environment.

The paper concludes by identifying a significant gap in specific research on the impact of MAS on the achievement of intended actual financial outcomes, and proposes further research to address this gap using the conceptual framework proposed as a structure for analysis.

13 Introduction

The question this research Project addresses was framed from the findings of Project 1 and is

'To what extent can management accounting connect operational decisions and actions with achieving improved profitability?'

Project 1 was an exploratory in depth case study into the management accounting system of one company (Hammond Logistics). The outcome was a detailed model of the system through which management source and use information when making and framing decisions with financial consequences. Analysing the system from the perspective of intent to achieve shareholder value objectives, three uses were identified as critical to the achievement that objective:

1) To enable management to instigate operational actions that result in financial transactions which, when aggregated, meet future financial objectives.

2) To fully transform these financial transactions into cash flows at timings that meet financial stakeholder requirements.

3) To transform these financial transactions into external financial reporting and projections in line with the requirements of accounting standards and financial stakeholders.

The Project concluded that instigating operational actions (1) was the primary use, with the cash flow and accounting reporting secondary uses, being dependent variables driven by the financial outcomes of operational actions. A further conclusion was that the effectiveness of the primary use in meeting its objective was significantly hampered where the level of demand fluctuates.

Since the completion of Project 1, following further reflection, these findings have been reassessed and tightened in two ways. Firstly, the objective of primary use (1) has been more precisely defined as improving profitability as opposed to the wider definition of financial objectives that covers other areas such as cash flow and Balance Sheet strength, the focus of uses (2) and (3). Secondly, the term Management Information used in Project 1 is replaced by the term Management *Accounting* Information, thus placing the research in the domain of management accounting. The term management information is a generic description covering both accounting and non accounting information, whereas the focus of Project 1 and this study is on information which is based on actual or projected aggregations of individual financial transactions, both the unit of analysis of Project 1 and the bedrock of accounting systems. The primary use 1 is therefore restated as follows – 'To enable management accounting to instigate operational actions that result in financial transactions which when aggregated, meet future profitability objectives'.

The purpose of Project 2 is to research this principal finding of Project 1 against the findings of prior relevant research, and from this prior research draw conclusions and proposals on the extent to which management accounting (MA) can produce information which management can use to instigate operational actions that result in financial transactions which, when aggregated, meet improved profitability objectives. More succinctly, this can be summarised in the following research question

'To what extent can management accounting connect operational decisions and actions with achieving improved profitability?'

A Systematic Review (Tranfield and Denyer, 2003) methodology is used to identify relevant prior studies, and the thematic findings are synthesised from this prior research using an Analytical Framework proposed by (Otley, 1999). These thematic findings are then further synthesised into four Key Thematic Findings that are identified as reflecting issues which are of key importance to the research question. Building on those Key Thematic Findings, a conceptual framework is proposed that maps the key functions and interrelationships required for a MAS to connect operational decisions and actions with achieving improved profitability. The intention is to develop a framework that can be used as a generic platform for assessing in practice whether a MAS has the necessary functionality and interrelationships to achieve its intended objective as defined in Project 1. It is proposed that the utility and relevance of using the framework in such a manner can be tested in Project 3.

The structure of the paper is as follows. The first section defines the research question, and outlines the intended link between the three projects of the Executive Doctorate. The second section describes the research and analytical methodologies used. The third discusses how the research methodology Systematic Review was planned, and the fourth identifies the descriptive findings. The fifth covers the extraction and synthesis of the thematic findings, leading to an overall identification of the Key Thematic Findings and the development of the generic conceptual framework. The sixth discusses these findings in relation to the research questions, the implications for future research, and an assessment of the study's limitations. The final section concludes.

14 Methodology

14.1 Systematic review

The literature review for this paper was undertaken following the proposals for a systematic review made by (Tranfield and Denyer, 2003). The operationalisation is based on the systematic review architecture of the AMRC at Cranfield School of Management. The approach provides a structured way of research to cover a targeted area, provides an audit trail so that the integrity of the research is capable of being followed, and it focuses on the importance of identifying the underlying evidence that informs the findings and theory identified and explicated. The target output of the approach is a synthesis of the findings of a collection of relevant studies that provides a reliable knowledge stock which is relevant to the research issue being addressed.

Drawing from medical research, a three stage process was proposed. The first stage covers the planning of the review and includes the production of a scoping review to map and assess the relevant intellectual territory, and a research protocol to provide a detailed plan to provide guidance and control for the implementation of the review. The second stage relates to the conduct of the review, including both the selection of the studies through the use of exclusion and inclusion criteria, and the extraction and synthesis of relevant data from these studies. The third stage relates to the reporting and dissemination of the findings. The first two stages are covered in Section 15, and the final stage is covered in the rest of the paper.

14.2 Analytical framework

The proposals of (Otley, 1999) are used to provide the analytical framework from which the thematic findings and key findings were synthesised, and from which the conceptual framework was developed. The framework postulated five issues that a management control system must address to be effective - objectives, strategies and plans, targets, rewards and feedback. It fits the purpose of the study as it was developed specifically to focus beyond the measurement of performance to the management of performance. The framework has been developed from an earlier study (Otley, 1987) and has been operationalised by two of the studies covered in this paper (Moon and Fitzgerald, 1996) (Malmi, 2003).

15 Systematic literature review

15.1 Scoping review and Protocol

The first stage of the systematic review is the scoping study, which was completed in November 2003. The aim of the scoping study was to identify the research question, assess the relevance and size of the literature, and delimit the subject area or topic. Through delimiting the overall field of study, the component sub fields within the overall subject area can be identified. From this, the intention is to incorporate these sub fields into search criteria that can provide a focussed method of identifying studies that are relevant to the research question. The target outputs of the review are therefore selection criteria and research formulae, developed from the delimitation of the overall field, that can be used in the further literature research and review. A formal document reporting the process and work done is included in Appendix A.

The next stage of the process was to produce a Protocol to provide a guide and control mechanism for the review search and analysis. This was completed in December 2003 and is included in Appendix B. The central element of the Protocol was the development of search strings to be used in keyword searches in commercial databases to identify a comprehensive range of academic studies that potentially address the research question. Both keyword strings and database identification were developed

from the findings of the scoping review. The keyword strings were developed from a deconstruction of the research question to identify the core constructs that relevant studies must cover. The question contains three main constructs as marked in bold. At this stage, the phrase financial objectives had not been changed to improved profitability

'To what extent can **management accounting** connect **operational** decisions and actions with achieving financial **objectives**?'

'Management accounting', as discussed in the scoping review, covers a broad range of sub fields and therefore multiple constructs will be required to provide coverage of these sub fields. A range of constructs covering the sub fields were identified in the scoping study, and these are used to cover the multiple key words required to cover management accounting. 'Operational' is a generic word and does not need expanding. 'Financial objectives' is relatively narrow and can be covered by the constructs of profitability and cash flow. The search strings were therefore identified, as in Table 15-1. As can be seen, the search strings used are still relevant to the change in the question as profit is the principle element of the financial element of the search string.

The databases were identified from an analysis of the databases that included the 32 academic studies assessed as relevant in the scoping drawn from 13 academic Publications. Using the Cranfield library search facility three databases Ebsco, Proquest and Science Direct were identified as covering all these studies, and it was therefore concluded that they would provide a wide coverage of the field and thus be suitable for the review.

Operations	Financial	Management accounting technique
Operation!	Profit! OR cash OR financ!	Activity Based
Operation!	Profit! OR cash OR financ!	Budget! OR Benchmark OR Variance
Operation!	Profit! OR cash OR financ!	Contribution OR variable cost!
Operation!	Profit! OR cash OR financ!	Cost!
Operation!	Profit! OR cash OR financ!	Management account!
Operation!	Profit! OR cash OR financ!	Management control!
Operation!	Profit! OR cash OR financ!	Operational control!
Operation!	Profit! OR cash OR financ!	Performance measurement or performance evaluation
Operation!	Profit! OR cash OR financ!	Real options
Operation!	Profit! OR cash OR financ!	Real time OR Enterprise resource planning OR ERP!
Operation!	Profit! OR cash OR financ!	Throughput accounting OR Theory of constraints OR TOC
Operation!	Profit! OR cash OR financ!	Value based management OR VBM

Table 15-1: Search strings

A feasibility test was then undertaken to test out both the search strings on the Science Direct database. For some of the search strings, the number of hits was too large to be manageable, and it was concluded that in these instances the strings would have to be adjusted to bring the number of hits to a manageable levels with a heuristic target of 100 being the ideal. The process of the adaptation of the initial search strings is discussed in the next sections.

15.2 Search process

Initial screening

The overall outcome of the search process was to reduce 11,755 hits in three databases using the initial search string to 84 studies assessed as relevant. To this were added a further 74 articles which were assessed from the scoping review studies to produce a stock of 158 articles assessed as relevant. The overall movement is summarised in the Table 15-2 . The rationale for exclusion at each stage is discussed below.

The initial hits of 11,755 were identified using the search strings detailed in Table 15-1 in the three databases. The restrictions on the search were to cover only studies published after 1982 and to cover studies that were classified by the databases as academic. The fields used for the search were the default fields for Ebsco and Proquest, and a field covering abstract, title, keyword for Science Direct. The precise syntax of the databases had to be adapted to the differing syntax rules used by the differing databases.

The initial hits were reduced to 1,717 by adjusting the search strings, when the initial hits were too high to be realistically manageable. The changes to the strings are detailed in Appendix C – 1, and were made to eliminate those key words which on initial assessment seemed to be attracting studies that by title were the least relevant. For example, the term ‘cost’ in EBSCO and Proquest produced a large number of non relevant studies, and was therefore further defined as ‘cost accounting’ which greatly reduced the number of hits. The changes were made by trial and error in response to each search string with the aim, where feasible, of obtaining between 20 and 150 studies, subjectively considered to be a manageable quantity. Consistent with the change in the research question, the key word ‘profit’ was included for all searches, although ‘finance’ was dropped on a number of occasions as it picked up a wide number of articles focussing’ for example’ on corporate or government finance.

As shown in Appendix C-1 the results were very different in the number of initial hits between both the strings and the databases. The deduced explanations for the differences were the varying quantities of studies held by the databases, and the differing algorithms used by the databases to conduct the searches. A further potential explanation was erroneous use of the search facility, although, to counteract this possibility, cross check searches using different permutations were undertaken to try and produce a result that appeared from initial review to contain a representative sample of potentially relevant studies.

The stock of 1,717 studies were then reduced to 347 by a review of titles, making a total of 465 studies, including those from the scoping review that were identified as potentially relevant. Exclusions were based on initial reviews of titles which suggested that the study would not be relevant because either the keywords triggering selection were used in different context, or the study did not cover Western capitalist organisations, or because the study had a purely academic or teaching focus, or because the study appeared to have no relevance to the research question and in particular the

operational element, or because the study was duplicated. These criteria were based on those developed in the Protocol.

The 347 studies were then further reduced to 184 through a skim of abstracts on screen by reference to the exclusion criteria, and, after the exclusion of another 23 as duplicates, 161 remained to go forward for a secondary screening. This process was in line with the plan set out in the research protocol (See Appendix C-2)

	Science Direct	Ebsco	Pro quest	SR	Scoping	Total
Hits from original search string	*242*	*3,181*	*8,332*	*11,755*		*11,755*
Hits from revised search strings	610	481	626	1,717		1,717
Studies from Project 1 and general reading					161	161
	610	481	626	1,717	161	1,878
Exclude by title review	-496	-359	-515	-1,370		-1,370
Exclude as non relevant					-43	-43
Chosen as potentially relevant	**114**	**122**	**111**	**347**	**118**	**465**
Exclude by abstract skim	-45	-67	-51	-163		-163
	69	55	60	184	118	302
Exclude duplicates				-23		-23
Studies remaining after initial screening				**161**	**118**	**279**
Exclude by abstract review				-58		-58
Studies remaining after secondary screening				**103**	**118**	**221**
Exclude after full text review				-19	-53	-19
Studies remaining after final appraisal				**84**	**65**	**149**
Exclude after re-review					-1	-1
Include from reassessment of not relevants					9	9
Include from recommends						1
Final summary				**84**	**73**	**158**

Table 15-2: Summary of research screening

Secondary screening

The abstracts of the 161 studies were then downloaded to Procite for the Science Direct and Proquest articles, and to Excel for the Ebisco articles as it was not possible to establish a link to Procite for these articles. The secondary screening was then undertaken by reviewing the abstract in detail for an identifiable proposition that is both academically valid and addressed the research question, using the methodology of (Whetton, 2002) as a basis for deconstructing the abstract to draw out, where feasible, the core content of the study to be assessed for relevance to the research questions. This resulted in the exclusion of a further 58 articles. These are summarised in Appendix C-3 together with the reasons for the exclusion.

The focus of the inclusion and exclusion criteria was not on the academic quality but on relevance as studies that may not be top academic but give valuable insights into the research question were assessed as being more relevant than a paper of top academic quality with no relevant insight. Furthermore, the quality of the evidence behind the

studies will be a key element during the synthesis of the findings. This secondary screening process therefore left 103 studies to go forward to final appraisal. The secondary screening process was undertaken in line with the plan developed in the Protocol with the exception that the category of indirectly relevant was not considered to be of use. In practice, the studies were assessed as either having a relevance to the research question or not, even if that relevance was not comprehensive it might give a relevant insight into some aspect of the research issue.

Final appraisal

Hard copies of the 103 studies identified as relevant were then obtained and reviewed in detail following the procedure outline in the Protocol. This led to a further 19 studies being excluded as not being relevant and a final stock of 84 studies identified as relevant. The studies that are excluded, together with the reasons for their exclusion are shown in Appendix C 4. The studies that were identified as relevant are summarised in Appendix C 5 along with the base data as defined in the protocol showing the study references, the management accounting key word which triggered the identification in the search, and a brief summary of why the study was considered to be relevant.

Following the plan outlined in the Protocol, the studies were analysed by attempting to identify a core proposition for each study by identifying the component parts in line with the (Whetton, 2002) methodology used in Project 1 and in the scoping report. This approach was found to be only partially successful as many of the studies were found to either contain multiple propositions, or provided insights that were relevant to the research question but did not contain specific theories capable of analysis using the Whetton methodology. To overcome this difficulty, where a proposition could not be identified, a general assessment of the relevance of the articles was made, rather than a specific deconstruction of the proposition. This therefore reflected, in the first instance, that the actual practice of the review differed significantly from the plan outlined in the Protocol. However' for the purposes of identifying those studies that were relevant this revised approach met the required output

Introduction of studies from the Scoping study

The final stage in the search process was to reintroduce the studies from the scoping study. This provided a further 65 studies. Details and the main reason for their assessed relevance are included in Appendix C 6. During the review for thematic findings, one of these was reassessed as not being relevant reducing the number to 64. In addition, the studies that had been assessed as non relevant during the scoping review were reassessed for relevance, resulting in a further 9 being included. These reassessments arose from an emerging deeper understanding of the research issues, producing a broader assessment of potential relevance. One final study was introduced following a recommendation during academic review with the author's supervisor.

16 Systematic review – descriptive findings

16.1 Introduction

The approach defined by the Systematic Review Protocol was that findings would be drawn out and synthesised from an inductive analysis of the studies identified using the (Whetton, 2002) methodology – See Appendix B. However, it became apparent in discussion with the panel and during the initial implementation that this approach was not satisfactory. In line with the issue identified during the final appraisal (see 15.2. above), it was difficult to use the Whetton (2002) methodology to draw out from the studies clean, specific propositions relevant to the research question informed by direct evidence; instead, it was concluded that studies tended to address specific topics that were relevant to the research question, and within this contained a multiple of interlocking considerations and proposals supporting by varying degrees of evidence.

A reassessment was therefore undertaken. The revised approach taken was to split the reporting and assessment of findings specifically into separate descriptive and thematic findings, consistent with the proposals of (Tranfield and Denyer, 2003). The thematic findings are covered in the next section, and they feed directly into addressing the research question. The descriptive findings are covered in this section, and are assessed from two separate perspectives. The first perspective is by the nature and age of the source publications from which the studies were extracted, including a comparison of the differing outcomes from the scoping and systematic reviews. The purpose of this is to assess the nature, breadth and credibility of the source publications, and to compare and assess the relative output of the scoping and systematic reviews. The second perspective is by key word groupings to provide both a base classification for the development of thematic findings, and to assess the consistency of the MA techniques and processes chosen against those targeted by the research strings. An overall conclusion is then drawn on the extent to which the review has produced a range of studies that meet its initial purpose.

16.2 Analysis by nature and age

The 158 studies were extracted from 66 Journals and five books, making a total of 67 differing publication types accessed, an average of 2.4 studies per publication. Table 15-2 tabulates the number of publications covered by each review (systematic or scoping) and jointly. Appendix D-1 provides full details of each publication accessed and the number of studies extracted from each publication.

The table demonstrates that, while there is a core 50% of the studies from nine publications accessed jointly, the systematic review produced a wider coverage with an additional 39 publications covered, compared to 19 by the scoping review. This wider coverage by the systematic review is in line with one of the objectives of the systematic review process, to produce a more comprehensive coverage than the traditional narrative reviews, the methodology underpinning the scoping review.

Source review	No of Studies		No of Publications		Avg per Publication
Both systematic and scoping	79	*50%*	9	*13%*	8.8
Scoping only	28	*18%*	19	*28%*	1.5
Systematic only	51	*32%*	39	*58%*	1.3
	158	*100%*	67	*100%*	2.4

Table 16-1: Review sources

The 158 studies were then classified by type of publication with four broad categories identified - Financial, Operational Management, General Management and Others. (See Appendix D – 2 for full details). The basis of the classification was by interpretation of the publications' title, and does not follow an external classification protocol. As demonstrated in Figure 16-1 while the majority of the publications are financial, the systematic review identified a higher proportion of operational management publications. This again suggests that the systematic review has provided wider coverage than the scoping review again in line with its objectives. The mix is also consistent with the make up of the search strings which were developed to link financial objectives and operational actions, intending to identify studies linking both fields of literature, and with outcomes therefore equally likely to come from either field. The scoping review, on the other hand was undertaken on a narrative basis with a general management accounting focus and is therefore biased towards financial publications.

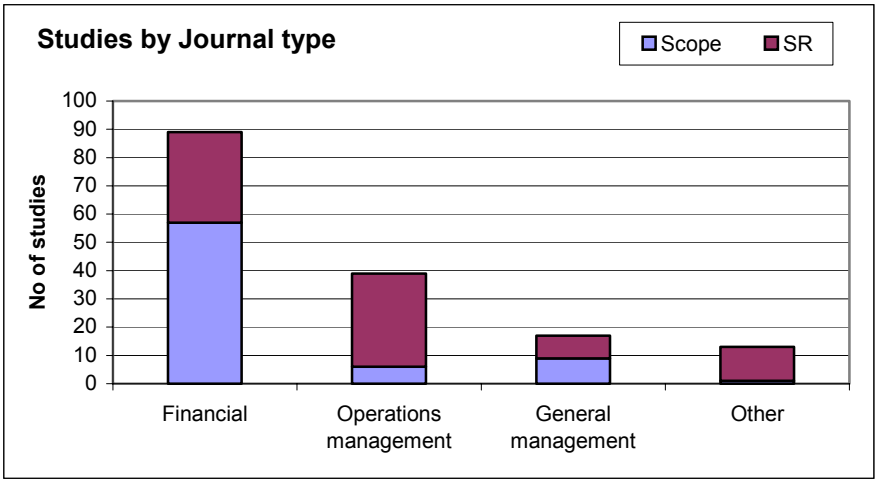

Figure 16-1: Studies by Journal type

The next analysis was by research data type. A central element of a systematic review is an assessment of the quality and relevance of evidence from which the thematic findings will be developed. The start point for such an assessment is the type of data from which the findings are drawn. Figure 16-2 demonstrates the type of the evidence supporting the findings. (See Appendix D -3 for make up) Overall, it demonstrates a wide range of data types, but with the systematic review providing a wider coverage as intended.

Studies are described as case studies when this is the description used by the author. However, the classification of in depth case study is a personal classification applied when the study is assessed as demonstrating an in depth, multi sourced longitudinal

study, not just a focus on a specific case with limited data collection and access. The simulation based studies have come from the operational management literature which was not generally addressed by the scoping review, and the in depth studies seem to result from the focus of the search strings on operations which tend to lead to in depth operationally based studies. This analysis therefore suggests, prima facie, a wide range of data types.

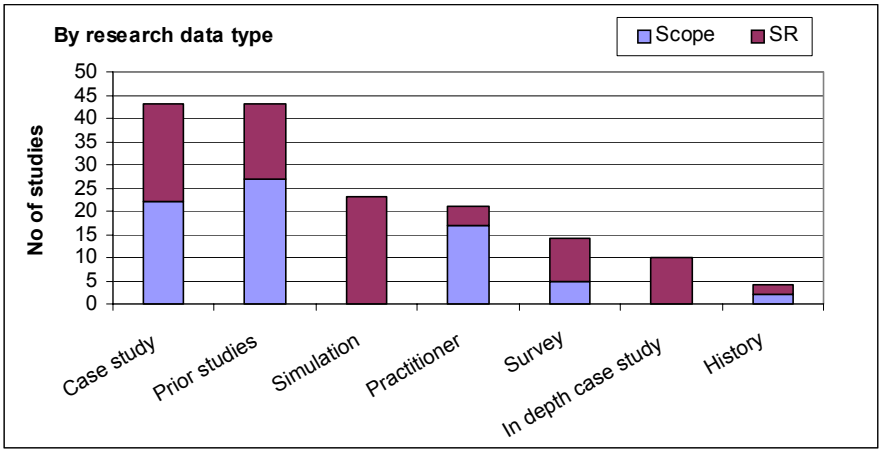

Figure 16-2: Studies by research data type

The final analysis of this section is by age. Figure 16-3 summarises the age of the 158 studies (see Appendix D - 4), demonstrating that the majority of studies have been published in the past five years. This is in line with an expectation that recent studies are likely to be more relevant as they can build on prior work, with older studies tending to be less relevant unless they are classics. However, the figure also demonstrates the systematic review is more evenly spread than the scoping review, and contains a higher proportion in 2003, the last full year. This is consistent with the systematic review, providing a more neutral search process, while the scoping review, generally led by prior citations, may tend to not access the most recent work as it has not had time to be cited.

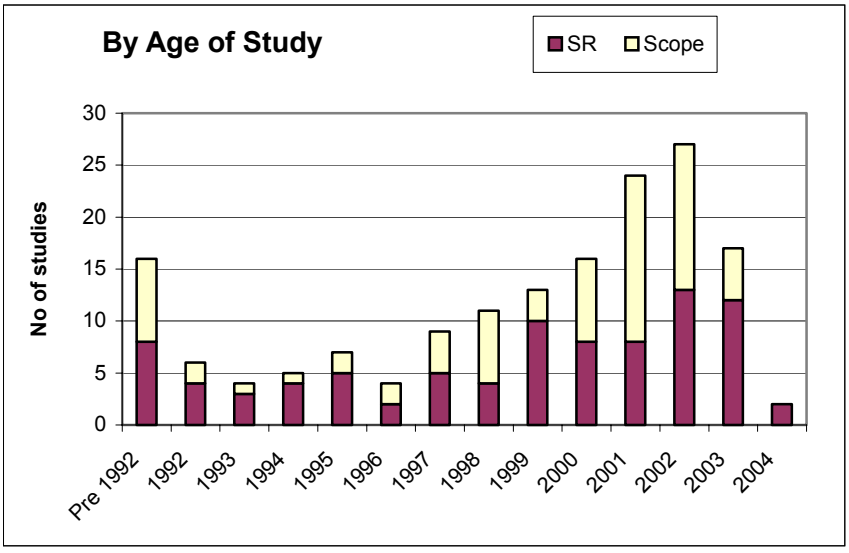

Figure 16-3: Studies by age

16.3 Analysis by Key Word Groupings

The second perspective of the descriptive findings is by key word groupings to assess the width of the overall coverage of MA techniques, processes and themes. This follows the grain of the studies which, it was found, tend to focus on a specific field (e.g. Activity Based Costing) and is consistent with the initial search criteria that had used such key words as components of the search formulae.

The analysis commenced by identifying, for each study, keywords assessed as best reflecting the primary focus of the study. This produced 16 groupings of key words, covering the 158 studies. These key word groupings were then compared to the key words used to specify the variable element of the research String. The purpose of this analysis is to assess the consistency of the theme grouping against the target of the search strings, and to identify if other significant themes emerged from the search. The results are shown in Table 16-2. The table demonstrates that six of the groupings equated directly to the search strings. However, the others groupings either reflected more fine grained sub fields of the search strings, or in the case of operational control, no thematic grouping emerged. From this it is concluded that, while the groupings are clearly related to the search string components, they reflect a further development and, in the majority of cases, more fine grained analysis. The groupings are all supported by allocations of specific studies from the total stock of 158 studies.

Key word Groupings	Management accounting technique per Search String
Budget	Budget! OR Benchmark OR Variance
Management Control System (MCS)	Management control!
Performance Management System (PMS)	Performance measurement or performance evaluation
Real options	Real options
Real time accounting	Real time OR Enterprise resource planning OR ERP!
Value Based Management (VBM)	Value based management OR VBM
Activity Bases Costing ABC	Activity Based Throughput accounting OR Theory of constraints OR TOC
Theory of Constraints (TOC)	
ABC/TOC	
Management accounting history	Management account!
Management accounting current status	
Management accounting change	
Management accounting use	
Product costing	Cost! // Contribution OR variable cost!
Target costing	
Cost accounting	
	Operational control!

Table 16-2: Key word groupings vs. Search strings

The allocations were analysed by their review source, as shown in Figure 16-4 (Appendix D-5 for details), and by their type of publication source as shown in Figure 16-5 (Appendix D-5 for details). Figure 16-4 demonstrates how, as intended, the systematic review widened the range of cover, specifically in TOC, product costing and target costing. Figure 16-5 shows the impact of the non finance publications widening

coverage, again mainly for product costing and TOC. Overall the results show the widening and deepening of the coverage produced by the systematic review process.

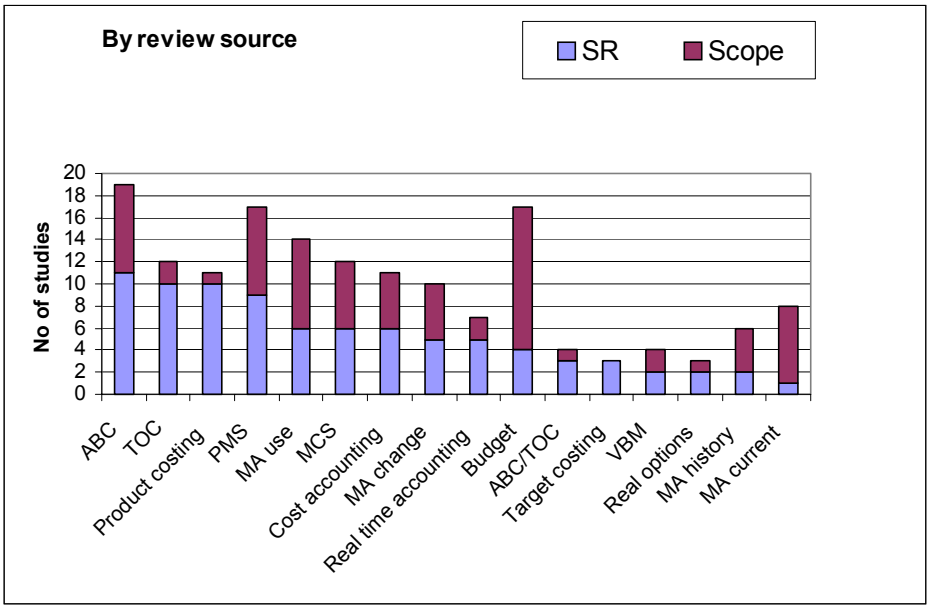

Figure 16-4: Studies by review source

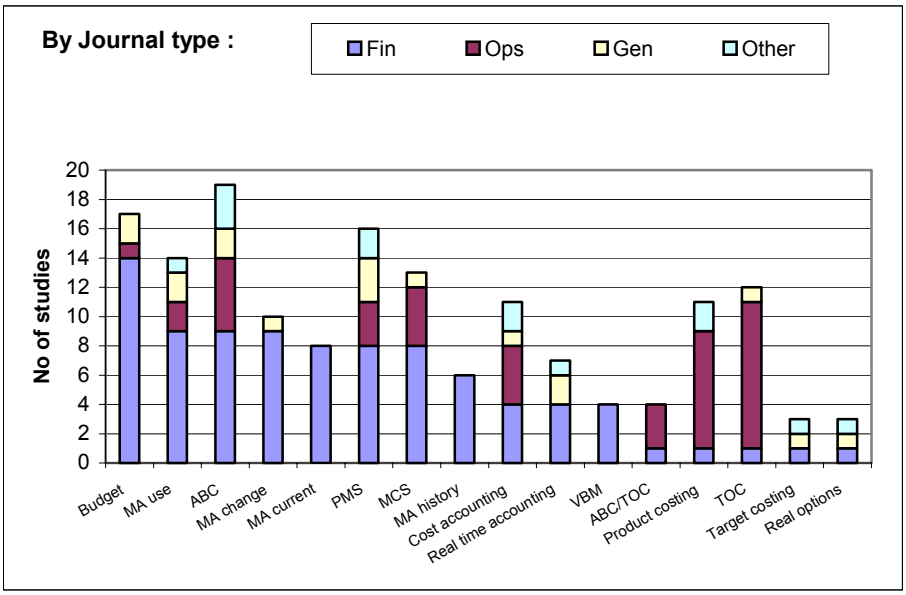

Figure 16-5: Studies by journal type

16.4 Conclusion

The purpose of the systematic review was to identify a range of studies that comprehensively and validly addressed the research question using a structured methodology to provide an audit trail to enable the integrity of the research to be followed. A principal purpose for the analysis of descriptive findings was to assess the extent to which this has been achieved.

The analysis above suggests that the review achieved this objective, with 158 studies extracted from a wide range of 67 different publications spread widely across the field of management accounting but chosen specifically to address the terms of the research question. These studies were classified into sixteen groupings compatible with accepted prior academic descriptions, giving a broad and relatively even coverage across the main areas of management accounting. During the process, difficulties were identified in implementing the planned Protocol approach to identifying Findings which required an alternative approach to be adopted. The clear identification of this change indicates the transparency of the SR approach, indicating the benefits of the approach in assisting and confirming the integrity of the findings.

A final check prescribed in the review protocol was to review the citation lists of directly relevant studies, to bring in any studies that had been missed in the initial review but appeared from the title to be directly relevant and academically credible. However, given the large sample of 158 studies identified, on reflection this has not been implemented as including even one, on average, for each study would have doubled the number of studies to over 300 which would have been unmanageable. However, as an alternative a review was undertaken with the author's academic panel of the initial stock of 158 studies to assess if in their opinion there were studies of key importance that could be beneficially included. This led to the introduction of a further seven papers increasing the total number to move forward to assessment of academic findings to 165.

While one of the objectives of the systematic review is to introduce a high degree of objectivity and comprehensiveness into the literature review process, this study has highlighted several areas where the process appears inherently subjective and limited. Firstly, the initial search is dependant on criteria and search algorithms developed by differing commercial databases, and any weaknesses or inconsistencies in these criteria and algorithms are automatically incorporated in the output. Secondly, the overall field of management accounting research is very large. For example a review of the ABC sub field identified 355 articles for ABC research alone between 1987 and 1998 (Lukka and Granlund, 2002) . Therefore, any review of such a large area of literature can only cover a small proportion of the potential total stock, although the intention of the use of tightly defined search strings is to identify those studies that are relevant to the specific research question. Thirdly, there is an element of subjectivity in the elimination of studies from the review of titles and skim of abstracts. This method was used to reduce a total of 465 articles identified as potentially relevant to the 158 which are subject to full analysis, and it cannot be guaranteed that some relevant articles were not discarded in the process (see Table 15-2).

However, despite these potential difficulties, the descriptive analysis illustrates that the systematic review process produced a wider spread of relevant studies than the scoping review, and the recording of the implementation of the search process and inclusion and exclusion criteria provides an audit trail and gives transparency to the process. Therefore, on the basis of this descriptive analysis the sample would seem to fit the needs of the objective of this paper.

17 Thematic findings

17.1 Introduction and overview

The purpose of this section is to synthesise the findings of the 165 studies to draw out thematic findings that are relevant to the research question, and provide a basis for the development of a conceptual framework. The proposals of (Otley, 1999) are used to provide the principal base framework for this analysis. This paper proposed:

'A framework for analysing the operation of management control systems structured around five central issues. These issue relate to objectives, strategies and plans for their attainment, target setting, incentive and reward structures and information feedback loops.'

The paper argues that any approach to managing organisation performance must address effectively these five central issues, and that the issues are interlinked. The issues are presented in terms of five questions which it is suggested can be re-phrased as a research tool to fit the specific focus of the research. Following this approach, the original Otley questions are rephrased as follows to fit the research question of this paper:

1) What are the key objectives that the study assumes, either implicitly or explicitly, that organisations to which the study is addressed are trying to achieve? (Objectives)

2) What management accounting processes and activities are proposed for an organisation to use to develop strategies and operational plans that can successfully achieve improved profitability? How can the performance of these processes and activities be measured? (Plan)

3) What management accounting processes and activities are proposed that an organisation can use to identify the performance levels required for these objectives and plans to be met, and to set appropriate targets for them? (Targets)

4) What management accounting processes and activities are proposed to define rewards for managers (and other employees) that achieve these improved profit targets (or, conversely, to provide penalties when they fail to achieve them)? (Rewards)

5) What management accounting processes and activities are proposed to produce the information flows (feedback and feed-forward loops) that are necessary to enable an organisation to learn from its experience, and to adapt its operational actions in the light of that experience in a manner that will result in improved profitability? (Feedback)

Each study was analysed to identify if it addressed each question and, if so, the findings of how it addressed that question were summarised. Where studies were not assessed as addressing specific Otley questions, but gave general insights into factors that generally

affect the functioning of a management accounting systems, they were classified as mediating studies. As the studies were not undertaken to address either the Otley questions or the overall research question, the classification is dependant on an interpretation of their relevance and focus. This, of necessity, has an element of subjectivity and is liable to alternative interpretations, but it is intended that the risk of differing interpretations of individual studies will be mitigated by the overall coherence of the cumulative findings. Appendix E shows how each study was analysed, and Table 17-1 gives a statistical summary of this outcome.

	No	%
All studies		
Allocated studies	123	75%
Mediating studies	42	25%
All studies	165	100%
Allocated studies analysis		
Objectives	118	96%
Plan	109	89%
Target	50	41%
Rewards	27	22%
Feedback	76	62%
Total allocated	123	100%

Table 17-1: Studies by issue addressed

It is immediately clear from Table 17-1 that there is a differential response rate in the number of studies that address each of the Otley questions. The implications of this differential response will be considered as part of the assessment of the findings below.

The Otley framework provides a 'horizontal' method of analysis as it provides a focus on the separate issues or elements required of a MAS. It does not, however, provide a 'vertical' framework for the analysis of the differing MA themes or perspectives being taken by specific studies. Such a 'vertical' analysis is provided by the key word groupings as analysed in Table 16-2. However, these groupings are based on normative academic journals key word classification, and do not therefore necessarily provide a consistent classification approach. From reflection of their underlying content, three differing types of classification were identified - specific MA techniques, generic MA themes, and general management. For example, ABC is a specific MA technique; it can be applied to themes of product costing or customer profitability; or is part of the general classification of MA.

As the intent of this study is to draw out thematic findings from the studies, the approach taken was to develop a classification based on a generic MA theme. To achieve this, a classification was inductively developed by assessing each study against the question – 'What is the main generic management accounting theme the study is addressing that is relevant to the research question?' Six themes were identified, five of which are consistent with classifications used in seminal works:

1) Product costs and pricing - (Johnson and Kaplan, 1987),

2) Customer profitability - (Meyer, 2002)

3) Throughput profitability - (Goldratt and Cox, 1984)

4) Process cost control - (Johnson and Kaplan, 1987)

5) Corporate Financial Accounting based profitability – ((Johnson and Kaplan, 1987))

6) Impact of real time information

The specific allocation of this classification is shown in Appendix E. The validity of the classification can also be usefully demonstrated and explained by using the example of a restaurant, a sector with which the author is currently involved. Each item on a menu can be classified as a product with differing levels of cost and pricing; customers or customer segments will have differing product purchasing patterns and thus differing levels of profitability; the total throughput of the restaurant governs the overall capacity utilisation (e.g. per day, week, month or year); the cooking and delivering of food and drink are processes with the level of cost incurred being dependent on efficiency; the overall profit of the restaurant or group of restaurants owned by the company reflects the corporate performance; the potential and speed with which the financial transactions and their aggregations, which will be used to quantify the above five functions will be determined by an IT system which will potentially have the capacity to undertake these functions in real time.

Apart from real time reporting, which provides the means to collect the data, the classifications reflect differing financial perspectives to the aggregation of individual financial transactions to produce analyses of pricing, cost or profit. Moreover, on further consideration it becomes apparent that the first four perspectives – product, customer, capacity and process – reflect differing aggregation perspectives on operational activities, whereas overall profitability reflects the aggregation perspective at the corporate level. Table 17-2 show the overall correlations between these two perspectives.

Perspective	Objective	Plan	Target	Reward	Feedback	Total
Operational						
Product	23	23	7	2	15	24
Customer	8	8	1	2	3	8
Throughput	17	16	3	0	4	17
Process	26	23	8	4	12	26
Total operational	74	70	19	8	34	75
Corporate	35	31	26	17	31	37
Real time reporting	9	8	5	2	11	11
	118	109	50	27	76	198

Table 17-2: Studies by perspectives

The following sections use the Otley structure for the basis of the review of the thematic findings in relation to the research question, and within each section the papers are

grouped by the operational, corporate and real time. The specific implications of this table are reviewed in the relevant section.

17.2 Objective

What is the key objective that the study assumes, either implicitly or explicitly, that organisations to which the study is addressed are trying to achieve?

The first Otley question to be considered relates to objectives, with the assessed results for each study shown in Appendix E. The results were standardised into six categories as shown in Table 17-3

By number	Ops	Corp	Real	Med	Total
Profit optimise	45	16	5	4	70
Cost control / reduce	19	3	4	5	31
Other (e.g. shareholder value)	5	7		6	18
Total financial objectives	69	26	9	15	119
Other (e.g. strategy)	5	9		15	29
None identified	1	2	2	12	17
	75	37	11	42	165
By %					
Profit optimise	*60%*	*43%*	*45%*	*10%*	*42%*
Cost control / reduce	*25%*	*8%*	*36%*	*12%*	*19%*
Other (e.g. shareholder value)	*7%*	*19%*	*0%*	*14%*	*11%*
Total financial objectives	*92%*	*70%*	*82%*	*36%*	*72%*
Other (e.g. strategy)	*7%*	*24%*	*0%*	*36%*	*18%*
None identified	*1%*	*5%*	*18%*	*29%*	*10%*
	100%	*100%*	*100%*	*100%*	*100%*

Table 17-3: Studies by objective type

This demonstrates that the operational studies generally have objectives that are financially related, - principally profit and cost - (92%), the corporate and real time studies are still principally financially focussed (70% and 82%), but the mediating studies only have a minority (36%) assuming a financial objective, and only 22% relating to profit and cost. Consideration of the individual studies (Appendix E) shows that this low percentage is because many of the mediating studies focus on issues that are tangential consequences of MA, such as the organisational and behavioural impact. On the other hand the high level of operationally focussed studies assume a financial organisational objective (92%) to some extent reflects the intention of the search strings derived from the Systematic Review process, although the studies sourced from the scoping study were not initially identified by prescribing a financial objective.

The overall conclusion is therefore that, for the studies for which the Otley analysis was considered to be relevant (i.e. excluding mediating studies), the answer to the Otley question is that a financial objective, principally profitability, is assumed.

17.3 Planning and strategy

What management accounting processes and activities are proposed for an organisation to use to develop strategies and operational plans that can successfully achieve improved profitability? How can the performance of these processes and activities be measured?

This question elicited the highest number of relevant findings from which specific proposals addressing the Otley question (89%) spread across all perspectives ,as demonstrated by Table 17-4. Appendix E shows the full details.

	Plan	Total	%
Operational			
Product	23	24	96%
Customer	8	8	100%
Capacity use	16	17	94%
Process	23	26	88%
Total operational	70	75	93%
Corporate	31	37	84%
Real time systems	8	11	73%
	109	123	89%

Table 17-4: Perspectives covered in planning

Operational - Product

Product costing provides the potential to plan product sales at prices and volumes with the objective of ensuring product income exceeds product costs in a manner that meets profit objectives. The two traditional approaches to product costing were through either full absorption or marginal costing. However' following the criticisms of absorption costing in the 1980's, (Johnson and Kaplan, 1987) Activity Based Costing (ABC) was proposed to overcome the alleged flawed approach of absorption costing to the allocation of overhead costs to products (Dugdale and Colwvn Jones, 2002) (Lukka and Granlund, 2002).

The highest number of Product costing studies relate to ABC. The fundamental concept behind ABC is to allocate indirect costs to product by identifying the drivers of those costs. Two main approaches to ABC can be identified from the literature (Dugdale and Colwvn Jones, 2002) - firstly as a one of study of product costs, (Fernie, Freeathy and Tan, 2001) (Sievanen, Suomala and Paranko, 2003) (Themido, Arantes, Fernandes and Guedes, 2000) (Tatsiopoulos and Panayiotou, 2000), and secondly as an overall management approach reclassified as Activity Based Management (Ness and Cucuzza, 1995) (CIMA, 2001). While these studies conclude on the benefits of ABC, others dispute its effectiveness, arguing that in practice it is not possible provide a clear causal link between indirect costs and product in a continually changing context and where

indirect costs are often one offs or exploratory (Dugdale and Colwvn Jones, 2002) (Armstrong, 2002) (Lea, 2003).

(Drury, 1994) and (Drury and Tayles, 1995), in a survey of practice support the implications of these difficulties by concluding that ABC is not predominant. They suggest that companies produce product cost information in a flexible manner using both variable and full cost techniques, with the relevance of full cost techniques being to tie in product costing with reported profitability through monthly and annual accounts. The findings of flexible use are supported by a range of proposals depending on context to agree pricing (Cleland, 2001a) (Bhattacharjee and Ramesh, 2000) (Bayou and Bennett, 1992) (Verma, Thompson, Moore and Louviere, 2001), and the benefit that absorption costing has in linking with Financial Accounting is supported by (Lucas, 2000). The difficulties of using one method of product costing is underlined by (South and Oliver, 1998) who differentiate profitability between fully and marginal profitability. They conclude that there is no precise decision of what is product profitability, and that decisions on product mix must be related to capacity availability and product demand, and therefore must relate to context. Two studies of networks confirm the inherent difficulties and uncertainties in agreeing product costs. (Kulmala et al, 2002) in a study on network costs, and (Helden et al, 2001)in a case study of transfer pricing at Hoogvens Steel, both highlight the difficulty in agreeing the basis of pricing between business unit; one between organisations in a network; the other within one organisation where there are tensions between the conflicting concepts of performance orientated business units and one integrated company.

Overall, while product costing is of key importance to pricing, its calculation is not precise because of uncertainty over the appropriate allocation of indirect overheads to products, and the potential benefits in some contexts of taking decisions on marginal costs. This implies there is no one size fits all solution and a wide variety of approaches may be appropriate depending on context.

Operational - customer profitability

Customer profitability extends product costing to customers by linking income potential from customers to the product cost of the goods and services they receive. A variety of studies in differing contexts make proposals that aim to establish a dynamic causal relationship between customer income and product cost so that an organisation can plan its activities around this relationship (Meyer, 2002) (Laitinen, 2002) (Lebas, 1999) (Ittner, Larcker and Randall, 1997) (Salafatinos, 1996) (CMA Canada, 2002) (None and Griffin, 1999) (DeWitt, 2002). This approach is well summarised by (Meyer, 2002) who bases his proposals on his analysis of the performance chain of a firm, which he describes as an elemental concept (Figure 17-1).

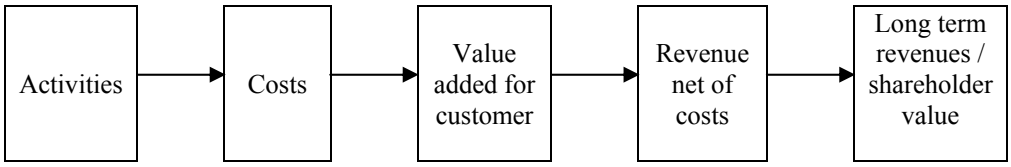

Figure 17-1: Elemental concept (Meyer, 2002)

This approach therefore extends the concept of product profitability to customer or customer segment profitability, and thus shows a clear link to a financial objective. However, as demonstrated by the range of approaches adopted, how this causal link can be established depends on context; this adds a further level of uncertainty to the already demonstrated difficulties of defining product costs and, related to this, product pricing

Operational - throughput

An alternative perspective is provided by the Theory of Constraints methodology, initially proposed by (Goldratt and Cox, 1984). This proposes that financial performance (The Goal) can be maximised by optimising capacity utilisation, and thus the ratio of income to costs, by eliminating bottlenecks and so achieving optimum throughput in relation to the available level of resources. A wide range of studies, generally in the operational research literature, use simulation studies to demonstrate the intrinsic potential of a TOC approach, (Gupta, 2002a) (Patterson, 1992) (Watson, 2003) (Smith, 2003) (Patterson, 1994) (Draman, Lockamy and Cox, 2002; Lee, 1996), or make proposals for linking TOC with ABC and other methods. (Bakke and Hellberg, 1991) (Gupta, 2002b) (Bih-Ru Lea and Lawrence D Fredendall, 2002). Other studies aim to explore the use of TOC in practice. (Mabin, 2003) provides a meta analysis of reports of 80 TOC applications and concludes that they provide strong evidence of successful TOC initiatives, but bases this on managerial interpretations not evidence of financial improvement.(Sale, 2003), in a survey of 75 US companies found support that TOC approach produces a better performance for business units than either JIT or no philosophy, although provided no evidence of a causal link. Other studies aim to incorporate the use of TOC principles more closely in an accounting setting. (Dugdale and Colwvn Jones, 1998) make proposals for throughput accounting (TA), concluding that, while no settled TA practice has been developed variations are likely to be used pragmatically in a portfolio of different accounting techniques, and (Long, 2002) provides evidence of the use of TA measures with Statistical Control Processes.

The focus of the Throughput approach is therefore on planning to optimise profitability by ensuring the full use of all organisational resources. This can be differentiated from the product or customer perspective which plan to maximise the cost/ income ratio at the product / customer level. For (Tollington, 1998), comparing the TOC with an ABC product costing, this is a variant of the absorption/ marginal costs comparison with ABC as a variant of absorption, but is concerned with more accurate overhead allocation, and TOC as contribution with the concern being to maximise the marginal use of resources.

Operational - process

This section reviews studies that make proposals on how processes can be planned to produce products or services at lowest cost or maximum profitability, using a variety of approaches.

Several studies use simulations to propose a variety of quantitative analyses of operational data and their linked costs and income to demonstrate how processes can be established that produce optimal profitability (Dawood and Marasii, 2001) (Housel,

1995) (Inderfurth, 2002) (Kogan, 2004) (Suwignojo et al, 2000) (Low and Sorensen, 2004) (Banker and Morey, 1993) (Chen and Lan, 2001), or how plans can be made to improve the profitability of processes in both manufacturing and service environments (Wouters, Kokke, Theeuwes and van Donselaar, 1999) (Wieslaw J Jurkiewicz, 1999) (Bititci, 1994) (Agrawal and Siegel, 1998) (Labbe, 2002) (Wouters and Verdaasdonl, 2002) (Axelson, Laage-Hellman and Nilsson, 2002) (Verdaasdonk and Wouters, 2001). Some evidence of practice is provided by the full case study of (Azofra et al, 2003) and a historical study by (Heier, 2000) on how key financial performance indicators can be used for assessing the basis of planned improvements in financial performance. In more general terms, (Lowry, 1993) argues that the decline of traditional large scale manufacturing has diminished the importance of inventory and thus traditional product costing, and that, for service industries, financial planning can be done by simple aggregations of resources planned. (Brignall, 1997) makes similar proposals arguing that the cost management problem is how to maximise the utilisation of this fixed resource, and how to change the levels of fixed costs in response to life cycle driven changes in demand.

Target costing provides an approach to moving process profitability planning into a process of strategic cost control over the total supply chain with the aim of achieving a rolling process of continuous improvement and cost reduction. (Carr and Ng, 1995), in an depth case study of Nissan UK, demonstrate a successful example of this approach, as do (Gagne and Discenza, 1995) in a simulation. However (Nicolini, 2000), also in an in-depth case study demonstrates potential pitfalls highlighting that the success of this approach is dependant on obtaining accurate, consistent and transparent costs from all organisations involved in the supply chain, and that in many sectors competitive factors make this difficult to achieve.

These studies demonstrate that process planning provides another perspective on the analysis of costs and profitability, although most of the evidence is based on simulations. However, this perspective is interlinked to the product, customer and throughput as the process costs from part of the underlying costs of these other perspectives.

Operational - Overall

The above studies demonstrate that operational costs and profit planning can be viewed from a variety of perspectives, and these perspectives are interrelated. As demonstrated consistently but in different contexts (e.g. (Kulmala et al, 2002) (Helden et al, 2001) (Nicolini, 2000) (Dugdale and Colwvn Jones, 2002) (South and Oliver, 1998)) there can be no one precise definition of operational cost as there are always issues of what costs are appropriate to allocate (whether to a product, business unit or customer) and what is the unit of measurement, all within an overall context of constantly changing underlying process costs. However, the studies do provide a variety of ways of approaching these issues, and some indication of how ,potentially, analysis using these perspectives can be utilised to develop plans that can achieve improvement in cost / income ratios and thus improved profitability.

Corporate

Budgeting provides the traditional method for corporate control of profitability (Otley, 1999). (Hopwood, 1972) distinguished two differing styles - a 'Budget Conscious' style to which every effort must be made to adhere, and a 'Profit Conscious' style that allows for adaptive responses. This basic dichotomy between fixed projected performance and adaptive responses flows through the stream of work - Reliance on Accounting Performance Measures (RAPM) - arising from Hopwood's (1972) seminal study. An in depth review by (Hartmann, 2000) concluded that there is a continuing tension between a desire to control the achievement of target 'bottom line performance' and the unforeseeable impact of uncertainty on the feasibility of achieving this. The study defines this as an uncertainty paradox – a need for decentralised autonomy to respond to uncertainty if bottom line targets are to be met, and also a desire to ensure through centralised control that actions are focussed on the achievement of bottom line results. This tension is reflected in the differing approaches between fixed and adaptive budgets. (Miller and O'Leary, 1987) demonstrate how the traditional fixed budget approach evolved from Tayloristic scientific management, underpinned by the concept of an individual as a governable person and the assumption that scientific analysis could identify an optimum performance level. (Hope and Fraser, 2001) and (Hope and Fraser, 2003) conclude that the traditional fixed command and control budget is an anachronism in the fast moving, post industrial world service orientated information age, and should be replaced by adaptive devolved processes, with planning and strategy as a continuous process.

Several in depth case studies explore aspects of functioning of budgets in practice, and their impact on the relationship between corporate and operational levels, highlighting a range of differing approaches depending on context and management judgement. (Moon and Fitzgerald, 1996) and (Ahrens and Chapman, 2002) report how, in the service sector (logistics and restaurants) plans are developed at corporate level and transmitted to operational level for implementation, but provide no evidence on how the plans were developed. (Euske et al, 1993) reports how, in a manufacturing environment only broad financial goals were set centrally, with the operating manager acting as a hinge, converting the top down financial requirements into operational plans; however, the study also reports that, in times of financial crisis, normal financial systems were abandoned and specific, high intensity centrally driven remedial actions were developed and implemented. (Nilsson and Rapp, 1999) report on the need for control systems to adapt in response to changing situations (e.g. acquisitions and step demand changes). (Radcliffe et al, 2001) report how, in restructuring initiatives instigated at corporate level, accounting is part of the broader ascendancy of financial control, institutionally sanctions what must be done, and provides a measure to see if it is done. Evidence of how budgeting can become dysfunctional is provided by (Fernandez-Revuelta Perez and Robson, 1999). This study reports a case where, in response to political and organisational pressures, the annual budgets have become de-coupled from operational realities, and their purpose changes to become a ritual legitimisation of underperformance, and does not meet the ostensible objective of providing central control, or instigating adaptive responses to a loss making situation. (Lillis, 2002) in a survey, reports on the difficulty of reconciling a profit centre strategy to maximise profitability, with a joint emphasis on manufacturing efficiency and customer responsiveness.

Other studies take a more conceptual approach with research data principally drawn from reviews of prior academic studies. (Chapman, 1997), in a study of the contingency theory of accounting, concludes that, as the level of uncertainty increases potential for accounting to reflect operational considerations decreases. (Spekle, 2001) proposes that management control structure variety can be explained by three factors - the extent of programmability, the degree of asset specificity, and the intensity of ex post information impactedness. (Simons, 1995) proposes that tension between the requirement for responsiveness and control be addressed by having two systems - interactive systems to provide answer feedback to the nature of performance, and diagnostic systems to provide learning systems. (Sunder, 2002) proposes a theory of control based on contracts with agents based on expectations, but with the capacity to be constantly updated to reflect the new conditions. (Goold and Quinn, 1990) conclude that control systems should coordinate the work of all parties towards the agreed goal, but that this is made difficult when there is strategic uncertainty. (Bruggeman, 1988) illustrates how budgetary procedures, corporate profit centre and service strategy should be in harmony, but his proposals are based on simulations that assume a stable operating environment.

A more prescribed analytical approach is provided by Value Based Management (VBM), which is based on the premise that shareholder value can be best achieved by identifying and exploiting the specific value drivers that create value (Malmi, 2003) (Ittner and Larcker, 2001) (Lackner, 2003). (Neely et al, 2001) propose that such a value based approach can be implemented by aligning budgeting more closely to the value drivers, and (Accenture, 2001), in a linked consultancy paper propose a framework to achieve this built round the interlinking strategy, target setting and operational objectives. However, the evidence of effective implementation of VBM is less clear. (Malmi, 2003), in a case study of 6 Finnish companies, concludes that much of the apparent commitment to VBM is rhetoric, and that there is no consistency of practice in identifying value drivers and connecting operational with strategic goals. (Seal, 2001), in an in depth case study, reports on the failure of the replacement of the previous strict command and control model at Marconi (the former GEC). A VBM approach identified high intellectual capital as the driver of shareholder value but this led to fragmentation of systems and the loss of overall coherent control. (Froud, 2000) concludes that VBM initiatives are driven by consultant's rhetoric, and that in reality, despite triggering a whole range of restructuring, they have limited benefit as product market pricing reduces prices in response to increased efficiency. Generally, the evidence therefore suggests that the potential for identifying value drivers that will increase future shareholder value is problematic both because of the future uncertainties, and the practicalities of aligning financial control systems with measures that can reflect these identified value drivers.

A problematic aspect of corporate profit planning is highlighted by (Phelan, 1997) in a critical review of Discounted Cash flow (DCF), generally accepted since the 1960s as the appropriate method for capital investment appraisal (Miller, 1998). This study concludes that DCF gives a spurious, unsupportable illusion of confidence, as precise future financial consequences of any current investment are by definition unknown, and therefore any projections that treat such projection in concrete terms are flawed. The

study proposes that a better approach is to apply strategic thinking, not specific financial projections, suggesting a more adaptive approach. A technique that incorporates such a potential to be adaptive is real options as this provides a mechanism to respond when future projections do not fit with the initial plan. (Benaroch, 1999) concludes that this is a significant advance on traditional (e.g. DCF) capital investment appraisal models, as do (Hennell and Stiles, 2002) arguing that it is a way of 'keeping options open' until uncertainties are resolved.

The studies generally agree that profitability objectives are the driving force; that the level identified as achievable is defined at the corporate level; and that plans to achieve the plans are set at the operational level. Underlying this is an endemic tension best described by (Hartmann, 2000) in his definition of the uncertainty paradox – decentralised autonomy to allow adaptive response vs. centralised control to ensure focus on the bottom line. This tension is reflected in the specific budget issue of fixed v adaptive budgeting. The studies indicate there are a range of differing approaches to address this issue, essentially characterised by the impact of differing judgement based responses to differing separate operating environments acted out in context of endemic tensions and uncertainty.

Real time systems

The perspective of this section is the impact of real time capacity on MAS. Real time information is available because of IT developments. These developments, as argued by (Coombs, Knights, and Willmott, 1992), have the potential to be a transformational development not just another technology, because they affect the nature of knowledge and thus the power that resides with that knowledge. There is therefore the potential for real time information to transform the nature of accounting information.

Several case studies indicate the potential positive impact of real time systems. (Jazayeri and Hopper, 1999), in a case study of a UK chemical company report on how a new set of procedures, classified under the term 'world class manufacturing' introduced in response to a financial crisis, led to the importance of traditional monthly accounts being relegated to a support role for weekly and real time financial indicators produced by a company wide ERP system. Cost reduction, target setting, diagnosis and problems solving came to lie with production staff, based on rolling information produced by the ERP systems. ABC was considered too complex to implement for the benefits that could be achieved, and simpler systems of marginal costing were used. A similar approach is reported by (Yeager, 1999) in a case study of Sappi Mills which demonstrates how real time costing software provides continual costing updates allow for adaptive planning using marginal costing. An earlier case study by (Turney and Anderson, 1989) reflects a similar theme, describing how real time financial information has been used as part of an initiative to build in a culture of continuous improvement. Other simulation (Burrows, 2001) and practitioner studies (Sherrat, 2003) (Barrett, 2003) (Menninger, 2003) make positive proposals for business performance management tools to enable real time interaction between planning and assessment of real time performance.

(Cooper and Kaplan, 1998) provide a more cautious note by identifying the promise and perils of real time cost systems. Their premise is that all cost systems must be based on ABC, and that this requires a complex reconciliation between the ABC product costs make up, and real time reports produced in resource usage analysis. The perils they highlight are that as there are two co existent method of costs analysis there is a danger of 'distorted information being delivered every single day' if care is not made to ensure that the information being produced is reconciled. It is noticeable, however, that as this study was written by the major proponents of ABC, it assumes ABC is essential, but because of its complexity it is difficult to implement, - a difficulty overcome in the case studies of (Jazayeri and Hopper, 1999) where the use of ABC was specifically discounted because of its complexity.

These studies suggest the potential of real time systems to make a level of data collection, aggregation and reporting which leads to a transformational change in the information available. They also, however, provide evidence that this has to be done in such a manner that the complexity of the process does not distort its information value.

17.4 Target

What management accounting processes and activities are proposed that an organisation can use to identify the performance levels required for these objectives and plans to be met, and to set appropriate targets for them?

	Target	Total	%
Operational			
Product	4	27	26%
Customer	1	8	13%
Throughput	3	17	18%
Process	11	23	35%
Total operational	19	75	23%
Corporate	26	37	70%
Real time systems	5	11	45%
	50	123	41%

Table 17-5: Perspectives covered in targeting

Operational

In the Product, Customer and Throughput studies there is little evidence of the conversion of the operational planning to target setting. The majority of studies classified as addressing the development of targets provide no evidence of how it is to be achieved (Bayou and Bennett, 1992) (Cleland, 2001a) (Koons, 1994) (DeWitt, 2002) or no evidence of use in practice (Goldratt and Cox,1984). Although (Ness and Cucuzza, 1995) provide an example in relation to ABC of building targets into the general ledger; they report that in the majority of cases ABC is a one off exercise planning analysis exercise not converted to targets. (Long, 2002) proposes setting run rate type targets using statistical process control charts to monitor capacity use, and

(Dugdale and Colwvn Jones, 1998) also propose the use of overall department measures to assess throughput, although evidence of actual implementation is not clear.

For Process studies proposals generally cover a range of financial and non financial indicators targets against which various aspects of financial performance and achievement of financial performance ratio can be assessed, but without evidence of their implementation (Bititci, 1994) (Brignall, 1997) (Chien, 2000) (Labbe, 2002) (Lowry, 1993) (Wouters et al, 1999). More specific evidence of use in practice of such an approach is provided by Azofra, Prieto, et al. (2003) and in a historical study (Heier, 2000). The target costing studies provide the most evidence. (Carr and Ng, 1995), in their Nissan case study, demonstrate how target costing is built into strategic cost control through a continuous cycle of design out costs and achieve savings against the benchmarks derived from target market prices. Similarly, (Gagne and Discenza, 1995) and (Nicolini, 2000) also report that targets costs should be developed by deconstructing the cost structure from an overall assessment of market prices.

Therefore, while there is some evidence of the use of key financial indicators as targets, apart from the central role of targets in Target costing, generally studies do not provide significant evidence on the conversion of Product, Customer and Throughput planning perspectives into targets.

Corporate

A far higher proportion of corporate studies address the Otley question (70%) compared to the operational studies (23%), indicating that target setting is seen as a key element of the corporate perspective (see Table 17-5).

In depth case studies provide details of practice. (Moon and Fitzgerald, 1996) report how targets are specified by head office from internal benchmarking of depots, bringing in a relative aspect to target setting. (Ahrens and Chapman, 2002) also report that individual restaurant budgets targets are developed by head office this time based on estimates of an outlook potential sales, with profitability based on menu margins. (Euske et al, 1993) report that only broad financial goals are set at corporate level, while operational site managers translate these financial goals into operational goals for individuals below them, except where a crisis occurs when a crisis form of target setting is implemented with specific high intensity forms of control over the errant individual or group. (Radcliffe et al, 2001) report from their evidence of case studies on downsizing that accounting provides the target when the initial downsizing is developed of what is required. (Fernandez-Revuelta Perez and Robson, 1999) report on the dysfunctional use of budget in which budget targets are set to meet corporate expectations, not to reflect underlying operational realities. (Collier and Berry, 2002) implicitly underline the need for flexibility concluding that budgets do not take account of risk in setting targets. (Lillis, 2002) provides survey results on the difficulties of setting complete measures that relate to manufacturing efficiency and customer responsiveness.

The conceptual studies provide some guidelines for how targets should be set. (Spekle, 2001) concludes that the basis for setting targets should be dependant on the five control

types he identified - market based targets, assessment based on actual performance, tight budget, emergent standards, and limits. (Sunder, 2002) concludes that targets need to reflect expectational equilibrium and be renegotiated and modified in response to changing environments. (Hartmann, 2000) accepts that some form of accounting target is important where profit is the primary goal, but highlights the paradoxical requirement for decentralised authority to respond to evolving situations. (Goold and Quinn, 1990) propose that the focus should be using target measures that are consistent with the strategic goals. (Simons, 1995) concludes that separate levers of control are required, with a diagnostic system to set preset standard of performance and interactive levers of control responding to the changing environment. (Otley, 2001) concludes that budgetary targets should be set as part of an overall management assessment. (Stainer, 1997) proposes that productivity and price recovery targets should be set through benchmarking against competitors. (Van der Stede, 2000) explores one approach to bring a level of flexibility through the creation of budgetary slack creation, concluding that businesses that are more profitable are able to build in greater levels of slack.

In relation to a value based approach, (Neely et al, 2001), (Accenture, 2001) and (Lackner, 2003) propose that targets should provide real connections between the analysis and calculation of budgeted performance and value drivers, incorporating a continuous process of questioning and challenging assumptions inherent in strategy. However, (Seal, 2001) highlights the potential problems of replacing of single fixed financial budgets with a range VBM based targets that lead to a loss of cohesive control; (Malmi, 2003), from his evidence of practice, concludes that in practice VBM is in fact rhetoric and targets continue to be based on the annual budget; (Froud, 2000) critically argues that a shareholder value driven approach will cause profit targets to be set too high, eventually leading to failure.

The overall conclusion from both conceptual and case based evidence is that some form of target is generally set centrally to align operational actions with corporate objectives, based on an assessment of the operational environment and the potential opportunities to achieve profitability. This is undertaken using a varying range of approaches and looseness depending on context and judgement about how to respond to operational conditions. The format is generally that of a traditional budget, with a profitability target and its make up, against which actual performance can be assessed. This reflects varying approaches to how the tension between the fixed 'budget conscious' (Hopwood, 1972) 'scientific management' (Miller and O'Leary, 1987) style, and the adaptive (Hope and Fraser, 2001) 'profit conscious' (Hopwood, 1972) style can be addressed, but with a general consensus that the fixed element is provided by targets set at the corporate level, and the adaptive element provided at the operational level by a range of differing responses to the implications of the target and variances from budget.

Real Time

In line with the planning conclusions, studies suggest that targets need to be adaptive and responsive, being routinely updated to reflect the changing situation (Burrows, 2001) (Turney and Anderson, 1989) (Sherrat, 2003). (Jazayeri and Hopper, 1999) provide specific detailed evidence of how this can be achieved. They report that objectives for cost reduction and target setting were produced as part of the overall

weekly ERPS, in conjunction with operational performance measures, with budgetary targets moving to a support post hoc role. (Cooper and Kaplan, 1998) take a different approach. They place ABC at the centre of their proposal but conclude that it is difficult to set targets against which performance can be assessed as ABC analysis has to be deconstructed into the resource costs aggregations (e.g. wages, material, overhead types) which provide the traditional building blocks of a budget constructed in line with FA reporting; they conclude that the complexity and difficulty of this approach can lead to difficulties and misunderstanding if it is not handled well.

17.5 Reward

What management accounting processes and activities are proposed to define rewards for managers (and other employees) that achieve these improved profit targets (or, conversely, to provide penalties when they fail to achieve them)?

	No	Total	%
Operational			
Product	1	27	7%
Customer	2	8	25%
Throughput	0	17	0%
Process	4	23	17%
Total operational	7	75	9%
Corp plan and control	17	37	46%
Real time systems	2	11	18%
	26	123	22%

Table 17-6: Perspectives covered by reward

Operational

Only 9% of the operational studies were assessed as addressing rewards, in line with the observation in the study that framed the questions (Otley, 1999) that this issue tends to be neglected by those concerned with performance measurement (Table 17-6). All the studies that do address rewards suggest that it is desirable to link rewards to the performance of the perspectives to which the study relates (e.g. target product costs, customer profitability) to ensure that staff interests are aligned with target objectives; none, however, explore how this can be implemented or the reward target incorporated in the overall system (Ness and Cucuzza, 1995) (CMA Canada, 2002) (Meyer, 2002) (Brignall, 1997) (Bititci, 1994) (Agrawal and Siegel, 1998).

Corporate

A higher percentage of these studies – 46% - are assessed as addressing the question. The evidence from these studies again suggests the normative approach is to link rewards, to some extent, to target performance, with the make up being a mix of financial and operational targets, with differing mechanisms depending on context. (Hope and Fraser, 2001) and (Hope and Fraser, 2003) propose that that rewards should move away from fixed negotiated targets to more flexible rewards based on relative

company and unit level performance. (Moon and Fitzgerald, 1996) report that rewards are based on benchmark performance against a mix of profitability, sales performance, delivery performance and cash flow collections. (Ahrens and Chapman, 2002) report bonuses of up to 50% against budget and customer service. (Radcliffe et al, 2001) report a link of remuneration to the achievement of financial targets. (Malmi, 2003) reports that bonuses are paid on a variety of financial metrics, with stock options for top management. (Seal, 2001) also reports a bonus system linked to variety of targets. More generally, (Simons, 1995) proposes the use of diagnostic systems to link incentives to goal achievement, while (Bruggeman, 1988) proposes that MCS structure must reinforce key objectives of staff.

Three studies, however, identify areas of potential difficulty in a clean link between identified targets and rewards. (Goold and Quinn, 1990) conclude that, as uncertainty places doubt on the feasibility of strategy implementation, defining strategic goals that are suitable for motivating managers is difficult. (Otley, 2001) reports on the increasing importance of performance related pay in recent years, but concludes that interpretation of its usefulness is not clear, mainly because of cultural differences of how managers of different nationalities act, and because, especially in the UK, of secrecy. (Froud, 2000), in a conceptual review suggests, that VBM targets encourage senior management to manipulate the financial targets so that incentive targets can be met, but suggests that this is in effect, window dressing and real improvements tend not to be maintained.

Further, of the four studies that have a specific focus on rewards, three also identify problematic issues. (Kerr, 1995) indicates his line of argument in the title – 'on the folly of rewarding A while hoping for B'. He argues that the aim of a reward system is to reinforce desired behaviour, not provide an obstacle to overcome which can occur if, for example, performance targets are linked to an unrealistic fixed budget. (Jensen, 2001) follows this theme by specifically calling for a severance of the link between budgets and bonuses. He proposes linear targets giving rising bonuses depending on achievement, best set in relation to long term growth targets, although also accepting that this can be difficult in a changing environment. In a similar vein (Dearden, 1987) proposes that bonuses should be based on what managers can effect. One (Rajan, 1992) uses mathematical simulation to demonstrate how bonuses can be used to initiate managers actions to meet owners' targets, without empirical evidence and implicitly, assuming a scientific management type approach.

The normative approach is therefore that rewards should be linked to targets that management incentives can influence. However, there is evidence from some studies that specifically address the issue that implementation of this approach may be difficult as there may not be alignments between the targets required to motivate management and the targets used in the MAS.

Real time systems

(Jazayeri and Hopper, 1999) highlight the importance of tying rewards to team performance by developing team based incentives, while (Burrows, 2001) proposes linking rewards to financial performance

17.6 Feedback

What management accounting processes and activities are proposed to produce the information flows (feedback and feed-forward loops) that are necessary to enable an organisation to learn from its experience, and to adapt its operational actions in the light of that experience in a manner that will result in improved profitability?

	No	Total	%
Operational			
Product	13	27	48%
Customer	3	8	38%
Throughput	4	17	24%
Process	14	23	61%
Total operational	34	75	45%
Corporate	31	37	84%
Real time	11	11	100%
	76	123	62%

Table 17-7: Perspectives covered by feedback

Operational

In relation to ABC, the studies generally conclude that obtaining relevant feedback is problematic. (Ness and Cucuzza, 1995) report that, as it is difficult (but not impossible) to reconcile ABC analysis to general ledger based accounting information aggregated by resources (e.g. wages, materials, overheads), many companies have systems for ABC separate to the general accounting system; this is problematical as they can quickly become obsolete. This difficulty of reconciliation is also confirmed by other studies (Cooper and Kaplan, 1998) (Hussain, Gunasekaran and Laitinen, 1998) (Carr and Ng, 1995). (Dugdale and Colwvn Jones, 2002) report that a variety of differing approaches have been developed to overcome the issue of reconciliation, but conclude that this has led to the whole approach becoming incoherent, leading it to be 'a melange of conflicting practices'. (Armstrong, 2002) concludes that ABC feedback is potentially harmful as it can build in classifications of non routine costs as specific allocatable costs. Customer profitability studies using an ABC approach (CMA Canada, 2002) (Meyer, 2002) also confirm this problematic issue of reconciliation. Other studies just assume ABC feedback is achievable (CIMA, 2001) (Van Damme and Van der Zon, 1999) (Laitinen, 2002) but without addressing the practical problems of implementation.

Absorption costing conversely is easier to use because of simpler overhead allocation procedures, but problematic, in line with the issues raised by (Johnson and Kaplan, 1987). It has the benefit that it is consistent with financial accounting reporting costing (Lucas, 2000), and enables monthly accounts to be produced in a manner consistent with annual accounts (Drury and Tayles, 1995). It thus provides an easier base on which to develop fast feedback (Lea, 2003) but has the problems of being likely to produce distorted product costs (Drury and Tayles, 1995). Similar benefits on compatibility with

general accounting are inferred for contribution accounting by three practitioner studies, although they do not provide much evidence in depth (Cleland, 2001a) (Allen, 2001a) (Bayou and Bennett, 1992).

There is little evidence about feedback in the Throughput studies (Table 17-7). (Dugdale and Colwvn Jones, 1998) conclude conceptually that no distinctive method will emerge for feedback of throughput performance, but that various forms of accounting may emerge in differing contexts. (Long, 2002) provides some evidence of such an application in his use of charts to identify unexpected performance to trigger appropriate adaptive and responsive actions. (Demmy and Talbott, 1998) assume feedback without addressing the issue of feasibility.

While 61% of process studies address feedback in some way, many lack detail on how in practice this will be obtained and how it is integrated with the general accounting system (Wieslaw J Jurkiewicz, 1999), (Bititci, 1994), (Chien, 2000), (Agrawal and Siegel, 1998) (Labbe, 2002), (Lowry, 1993) (Brignall, 1997) (Verdaasdonk and Wouters, 2001). However, (Azofra et al, 2003) provides some evidence in their case study. This describes an ERPS type integrated performance management system providing both financial and non financial key performance indicators, covering areas identified as critical; they conclude this is positively associated with continuously improving operational efficiency and profitability. (Emsley, 2000) and (Emsley, 2001) provides some evidence on the use of variance analysis to potentially provide a bridge between financial and operational activities, and historical evidence (Heier, 2000) demonstrates the use of key financial indicators.

In relation to target costing, (Carr and Ng, 1995) provide evidence of an effective use of feedback leading to continual revaluation of target costs. They report that implementation is aided by a simple approach to overhead allocation, and that ABC is considered unnecessarily complex with overheads only 12% of costs. However, outside the classic target cost environment of Japanese car manufacturing, the evidence of effective feedback is more problematic, mainly because competitive pressures and traditions of secrecy and cost manipulation hinder the establishment of the necessary cost transparency and collective agreement on accuracy of costs though the supply chain (Nicolini, 2000) (Kulmala et al, 2002). (Helden et al, 2001) confirm similar issues when exploring the difficulty of obtaining agreed principles for internal transfer pricing.

Overall, for the operational perspectives evidence of feedback of actual performance against plan is patchy. This is consistent with an equivalent lack of cohesive evidence of target setting since, for feedback of actual to be of use, it must be compared to targets derived from plans. In particular, the evidence suggests that ABC feedback is difficult through the complexity of reconciliation with the general ledger, and while product cost based on absorption allocation overcomes this issue, the validity of the information produced is then problematic. There is therefore little evidence on how the actual performance of plans is assessed through feedback against target, and how variance from plan and target can be used to either inform changes in plan or to instigate control actions to bring performance back to intention.

Corporate

The budget studies report on various aspects of the dilemma between fixed and adaptive budgets. (Miller and O'Leary, 1987) demonstrate that, for the fixed budget approach derived from scientific management, the role of feedback was to check the accuracy of standards. For (Hopwood, 1972) a budget conscious style leads to performance evaluation based on the extent to which actual results meet budget, whereas a profit conscious style leads this feedback to be used as part of a learning process to enhance long term profitability. (Hartmann, 2000) summarised the two conflicting approaches as an uncertainty paradox – desire to control versus need for autonomy to respond to event. (Van der Stede, 2000) implicitly assumes a fixed budget approach flexed by the concept of budget slack, concluding that where there is low product differentiation and/or low profitability there is less slack and a tighter control of budgetary performance and an enhanced short term focus on meeting budget; for the opposite there is a more flexible response to variances. (Collier and Berry, 2002) conclude that, as budget outcomes can be dependant on the outcomes of risk, interpretation of feedback is dependant on how management can transfer responsibility for (negative) outcomes caused by risk not acknowledged in the initial budget. (Hope and Fraser, 2001) and (Hope and Fraser, 2003) in line with their adaptive proposals, conclude that feedback should be interpreted against relative performance contracts not fixed budgets. They propose feedback should be used to inform continually updated rolling future forecasts, not linked to corporate fiscal years, to provide feed forward to the future of current trends from which future plans can be developed.

The in depth studies provide some limited evidence of how operational levels treat the interpretation of feedback of actual performance against centrally defined targets. (Moon and Fitzgerald, 1996) report on the success of a system for TNT built around reporting and assessing weekly profit and loss performance against centrally agreed targets for each division (sales, operating costs and allocated central costs), supported by indicators of customer service levels, sales growth and debt collection; they conclude that it successfully enables the strategy to be converted into action, but do not explore any specific impact at the corporate level, only reporting on the operational impact. (Ahrens and Chapman, 2002) also report a weekly budgeting and profit reporting system (for a chain of restaurants), concluding that, while the system leads to contests of accountability for variances on food and labour margins, it provides for strict hierarchical control; again, however the fit of actual corporate performance and strategy is not assessed. (Fernandez-Revuelta Perez and Robson, 1999) report how feedback of negative variances against budget are rationalised away to support the politically inspired motivation to maintain the existence of the plant. Other studies provide less specific detail (Euske et al, 1993) (Nilsson and Rapp, 1999) while generally focussing on the importance of management interpretation between corporate and operational levels. (Radcliffe et al, 2001) highlight the central importance of accounting feedback as a measures of what has been achieved against targets assessed as being institutionally sanctioned. (Lillis, 2002) highlights the difficulty of reconciling multiple dimensions of feedback (e.g. efficiency v customer services).

The conceptual studies based on prior research provide some general guidelines on the nature of feedback, but are not specific on content or how information is produced in practice. (Chapman, 1997) proposes that feedback should be interpreted on the basis of

levels of uncertainty. Sunder (2002) concludes that the role of accountancy information is to inform an assessment of the performance of a contract model of expectational profitability. Other studies generally call for feedback to reflect both financial and non financial factors, without being explicit on the nature and source of the information based on practise (Taninecz, 2002) (Otley, 2001; Simons, 1995) (Goold and Quinn, 1990) (Spekle, 2001).

In value based studies, (Seal, 2001), in his study of Marconi provides specific evidence. This value based approach led to the replacement of the single fixed budgetary control with a mix of adaptive controls focussing on a variety of perceived value drivers. This led to a lack of coherence for the interpretation of feedback of performance. (Neely et al, 2001) and (Accenture, 2001) more generally propose that both financial and non financial feedback information should be obtained to align operational actions with value drivers, but only make general proposals and do not address specific issue of implementation. (Froud, 2000) very generally concludes that feedback normally reports a failure to meet the high expectations developed from the promises of consultants, but that the implications of this continuous failure is not internalised, leading to a ceaseless endlessly failing struggle. In relation to DCF (Phelan, 1997) argues that this presents 'an illusion of confidence in financial analysis' and apparently eliminates uncertainty, where the reality is that the future is uncertain. The study concludes that this giving an illusion of confidence where there can be no confidence is dangerous, and that to achieve effective outcomes the use of apparently hard DCF analysis needs to be replaced by broader strategic assessment. Another approach to managing feedfoward is the real options approach (Hennell and Stiles, 2002) (Benaroch, 1999) which build in a potential flexible response to uncertainty though the effective purchase of future options to change in response to outcomes being different to original plan assumptions. The bonus studies tend to treat feedback as an automatic default which will provide the type of information required, rather than exploring in more specific terms how this can be achieved (Jensen, 2001) (Dearden, 1987) (Kerr, 1995).

The general consensus of the studies is that it is the corporate role to determine the target level of profitability to be achieved by operational actions, and the role of feedback is to compare actual performance against target. There is little support, either conceptually or from evidence of practice, for the apparent suggestion of (Hope and Fraser, 2001) and (Hope and Fraser, 2003) that centrally derived budgets should be scrapped and replaced by devolved processes. However, while the studies are clear that feedback is assessed against centrally defined targets, there is little evidence of how this leads to changes in either plan or initiatives to control performance, as the evidence is mainly drawn from the study of the operational response to feedback, but not the corporate use and response to this feedback. The evidence is therefore confused and partial on how feedback can be used, with a wide range of differing interpretations of how the feedback of actual versus target should be evaluated and the consequences that should be derived from it. However, the general implications are that the use of feedback is of key importance, as reflected in the high incidence of corporate studies that address feedback (84%).

Real Time

(Jazayeri and Hopper, 1999) report how financial information, produced from the ERP system in the form of weekly accounts and trend analysis, allowed line managers to become their own accountants. Monthly accounts became secondary, reverting to a formal record of financial information and a control against which the weekly accounts could be compared, but not the main information source. While the loss of formal accounting controls potentially impacted on the accuracy of the weekly accounts, the advantages of immediacy outweighed any additional accuracy achieved by the delay. (Yeager, 1999) reports a similar approach with immediate feedback allowing adaptive future planning. (Carter, 2001) provides evidence from CISCO how using advanced IT is feasible to produce real time information from the general ledger producing deep, accurate, up to date information. Other studies (Menninger, 2003) (Burrows, 2001) (Turney and Anderson, 1989) (Sherrat, 2003) (Barrett, 2003) highlight the immediacy benefits of (near) real time reporting, but without evidence of practise.

(Cooper and Kaplan, 1998), however, while accepting the potential benefits of real time information to allow immediate response to changing situation, focus on perils as well as promise of real time costing systems, although as they assume that all systems must be ABC, this may reflect the difficulties of ABC as discussed above. However, (Granlund and Malmi, 2002) also highlight the potential problems of implementation of real time information through ERPS systems, reporting in their study that ERPS so far had relatively little impact on management accounting practices running parallel to accounting systems, with only intermittent reconciliation because of system complexity, interface problems and long project times.

The implication of real time systems is therefore that, while there is the potential to integrate a variety of differing financial and operational perspectives, this can be very complex and success is dependant on the ability to address this complexity during implementation and operation in a viable way.

17.7 Mediating factors.

Introduction

This section reviews those studies where findings relevant to the 5 Otley questions were not specifically identified, although they do address issues which are of general relevance to the research question. 42 studies were classified in this manner. These studies tend to be conceptual in nature with the evidence base being general academic research, surveys and historical studies, not case studies, simulations and practice. This is demonstrated by Figure 17-2 which compares the evidence base of the mediating studies against those allocated to the Otley questions

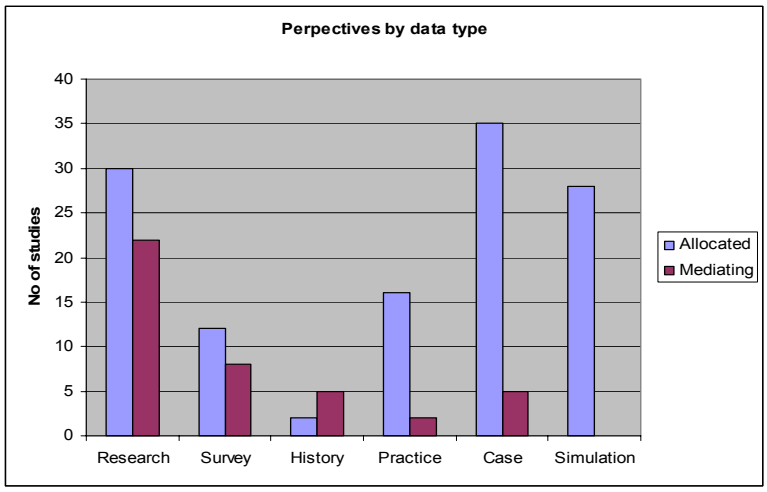

Figure 17-2: Perspectives by data type

Three groupings were inductively developed during the analysis - MA as an economic discipline, MA viewed from an organisational and behavioural perspective, and MA as part of an overall organisational performance management system. The review structure is undertaken using these groupings.

As a an economic discipline

Several studies view management accounting from the perspective of financial accounting. (Johnson and Kaplan, 1987) and (Kaplan, 1988) concluded that management accounting had lost its relevance by its processes being absorbed into the practise of financial accounting – 'the triumph of financial accounting'. The proposed remedy was that three sets of accounts were required - long term product costing, short term operational control and financial reporting – although with the implication that they all continue to link to accounting systems, but with differing levels of aggregation. (Johnson, 1992) extended this criticism to the central relevance of accounting as an information source, using a Plato analogy that the relationship of accounting to reality is like the shadow on the wall of a cave to the object causing the shadow, and that therefore the focus of management should be on the object, not the shadow. (Macintosh et al, 2000), taking a post modernist view also argues that accounting loses touch with reality and is self referential, only providing a use thorough a sense of exogeneity and predictability.

Despite these critiques, research (Drury and Tayles, 1997) (Ezzamel et al, 1997) indicates that monthly accounts based on financial accounting continue to be the central element of most companies management accounting systems, and a major reason for the continuing use of absorption costing is its compatibility to FA based reporting (section 5.3.a). (Mattessich, 2003) places the problems and potential of FA based information in context. This study argues that the problem with accounting representation is the difficulty in allocating income and expenditure to periods as the actual result of a project is only known when it is finished and its overall results in cash terms can be assessed. Any measurement within a project – and the life of a company can be seen as a long term project – is therefore problematical as information about allocation of

income and expenditure to periods is partial and depending on judgement. Nevertheless, the study concludes that 'for accounting value a purpose-orientated representation is required, and therefore accounting is useful as it provides an authoritative value against which it is possible to work'. This is consistent with the idea of profitability being a central factor in 'for profit' organisations, accepting the necessity of having some authoritative value to inform decisions, even if that value is intrinsically partially flawed.

Other studies view management accounting as a calculative practice, implicitly not rooted in double entry accounting practice, and not a representative cohesive body of knowledge. (Miller, 1998) defines accounting (especially MA) as a collection of calculative practices that have developed over time, using specific examples of techniques as they developed in response to particular historic circumstances. (Hopwood, 1987) similarly concludes that there is no primeval essence of accounting, but that it is a collection of financial practices that, although initially developed in response to particular circumstances, then often gets embedded in the organisational systems and structures which drives an organisation. (Walsh and Stewart, 1993) in a review of the root of accounting practice in the 18th century, conclude more specifically that accounting and management are inextricably linked, and that this is reflected in period reports being use to represent the flow of manufacturing processes.

In relation to recent research, (Ittner and Larcker, 2001) conclude no substantive body of accounting knowledge has been developed, although (Zimmerman, 2001), reviewing these findings, concludes that a potential way forward is to view management accounting from an economic perspective. While identifying a twin role, 'It is well understood that accounting systems serve both decision making and control roles', the study proposes an increased focus on the control aspect (reduce agency conflict) more than the planning aspects (improve decision making). This conclusion of accounting as a calculative practise focussed on economic (financial) performance and, with a tension between control and improvement ,reflects themes discussed above (e.g. (Hopwood, 1972) budget conscious (control) style versus a profit conscious (profit improvement) style. (Horngren, 1995) expresses a similar approach using different language, concluding that the role of management accounting is twofold – firstly to provide the transmission of information to help reach wise economic decisions, and secondly to motivate users towards organisational goals which is a softer way of defining the control function.

Other more practise based studies also show how accounting is an evolving set of calculative practices. (Cooper, 1996) concludes that costing systems will move increasingly into the control of operational management, with traditional financial accounting based information moving to a support role. (Chenhall and Langfield-Smith, 1998) report the use of a mix of techniques. Finally, the range of techniques is reflected in the syllabuses of the professional bodies, with the management accounting modules of the (CIMA, 2002) syllabus (alone only 25% of the total content) listing 206 different subjects to be considered.

The overall thrust of this research is that management accounting is a calculative practise used by management to achieve economic ends, with information used in two

roles, control actions to reduce agency conflict, and to inform decision making aimed at improving financial performance. Financial accounting is part of the range of potential calculative procedures, with particular relevance through its role in external reporting, but not in itself the core element.

MA – organisational and behavioural issues

(Burchell et al, 1980) concluded that the role of accounting is dependant on the sociological and organisational environment, and introduced a four part analogy of the varying uses of accounting based on the level of uncertainty using a machine analogy - answer, learning, ammunition, and rationalisation. (Loft, 1986) similarly identified that the use of accounting is influenced by organisational and behavioural issues, relating to the control of knowledge. More recently, (Bhimani, 1994) concluded that the focus of accounting exploration should be on organisational issues not a limited technical focus, and (Burns and Scapens, 2000), taking a perspective of old institutional economics, concluded that the use of explicitly introduced MA processes and activities will be subtly subverted both by specific interest groups and the institutionalised routines. (Granlund and Lukka, 1998) concluded that through global pressures three drivers (economic, coercive normative, mimetic) were tending to cause management accounting practices to merger. (Lukka and Granlund, 2002) then conclude that differing research genres – three were identified, consulting, basic and critical – have led to an unfruitful and un-cohesive development of knowledge as the findings of each genre are generally undertaken in a vacuum.

Several studies examine organisational and behavioural issues using case studies. (Euske and Riccaboni, 1999) conclude that how an MCS works is largely dependant on the initiative of the senior executive, but that it has the potential to be a flexible tool to manage interdependencies (e.g. management to workers). (Cowton and Dopson, 2002) conclude that MAS is not, as they originally anticipated, solely a method of discipline and surveillance, but that disciplinary control is impacted by the degree of agency available to managers who can changes the systems via structuration. (Ahrens, 1997) reports on the organisational practise of accounting and the complex, flexible and fragile process of enacting orders which accounting engenders.

Other studies explore organisational behaviour from the perspective of response to change. (Gurd et al, 2002) conclude that accounting response to other organisational changes was uneven, but found evidence that financial distress is the main reducer of lag in accounting response. (Granlund, 2001) concluded that change implementation or its denial is impacted by a variety of human, institutional and economic factors, often depending on the actions of specific individuals. (Vámosi, 2000) reports how there were elements of both continuity and change in management accounting practices during change from communist to capitalist culture - calculation practices were unchanged but cash management was quite a new discipline.

The overall implication of these studies is that the effective implementation of management accounting practices is affected by a wide variety of behavioural issues, which leads to a context of uncertainty. However, as the studies tend to take a sociological perspective, they do not address the extent to which the achievement of

profitability is impacted.(Argyris, 1990), however, does tangentially address this issue by concluding that when failure initiates organisational defences that can be counterproductive, there is a need to design interventions to accomplish the engagement of organisational defensive routines. Further, there are indications, especially on the studies on change, that the implementation of actions aimed at meeting profitability objectives can be either pushed though by strong individual pressure (e.g. (Granlund, 2001; Euske and Riccaboni, 1999)) or strong financial pressures that pull through the need for the financial goals to be the prime consideration (e.g. (Vámosi, 2000) (Gurd et al, 2002)). This conclusion is consistent with other findings such as (Hope and Fraser, 2001) who identify the need to find 'burning bridges' to initiate changes in budgetary procedures, or financial pressure that initiated changes by Wedgwood in the 18th century (Hopwood, 1987), or the use of accounting to institutionally sanction a downsizing exercise (Radcliffe et al, 2001).

As part of an overall Performance Measurement System

Some studies view management accounting as part of the overall Performance Management System (PMS), with its nature and content contingent on context. (Jones, 1985) concludes that MAS are embedded in organisational structures affecting many areas and that any changes, such as following an acquisition can affect organisational equilibrium. (Otley and Fakiolas, 2000) conclude that, since the seminal article of (Hopwood, 1972), the narrow focus on budget controls has widened to cover a broader range of management control practices. (Otley and Pollanen, 2000) conclude that control practices and their effects differ markedly across organisational and cultures. (Chenhall, 2003) also concludes that MA is part of the overall package of MCS.

The most important development in Performance Management Systems in recent years has been the development of the Balanced Score Card (Kaplan and Norton, 1996) and (Kaplan and Norton, 2001)). BSC has moved through various stages of development (Otley, 1999) with the 2001 book focussing specifically on replacing financially driven processes with Balanced Scorecard processes aimed at translating strategy into action and enabling continued strategic development. Financial measures then become a lag indicator. Operational budgeting becomes the mechanism for authorising resource supply and spending at levels developed using the Balanced Scorecard process as the lens by which initiatives are proposed, ranked and selected. (Meyer, 2002), on the other hand concludes that the difficulty with using the BSC as a primary tool for achieving financial goals is that, as the BSC focuses on a variety of dissimilar measures, it can provide no clear causal link between the performance measures used and the performance target required. The implicit assumption behind the BSC is an indirect link between financial and BSC performance in that, if the organisational performance is in line with the varied BSC objectives identified, the financial results will automatically result as the organisation has been operating on the preordained strategy. However, this assumes that the strategy analysed and reflected in the BSC measurement is necessarily going to result in required financial goals, be able to respond to continually changing circumstances, and thus continual realignment of the various target measures in a manner that is compatible with meeting financial objectives.

Other studies have also identified difficulties in the connection of strategy with management accounting. (Asch, 1992) identified three problems with strategic financial control - systemic (difficulties in design), behavioural, and political. (Chenhall and Langfield-Smith, 1998) and (Langfield-Smith, 1997), reporting on a survey exploring the link between strategy and financial control systems (FCS), conclude that no real evidence can be found of a link between Strategy and FCS.

The wider PMS studies therefore focus generally on all organisational performance management systems, whether financial or non financial. These studies tend to view a MAS as a subsystem of the overall PMS and generally do not assume the primacy of the profitability objectives. However, from the perspective of this paper, which assumes the primacy of the profit objectives, non financial performance management systems are parallel systems whose goal is to provide support to ensure that operational actions are undertaken in an effective manner so that the result can be increased profitability. The non financial performance management systems focus on operational actions, whereas the MAS converts the actual or intended outcomes of these operational actions into financial terms, thus providing an assessment and test on the effectiveness of the operational actions in achieving the goal of profit improvement. In these terms for example, while the BSC can be seen as a framework for translating strategy into actions, the MAS can be seen as a framework for assessing whether the actions will result in the intended level of profitability, and give the capacity to feedback the assessment which may result in changed actions if the profitability outcome is not in line with intentions.

17.8 Key thematic findings

This section draws out, from the detailed review undertaken above, key themes that are assessed as running through the findings, and are judged to be of critical importance in affecting the extent to which management accounting can connect operational decisions and actions with achieving improved profitability.

Single Corporate and multiple Operational perspectives

In section 17.1 two organisational levels were distinguished - operational and corporate - compatible and consistent with the traditional top down / bottom up differentiation. Five differing financial perspectives were then identified reflecting differing approaches to the aggregation of financial information – Product, Customer, Throughout, Process and overall financial organisational performance. One of these perspectives – overall organisational financial performance - was assessed to be the focus of analysis at the corporate level, with the other four being the focus of analysis at the operational level. The review of the studies confirmed the overall validity of the distinctions, as a range of studies was identified for each perspective indicating that each perspective provided a valid but different lens from which to analyse financial information.

Financial Accounting was identified as the method of aggregation used for calculating the performance outcome which provides the measure for assessing the level of

achievement of the objective of the use of a MAS – improved profitability. The four operational perspectives reflect differing valid approaches to the analysis of the financial consequences of operational performance. The implication is that there is no one 'best' way for the financial analysis and assessment of operational performance. Each perspective, or mix of perspectives, has the potential to be of critical relevance depending on circumstances. It is not therefore possible to argue that one perspective is 'better' or more relevant than the other, as they are all potentially relevant, with differing and changing degrees of relevance depending on context.

The issue for developing an effective MAS is to how can this varying potential range of perspectives for analysis be beneficially incorporated into a MAS that is not overly complex, where the output of the differing perspectives are compatible and not at odds with each other, and where beneficial information is provided to inform and control management action focussed on the improvement of profitability. This leads to a key conclusion for this study that the outcome of any cost analysis, either planning or actual performance, must be capable of being reconciled to Financial Accounting reporting, as this provides the authoritative measure of success in relation to the objective. Therefore, for a MAS to be successful it must embrace the differing perspectives and not restrict its scope to one particular approach, subject to the test that it provides an analysis of information which is deemed to be of benefit in determining the plans and actions which are assessed as being best able to result in improved corporate profitability as defined by FA based reporting.

Endemic management tensions

A major theme of many of the studies is that a MAS has to operate within a context of endemic management tensions, the impact of which has to be addressed by any effective MAS. Three interlinked management tensions can be identified from the analysis of the studies - centralised v devolved, fixed v flexible, control v inform.

The centralised v devolved tension reflects consequences of corporate/operations split discussed above, and is encapsulated by the uncertainty paradox of (Hartmann, 2000) – a need for decentralised autonomy to respond to uncertainty if bottom line targets are to be met, also a desire to ensure, through centralised control, that actions are focussed on the achievement of bottom line results (section 17.3). The same underlying issue appears in the studies presented in a variety of differing ways such as (Hope and Fraser, 2001) and(Hope and Fraser, 2003) on proposals for devolved not centralised processes, (Euske and Riccaboni, 1999) on the role of management as a hinge between operations and corporate, (Bruggeman, 1988) and (Nilsson and Rapp, 1999) on the need to ensure that systems are compatible between levels.

The fixed vs. adaptive tension reflects a specific application of the centralised v devolved tension to budgets, although with the added dimension of implicit contests about primacy of knowledge and control. The roots of the fixed view are in scientific management (Miller and O'Leary, 1987) with the base assumption that a specific plan can be identified top down which will achieve the targeted aim, and that operational staff should be treated as 'governable persons' whose role is to implement the specified approach, with a fixed budget providing financial quantification to provide control of

performance. The opposite approach of adaptive response is proposed by (Hope and Fraser, 2001). The distinction is reflected in the budget conscious v profit conscious style proposed by (Hopwood, 1972). The evidence of the studies, principally from the corporate organisational perspective, suggests a range of approaches to address this issue generally focussed on a centrally defined financial target with differing responses to variances to that target.

The inform vs. control tension reflects the twin roles of MA reviewed in section 17.7. The potentially problematic issue for the effectiveness of a MAS is that this distinction implies that the same information can be interpreted in two differing ways, depending on which approach is taken. The control role requires action to be taken to ensure that performance is brought into line with target and assumes a degree of certainty, whereas the inform role treats variance from target as additional information which may lead to changes in plan, targets and actions, and assumes a degree of uncertainty

The overall conclusion is that these tensions are endemic to any MAS, and therefore any effective systems must provide an approach that enables these tensions to be addressed.

Endemic uncertainty

A further key finding is that a MAS operates in a situation in endemic uncertainty about context, content and process. The context is uncertain because, given that the role of a MAS is to inform and control actions for the future, as the future is unknown there is uncertainty relating to the impact this will have. This was defined by (Burchell et al, 1980) and (Chapman, 1997) as uncertainty both as to cause and effect and as to objectives. The content is uncertain because all the multiple operational perspectives are potentially valid and therefore for any particular context there is uncertainty as to which is the most relevant; this is further enhanced by the potential difficulties in the reconciliation of the perspectives and related techniques (as indicated by the ABC studies), and by the limitations implicit in accounting representation as reviewed in 17.7. The process is uncertain as a consequence of the inherent management tensions discussed above, and there are endemically differing and potentially conflicting management approaches that can be adopted, summarised in the uncertainty paradox of Hartmann (2000).

The implications of this endemic uncertainty are that any MAS that aims to link operational actions to improved profitability must have mechanisms that are able to respond to this high degree of uncertainty, which has the potential if not addressed of derailing the effectiveness of the system. As a consequence, there can be nor certainty about the optimality of any approach adopted, or as stated by (Horngren, 1995) ‘There is no magic solution’.

Real time systems potential

The real time information studies suggest that, with the use of new IT capabilities information can be drawn independently from the general accounting systems with the potential to replace information from the general ledger as the primary source of information. Traditional general ledger information moves to a support role (section

17.7.). This is done by applying a price to the actions that trigger income and expenditure as it is incurred, rather than waiting for that to be undertaken retrospectively by the accounting system. The potential benefit arises from the immediacy with which the information can become available, leading to the potential for quicker response to variances from target – a 'transformation that affects the nature of knowledge and thus the power that resides in that knowledge' (Coombs et al, 1992). However, this process is not without its pitfalls, for example relating to difficulties of reconciling the two sources of information, ensuring the completeness of transactions, and information overload.

17.9 Development of conceptual framework

The previous section identified four key findings which were assessed to be of critical importance in affecting the extent to which management accounting can connect operational decisions and actions with achieving improved profitability. This section uses these findings, together with a reinterpretation of the Otley framework, as building blocks to produce a conceptual framework that addresses the implications of these key findings, and covers generically the functions and interrelationships required of an effective MA. The framework (Figure 17-4) was developed as a two dimensional map of a MAS.

The X-axis is based on an assessment of the interrelationships between four of the Otley elements, subject to 'Objective' being reclassified as synonymous with Actual (profit) as this is the specific defined objective of this study. Configured by time, although counter-intuitively with time moving from the future (plans and targets) to the past (actual outcomes), the relationship as outlined in Figure 17-3 become apparent. From this analysis it is apparent that feedback is the central driver of dynamism in the systems, providing the information that both drives the development of the plan and enables the level of actual performance of the target derived from the plan to be assessed, thus giving the potential to control performance.

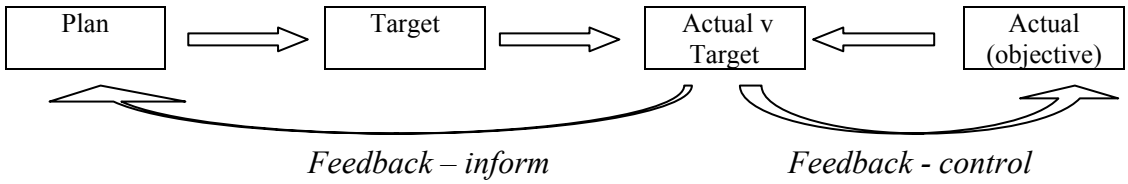

Figure 17-3: Feedback – control and inform

The Y-axis dimensions are provided by the first key finding - differing perspectives. The base dimension is between operational and corporate. There is no sub dimension at the corporate level as the corporate financial perspective is based on Financial Accounting aggregations. However, at the operational level the four financial perspectives identified – product, customer, throughput and process –provide sub dimensions. While the perspectives correspond with differing approaches to the aggregation, the data source for the aggregations – actual and projected financial transactions - is the same. Further, the underlying purpose behind the use of the

differing perspectives is the same which is to achieve improved profitability, and which is defined by the FA perspective. Therefore, although the operational perspectives initiate differing ways of aggregating information, they are all capable of being reconciled to Financial Accounting aggregations as this covers all costs and income since its role is to report the financial consequences of all financial transactions. This can be illustrated using the restaurant example (see section 16.1). All the financial transactions underlying the cost and income make up of each menu item (products), purchases by customers, the net income for a particular period (throughput), or supplying the resources required to cook and deliver the food, will all be reflected in Financial Accounts.

The second finding, – endemic tensions, – provides the behavioural and organisational context within which the MAS operates. Three tensions were identified - centralised v devolved, control v inform, fixed v flexible. Being endemic, these issues will by definition impact on the effectiveness of an MAS, and how the systems addresses them will effect the extent to which the systems can be used to enable management to achieve the goal of improved profitability. There can be no conclusion therefore on which in itself is the best approach to managing these tensions. However the single goal of improved profitability provides a way of assessing the impact of a particular approach. Using the restaurant example, in a chain of restaurants the local management could be given autonomy to be flexible on menu pricing which had previously been centrally controlled – a change from centralised to devolved control. If this led to an increase in profitability it could be inferred that the change had been beneficial. However, the assessment of the impact would also have to be judgement based and take into account the potential impact of other factors – e.g. improved service levels, change in local competition – that might also impact on performance.

This leads into the third finding, – uncertainty, – that underpins the underlying context within which the systems will operate. The test of the effectiveness of a MAS is therefore dependant on how effectively it is able to respond to this context of endemic uncertainty. In section 17.8. three dimension of uncertainty were identified – context (characterised as uncertainty over both the consequences and the objectives for action), content (characterised as differing perspectives) and process (characterised in management tension). The response of proposed conceptual framework to these dimensions of uncertainty is centred on two main elements: firstly, the assumption of the organisational goal of improved profitability to provide partial certainty over objectives for actions; secondly, the use of feedback to provide a level of learning about the assumptions underpinning the actions undertaken, made in a context of uncertainty, giving the potential to stimulate adaptive responses learned from the feedback that have the potential to instigate actions that lead to improved profitability.

The assumption of the objective of improved profitability only partially addresses the issue of uncertainty over objectives for action as the objectives of staff and other stakeholders involved in implementing the goal will not necessarily be aligned with this corporate goal (see section 17.8). However, this assumed specific corporate objective does then provide certain organisational objectives against which feedback of the outcomes of future actions can be assessed. Plans and targets can then be developed based on the type of perspective analysis and management approach to the endemic

tensions assessed to be most likely to achieve the goal of improved profitability The feedback of actual outcomes against target then provides an assessment of the measure of success achieved. While this does not of itself provide a causal link between the management approaches used, the level of success achieved provides tangential evidence of a causal link. This tangential link can be increased if the feedback is in a form that provides a sufficiently clear comparison of actual versus target in the terms of the perspective for analysis use. Thus, the key factor underpinning the effectiveness of the system is not the specific individual functions of the systems, but how these functions interrelate and so give constantly refreshing feedback that addresses the issue of uncertainty by providing the learning, adaptive and control roles.

The fourth finding, – real time systems, – provides a potential transformational change to the operation of a MAS. As identified, the effectiveness of the feedback and the reconciliation of information that has been aggregated from the same source in differing manners are central elements of the systems as defined. The requirement for both of these is for the rapid and complex collection, analysis and reporting of data, which the developments of IT are transforming. The developing capability of IT to produce the information in terms of feedback and analysis provides a different potential for the development of an MAS system to that feasible before these developments.

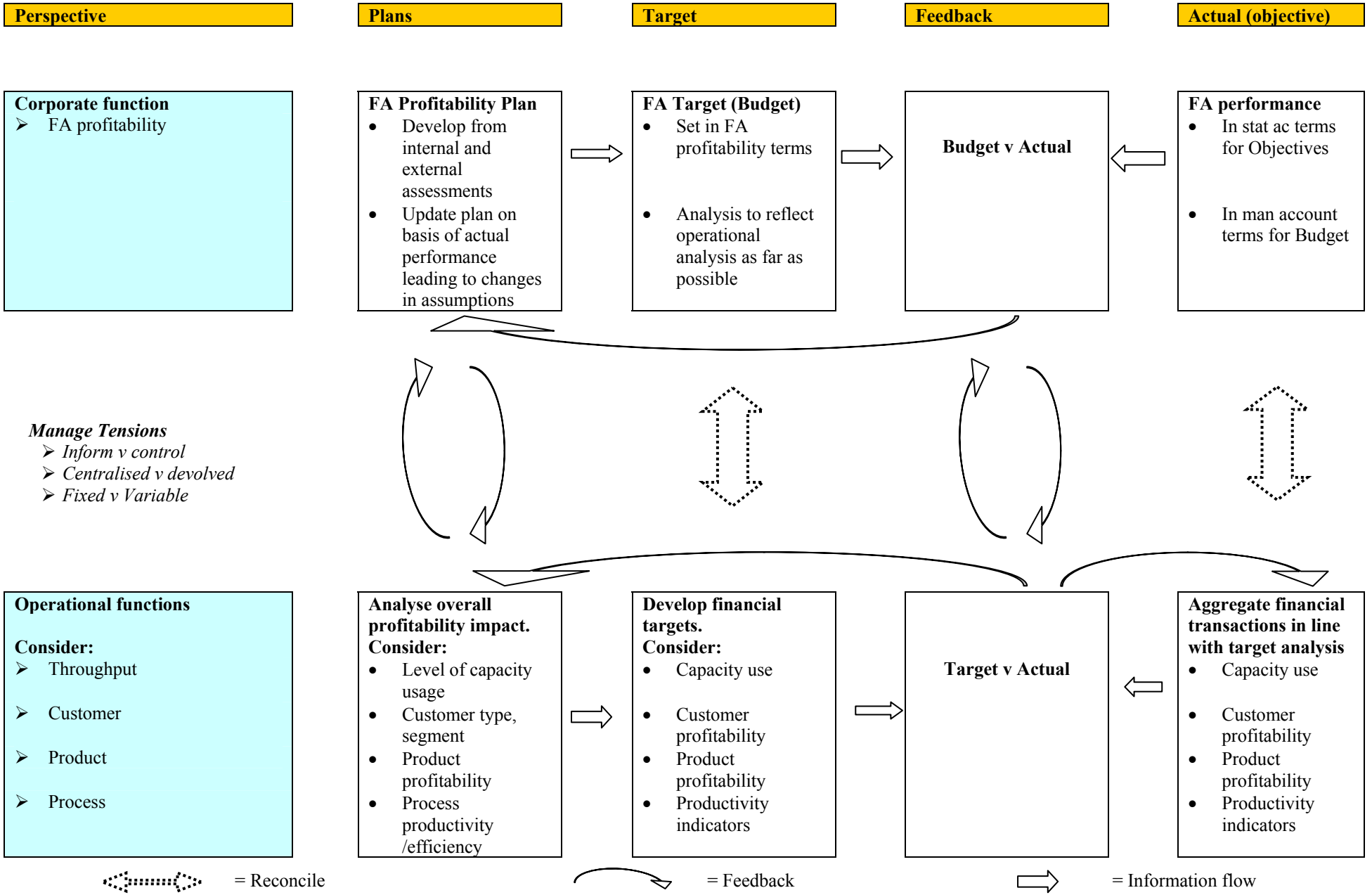

Figure 17-4: P2 conceptual framework

18 Discussion

18.1 Introduction

This section initially identifies and discusses the factors that are appraised as having a key impact on the extent to which a MAS, as mapped out in the conceptual framework is capable of being used to achieve the goal of improved profitability. Two critical factors are identified – the role of the financial objectives as the central unifying factor, and the role of feedback in initiating learning and adaptive developments to enable this goal to be achieved. Other factors also assessed to be of significant relevance are then discussed. Next, a review is undertaken of the coverage of the prior research in relation to the research question, and several gaps and shortcomings are identified. Finally, a review and assessment of the limitations of the study are made.

The discussion is informed by evidence drawn from the thematic findings of this study, with additional context provided by the author's personal experience of MA practice over many years.

18.2 Critical factors impacting on the Conceptual framework

Financial objective as central unifying factor

The single financial objective of improved profitability provides the main focus for action and a central unifying measure against which the financial outcomes of actions can be assessed, and from which appropriate adaptive responses can be developed as assessed as necessary. Thus, in an operational context that is uncertain, complex and dominated by endemic management tensions, this single objective provides a degree of certainty against which the effectiveness of any approach adopted can be assessed. Financial Accounting provides the authoritative measure of quantifying the level of achievement (Mattessich, 2003). Management Accounting provides a means to inform and control management actions structured towards achieving this goal.

However, this approach provides a focus for action that is relative not absolute. There can be no precise definition of what is an 'optimum' performance objective, only relative objectives drawn, for example, from previous performance, assessed achievable improvements, or sector benchmarks. There can be no 'best' management approach, only a set of plans and implementations developed on the basis of current information as being capable of meeting the objective, but subject to change and adaptation as new information is fed in by feedback. This approach treats the uncertainty, complexity, behavioural and organisational issues that are the subject of focus of many of the studies reviewed as constraints and limiting factors. They have to be counteracted and addressed in the manner which is judged by management to have the best potential for success, but which is continually subject to revision.

This conclusion is specifically relevant for organisations working in the capitalist 'for profit sector'. It is consistent with findings of this study on the prominence of financial

objectives. It is also consistent with the author's personal experience of a general overall focus at shareholder, board and senior management level on the 'bottom line', and conversely of a tendency towards corporate failure when lifestyle or other objectives take primacy. It goes against the conclusions of Johnson and Kaplan (Johnson and Kaplan, 1987) that the 'triumph of the financial accounting mentality' had led to a failure of management accounting and should be replaced by alternative measures, and (Otley, 2001) who argues that management accounting should concentrate more on management and other non financial performance measures, and less on accounting. To the extent that it provides a boundary which places all MAS techniques and processes within a unifying context, it goes against (Zimmerman, 2001), following (Ittner and Larcker, 2001), who concludes that 'empirical management accounting literature has failed to produce a substantive cumulative body of knowledge', or the conclusion of (Hopwood, 1987)'that there is no primeval essence of accounting'.

Feedback of operational performance vs. corporate goal

While a single goal is defined at the corporate level, as demonstrated in P1, this goal is achieved by the implementation of operational actions whose cumulative financial consequences define the extent to which the goal is achieved. Therefore, in order to achieve the corporate goal it is necessary to develop operational actions that can enable this to be achieved. However, the environment in which these actions have to be developed and implemented is characterised as uncertain, changing, tension filled and multi dimensional - meaning that there can be no optimal, fixed, best answer but only relative responses which require continual adaptation.

Under the conceptual framework proposed, feedback is the central element that provides a dynamic link between operational performance and financial outcomes. However, it does not provide precise prescriptive solutions, but rather a way of testing the extent to which the plans, target and their implementation have been able to achieve the intended objective of improved profitability, and, where this indicates failure to meet intent, it provides a trigger to initiate adaptive responses and new learning that can lead to change that can potentially lead to future improved performance. The process is a rolling measurement of actual outcomes vs. target, both in terms of the differing cost perspective analyses, and in FA profitability. Learning and adaptations can be achieved by testing the outcomes of differing approaches in terms of profitability impact.

This process in itself may not identify whether shortfalls against target arose through implementation or feasibility issues, or a mix between the two, although analysis from differing perspectives may give an insight into where actions can be implemented to improve performance. However, feedback provides the potential for a trial and error approach to this by providing output of evidence of the effectiveness of these processes. Thus, feedback in terms of cost perspectives can allow performance to be assessed in terms that are relevant to the operational level, while the re aggregation of the same information in terms of FA profitability allows for outcomes to be assessed in relation to the improved profitability.

However, given the need for continual adaptation and response, this process needs to be produced at a speed that allows relevant responsive actions to be developed. The need

for a sufficient level of speed and multi-dimensionality leads on to the feasibility of implementation. The capacity to provide this is potentially provided by real time IT developments, although the limited evidence to date has highlighted the implementation problems of this, and suggests that there can be no precise conclusion, with trade offs between speed, accuracy and details required.

This approach is clearly not consistent with the scientific management style of fixed budgets which is the root concept behind traditional fixed budgets. However, it is also not consistent with the proposals to scrap 'command and control' budgets and replace them with adaptive and devolved processes (Hope and Fraser, 2001) (Hope and Fraser, 2003) as the intent is still to command and control operational actions to achieve corporate ends, but within the context that it is acknowledged that flexible adaptive responses will be required to achieve this, and that there can be no optimum performance, only relative success.

18.3 Other relevant factors

Quick and dirty versus detailed and precise

There is a strong theme underlying some studies that accountancy is a precise practice where sufficiently precise analysis can identify the correct conclusion. The roots of budget in scientific management, central to MAS, have already been demonstrated. It is reinforced by the numeric basis of accounting and the requirement of double entry for accounts to precisely balance, and the assumption that FA based accounts can show a true view and fair view of a company's financial affairs. The studies, with an underlying assumption of detailed precision, include those that use simulations to identify the best approach for analysis to be used, that propose that long term product costs can be identified by the precise allocation of overheads using the correctly identified cost drivers, or propose that, if the correct value drivers can be identified, a strategy can be developed and implemented to achieve target results.

This paper concludes conversely that as MA functions in an environment of endemic uncertainty, with multiple valid perspectives no precise answers can be gained that identify the optimum solution; only relative performance targets can be used, and assumptions have to be continually checked and reassessed as the operational context and efficiency of the operations changes and evolves. A consequence of this is the need for a trade off between the complexity and difficulty of implementing a detailed system versus the value of the information provided. For example, a system that provides relatively simple assessments, but of multiple perspectives that reconcile to FA reporting and allow for frequent fast feedback loops, may provide effective information to control and inform decisions and actions; conversely, a more complex, precise, but one dimensional approach may provide information that is too slow and irrelevant to be of effective use. A further consideration may be that an approach will be more effective if financial transactions are aggregated in a manner that the same blocks of information can be swiftly reanalysed to provide assessment of the differing perspectives, rather than with a specific one dimensional focus.

Need for management initiatives

A further consequence of operating in a context that is endemically multi perspective, uncertain and tension filled environment is that as there can never be a correct answer, but there can be a general thrust towards inertia as there will always be a valid alternative approach to any action that is taken. A consequence of this is that the default position of continuing to follow continuity not change can become embedded, as for example reported by (Granlund, 2001). The inference of this is that in order to overcome a default pressure of no change, a strong central management drive is required to identify potential to improve profitability and to press for initiatives and interventions to ensure plans and targets that respond to this assessed potential. This is consistent with the findings of many of the studies, some of which report that change for existing processes generally is stimulated by financial crises (Hopwood, 1987) (Gurd et al, 2002) (Argyris, 1990) (Vámosi, 2000) (Radcliffe et al, 2001) (Euske et al, 1993) and others report that this is dependant on specific management initiatives (Moon and Fitzgerald, 1996) (Granlund, 2001) (Euske and Riccaboni, 1999).

Rewards

Although the normative approach is to link rewards to target performance, generally without exploring how this can be done, a limited number of studies conclude that a clear link between corporate targets and management performance is often difficult to achieve and can be motivationally counter productive. This arises because often there are many factors outside a manager's sphere of influence which affect corporate performance. Nevertheless, it is also generally concluded that some form of reward is required to confirm a beneficial alignment of management and corporate interests. This leads to the implication that a separate set of targets has to be developed relating to factors management can affect that are separate and independent of corporate targets. However, a potential consequence of this is to add a further layer of perspectives, reconciliations and complexity.

An additional issue, not generally specifically addressed, is that the intention of bonuses is to initiate improvement. If improvement is achieved, to gain further improvement the hurdle for rewards will have to be raised. This has the potential to provide a disincentive to managers who will wish to keep expectations of improvement as low as possible in order to keep the hurdle that defines what improvement is required as low as possible. This again leads to another dimension of complexity, as this implies a further requirement of reward targets and thus feedback systems detached from corporate targets.

No proposals on how to manage this relationship between separate organisational and reward target/feedback systems have been identified in this review, apart from the overall test that, if a procedure is set in place that is part of the achievement of improved profitability by that test, it is acceptable.

Long term versus short term

There is an underlying assumption in many studies of a specific distinction between long term and the short term. This is reflected in the general criticism of 'short termism' and, for example, the distinction between long term product costing and short term processes (Johnson and Kaplan, 1987) and the identification that it is long term performance we are aiming to measure (Meyer, 2002).

This study does not distinguish between the short term and the long term. It takes the view that the future is a continuum, and that plans for the future have to treat it as such. Any assessment of the future has to be based on interpretations of currently known information about the past, extrapolated from the present to the future. Therefore, any view of the 'long term' future is in effect a personal interpretation of the present and the past. As a consequence, any MAS has to deal with the unfolding outcomes of the present. This leads to proposals for a continual adaptation of plans for the future as the present unfolds. How plans and adoptions are developed depends on the judgement of the management responsible for their implementation. Further, the success of how this is achieved can only be assessed from the cumulative performance of outcomes, which is consistent with the emphasis on historical performance rates given in stock market analysis.

The implications of this for an MAS is that current feedback is of continual relevance for assessing plans and targets for all future time horizons deemed as requiring consideration. This provides a direct link of the outputs of a MAS with strategic development. This conclusion is in line with (Hope and Fraser, 2001) and (Hope and Fraser, 2003) for strategy as a continual development, and Neely (2001) to link budgeting with planning and strategy, but not the distinction of Johnson and Kaplan (1987) between short term processes and long term product development.

18.4 Key research issues

The main research issues identified by this study revolve around a general gap between research into the impact of the actual impact and implementation of MA techniques, processes and considerations on the level of actual financial outcome achieved against objective, despite the underlying purpose for the existence of a MAS being able to achieve this objective. As a consequence, studies generally cannot provide insight into how feedback of actual performance can be used to provide a process of learning and adaptation in relation to the financial objective. For consideration of the proposed conceptual framework this is a major gap as the assessment of the impact of feedback of actual performance to plan, at operational and corporate levels and between differing perspectives of aggregation, is central to assessing the effectiveness of a MAS. Indeed, not one study provides evidence of specific actual financial performance against target, which is the central element feedback for a MAS. This failure to place studies in the context of actual financial outcomes increases the general implication of a disconnect between financial performance and the operational realties of an organisation which cause the financial performance levels to occur. Three specific areas of this gap are identified as discussed below.

A final research issue reviewed is the relationship between MA and the overall domain of Performance Management.

Utilisation of operational perspectives

The relevance of four operational aggregation perspectives is in the potential to develop plans, targets and feedback assessment by reference to product pricing and margin (Product), and/or customer profitability (Customer), and/or utilisation of available organisational capacity (Throughput), and/or the cost effectiveness of the processes used to produce and deliver the goods and services supplied and sold (Processes).

The studies provide a wide range of analyses on how plans can be developed using these differing perspectives. However, although plans are only of relevance if they are implemented in a manner that achieves the intended result, the studies are generally silent on how plans can be implemented and their impact assessed. There are two possible reasons for this - either in practice there is no follow through from plans to implementation, or studies have not been undertaken or identified by this paper which research how this is undertaken. Either way, there is a research gap that needs to filled, which has the potential to produce evidence that will be beneficial to use in practice.

Role of management accounts

One approach to covering this potential gap is to further explore the use of (typically monthly) management accounts. While not explicitly covered by many studies, there is a steady stream of evidence, strongly supported by personal observation, that the key formal method of MA reporting is monthly management accounts. A potential role for these accounts is to provide a link between the multiple operational perspectives and the single corporate perspectives. Normatively, monthly accounts will show corporate results computed in a manner that is consistent with FA external reporting standards. However, as their reporting structure is not guided by FA reporting procedures, there is the potential for them to be structured in a manner that reflects operational perspectives. From the operational perspective, while there are multiple different perspectives the base data (financial transactions) and target outcome (improved profitability) are common and potentially reconcilable in terms of overall FA performance. Therefore, monthly management accounts have the potential to be structured to reflect operational perspective analyses, either as part of the accounts, or as support analyses with differing forms of analysis, but with overall reconciliation of profit outcome. At a minimum, if the link between the monthly accounts is potentially achievable, negative variances can provide a signal to initiate action to explore the nature of adverse variances and stimulate adaptive responses. Such an approach is consistent with the normative response of above budget good, below budget bad.

This analysis points to a potentially central role for monthly management accounts, and one which in practice may be extensively utilised. However, little evidence is provided by the studies identified on the extent to which routine management accounting reporting practices can provide the link between operational analysis and target financial outcomes. This suggests that further work needs to be undertaken to assess the

extent to which it is possible to embrace the potential for utilising, depending on context, the potential benefit of multiple perspectives within a routine reporting environment.

Feedback against financial corporate objective

No studies directly attempt to assess the specific impact of MAS actions on the level of quantified corporate profitability achieved. Although many of the studies with a corporate perspective address feedback, it is generally addressed either in conceptual terms, or from the viewpoint of operational management or the organisational and behavioural considerations. Only general conclusions about the success or not of a system are made, with no attempt at specifically quantified assessments of corporate profitability performance. Consequently, there is little evidence on how feedback of actual financial performance outcomes can be used to assess the effectiveness of the plans in meeting their intended goals. This creates difficulties in assessing the extent to which MAS can link operational actions to the achievement of improved profitability, apart from assessment based on the analysis of the approach being adopted.

Relationship to Performance Management

In section 17.7 the findings of studies were reviewed relative to the relationship of management accounting with performance management. In this section The Balanced Scorecard (BSC), was identified as generally being regarded as the most important performance management tool to have been developed in recent years, and moreover as having been developed to overcome the perceived problems of MA as outlined in Johnson and Kaplan (1987). As such, the BSC can be seen as a proposal to replace accounting systems as the central management systems required by an organisation with the capacity to translate 'strategy into action', and with financial measures becoming lag score keeping indicators (Kaplan and Norton 1996, 2001) (Kaplan and Norton, 2001).

A difficulty of this approach (see Meyer 2002) is that the BSC or other non financial performance management systems do not directly link the consequences of actions with the achievement of financial objectives. For this to be achieved a further link is required that assesses the financial consequences of operational actions. For example, while non financial performance measures outputs may be assessed as improvements (e.g. service levels) they may not be conducive to improved profitability – returning to the restaurant example, Michelin starred food and service levels are not provided by mass market restaurants as this could only be achieved by increasing costs and therefore required prices beyond the reach of target customers.

On this basis, performance management measures such as BSC move to a support role to MAS, providing a measurement systems for target operational actions identified by the MAS as leading to intended improvements in profitability, contrary to the proposal of Kaplan and Norton (1996) and (Kaplan and Norton, 2001) but consistent with Meyer (2002).

18.5 Limitations

Choice of studies limited and subjective

The methodology of this study is to address the research question via synthesising the findings of relevant prior research. The effectiveness of how this is achieved is dependant on a range of studies being identified that cover all principal strands of research, at a quality threshold which ensures that the findings have validity. However, management accounting is a key management function and as the range of literature is potentially vast, only a small proportion can be realistically covered (see section 16). It is therefore possible that a different choice of studies would lead to differing interpretations. The first approach to address the potential negative impact of this has been to use the Systematic Review process to provide a structured and analytical element to the identification of the literature, although again as discussed in section 16, this is subject to a level of subjectivity in eliminating studies and dependant on the effectiveness of the search algorithms. A second approach has been to take sounding from the author's academic panel of works that are generally considered to be of significance. This was particularly relevant in relation to the general reading which covered the content of the scoping report. A third approach is to use a structure for analysis which confirms the inherent consistency and relevance of the studies. Finally, the author used his experience of practice to gauge whether the topics covered by the studies are consistent with his interpretation from practice of issues which are of critical importance.

Assessment of studies is subjective

The majority of the studies were not written to address the research question and therefore the findings used in this paper are tangential to the initial research aim of the study. Further, many of the finding are complex and ambiguous. In addition the quality range of the studies is of variable academic quality, although this is mainly applicable to the practitioner papers which are in a minority and were included to provide a depth in the range of studies covered.

Therefore, the interpretations of findings are based on the author's personal assessment of indirect evidence, and it is possible that another researcher may come to a different conclusion as to the significance of the paper to the research question. This potential for alternative interpretations also applies to the classification of the studies against the Otley framework. The use of concrete numerical tabulations gives an apparent air of precision which does not exist; the aim of numerical analysis is to identify trends and themes, not precisely accurate classifications.

Again, as discussed above, the main approach to counteract the negative impact of these factors is to use a structured approach with the intention of ensuring the internal consistency of the analysis, so that where individual interpretations may be open to challenge, the overall trend provides a robust analysis.

Profitability goal

The study concludes that the objective of a MAS is to achieve improved profitability. This is different from the normative assumption of the financial goal of a for profit company which is to maximise the future value of positive cash flow. This approach has been taken in line with the conclusion of P1 that it is the achievement of profitability through achieving an excess of income over expenditure which is the underlying driver of future cash flow, subject to timing differences of the conversion of the assets and liabilities into cash, which may in itself have an impact on profitability through changes in financing costs.

Personal Bias arising from experience in Practice

The author acknowledges that many of the interpretations will be affected by his personal interpretations arising from a long period of use of MAS. This is specifically acknowledged in the discussion section, but will of necessity impact on interpretations made in other sections. However, this personal dimension is consistent with the phenomenological philosophical stance (Easterby-Smith et al, 1991) taken in Project 1 and underlying the whole of the thesis. While this personal bias can be seen to reduce the objectivity of any assessment, it is also intended that it will bring a level of understanding of the issues involved drawn from practice that would not be available to a researcher who has no experience of practice in this field.

19 Conclusion

19.1 Key Findings

This paper set out to identify and synthesise findings from prior work which addressed the following research question

'To what extent can management accounting connect operational decisions and actions with achieving improved profitability? Evidence from a systematic review of literature.

Four themes were drawn out from the findings of a Systematic Review, analysed using a framework proposed by Otley (1999), that were assessed as having a critical impact on the issue raised by answering this question: - Single corporate and multiple operational perspectives, endemic management tensions, endemic uncertainty, potential of real time systems. A conceptual framework was proposed, drawn from these four themes, built on the Otley framework to produce a map of the functions, organisational levels and time frames that are required for a MAS to function effectively to meet its goal.

Appraisal of this framework against research evidence and proposals, and informed by the authors personal experience of practice, identified a number of key factors that affect the effective operation of a MAS. Of these, two interlinked factors - the acceptance of a financial goal as the overriding objective, and the central role of feedback - were assessed to be of critical importance in providing the main underlying drivers of a MAS as mapped in the framework. These factors are critical as they

provide a method of addressing the consequences of the uncertain, multi perspective, management tensioned environment in which an MAS has to operate, where there can be no 'optimum' solution, only relative success. The single financial goal provides a central focus and thus a degree of relative certainty of purpose, and is consistent with the roots of management accounting as an economic discipline. The feedback provides a method of connecting operational performance to overall target financial outcomes, through building in a capacity for continual adaptive and learning response to an operating environment which is uncertain, changing and continually being reassessed.

The paper therefore proposed a generic framework of the functions and the interrelationships required by a MAS if it is to meet its objective as defined in the research question. However, while the framework maps the generic function and interrelationships required, and several key factors were identified as having a significant impact on its use, the actual effectiveness of its use is dependent on how it is implemented in specific context.

19.2 Contribution to theory

Provide overall framework for MA.

The aim of this paper was to review prior research into management accounting with the intention of synthesising their findings into a coherent analysis and framework that is relevant to the research question. The study concludes, unlike other reviews (Ittner and Larcker, 2001), (Zimmerman, 2001) that there is a coherent theme to management accounting, based in its roots as an economic practice, which is centred on the objective of achieving a financial goal. Further, four key themes are identified which impact on the potential for MA to achieve its goal, and these are used to develop a framework which generically identifies the functions and interrelationships required by a MAS for it to be effective.

Under-researched areas

The central conclusion of the study is based on the assumption that the role of MA is to inform and control management actions aimed at achieving improved profitability. Drawing on prior findings, a conceptual framework is proposed on the key function necessary for a MAS to achieve this goal. However there is no evidence against which to test the effectiveness of this proposal relative to practice as very few studies in general terms, and none in specific terms, attempt to assess the effectiveness of an MAS in relation to actual performance of improved profitability. This is despite the majority of studies explicitly accepting that the goal is to improve profitability. There is therefore a body of studies that provide no evidence about the extent to which their proposals impact on the achievement of the objective which is the goal of the practices being researched.

The importance of the gap is magnified by the identification of this study - that it is the use of the feedback of actual performance against intent which is the central dynamic

force behind the operation of an MAS. Therefore, without evidence or research into this feedback in practice, the development of theory on the effectiveness of the propositions is difficult.

Provided evidence of use of Otley framework

The Otley framework was specifically proposed for use in further research. This study uses the framework for this purpose, and provides a further development of its utility by using its structure as a major component of the proposals for a generic framework of an MAS

19.3 Contribution to practice

The proposed conceptual framework provides a map of the functions and interrelationships required for a MAS that can facilitate the achievement of improved profitability. It therefore provides a benchmark and check list against which a MAS, operating or being developed, in practice can be assessed, with the potential as a consequence, of gaps in functionality to be identified and remedial action implemented. It can also provide a conceptual guide to both operational and corporate management to place the relevance and significance of any particular function they manage in the overall organisational context.

RESEARCH PROJECT 3

November 2006

How can management accounting inform and control operational decisions and actions to facilitate the achievement of improved profitability? - Evidence from an in depth study of a medium sized logistics business

ABSTRACT

This study reports on the findings of an in depth longitudinal Case Study of a medium sized UK logistics company. The framework for analysis was based on a conceptual framework developed on P2 that built on the proposals of Otley (1999), and that aimed to identify the functions and interrelationships required for a Management Accounting System (MAS) to effectively perform its role.

The study concludes that the operation of the MAS is fundamentally determined by the impact of uncertainty. However, the impact of uncertainty is transient and asymmetrical; the operation of the systems therefore oscillates between operating under conditions of certainty and uncertainty, fitting Kurt Lewin's model of organisational change (Hatch, 1997) - unfreeze/change/refreeze. Four dimensions of uncertainty are identified – customer changes, market factors, reporting validity and management effectiveness. The customer changes and market factor uncertainties directly impact on assessment of the core element of accounting reporting, –financial transactions. Reporting validity and management effectiveness add further layers of uncertainty which problematise the interpretation of the significance of changes and the effectiveness of response.

While these uncertainties provide an intrinsic limitation on the potential effectiveness of a MAS to facilitate profitability improvement, the study identifies several response approaches that partially address these limitations. It also proposes a revised framework updating the P2 proposal to incorporate the relevant P3 finding . While these responses are identified as partially effective, the study also concludes that an effective MAS that meets the requirement of the proposed framework is of critical importance in the achievement of profitability goals.

20 Introduction

20.1 Project purpose and question formulation

The question this Project addresses was framed from the findings of Projects 1 and 2 and is:

How can management accounting inform and control operational decisions and actions to facilitate the achievement of improved profitability? - Evidence from an in depth study of a medium sized logistics business'

Project 1 was an empirical longitudinal study. Its main output was an in depth model of a MAS, demonstrating how financial outcomes are a consequence of the financial implications of operational actions. The principal finding was that the role of MAS is to inform and control in a way that operational actions can be changed so that this will lead to improved profitability. The study concluded that that the principal role of a MAS is to provide information in a manner that facilitates the initiation of operational actions which produce financial outcomes that, when aggregated, meet agreed financial goals. Two strands for further work were proposed. Firstly, to draw from prior research conclusions and proposals on the extent to which MA can be used to instigate operational actions which results in financial outcomes that meets profitability objectives. Secondly, to extend the in depth empirical research beyond defining the role of an MAS, to assessing how effectively it can be used to achieve the intended goal.

Project 2 addressed the first work strand, using a Systematic Literature Review methodology (Tranfield and Denyer, 2003) and a framework for analysis proposed by (Otley, 1999). Four key themes were synthesised from the findings as having a critical impact on the extent to which Management Accounting (MA) can connect operational decisions and actions with achieving improved profitability - multiple perspectives (product, customer, throughout, process and overall financial); endemic tensions (centralised v devolved, fixed v flexible, control v inform); endemic uncertainty; and potential of real time systems.

Building on the Otley framework and drawing on these findings, a conceptual framework was proposed identifying the functions and interrelationships required for a Management Accounting System (MAS) to effectively perform its role. Appraisal of this framework indicates two interlinked factors of critical importance - the acceptance of a financial goal as the overriding objective, and the central role of feedback. The financial goal provides a certainty of purpose; feedback provides a mechanism to connect operational actions to financial outcomes, and to inform necessary reassessments and adaptive responses in a changing, uncertain operating environment. The paper concluded by identifying a significant gap in specific research on the impact of MAS on the achievement of intended actual financial outcomes, and by proposing further research to address this gap using the conceptual framework proposed as a structure for analysis.

Project 3 aims to address both the second further work strand identified in P1 and the gap identified in P2. The methodology used is an in depth case study. The intention is to provide in depth evidence of practice of how a MAS can be used to deliver profit improvement goals**.** The intended outcome is an identification and assessment of the factors and limitations that critically impact on its ability to achieve this role. This will then meet the objective of extending the P1 finding to an assessment of effectiveness in use, and providing some evidence to meet the research gap identified in P2.

The study is based on the premise that MA is a calculative practice whose purpose is to facilitate the achievement of financial goals. This provides an economic focus to the broader general assumption that 'MA researchers are ultimately interested in providing some insight into which practices have favourable effects on organisational performance' (Ittner and Larcker, 2001).

The paper consists of six sections. The first section defines the question and then outlines the relationship of this project with earlier projects. The second section describes the method used for data collection and analysis, including a description of the data used to inform the case study. The third and fourth sections present the case findings from differing operational and corporate perspectives, in line with the structure of the P2 framework. The fifth discusses the implications of the studies, specifically by reference to the research question, prior research and practice, concluding with an assessment of the limitations of the study. The sixth concludes, summarising the contribution for theory and practice, and outlining the way forward to integrate the total Doctorate.

21 Method

21.1 Introduction

The research undertaken is a longitudinal case study of one company, - Sutton Support Services (previously Hammonds), a Midlands based UK logistics company with sales of £36m, the same company that provided the case for P1. The methodology and philosophical background is the same as P1, and is in line with the methodological proposals of Berry and Otley (1995), and Eden and Huxley (1996). The period of the research covered 24 months from 1/4/03 to 31/3/05. This covers the majority of the period between two changes of ownership. During that period the author was executive chairman, and along with the CEO, a controlling shareholder (35% shareholding each). The final 30% shareholding was held by institutional investors. As a consequence of the authors' role, total access was available to all the company's internal and externally produced records, minutes and reports, however financially sensitive. On 17/1/03 there had been a refinancing that saw existing institutional shareholders reduce their shareholding, with funding arranged by increased bank debt. On 30/3/05 the whole of the shareholding was sold to a third party, and the company became a subsidiary of a larger operating company. The period therefore covers a discrete period of time, book marked by independent market driven valuations of the company.

P1 provided an in depth description of the operation of the MAS, which is summarised in the overall model (Figure 10-2), illustrating the identity, nature, and interrelationships of the data and information produced and used by the MAS. This model and the description in P1 therefore provides a map and guide against which the data collected can be positioned. The core operational structure was as shown in Figure 21-1, although it was subject to changes as discussed in Section 23.

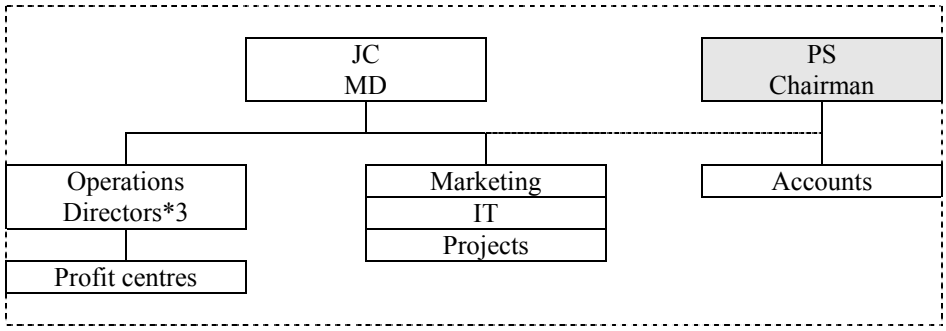

Figure 21-1: P3 organisational structure

P2 provides the framework for analysis of the research. The two critical factors identified (profit goal and feedback) provide the overall themes that underpin the design of the research. The profit provides the focus of the research. The assessment of feedback of actual performance against intended feedback provides the context within which the profitability is assessed. These two factors draw in three of the elements of the Otley framework from which the P2 framework was developed – profit as the objective, target as the target profit, and feedback being represented by actual performance and its variance from target. The distinction between corporate perspective and operational perspective provides the overarching structure of the research. The four key themes identified provide a framework of potentially impacting factors against which the implications of the findings are assessed: multiple perspectives (product, customer, throughout, process and overall financial); endemic tensions (centralised v devolved, fixed v flexible, control v inform); endemic uncertainty; and potential of real time systems constructs

Two types of data were collected – financial and documentary. For the financial data the process was designed to draw out from the data financial outputs likely to stimulate management response through the feedback. This was assessed principally as being variances in profit performance. For the documentary data the process was designed to categorise the data in line with the financial reporting structure to provide evidence of how the feedback of financial outputs was interpreted and used. The starting assumption was that the level of management actions stimulated by the feedback would be broadly proportionate to the volume of the data. The unit of analysis is cost and profit centres.

21.2 Data collection

The financial data, extracted from the company's records, consisted of weekly accounts, monthly accounts, annual accounts and plans and targets. Full details of their content and how they are produced are shown in P1, and their interrelationship is summarised in Figure 10-2. All data is recorded in excel spreadsheets, which is the format used by the company to produce financial data.

The Weekly accounts consisted of 104 sets of weekly accounts covering the week endings from 5/4/03 to 27/3/05. These accounts were referred to as flash accounts in company parlance. They are produced from operational data. Their make up was a detailed profit statement produced for each Profit Centre (up to 38), and an overall summary showing the company's weekly profit. That profit was made up of the aggregated profit and loss from each profit centre (normally called contribution) less the aggregated cost of central overheads and interest. Also included was a weekly target agreed at the start of each quarter between corporate and operational management, and a variance between target and actual. This information was taken to provide the operational perspective identified in the P2 model. Monthly accounts consisted of 24 sets of accounts covering the period April 2003 to March 2005. These accounts were produced from the company's double entry accounting system and distributed to key financial stakeholders which were principally the institutional shareholders and the bank. They were also reconciled as far as possible to the weekly accounts to ensure the validity of the weekly accounts. Annual accounts consisted of 2 sets of accounts for March 2004 and March 2005, including detailed support schedules produced both by the company staff and the auditors. These were produced from the company's double entry system and are developed from the last month end management accounts, but amended for further validation and inclusion of changes to comply with standard accounting policies. The final version was as agreed with the auditors and included agreed audit adjustments. Plans and targets consisted of a range of spread sheets produced on an ad hoc basis to calculate forward projections .

The documentary evidence consisted of data of a diary kept by the author and data extracted from the company's records including board minutes, financial commentaries, sundry emails, minutes and memos. Full details of their content and how they are produced are shown in P1, and extracts used during the presentation of the findings provide examples. The Diary was kept by the author from June 2003 to March 2005. Board meetings were generally held quarterly both for the holding company and trading subsidiary company. Copies of 11 board meetings both for the holding and operating company, were used. Financial commentaries were the written financial report which was produced along side the monthly management accounts and distributed to the company's financial stakeholder – in particular, the institutional shareholders and bank. 23 commentaries used each covered a month in the period being researched. Sundry minutes, emails and memos relate to 15 different minutes and memos produced by a range of staff. In addition there was access to the summaries and extracts from highly confidential customer contracts, including pricing mechanisms, service obligations, operational profiles and terminations dates.

21.3 Data analysis

Approach to analysis

The approach adopted for the data analysis was twofold. The first stage was to extract and summarise the financial and documentary evidence assessed as relevant from the primary data sources. The summaries were recorded for both financial and documentary data in clear date order, using the 24 months of the study format as the basic time structure. The second stage was to match the financial and the documentary data to produce a link between the financial information that informed management actions as recorded in the documentary data, and evidence of the financial outcomes arsing from those management actions.

Financial Data

For the operational analysis the key unit of analysis was the individual Profit Centres, with financial data provided by the weekly accounts. The performance as reported in the weekly accounts was used for the basis of analysis. The actual contribution, target contribution and sales were summarised for each Profit Centre (PC) and Cost Centre (CC) for the 104 weeks from we 5/4/03 to 25/3/05 in a standardised format. The profit centres were referenced to the node number references (see below) to allow for later cross referencing. The weekly average and standard deviations (SD) for the actual profit, and variance from plan was then calculated for each profit and cost centre to provide a consistent measure of the spread of performance. The interpretation made was that the larger the standard deviation, the greater the level of management action likely to be stimulated by the feedback. As shown by the Figure 21-2 and statistical analysis (corr = .94), there is a close correlation between the SDs for both actual profit and variance from plan, leading to the conclusion that they could be treated as materially similar indicators.

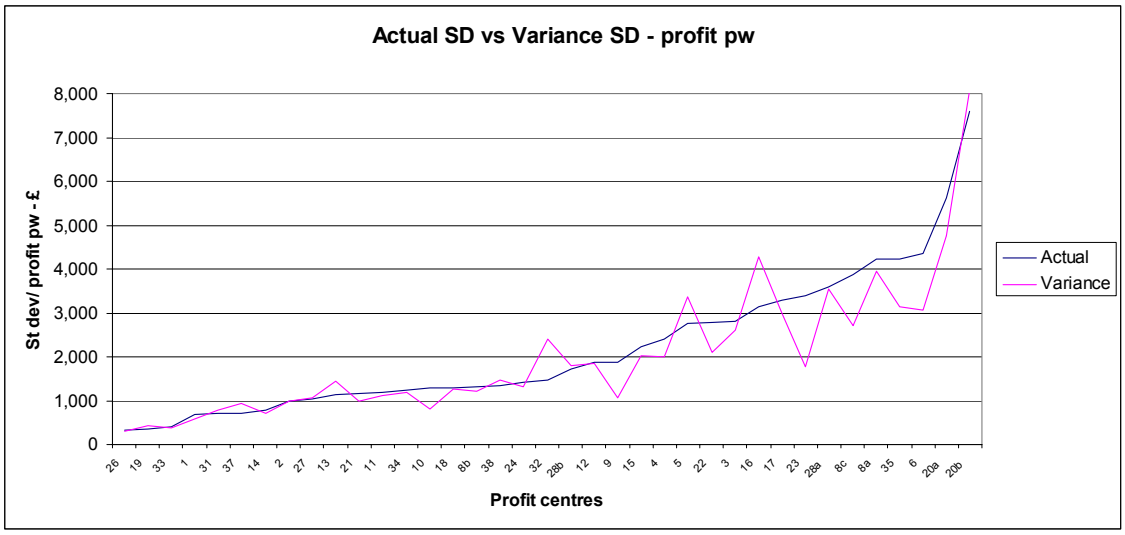

Figure 21-2: Actual Standard deviation – actual vs. variance

The profitability performance for each profit centre was then graphed against the target for each week, using a four week moving average to smooth the results to reduce noise and aid interpretation. In some cases, where documentary evidence indicated correlation of profit and sales was significant, sales values were also plotted using a second axis scale. This was only done for a minority of PCs as the sales information was not reported consistently over the 104 weeks of the study period, sometimes including intercompany sales, sometimes not. To obtain valid data, sales figures had therefore to be reconstructed week by week from base weekly data to provide coverage over the 104 weeks of the study period (see Appendix B-1 for details for all Profit centres).

For the corporate perspective the unit of analysis was the overall corporate performance, made up of the aggregation of all the Cost and Profit Centres. Financial data for the corporate perspectives was drawn from summaries of company performance as recorded in the weekly (flash) accounts, monthly management accounts and annual audited accounts as extracted from the original data. The weekly profits were summarised to show company weekly profit against target (Appendix C-1), analysis of PC profit changes (Appendix C-2), variance against target on a quarterly basis (Appendix C-3) and analysis of overheads cost by week (Appendix C-4). The monthly accounts performance was compared to the equivalent weekly accounts performance (Appendix C-5). The annual performance of the weekly, monthly and annual accounts were compared (Appendix C-6). The monthly debt levels and interest cost was extracted from the monthly accounts and consolidated (Appendix C-7).

Documentary data

All the documentary data was imported into Nvivo.2. This gave a total stock of data of approximately 100,000, words assuming 6 characters per word, as shown in the following table:

	No of docs	Characters	Est words	%
Diary	22	402,599	67,100	66.9%
Formal Board minutes	19	95,920	15,987	15.9%
Man acs commentary	21	59,674	9,946	9.9%
Emails mins etc	14	43,716	7,286	7.3%
	76	601,909	100,318	100.0%

Table 21-1: Documentary data - volume

The data has all been allocated to months numbered 1 to 24 so that the data is chronologically in line with the financial data, i.e. from (1) -April 03 to (24)- Mar 05. The data was then sorted into nodes allocating the data into 1313 separate passages, as shown on Table 21-2.

	Diary	Man acs comm	Operating board	Holding board	Emails, mins etc	Total
Summary						
Operations perspective	465	132	77	54	53	781
Corporate perspective	394	60	30	31	17	532
	859	192	107	85	70	1313
Operations perspective						
PC 1	7	1	0	0	0	8
PC 2	7	2	2	2	1	14
PC 3	18	5	5	1	2	31
PC 4	9	2	0	2	4	17
PC 5	24	1	1	3	0	29
PC 6	13	4	1	1	2	21
PC 8a	41	6	9	2	7	65
PC 8c	7	2	3	1	3	16
PC 10	6	1	0	0	1	8
PC 11	7	6	5	0	2	20
PC 12	9	2	1	1	0	13
PC 13	5	0	0	0	0	5
PC 14	2	0	0	2	0	4
PC 15	13	3	1	3	2	22
PC 16	8	2	2	2	2	16
PC 17	23	16	6	1	3	49
PC 18	8	1	0	0	1	10
PC 19	2	0	0	0	0	2
PC 20	91	20	10	9	3	133
PC 21	5	5	3	4	0	17
PC 22	14	3	2	3	1	23
PC 23	6	2	3	4	1	16
PC 24	7	0	0	0	1	8
PC 26	2	0	0	0	0	2
PC 27	4	3	1	0	1	9
PC 28	60	9	11	4	8	92
PC 31	6	0	0	0	1	7
PC 32	9	4	4	3	2	22
PC 33	3	8	0	1	0	12
PC 34	7	3	0	1	2	13
PC 35	32	13	5	3	1	54
PC 38	10	8	2	1	2	23
	465	132	77	54	53	781
Corporate perspective						
Profitability- monthly	18	35	3	10	2	68
Profitability – weekly	43	0	1	0	2	46
Targ,strat,struc,bonus	96	4	6	5	8	119
Sales and new	16	0	7	1	0	24
Cash and borrowing	29	21	5	10	3	68
Financial sholders	52	0	1	3	1	57
Weekly acs production	34	0	3	0	0	37
Monthly acs production	71	0	1	1	1	74
Annual acs production	16	0	0	1	0	17
Cost control system	19	0	3	0	0	22
	394	60	30	31	17	532

Table 21-2: Documentary data passages by profit centre

The node structure was developed as follows. The split between operations and corporate perspective was informed by the P2 framework. The profit centres for the operations perspective were informed by the operational structure of HLG as recorded in the P1 model. These nodes were interpreted as reflecting the operational perspectives as they recorded the management actions and interpretations at the operational level of the profit centres. The corporate perspective nodes were developed inductively from interpretation of the data and by the differing types of accounts identified in P1. The documentary data was then copied from NVIVO 2 to a separate word document for each node.

As the documents had been numbered chronologically by month number, the data was automatically sorted into chronological month order. The data for each node was then reassessed for relevance and any data assessed as being totally non relevant was discarded. In addition, the format was tidied and rationalised, as the NVIVO.2 format is not produced in a reader easy manner. Appendices A1 to A-5 provide examples both of detailed documentary data identified as being relevant and how the information was summarised.

Match financial data with documentary data – operational perspective

The graphs for each PC recording the four week moving average of weekly profitability, targets and sales, were copied into the word document containing the documentary data allocated to each operational node, as identified in Table 21-2. In three instances there were two cost centre for one set of documentary data where there were two profit centres (e.g. separate profit centres for warehousing and transport services). This was addressed by reallocating the documentary data to the financial data to which it relates. The profit centres were grouped into four classifications: - dedicated contracts where resources, such as trucks and warehouses, provide dedicated third party logistics services for one specific customer; semi dedicated where one customer is supported by a mix of dedicated and shared resources; network where multiple customers are serviced by a mixture of company and subcontracted resources; and warehouses where warehouse services only are provided to either single or multiple customers.

The documentary evidence then was reviewed against the financial performance, as shown by the graph for each PC. The management action or interpretation that related to specific movement or variance in profitability was summarised and cross referenced to the graph. This identified for each profit centre specific management actions or interpretations relating to that profit centre, and the corresponding financial impact or related changes to that action or interpretation (see Appendix A for examples).
The findings were then analysed and summarised using the framework developed in Project 2. The interpretation of the findings was supported by the prior ranking of the profit centres. This ranking was based on the conjectures that the best indicators of management interventions and activity would be the number of volume of documentary data and the quantum standard deviation of weekly profit performance. The conjectures assumed that the documentary data would record management interventions and significant interpretations, while the standard deviations would provide a measure of variation of performance. Table 21-3 shows a ranking of the profit centres using a combined average of the St dev and documentary ranking. As 11 of the profit centres

either started or terminated during the 24 months of the study to ensure compatibility of documentary data a calculation of the average number of passages per node/profit centre per week was used for the ranking, not the absolute number, as shown on Table 21-2.

Ref	Type	Passages		Profit		Ranking		
		No	Pw	Avg pw	S Dev	Pass pw	Profit SD	Comb
20b	Ded	66	0.63	7,299	7,604	2	1	1
20a	Ded	67	0.64	4,704	5,628	1	2	2
35	Ded	54	0.52	11,923	4,227	4	4	3
28a	Semi	52	0.50	1,256	3,607	6	6	4
17	Ded	49	0.47	1,338	3,291	7	8	5
5	Semi	29	0.56	3,326	2,770	3	12	6
8a	Semi	16	0.31	3,732	4,221	11	5	7
23	Semi	16	0.31	5,323	3,394	10	7	8
22	Semi	22	0.42	3,737	2,796	8	11	9
28b	Ded	40	0.51	1,463	1,721	5	16	10
6	Net	21	0.20	2,432	4,344	20	3	11
3	Semi	31	0.30	3,200	2,798	13	10	12
8b	Wh	33	0.32	(514)	1,305	9	20	13
32	Ded	23	0.29	6,221	1,478	14	17	14
16	Semi	16	0.15	5,505	3,150	23	9	15
15	Semi	22	0.21	2,276	2,229	19	14	16
4	Ded	17	0.16	3,663	2,394	22	13	17
38	WH	23	0.22	(1,415)	1,341	18	19	18
11	Wh	20	0.26	(2,445)	1,186	15	24	19
12	Semi	13	0.13	1,974	1,868	25	15	20
21	Ded	17	0.23	4,064	1,163	17	25	21
8c	Wh	32	0.31	(993)	707	12	30	22
14	Semi	4	0.25	(310)	775	16	29	23
24	Net	10	0.10	1,020	1,416	28	18	24
18	Semi	13	0.13	805	1,296	26	21	25
2	Ded	14	0.16	1,141	994	21	28	26
13	Semi	5	0.14	1,250	1,136	24	26	27
10	Net	8	0.08	990	1,284	31	22	28
34	Semi	8	0.08	578	1,244	32	23	29
27	Net	9	0.09	3,210	1,031	30	27	30
33	Ded	12	0.12	4,258	401	27	33	31
1	Ded	8	0.09	697	674	29	32	32
31	Semi	7	0.07	2,148	702	33	31	33
19	Ded	2	0.02	1,239	351	34	34	34
26	Wh	2	0.02	1,499	326	35	35	35

Table 21-3: Profit centre ranking

Match financial data with documentary data – corporate perspective

Compared to the operational perspective there was only one level of aggregation – company profitability – but three differing sets of accounts – weekly, monthly and annual. The documentary data assessed as reflecting the corporate perspective (see Table 22-2) was therefore allocated against the accounts which informed the management assessments and actions recorded by the data. This then set up the potential for a cross analysis between the three differing types of accounts.

22 Findings – operational perspective

22.1 Introduction

The relationship between profitability outcomes and the use of MA from an operational perspective is initially illustrated through five mini case studies of profit centres. The aim is to provide an insight, based on the empirical evidence, of how the relationship operated between the achievement of profitability and the use of MA, including specific illustrations of the role and impact of uncertainty, endemic tensions and multiple costing perspectives. The cases were chosen by reference to the ranking analysis in Table 21-2. Three were cases chosen to cover the highest ranking of management interventions to provide a rich level of evidence, the fourth was chosen to give an illustration of a network profit centre, and the final was chosen from the lowest rankings to illustrate a situation where there are few interventions. Full details of the relevant documentary evidence supporting these studies are included in Appendix A.

Each of the Profit Centre Cases concludes with a standardised summary assessing the role and impact of the key of the main elements of the P2 framework. A similar analysis, based on the same level of information was also undertake for the other 30 profit centres, leading to a stock of 35 separate sets of equivalent analysis for each profit centre. The three elements, planning/target/ feedback are considered in relation to the overall assessment of outcome for profitability, as all three relate to differing dimensions of either actual or projected profitability and are interrelated in the assessment and implications of variances. Full details of the standardised summaries are included in Appendix B-1.

This stock of standardised analysis therefore provides a base for a cross case analysis of the impact and role of each of the key element of the framework across the thirty five profit centres. This is undertaken in the sections following the illustrative profit centre (PC) case studies.

22.2 Profit centre case studies

PC 20(b)

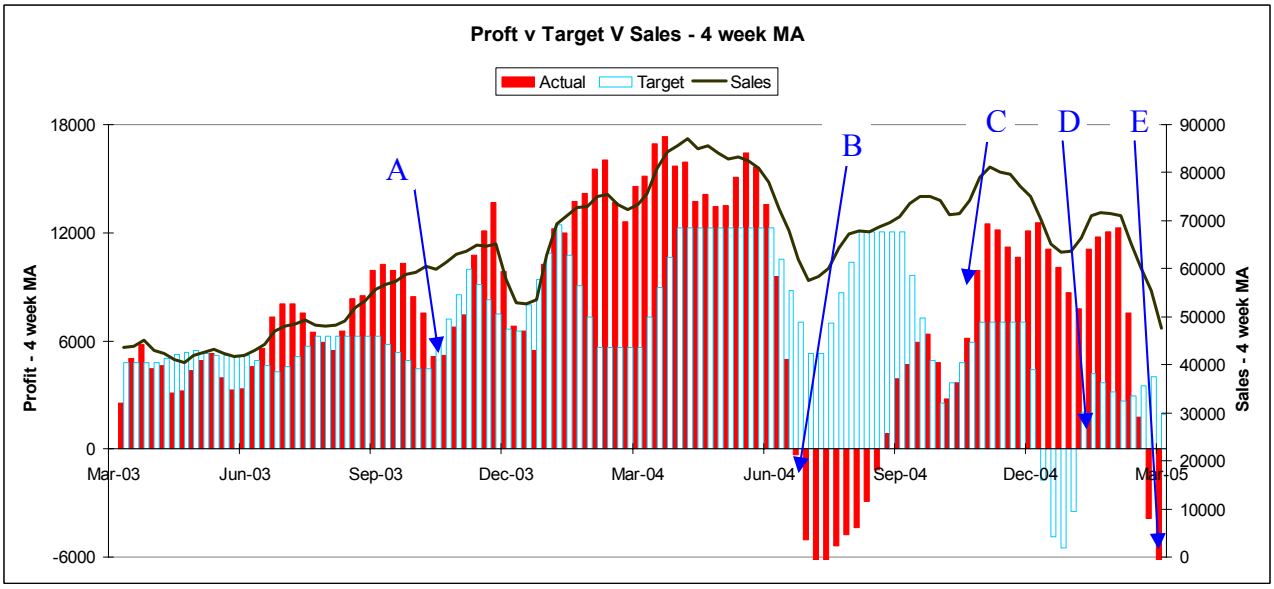

Figure 22-1: Profit vs. Target vs. Sales (PC 20(b)

This profit centre effectively reflects two different operations, although internally they were treated as one profit centre. From April 2003 to June 2004 the profit centre covered home distribution from one store. From June 2004 to March 2005 it covered distribution from a central warehouse throughout the UK based on a different set of terms.

From April 2003 to Jun 2004 profit increased broadly in line with the customer strong sales growth, apart from a short term reduction in October 2003. This triggered an intervention which identified poor staff management leading to high agency costs, which led to remedial actions (A). March to Jun 04 was an unclear stage while attempts were made to negotiate the central distribution contract and extend the store home delivery contract. In June 2004 the customer advised that the store contract would be terminated at two week notice, but that the company would be awarded the central distribution contract for the South of the UK on a provisional basis, as described in the dairy – *'Situation is unclear as customer timetable and requirement fluctuates. As operational requirement is not clear, cost required are not clear. However customer will operate on an open book – although they have a target price of £49 per drop'.* Process cost analysis had indicated that the target price of £49 would be achievable.

In July 04 there was a major swing from profit to losses (B). A centrally driven operational and financial review identified, that at an operational level, there had been no plan to reduce costs to respond to termination of store work. The conclusion was summarised in the dairy thus '*the situation is not clear at PC 20 (b), and profitability may collapse but not sure why as PY (Director on suspension for sexual harassment)*

seems not to have made any constructive plans to change the method of operation to fit in with the warehouse direct contract, or make arrangements for the losses of PC20b.'

A new central manager was assigned to conduct a turnaround as a matter of urgency, as the size of the losses were very significant in relation to overall corporate performance. A twin strategy was adopted of reducing costs while aiming to firm up pricing arrangements with the customer. While it was unclear what price could be charged the loss was reported based on the assumption that £49 per drop was the maximum that could be charged, even though the contract was theoretically open book.

From July to December 2004 improvement to operational processes allowed costs to be reduced to bring them into line with reduced revenue, and continued negotiation were undertaken with the customer using arguments based on open book analysis to justify prices charged. A fallback position was taken that if profitability was not adequate the contract would be unilaterally terminated. Profitability results were reported on the basis of best estimates of prices that would be accepted by the customer, but given the uncertainty, low targets were set. This process led to improved performance, with significant positive variances against budget, with some of the work undertaken on a network basis by the vehicles based at PC20(a) (C). The evolving situation is summarised by the following quote form the diary '*Overall agreed that the position was becoming clearer each time we review the position, and therefore we can defer the decision, especially as we are on 3 months notice for the CD (central distribution contract) so we in effect have an option to get out, although the cost of the option is the lack of security, although compensated by us having all the trucks etc on short term rent'*

In January 2005 the customer announced that the business for the total UK, not just the South, would be put out to tender, which led to the commencement of a full exercise of process analysis, product pricing and production of customer tender (D). In March 2005 PC20 (a) was closed at short notice leading to the loss in throughput for the vehicles based there which led to a return to losses. (E) The response to this occurred in the period beyond the scope of this study.

The case illustrates a mix of uncertainty matched by periods of relative stability. It provides a graphic example where adaptive action is not instigated at an operational level (B) and has to be stimulated by central intervention and a change in management. It demonstrates how profitability increases as a consequence of additional customer led sales impacting profitability through a beneficial price mechanism (A), through reduction in cost through process changes (C), subject to being linked with negotiating price increases. It illustrates how the certainty of future profitability is impacted by uncertainty over the length of the contract, the pricing terms and the service profile to be met. It illustrates how changes in service profile instigated by the customer (B, E) have a major impact on profitability which requires a reactive response, but is difficult to respond to proactively as the circumstance of the change and its impact are not clear until they occur. Finally it illustrates how using MA feedback profit improvement responses can be implemented and their outcome monitored for success, but not until after significant loss of profitability has been encountered and with no certainty of the length that future profitability will be maintained.

Question	Answer	Evidence
Profitability change		
Outcome for profitability?	Increase and reduce	Profit in line with sales Mar 03 to Jun 04. Jun/July major profile change led to major decrease (£25k pw). Price renegotiation and operational restructuring led to established profits (Sep to Feb 05) . Further profit drop in Mar 2005 as profile changes against. Failure to anticipate Jun 04 drop led to management changes
Nature and impact of response	Man /op /sales	Decreases caused by change in customer profile, management ineffectiveness. Increases caused by rising sales and operational restructuring following management change.
Impact of uncertainty		
Encountered uncertainty?	Pricing. Operational cost Contract.	Customer driven changes (B,D), senior management capability (B), pricing terms (C)
Impact of endemic tensions ?		
Central v devolved	Devolved / Central	See (C)
Control v Inform	Control and inform	Continual reassessment but targets used to guide determination of acceptable advices, and variances raising the question whether it is a matter of implementation failure (control), or requiring adaptive response as feedback indicates a changed operating environment
Fixed v Flexible	Flexible/ fixed	The constant changes and uncertainty leads to requirement for flexibility, with profitability targets adjusted to evolving circumstances
Impact of multiple perspectives		
Process	Pricing / operational analysis	Costing processes provides the basis for pricing assessment and assessing financial impact of restructuring
Product /Services	Not used	Service provided to customer treated as product
Customer	Price setting / target setting	Prices negotiated with customer based on customer advised operational profile and costed process analysis. Including price ratchets aimed at responding to variations from profile. Confirmed by contract, but some interpretations contested
Throughput	Profitability driver	Potential to achieve improved profitability by increasing throughput per unit of resource when price set

Table 22-1: Analysis of PC 20 (b)

PC 35

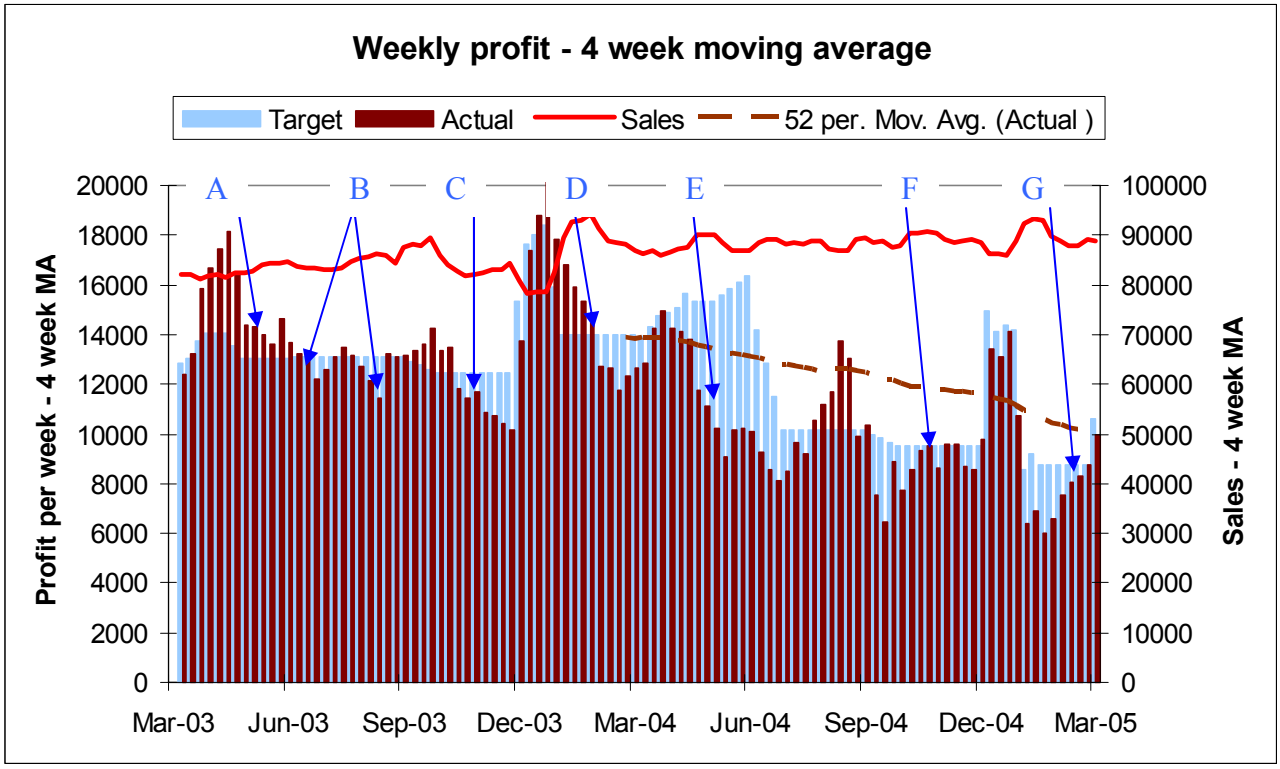

Figure 22-2: Profit v Target v Sales (PC35)

PC35 was a contract to deliver spares to all UK garages on a daily basis for a major motor vehicle manufacturer. The contract had been held for 18 years, and had always been the company's headline performer for profitability, service innovation and prestige of the customer. Over the years, profitability had been on a continuous steady upward trend as the customer expanded.

From April to September 2003 the contract continued to perform in line with its historic profile with good consistent dependable profitability (A). However, in August and September 2003, higher subcontractor costs were noted to be harming profitability. As described in the diary - *'it has never been significant before',* although the conclusion was that it was a blip, not a trend (B)

In October 2003 operational problems relating to scanning effectiveness were identified, which required further staff agency costs to overcome problems, thus reducing profitability. However, it also became apparent that many difficulties may be arising as a result of a harder commercial line being taken in agreeing extra charges following a change in management responsibility by the customer from the UK to Europe (C), as reported in board minutes of October 2003 *'PC35 was being de-stabilised by the move to European management and change in relationships and system.'*

From Jan 04 to April 04, after the normal seasonal Xmas/New Year performance, in response to continued underperformance both operational and management changes

were instigated to address the issue and actions were assessed as being satisfactory, as recorded by an internal email by the CEO who wrote *'I have copied you in on AF memo re PC35 P&L, he seems to be on the case'*. This was further confirmed by a full financial review of the cost structure of the contract, which led to the conclusion that the cost drivers were now better understood, and spending limit controls were being put in place to ensure targets were met. (D)

However, in May 04 profit was still assessed as being below target with the results of an analysis of weekly profitability being recorded in the diary as '*costs up across the board*'. This led to a further reassessment which concluded that there is an underlying change in the operational nature of the contract, leading to a fundamental change to profitability and requiring fundamental changes. This is explained by the following July 2004 diary extract (E), recorded following a full review meeting– *'PC35 is out of line superficially because of higher agency and own non chargeable couriers, which Andy is having difficulty in sorting. However on discussion of the reasons became apparent that the job that involves a lot of handballing off is not now popular and the tight labour market has led to difficulties in recruitment. Further the PC35 garage base has changed to larger edge of town garages, where volumes are bigger. This means the competitive advantage of hand balling to small garages where roller cages cannot get is no longer relevant, and other companies have developed track and trace roller cages (i.e. containers) which is eliminating our competitive advantages. With the fleet getting older there are therefore strong pressures both reducing our competitive advantage and profit. Agreed that need to have a major rethink of the systems built around roller cages for delivery, not handballing, and linking the tracking technology around this'*

This reassessment led to a reduction in the target and a focus of trying to use spending limits to maintain profitability, while developing a new operational solution to address the newly identified underlying issue (E). Cost pressures, however, continued to reduce profitability, leading to a further reduction in target and further attempts to provide tighter control, with profitability only increasing over the Xmas and Easter holiday periods, where the nature of the contract meant income was received over holiday periods when costs were significantly reduced (F).

This case provides an example where management action, instigated in response to feedback signals, was not able to stimulate action to improve profitability. After a range of initiatives, profitability was accepted as being at a lower trend than previously and targets were lowered. The case illustrates how, in a long established customer contract which had a record of continued increases in profitability, unforeseen changes, both in the operating environment and by the customer, lead to adverse financial consequences. This provides an example of a situation which had been assessed as low uncertainty moving to a position of high uncertainty, following the classification of (Burchell et al, 1980), moving from a position of computation to that of judgement. The feedback system therefore provides signals that there may be a change in uncertainty levels, but it is left to judgement as to how that is interpreted. Again the case shows that the approach to the judgement issue is to aim to address the problems on a rolling basis with a constant reassessment of the output. The case also demonstrates where changing price mechanism means that increased sales do not necessarily correlate to increased profits.

The impact of all three endemic tensions is illustrated. Management responsibility is devolved provided the fixed type performance targets be met; when they are not central management intervenes. After central management intervenes the variances are interpreted as informing a change in operational environment not a failure of control. This then leads top a change in targets. However, the case illustrates the uncertainty surrounding the interpretation of feedback, and the consequent dependency on management judgement, for which there is no certainty that it provides an optimal response.

Finally, the case again provides evidence of the use of customer/ product costing to agree the terms of trading and to use to negotiate with the customer, while process analysis is used to cost the elements and interrelationship of the resources used to build up the product costs.

Question	Answer	Evidence
Profitability change		
Outcome for profitability?	Reduce	Profitability consistently decline despite increase sales (see graph). Documentary evidence show nature of response
Cause and response	Op changes / pricing	Change in customer management and trading environment create worsened operational context. Operational response fail to halt profit decline, but may limit impact
Impact of uncertainty		
Encountered uncertainty?	Pricing. Op cost	An apparently stable operating environments move to a changing environment
Impact of endemic tensions		
Central v devolved ?	Devolved / Central	Initial leave largely devolved (B,C,D), but as evidence of continued shortfall continues central interventions (E)
Control v Inform ?	Control and inform	Continual assessment and reassessment whether the feedback is indicating that shortfall is a function of failure in management control, or a response to a changed operating environment
Fixed v Flexible ?	Flexible/ fixed	Fixed centrally derived goal gradually reduced as potential performance levels down graded
Impact of multiple perspectives		
Process?	Pricing / operational analysis	Costing processes provides the basis for pricing operational changes and new contract proposals
Product /Services?	Not used	Service provided to customer treated as product
Customer?	Price setting / target setting	Prices negotiated with customer based on customer advised operational profile and costed process analysis. Including price ratchets aimed at responding to variations from profile. Confirmed by contract, but some interpretations contested
Throughput?	Not used	Not used as resources agreed with customer

Table 22-2: Analysis of PC 35

PC 28 (a)

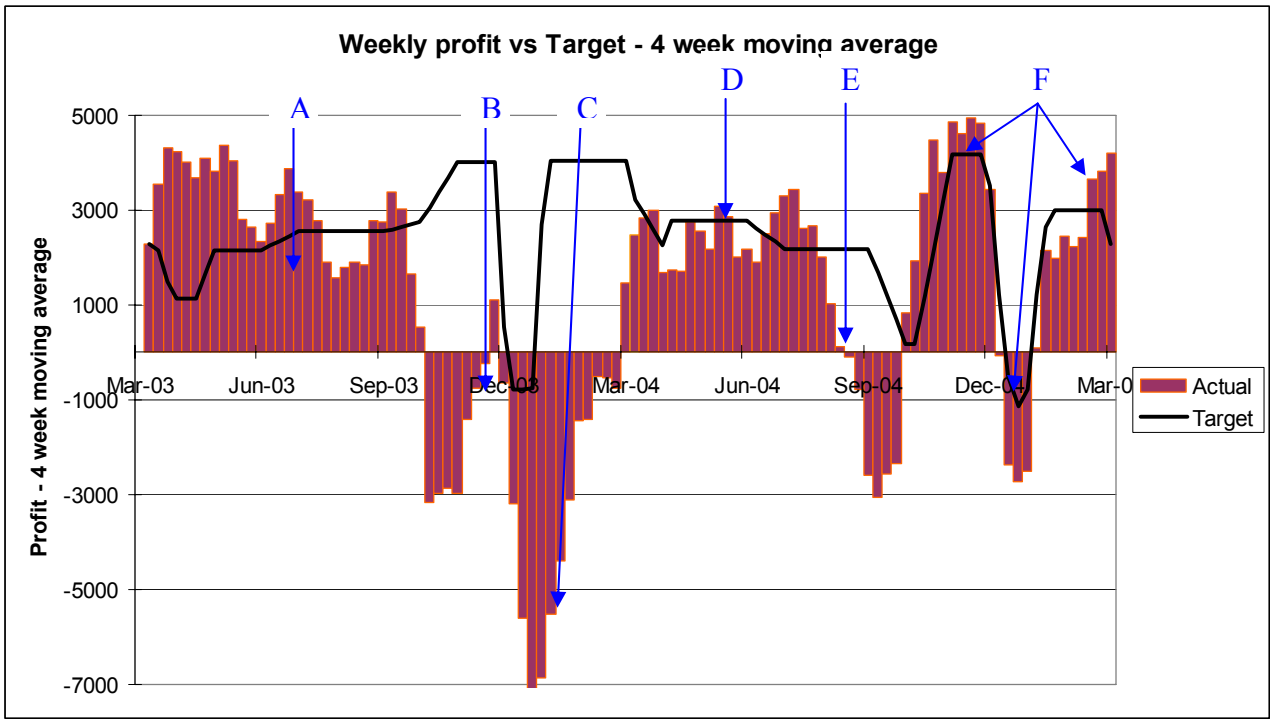

Figure 22-3: Profit vs. Target (PC 28 (a)

The profit centre started as a single distribution contract. From March to September 2003 it was assessed as being broadly consistent (A). From October 2003 the existing contract was changed following the acquisition of the customer to a twin contract for distribution and warehouses (see PC28 (b)). This new contract had been through an analysis and tendering process and was agreed in principle in July 2003. The price was based on costing of the processes required to undertake the contract together with a mark up intended to provide a margin of £7k pw for both contracts. The intention was to use the costing used for the tender as the basis for setting the target.

In the first weeks of operation trading was at a significant loss. This led to an immediate centrally driven review which concluded that problems related to teething problems, for example, among other things as reported in the diary '*the sizes of the boxes were smaller than at previous contract so the planner had effectively not been planning full vehicles.'* The ironing out of these teething problems, which were effectively fitting the theoretical plans of the tender to the operational realities, led to a movement to small profitability before the Xmas shutdown, with the weekly figures providing a method of monitoring the achievement of that performance (B).

In Jan 2004 a major crisis at the warehouse (PC 28(b)) led to knock on impact at transport as the work flows were fundamentally disrupted and coherent planning schedules could not be organised. The crisis was stimulated by a transfer of a large new wave of work. This together with Xmas close down led, to large losses, and poor service levels which resulted in a severe deterioration with the customer. This triggered

intervention by senior central management who took over direct management of the contract to resolve both the services and profitability issue. (C).

The turnaround process was hindered by actions initiated by the customer. In response to the services problems, the customer took away 60% of the volume of the transport work, disputed the calculation of the invoices and delayed payment. Instigated by central management process improvements were made and rolling negotiations held with the customer to improve and confirm agreed trading terms. By September acceptable terms were agreed with the customer. However, although profitability had initially been re-established (D), results worsened again as the central management intervention was withdrawn (E). This led to a further review and the conclusion that the problems lay in ineffective management. A change in the operational management team was instigated profit which led to profitability level being re-established in line with revised target expectations, with the normal seasonal Xmas loss of sales dependant contract. (F)

The case illustrates how new streams of business can import a high degree of initial uncertainty as the operational and financial outturns vary from initial intent. The MA system reports whether intended outcomes are achieved, with variances informing initiatives to change processes or cost terms (B, C) or control actions (E) or confirm that performance is in line with revised expectations (D,F). Following each initiative, revised targets are set to reflect the expectation of achievable profitability following the previous intervention (D, F). This requires a flexible approach to target setting, central intervention when variances from intent are reported, and oscillation between the controls and inform role depending on interpretation.

Question	Answer	Evidence
Profitability change		
Outcome for profitability?	Increase and reduce	Negative variances triggered central management interventions in Oct 03, Feb 03 and Sep 03 which led to operational changes and ultimately in Sep 04 a change of management as existing management could not maintain centrally driven improvements. The requirement for changes were assessed as a mix of management failure and need to renegotiate terms as the operational profile was different to the initial tender profile.
Nature and impact of response	Man /ops pricing	Changed operational profiles and failure of operational management assessed as causing negative variances. Reponses was to restructure operations, negotiate price changes and instigate management changes. Performance form Oct 04 in line with target
Impact of uncertainty		
Encountered uncertainty?	Pricing. Operational cost Contract.	Customer driven changes (B,D), management capability (B), pricing terms (C), new circumstances (B)
Impact of endemic tensions ?		
Central v devolved	Devolved / Central	See (C)
Control v Inform	Control and inform	Continual reassessment but targets used to guide determination of acceptable advices, and variances raising the question whether it is a matter of implementation failure (control), or requiring adaptive response as feedback indicates a changed operating environment
Fixed v Flexible	Flexible/ fixed	The constant changes and uncertainty leads to requirement for flexibility, with profitability targets adjusted to evolving circumstances
Impact of multiple perspectives		
Process	Pricing / operational analysis	Costing processes provides the basis for pricing assessment and assessing financial impact of restructuring
Product /Services	Network	Service provided to customer treated as product. Internal network prices
Customer	Price setting / target setting	Prices negotiated with customer based on customer advised operational profile and costed process analysis. Including price ratchets aimed at responding to variations from profile. Confirmed by contract, but some interpretations contested
Throughput	Not used	No evidence

Table 22-3: Analysis of PC 28 (a)

PC 6

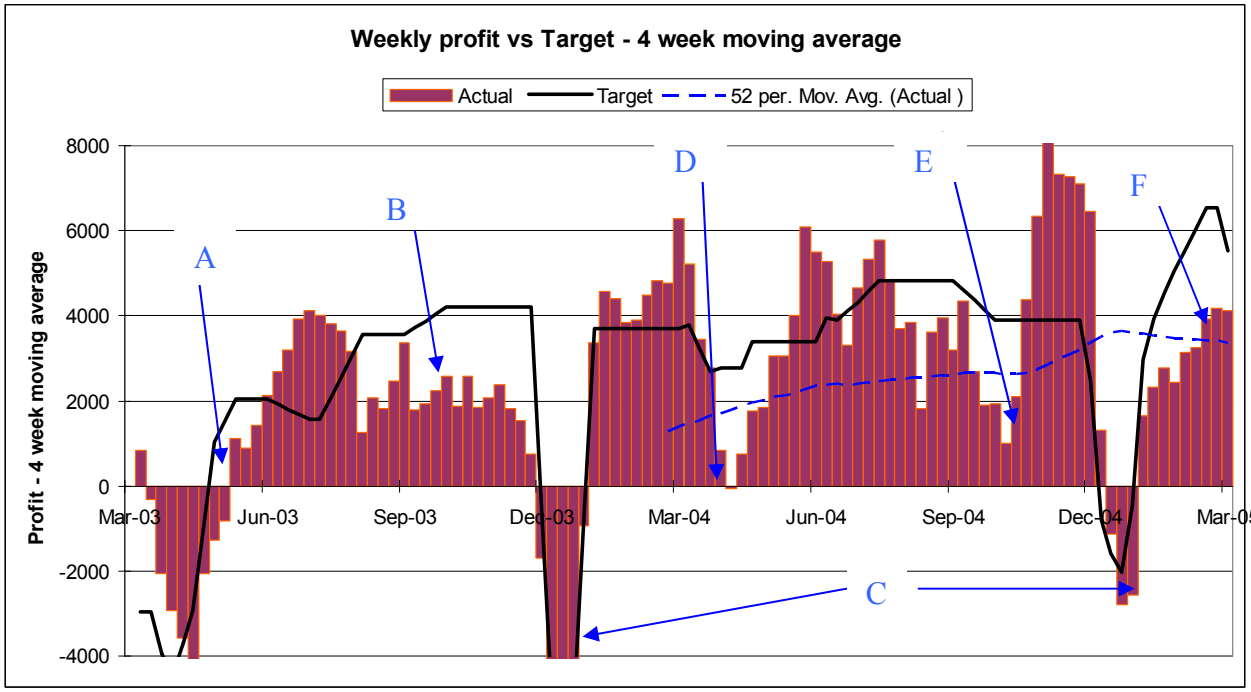

Figure 22-4: Profit v Target (PC6)

PC6 is classified as a network profit centre as it principal role is to distribute the un-dedicated deliveries of the semi dedicated contracts through a consolidation in a shared warehouse and groupage system. The internal traffic is then supplemented by some smaller external customers.

In March to June 2003 losses were recorded which were attributed to the loss of some minor customers. This resulted in insufficient sales throughput to profitably cover the cost of the fleet. This instigated '*Actions ….. to increase sales or reduce cost' (Man accounts commentary April 03)* (A). The actions instigated by operational management improved profitability, although with a shortfall against target from September to December, because '*The additional sales promised from August onwards do not seem to have materialised'*. Later, in November this was assessed as '*Trend below forecast, but not key issue at present' (Nov Diary).* A further issue related to the allocation of warehouse overheads as reported in the December 03 commentary '*and PC6 is below trend performance as overheads have been reallocated from the warehouse to PC6.'*

From December 2003 onwards performance was assessed as being in line with expectation and intent, with intermittent fluctuations normally caused by specific identifiable 'blip' factors. For example, large losses were recorded over the Xmas seasons (C) but these were anticipated; there was a smaller downturn at Easter which was not anticipated but was caused by seasonal holidays (D); in October 2004 there was a shortfall '*caused by the interco pricing not having caught up for the fuel increases, which are covered largely by fuel supplements which are not passed on internal transfers* (E); in February there was a shortfall against target following a three week temporary shut down of the a major customer's factory (F), although this was against an

increased target. The general conclusion was that results were satisfactory, and that this was caused as recorded in the July 04 diary *'Also evidence that use of capacity is leading to improvements at PC6 generally'.* The improvement in profitability is demonstrated by the 52 week moving average line on the graph.

The case provides an illustration of profitability being increased though a focus on throughput. This is a reflection of the network basis of this profit centre giving it a different profile to dedicated and semi dedicated profit centres. Pricing is based on traditional rate schedules, and profitability is dependant on the ratio of throughput and cost of resources used. These resources are relatively fixed given the requirement for minimum levels necessary to give geographical and frequency cover. Given the relative success in profit improvement, management was left by default at the operational level, as relatively stable targets provided the basis for control. However the MA system does not provide any proactive means of testing the potential for greater profitability – as results are deemed to be acceptable there is no pressure or use for further change, although where results are deemed unacceptable the pressure of the reporting stimulates change.

Question	Answer	Evidence
Profitability change		
Outcome for profitability?	Increase and reduce	Graph show losses in March to June 2003 gradual trend improvement (see trend line). Documentary evidence show assessed impact of sales fluctuation, and that action being taken to improve performance by better operational management.
Assessed cause and response?	Op changes / cost alloc / sales	Poor performance triggers action to reassess cost allocations and improve capacity utilisation. Also shows that sales targeted not achieved - 'additional sales promised fro Bradford from Aug 03 do not seem to have materialised'
Impact of uncertainty		
Encountered uncertainty?	ABC. Sales volume	Performance impacted by unforeseen blips (D.E,F) but generally relatively stable within the context
Impact of endemic tensions ?		
Central v devolved	Devolved	Improvement in profitability means no central involvement
Control v Inform	Control	Profit target provide control guide for profit expectation
Fixed v Flexible	Fixed	Stable environments means target broadly consistent
Impact of multiple perspectives		
Process	Operational analysis	Provides analysis to ensure maximum throughput
Product /Services	Price/ target setting	Standard pricing matrix based on historic market prices and achievement of required profitability. Network
Customer	Not used	Multi customer - product based
Throughput	Profitability driver	Maximising throughput for the resource used provides main driver of profitability

Table 22-4: Analysis of PC6

PC 26.

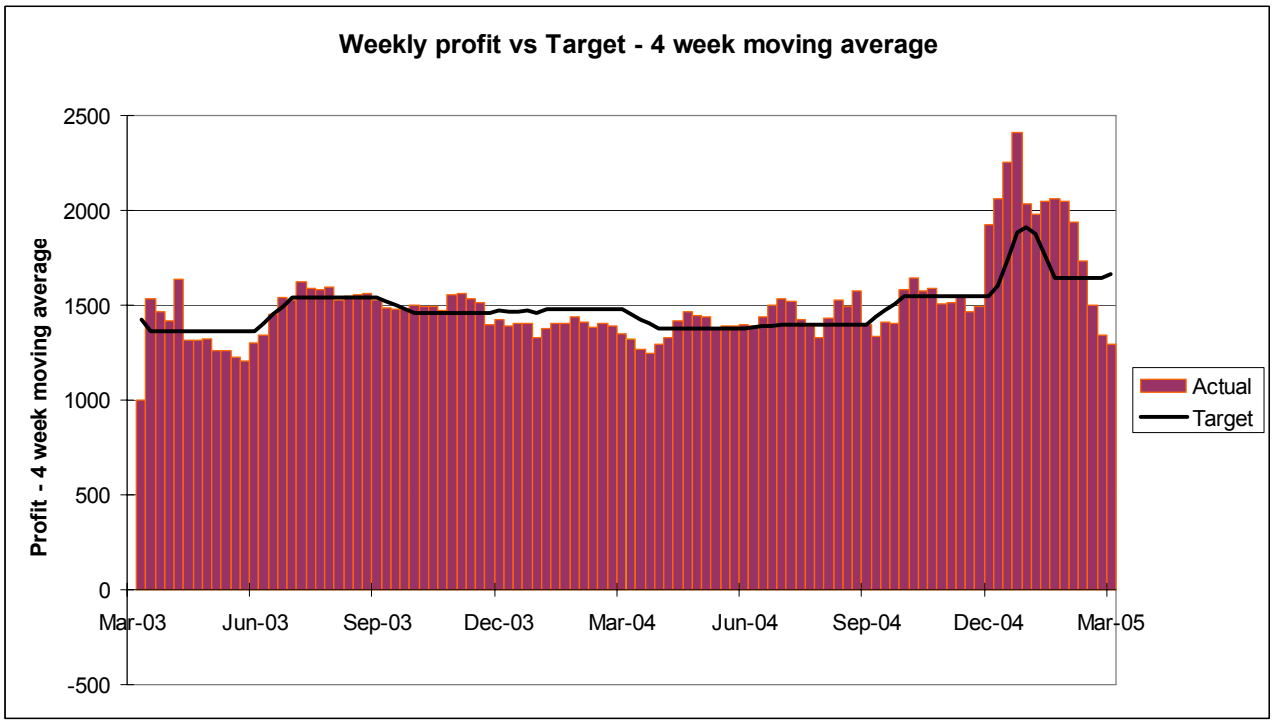

Figure 22-5: Profit v Target (PC 26)

PC6 was contracted to use a third party warehouse for agreed prices that led to consistent cost and income profile. The documentary data provides little evidence of management action, except for two conclusions that the aim is to maintain profitability. There is therefore no evidence of the use of MA to maintain profitability, as profitability is assessed as adequate. It illustrates that in an environment of financial stability, the issues of uncertainty endemic tensions do not apply. Further, there is no evidence of how the differing multiple perspectives are used to analyse and instigate improved performance.

Question	Answer	Evidence
Profitability change		
Outcome for profitability?	Stable	Profitability levels accepted as adequate
Nature of response	No response	Stable target and stable performance signal no change
Impact of uncertainty		
Encountered uncertainty?	None	Environment treated as stable
Impact of endemic tensions ?		
Central v devolved	Devolved	Default devolution
Control v Inform	Control	Only used to monitor achievement of stability
Fixed v Flexible	Fixed	Fixed only has small fluctuations based on stable profitability
Impact of multiple perspectives		
Process	Not used	No evidence of use in study period
Product /Services	Not used	Service provided to customer treated as product
Customer	Price setting / target setting	Once initial price agree, rolls on to end of contract
Throughput	Not used	No assessment made

Table 22-5: Analysis of PC26

22.3 Outcome for profitability

The analysis of the evidence shows that 31 PCs were assessed as providing significant feedback signals. Feedback signals are principally variances between profit and target, but also include changes in absolute profitability or signalled changes in customer terms. Over these 31 PCs, 68 examples of response types were identified. In addition, 15 examples were identified where a feedback signal was assessed as significant, but no response was initiated. Full details of the analysis are included in Appendix B-2. The documentary and financial evidence behind the interpretations made are summarised in Appendix B-1 for each profit centre.

Response triggered

The 68 examples of different response types were categorised into seven different classifications. These were then further split into two broad categories - those where the responsibility for cause/response actions is internally controlled, and those where actions are dependant on agreement with customers. Table 22-6 summarises this analysis.

	Profit increase	Profit decrease	Total
Internally controlled			
Op changes	13	6	19
Man change	7	0	7
Improve reporting	2	2	4
Change cost allocations	2	1	3
	24	9	33
Customer dependant			
Pricing negs	10	9	19
New/ extend/ quit	10	3	13
Increase sales	1	6	7
	21	18	39
Total	45	27	72

Table 22-6: Response triggered

Table 22-6 demonstrates that internally controllable responses generally achieved improved profitability (24 v 9). This is understandable as there is no dependency on third party decision makers. The principal form of internally controlled response was operational changes, and the illustrative case studies give examples of how this impacted positively on profitability outcomes. Management change was closely related to operational change. Management change also followed the ranking of the cost centres as shown in Table 21-3. As demonstrated in the case studies PC20(b) and PC28(a), this suggests that management change was time consuming, but may have been necessary to ensure implementation when initial pressure to make operational changes is not effective. The significance of reporting and cost allocation issues are not considered from the operational perspective, as it is a matter of corporate action.

Conversely to internally controlled responses, Table 22-6 shows that that customer dependant responses were not so successful (21 v 18). This is understandable as customer actions can only be influenced but not directly controlled. The high number of new/extend/quit (10) reflects the option of withdrawing from providing the service to the customer if adequate terms cannot be agreed. The alternative, explaining the high number of price negotiations leading to continued price reductions (9), was to accept lower prices on the basis that, while it may lead to reduced profitability, that is better than losing profitability in totality (e.g. PC15,16). The effectiveness of increased sales is again a function of the effectiveness of sales activities. The split between customer and internally controllable changes are often interrelated as operationally led changes are often stimulated by changes in customer service profile which may need lead to a requirement for changes in pricing (see PC 20 (b)).

Overall two significant points can be drawn from these findings about the use of feedback signals. Firstly, they provided a stimulus to instigate profit improvement actions; the achievability of this was dependant on both the capability of management instigating an appropriate response to the operational changes, and being able to agree pricing terms with the customer that allow for targeted profitability. Secondly, the use of feedback was reactive not proactive. Consequently, as the focus is on negative variances, reductions in profitability have already occurred before responsive (reactive) actions are taken. (See graphically 20(B)). Profitability has therefore already been harmed to a greater or lesser extent before the benefits of responsive actions can flow through, reducing the benefit of any profit improvement changes that are imitated.

No response triggered

The 15 examples where a feedback signal was assessed as significant, but no response was initiated, can be split into three categories, also split by the profit impact as summarised below:

	Profit increase	Profit decrease	Total
Sales up / down	7	3	10
Bonus	2	1	3
Lost	0	2	2
	9	6	15

Table 22-7: No response triggered

These reflect examples where the management assessment was that no response was required that could have a positive impact on profitability. The principal category relates to sales, where the pricing and cost structures have been undertaken in a manner that changes in sales automatically flow through into increased or reduced profitability – see case example PC 20(b) and PC15 and PC22 for other clear examples. The other categories relate to bonus, where there is evidence that the bonus was structured in a way that motivated automatically the operational management to instigate actions to improve profitability, and lost contract where the assessment was that the contract was lost through internal customers changes that could not be challenged.

22.4 Role of uncertainty

The following Table 22-8 summarises the main uncertainty factors drawn from the documentary evidence that were assessed as causing uncertainty over the consequences of action (Burchell et al, 1980), arising from uncertainty of information (Chapman, 1997). The table tabulates the uncertainty factors to groupings of PCs which are assessed as having similar characteristics (see Appendix B.3 for full details).

	Groupings of PCs						
	Pricing / ops	End	Stable	Sales vol	Info	New	Tot
Uncertainty factors							
Pricing	13	0	0	0	0	0	13
Operational profile	12	0	0	0	0	0	12
Contract (termination)	4	4	0	0	0	0	8
Sales volume	1	0	0	6	0	0	7
Information	2	0	0	1	4	0	7
Contract (new)	0	0	0	0	0	2	1
Total	32	4	0	7	4	2	49
None	0	0	6	0	0	0	6
	32	4	6	7	4	2	55
No of PCs	14	4	6	6	4	1	35
Avg factor per PC	2.3	1.3	1.0	1.2	1.0	1.0	1.6
Avg profit	3,350	4,087	2,824	702	625	(310)	
SD/Avg profit	1.28	0.60	0.33	1.00	1.40	2.50	

Table 22-8: Uncertainty factors

The first and largest grouping covers 14 PCs, where uncertainty over pricing and operational profile have been identified as impacting on the potential for improved profitability. All 14 PC have been classified as dedicated or semi dedicated contracts and therefore service one specific customer. The uncertainty generally occurs when customer driven changes, principally in pricing, operational profile or contract terms, often interrelated, cause a negative impact on profitability. As these changes result from internal decisions or trading circumstances specific and private to the customer, often the change is unknown in advance. As the resources and logistics processes have been specifically developed on the assumed profile and prices for the specific customer being serviced, where these change the logistics processes, the processes have to be reassessed and pricing terms renegotiated. This can occur as a major rapid change (see case PC20 (b)) or as a slower, evolving change without any precise indicator of change (see case PC35) or where a change was anticipated but its impact was not foreseen (see case PC28a). Clearly, as the existence or potential impact of these changes is unknown, it is difficult to act proactively to protect profitability.

The second grouping (end) also relates to single customer contract but in this instance the uncertainty relates to termination of the contract not a change in the profile and/or pricing. This causes a complete loss of profitability, with little potential to respond. The contracts classified under this grouping are only those where termination threats have

crystallised. However, there is an underlying area of uncertainty for all the single customer contracts, which is out of the control of the company. One approach, as demonstrated by PC32 (see Appendix A-1), is to build into the contract compensation for customer induced changes that harm profitability This, however, is not always feasible as demonstrated by the difficulties in price negotiation illustrated by cases PC20(b) and PC35.

The third grouping (stable) also relates to dedicated contracts, but in this instance no changes to operating profile, pricing or volumes are reported as evidenced by the low standard deviation compared to average sales. However, while this group is recorded as stable and certain, there is the potential for changes to occur in the event of internal changes to the customer's business (e.g. PC35 which for many years prior to the current period had recorded stable steadily growing profitability). On the basis that eighteen dedicated contracts incurred unforeseen changes compared to eight that did not, it is a matter of timing when they move to a state of uncertainty.

The next grouping (sale vol) relates to variable sales profit centres where sales come from a range of customers who can withdraw their demand at any time. As in this study, these profit centres tend to be support operations for the main dedicated business - they suffer from the fluctuation in volume in the dedicated business for the reasons discussed above (see case PC6) and the average profitability is about 20% of the first category.

The last two groupings (info and new) relate to uncertainty over reporting and uncertainty over outcomes because the contract is new and has not been established. The evidence suggest (see PC1, PC13) that the problem relating to reporting arises from the perceived lack of importance of the profit centre. The new issue relates from the time in the cycle of the contract, and relates to all contracts when they have been signed up but are not established.

The overall implication of this analysis is that changes principally led by customers relating to operational profile, pricing and contractual terms have the capacity to become apparent at any time, with the potential to cause a reduction in profitability until a reactive response has been developed. The impact of the change is uncertain until it has occurred by which time it will have had the potential to cause a profit reduction impact, and this can only be addressed where the implications of the changes become apparent and a reactive approach can be developed.

22.5 Impact of endemic tensions

The P2 framework identified three endemic tensions (centralised v devolved, fixed v flexible and control v inform) as having a critical impact on the potential effectiveness of a MAS. The aim of this section is to assess how these tensions impact on the use of the MAs is the context of the study case. Each tension is considered in turn

Control and inform

As discussed in P2 the control and inform tension relates to the two generally accepted purposes for the use of MA information. The documentary evidence and the P1 systems description indicate that that control was the default use of the MAS information. It operated by providing a quantification of the profit target that the operational management was expected to materially achieve. The inform function became relevant when the analysis of the feedback indicated a factor that was affecting profitability that had not been factored into the assumptions behind the target. This led to responsive action to instigate changes to recover acceptable levels of profitability.

The type of usage for each PC was assessed on the basis of the documentary and financial evidence. The results of this assessment are detailed in Appendix B-4(a) which summarised the analysis of B1, and are summarised below.

	No of PCs	Average Rank	Response to variance	No response to variance
Control	7	28	1	9
Control and inform	28	15	67	14
	35	17.5	68	23
In % / percentile rank				
Control	20%	163%	1%	39%
Control and inform	80%	84%	99%	61%

Table 22-9: Analysis by control and inform

This analysis indicates that for the majority there was evidence of both control and inform usage – 28 (80%), with the balance control only. It suggests that the role of inform/control is to pick up as significant changes mainly driven by external factors, to trigger a requirement to reassess the profitability profile. It does not counteract the conclusion the control is the default condition as, over the two year period for most of the control and inform classified PCs, control continued to be the default position. However, it does indicate that there was a high degree of change occurring within the operational activities.

The minority of PCs classified as control only generally exhibit stable profitability, a high ranking for conjectured intervention (average of 28 vs. 15), and a low standard deviation for profit variance against average profit (.3) against the control/inform group, and a low number of instances where signal triggered response – 1 out of 68. This was in PC2 - specific circumstances where an initial response of trying to keep the contract was clearly not feasible as the customer had strategically decided to close the business unit for which the services were being provided. Again as is to be expected the only PC

covered by the case description (PC26) was chosen because it was conjectured to have a low level of intervention.

Centralised and devolved

In this assessment the distinction between centralised and devolved responsibility is based on the level of responsibility for devising and implementing changes to operational actions. The default position is devolved responsibility, subject to the agreement of the target performance level between operational and central management. A PC is classified as having a central management involvement when the feedback triggers a direct intervention from the central management team, on the basis of an assessment that the operational management are not able to instigate changes that are going to lead to optimal profitability. The Profit centres have been split into three groupings in line with consistencies they demonstrates in relation to this tension, summarised as follows (see Appendix B.4(b) for detailed make up):

	No of PCs	Average Rank	Average Profit	Response to variance	No response to variance
Dev – Cont	7	29	2,165	1	9
Dev - Cont/inf	14	21	1,829	28	11
Cent/Dev - Cont/inf	14	9	3,274	39	3
	35	17	2,474	68	23
In %					
Dev – Cont	20%	167%	88%	1%	39%
Dev - Cont/inf	40%	122%	74%	41%	48%
Cent/Dev - Cont/inf	40%	51%	132%	58%	13%

Table 22-10: Devolved vs. control/inform

The first grouping, covering 20% of the PCs, were assessed as having devolved responsibility, MA used as a control function, with no requirement to respond to variances as performance is in line with target. This type is clearly demonstrated by the illustrative PC26. These show a high conjectured ranking illustrating little management intervention and a low level of profitability fluctuations.

The second grouping covers 40% of the PCs that were assessed as having devolved responsibility, but using the information to inform and control. The response to feedback signals is implemented by the devolved operational management without the need for specific central management interventions. This type of PC is shown by the illustrative case study PC6. The net level of profitability is smaller (74% of average), indicating that materiality impacts on the decision of central management to commit resources. Examples include PC38 where profitability levels did not improve despite initiatives, but the explanations were accepted by central management, or PC4 where it was accepted that profitability would be eliminated as, for customer reasons, it was not possible to stop termination.

The final grouping covers 14PCs (40%) where some element of central involvement was assessed together, and the use of control and inform. Central management had decided from feedback that central involvement interventions were necessary as the

existing operational management did not have the skill or resources to respond to the changing environment. This grouping covered the largest volume of response incidents (58%) with feedback being used to inform the response. The central intervention involved either assistance or replacement of operational management. The type of involvement is demonstrated by 3 of the cases reviewed (20a, 28a and 35) which were chosen on the conjecture that involved significant management intervention.

Fixed v flexible

The fixed v flexible tension was related to the target used to provide a benchmark performance against which performance can be assessed. It was closely linked to the other two tensions as it provided a method for assessing feedback (actual v target) to be assessed for inform and control, and provides a context within which devolved management can operate. It therefore linked the other two tensions to operationalisation. In this context the term 'fixed' was used to denote a relatively stable level of profitability, with profitability targets fixed over time; 'flexible' denoted change over time. The term 'fixed' is interpreted relatively, covering seasonal and operational variances which are interpreted as blips, while the overall trend of performance is assessed as being materially consistent. The classification of the PCs is shown in Appendix B.4(c) with the detail analysis of each case included in Appendix B-1. Nine of the PCs were assessed as having fixed targets set, based on the assessment that the profit targets were relatively fixed over the two years of the study, summarised as follows. The following table shows how they correlate to the classification of the other tension, with Appendix B.4(c) giving the detailed make up.

Fixed Only	No of PCs	StDev/ profit	Average profit	Response to variance	No response to variance
Devolve – Control	6	0.3	2,336	0	8
Dev/cent – Cont/inf	3	1.2	1,669	8	0
	9	0.4	2,113	8	8

Table 22-11: Fixed only vs. control/inform

Five of the six 'devolve – control' PCs showed very stable performance, very low fluctuations of profitability as determined by the standard deviations, and close meeting of target. This is typified by illustrative case PC26 which was chosen on the conjecture of demonstrating this scenario. The one outlier, PC18 exhibits a stDev/profit ratio of 1.8. This is a small profit earner (average £805 pw) and, while there is a major seasonal and short term fluctuation, is assessed as overall providing stable levels of profitability. For the other three PCs the assessment is that the target should remain fixed over the period, but that feedback triggers internal actions such as operational changes, management changes and improvements in reporting to bring the results to the fixed level of performance which is assessed as being achievable. For two of the PCs the actions were initiated by operational management, with one (8(a)) assessed as requiring central intervention

The other 26 PCs were assessed as having a mixture of fixed and flexible targets. A flexible target is defined when, over the two year period of the study the profitability target is assessed as changing significantly. The fixed element comes from the practice

adopted that an agreed fixed target is made for each calendar quarter with 13 weekly fixed targets against which performance is assessed. The illustrative cases PC20(b), PC35, PC28(a) and PC6 provide examples of this. For all the 26 PCs either external changes and/ or reassessment of internal capabilities external changes lead to changes in target levels of performance. The reassessed performance level is then flexed to a new target assessed as reflecting the best achievable level of profitability given the new interpretation of the revised situation. This new level of fixed target will, however, again be subject to flexing as the actual performance against the revised target occurs, which may again trigger a further reassessment (e.g. illustrative cases PC20(b), PC35). The 26 PCs can be split into two groupings dependant on how they resolve the devolved centralised tensions, which coincidentally splits on a 50/50 basis. The make up of this split is summarised below and detailed in Appendix B.4(c).

Fixed/flexible	No of PCs	StDev/ profit	Average profit	Response to variance	No response to variance
Devolved	13	1.0	1,959	24	12
Cent/Dev	13	0.9	3,239	36	3
	26	0.9	2,537	60	15

Table 22-12: Fixed/flexible vs. centralised/ devolved

The summary shows a split between responsibility for flexing the target being left to devolved management, and being agreed in conjunction with central interventions. The analysis shows that the PCs where there was central intervention had higher average profitability, more responses and less no response than those without central intervention. The inference is that the higher the potential impact on profitability, the more likely it is to trigger central intervention. PC6 provides an example where central intervention was not linked to flexible targets.

Conclusion - endemic tensions

The default resolution to the tensions in the case being studied is control, fixed and devolved. However, through uncertainty outcomes and operational context occur which require responsive actions. These responsive actions are implemented through using the feedback to inform of the financial consequences of the changed situation, instigating central interventions when the assessment that the devolved management is unable to respond to the changed situation, and a consequent change to the targets to reflect the changed situation. How the PC fit into these gradations can be summarised by the following table, drawn from the above analysis:

Tension resolutions			Nos	Operational Characteristics
Fixed	Cont	Dev	6	Target stable. No significant operational change. Operational management ensure profitability in line with target
Fixed	Cont/ inform	Dev/ Cent	3	Target stable, but performance not in line with target. Use analysis of feedback to confirm stability, and intervene to improve internal actions to achieve target profitability
Fixed/ Flex	Cont/ inform	Dev	13	Target changes in response to change in external factors and/or reinterpretation of internal operational factors. Target flexed to effect changes situation and devolved management left to

				implement response action to
Fixed/ Flex	Cont/ inform	Dev/ cent	13	Target changes in response to external operational factors and/or reinterpretation of internal operational factors. Target flexed to effect changed situation. Central management intervene as operational management not assessed as capable of responding to the changed situation
			35	

Table 22-13: Tension resolution

22.6 Impact of multiple perspectives

Four differing perspectives, identified in P2 for the aggregation of actual and projected financial transactions, were identified in P2 – product, customer, throughput and process. This section assesses how they were used to improve. This is undertaken by matching the use of the perspectives against the response to feedback reviewed in section 22.3. The aim is to achieve some insights into the relationship between the use of the differing perspectives and profitability outcomes arising from their use.

Process

P2 concluded that the aim of the process perspective was to aggregate financial transactions to assess how operational processes can be planned to produce products or services at lowest cost or maximum profitability. Uses for the process perspectives were identified in 24 of the 35 PCs (see Appendix B.5.(a)) with two distinct roles – operational analysis and input to pricing. The operational analysis was used to identify how services provision could be provided more cost effectively via iterative costing of potential service options and the resources required to provide these. Examples include analysis of the cost of service restructuring following change of profile or customer service requirements (e.g. PCs35, 20(a), 28(a)); or analysis to get better capacity utilisation of the trucks driven by internal pressure to improve profitability (PC6). The input to pricing process role related either for new contracts (e.g.PCs14, 21, 22) or where the services has had to be restructured following changes in profile instigated by customer led changes (e. PCs 35, 20(a), 28(a)).

In section 22.3 seven feedback response types were identified - Operational change, management change, cost allocation change, improved reporting, pricing negotiations, increase sales and New/extend/quit. Of these, two, – operational change and pricing, directly relate to the use of the process perspective. Table 22-14 therefore matches process use against these two feedback response types (See Appendix B.5(a) for details).

	Mixes of use of process analysis			
	Ops and price	Ops only	Pricing only	Total
Number	13	5	6	24
Rank	10	19	18	14
Average weekly	3,451	1,245	3,369	2,971

profitability				
Operational analysis				
Improved profitability	9	4	0	13
Reduced profitability	5	1	0	6
Price analysis				
Improved profitability	5	0	5	10
Reduced profitability	7	1	1	9

Table 22-14: Use of process analysis

Operational and pricing use matches both the lowest ranking, which suggests high interventions, and the highest average profit levels. Operational interventions were classified as leading to improved profitability by approximately 2 to 1 in line with intention. However, where profitability was not achieved it is associated with failure to achieve price increases (PCs - 15, 16, 34, 35, 20(b)). Profitability interventions were classified as leading to profit improvement approximately in a 50/50 ratio. While the process analysis can be used to inform the reason for a request for increased prices (e.g. PC5, 22), acceptance is dependant on agreement with the customer, and may lead to positions where a reduction in profit has to be accepted because the reduced level of profitability is acceptable (PC 15,16). In these cases, the customer can take advantage of changes in profile to push for relatively reduced prices.

The evidence shows that the process perspective was associated with informing planning and target setting, with effectiveness then assessed through feedback. This provided a key element of MAS use as it enabled the operational activities to be restructured in a manner that improved profitability. However, effectiveness was closely linked to agreement of pricing, and while the process may reflect a most cost effective solution, unless the costs can be recovered from the customer it will not lead to increased profitability. Further, there was no evidence of a test to assess whether process had been developed to achieve optimum profitability, the only test being against target which may not necessarily be optimum. Finally, there was little evidence of unilateral pressure to improve processes without the push of feedback triggers.

Product pricing / customer profitability

P2 concluded that product costing provided the potential to plan product sales at prices and volumes that enabled product income to exceeds product costs and thus meet profit objectives. It further concluded that the product perspective could be extended to a customer perspective through linking income potential from customers to the cost of the goods and services they receive.

The structure, content and use of the Profit Centres indicates that this perspective, especially customer, provided the core perspective through which MA information was aggregated and used. Its uses were twofold: firstly, for providing the aggregation level for target setting, feedback of actual vs. variances and the assessment of the impact of response actions; secondly, for product pricing as indicated in the P2 conclusion. The evidence also supports the customer perspectives being treated as an extension of the product perspective, with the PC structure providing a format for both the collection of

product costs and the calculation and assessment of prices. Within the overall concept of the Profit Centres matching customer related income and costs, three different alignments or groupings of cost/ income relationships emerged from the data – dedicated customer, semi dedicated customer and multi customer. Dedicated customer where the PC covers income and costs solely for one customer ; semi dedicated where the principal focus was on one customer, but some resource were provided by other PCs; and multi customer where there were a range of products.

To assess the profit significance of the three groupings and the impact of the use of PCs to provide feedback, the results of the responses as assessed in 22.3 were matched against the three groupings. The results are detailed by PC in Appendix B.5(b) and summarised below in Table 22-15

	Customer Dedicated	Customer - Semi Ded	Mult customer	Total
Number of PCs	13	15	7	35
Average profit	3,952	2,286	132	2,474
SD/Profit	0.5	1.0	14.7	0.9
Response				
Improve	9	22	8	39
Reduce	10	8	9	27
No response				
Increase	5	6	0	11
Reduce	1	3	0	4

Table 22-15: Response profit outcomes

As identified in 22.3, the feedback stimulated both internally controlled response in addition to informing pricing which the P2 indicated as the main role of this perspective. The statistics demonstrate a higher incidence of responses per PC for the semi dedicated and multi customer PS than the dedicated PCs, which may reflect the more complex nature when product provision and customer are not directly aligned. However, there is no strong correlation, and the main significance is that this customer perspective provides the level of aggregations on which the target/feedback mechanism is based.

Table 22-15 does, however, demonstrate a significant difference in profitability and stability between the groupings – with dedicated customer providing the greatest level of profitability and stability (£3952 profit pw, low SD/profit ratio), semi dedicated in the middle, and multi customer the least profitable and stable. This points to the use of this perspective in defining the profile of customers which are likely to lead to improved profitability. This is supported by the evidence where customer profitability informed decisions on the desirability of maintaining the relationship with the customer (e.g. PC 34, 13) or the level of reduction in profitability that it is acceptable in response from pressure from the customer to reduce costs (e.g. PC15,16,35). This brings back the use of this perspective in price setting through costing services to be provided to the customer, with profitability dependant on the addition of the margin over price. Price

was calculated either on a cost plus basis (e.g. PC22) or related to the price that was achievable to the customer (e.g. PC 20(b),28(a)). The most desirable scenario is to have a price matrix that allow profitability to respond automatically to levels of demand (e.g. 4, 20(b)) although as was evidenced in both these cases this desirable situation was interrupted by unilateral changes made by the customer to operational and pricing requirements.

The findings also demonstrate problematic areas relating to the validity of the allocation of costs. These issues in effect relate to transfer pricing and the ABC issue of the allocation of central costs. The transfer pricing issue is directly apparent for the semi dedicated and multi customer PC through the issue of network and internal charges and allocations (see Appendix B.5(b)). This includes questions over the validity over the allocation of costs common to more than one PC (e.g.PC3, 38), standardised internal charges of the network charges (which tended not be challenged), and internal charges for specific services (which tended to be more contentious) . PCs 3,13 and 38 showed particular examples of these issues, which raised difficulties in the interpretations of performance. The central overheads issue is addressed in more detail in the corporate perspective, but was also clearly raised by the questioning of the validity of profitability of PCs which have benefited from a high degree from central costs utilised as part of profit improvement initiatives (e.g. 20(b), 28(a)).

The overall conclusion is that the core level of MA aggregation for the company was by customer. It provides a mechanism of informing the price to be charged, and developing a target to either control its achievement or inform, if in practice, the theoretical costs are not being achieved. This then can lead to a stimulus for changes. Of the response types to this stimulus, pricing and customer retention issues were directly related to this perspective. Other response types provided an input into the cost side of the customer/ cost relationship. A central issue affecting the validity of the information produced is the identification of what is to be identified as cost which brings in the issues associated with cost allocation which are addressed by the ABC literature. The final point is that, although this level of aggregation informs relationship with customers, it does not in itself drive the achievability of the goals triggered by feedback as that is dependant on the response of the customers and the effectiveness of the internal management.

Throughput

P2 concluded that the focus of the Throughput approach is to optimise profitability by ensuring the full the use of all organisational resources. The analysis of the evidence identified 13 incidents where a throughput approach was considered, and a further three where it was apparent that throughput approach may have been relevant but was not considered. Further analysis, however, indicated that the primary driver of the relevance of a throughput approach related to the nature of the contract as indicated by the summary below (see Appendix B.5 (c) for details).

	Network	Whouse	Dedicated	Semi	Total
By number					
Utilise	3	5	3	2	13
Potential	0	0	1	2	3
Not considered	0	2	7	10	19
	3	7	11	14	35
By percentage					
Utilise	100%	71%	27%	14%	37%
Potential	0%	0%	9%	14%	9%
Not considered	0%	29%	64%	71%	54%
Total	100%	100%	100%	100%	100%

Table 22-16: Utilisation of throughput

All of the 3 network PCs were assessed as demonstrating throughput thinking, given that, as they required a minimum capacity level to meet the fluctuating demands of the semi dedicated depots they served, their profitability was dependant on the level of throughput relative to capacity cost. However, although the evidence shows this relationship is well understood, given their primary importance as a resource for other PCs rather than major profit earners in their own right, this factor was generally accepted as a cause of fluctuating profit, rather than an approach that could be utilised to increase profitability.

The seven warehouse PCs were the other classification which demonstrated a majority of throughput thinking (5 out of 7). The relevance in these examples is that warehouses provide a fixed physical resource, and therefore there is a clear relationship between the maximising of throughput and profitability. The two examples which were not assessed as indicating throughput thinking (PC 26,33) emphasise this thinking as they were fully dedicated to single customers, with agreed levels of margin as part of the contractual relationship, and no potential to maximise throughput as the level of throughput was dependant on the one specific customer, and it was that customer's demand that governed the level of throughput.

The third category are the dedicated contracts with 3 showing evidence of throughput and one showing evidence that throughput thinking may be potentially beneficial. The relevance in the circumstances is dependant on the nature of the contractual relationship with the customer. For PCs 20(a)+(b), and potentially for PC 27, a price for a service was agreed, but the amount of resource provided to achieve this service was at the discretion of the company, so that profitability would be enhanced by optimising the level of throughput per each element of capacity; a similar commercial arrangement was also relevant for PC17. However, for the other PCs the level of capacity to be provided was specified by the customer (e.g. PC35) and therefore the level of capacity utilisation was not a major driver of the profitability, rather the cost effectiveness with which the capacity was produced.

The final classification is semi dedicated. As part of the contractual terms of these PCs, capacity can generally be flexed between dedicated and shared allowing a flexibility in level of fixed resources so that response to movement in throughput can be made by

changing resources allocated to provide the service, rather than eliminating bottlenecks to improvise the throughput for a given set of resources. However, there was evidence in some cases that optimising throughput could (3, 28(a)), or had, the potential (PC15,16) to increase profitability, as some level of the dedicated resource was fixed. Indeed, this may also be a potential for other PCs although there was no evidence to support this conclusion.

Where a throughput approach was evidenced, its implementation was undertaken either via process changes to identify how the throughput/cost ratio could be improved, or by attempts to increase sales. To that extent the throughput approach only reflects a specific approach to applying the process perspective. On another level it has the potential to provide an alternative approach to response to feedback triggers arising from variance against target, the principle driver of the system evidenced by the study of these resources . This arises through the potential to operate proactively by continually monitoring the level of capacity across all the company resources to assess whether these resources can be used more effectively by reducing bottlenecks that restrict their use. However, this approach requires a corporate level view, and is hindered by an approach which optimises performance at a specific customer level.

23 Findings - corporate perspective

23.1 Introduction

The perspective taken in this section is corporate, with the study company viewed as one profit centre, compared to the thirty five segmented individual profit centres of the operational perspective. The corporate production and use of MAS are described, reviewed and related to financial outcomes achieved over the 24 months of the study period. Key issues arising from this that are relevant to the research question are identified and then assessed, using the P2 framework as the structure for analysis.

The documentary data supporting the case is outlined below, with the content summarised in the Appendix C, and cross referred where relevant to graphs of financial performance. Table 23-1 reflects a re-ordering of the data identified in Table 22-2 above. The financial outcomes achieved are recorded in the relevant accounts as summarised in Appendix D and reviewed below.

	Ap	Diary	Mth acs comm	Op Board	Hold Board	Internal docs	Total
Weekly accounts							
Weekly accounts – production	C.1(a)	34	0	3	0	0	37
ABC, bonus, structure, plan, target	C.1(c)	112	4	13	6	8	143
		146	4	16	6	8	180
Monthly accounts							
Monthly accounts - production	C.2(a)	71	0	1	1	1	74
Weekly v monthly – production	C.2(b)	43	0	1	0	2	46
Cost control system	C.2(c)	19	0	3	0	0	22
Monthly accounts – performance	C.2(d)	18	35	3	10	2	68
Cash and borrowing	C.2(e)	29	21	5	10	3	68
Financial stakeholders	C.2(f)	52	0	1	3	1	57
		232	56	14	24	9	335
Annual accounts	C.3	16	0	0	1	0	17
Total passages		394	60	30	31	17	532

Table 23-1: Corporate perspective –supporting data

23.2 Corporate Case Description and Review

Case structure

The case description starts with a review of the corporate objectives and a summary of the systems used to report performance, and inform and control the achievement of that performance. Next, the production and use of the weekly accounts is described and reviewed from the corporate level perspective in some detail, as this is assessed to be the primary source of MA information. The production and use of the monthly and annual accounts is then described and reviewed, and their relationship with the weekly accounts assessed. The case is finalised by a review of the implications of this approach for the financial stakeholders, who determine the overall financial objective and set the assessment of the extent to which the objective has been met.

Financial Objectives Drivers

The two stakeholder groups that have a direct interest in the level of profitability are the shareholders and the bank. The direct involvement of the shareholders relates to the capacity of the company to pay dividend and its profit related valuation. The direct involvement of the bank relates to their requirement for financial covenants that require minimum levels of profitability and cash flow as under pinning their willingness to continue to provide lending funds.

For the study period their requirements and aspirations were principally determined at a financial reconstruction undertaken in January 2003. At that restructuring the previously majority shareholding institution investors reduced their equity investment to 30% in return for a significant repayment of capital, funded by additional bank lending to the company. This left the company owned 70% by the CEO and Chairman on an equal split basis, and 30% by two private equity houses. Bank debt increased to £5.0m.

As this funding had been borrowed on the strength of future projected profitability and positive cash flow, the holding company Directors had committed the company to future profit levels that ensured the future solvency of the company through a 'whitewash' procedure in line with company law requirements, linked to minimum profit interest cover which required minimum profitability before interest of around £700k pa. In addition, at the restructuring, under a formal shareholder's agreement, it was agreed that 50% of annual post interest profitability would be paid out in dividends, reflecting the shareholders aspirations to increase profitability as far as possible to support dividend payments. At the start of the study period there were clear incentives for the holding company board, which consisted of the management shareholder plus a non executive representative of the institutional investors, to increase profitability to the maximum feasible extent.

The study period ended at the end of March 2005 with the company being sold through a trade sale to a larger competitor. This evidence collected about the sale process thus provides a further insight into how the MAS was used to optimise the realised value of shareholder equity, and how this information was interpreted by the acquirer.

Profit reporting systems

The company produced three sets of profit reporting systems – weekly, monthly and annual.

The weekly accounts were produced by summing up all the individual Profit Centres profits (as reviewed in the operational perspective), and then subtracting central overheads and interest. The overall weekly performance was assessed each week against a weekly target, calculated from the aggregations of the individual Profit Centre target (See Section 22) less a projected target for central overheads, again agreed at the start of each quarter. This reporting system therefore provided the overall aggregated corporate profitability of the results used to inform and control performance of the individual Profit centres.

The monthly accounts were produced from the company's double entry based general ledger, generally in line with the company's financial accounting policies. Unlike the weekly accounts they included a Balance Sheet. However, the general ledger was set up to reflect as far as possible the weekly accounts profit centres with the intention of making the results complementary and parallel. The intended purpose of the monthly management accounts was twofold: firstly to produce accounts that recorded overall profitability in Financial Accounting terms on a monthly basis, with their accuracy validated using normal Balance Sheet accounting financial controls and reconciliations to cash; secondly, to provide a method of validating the accuracy of the weekly accounts which were not produced under double entry Balance Sheet control. Thus the aim was to provide a full connect between the accounting reports that were used to control and inform operational actions, and the profitability outcomes as recorded in FA terms.

The annual audited accounts were based on a conversion of the cumulative performance of the last month of the monthly accounts in statutory accounts format. The process was to make a first draft based on the last month of the financial year (March) and then make any necessary year end adjustment deemed necessary to satisfy audit requirements. As both the dividend calculations and interest bank covenants were based on the results as recorded in the annual accounts, any performance recorded in the weekly accounts would only be valid in flowing through to the achievement of financial goals if the results flowed through to the annual accounts.

Profitability per weekly accounts

The weekly profitability results provided the main source of information for the day to day corporate direction of the company. This is reflected in the high number of diary entries assessed as relating both directly to performance and to management issues that impact on performance, identified above and summarised in appendices C.1(b,c,d). Although there were significant issues of validity which were raised by reconciliations with the monthly accounts, as discussed below, for the purposes of management actions the figures were accepted as giving a materially accurate measure of performance. The

weekly overall performance is summarised in the following graphs, with Figure 23-1 showing performance against target, with detailed support included in Appendix D.1

The results show a fluctuating performance that is generally in line with target, subject to seasonal fluctuation, some minor fluctuations and a major downturn between June and September 2004. This was identified as being caused by problems simultaneously occurring over a range of PCs, with a particularly significant downturn in PC20(a,b) which had been major profit earners (see Section 22.2). This stimulated a range of specific PC based responses, and by November performance was being assessed as back '*on line.'* The most significant seasonal downturn is over the Xmas/New Year season, and to a lesser extent over the Easter and summer holiday seasons where holidays and staff absences also impact on the cost income ratio.

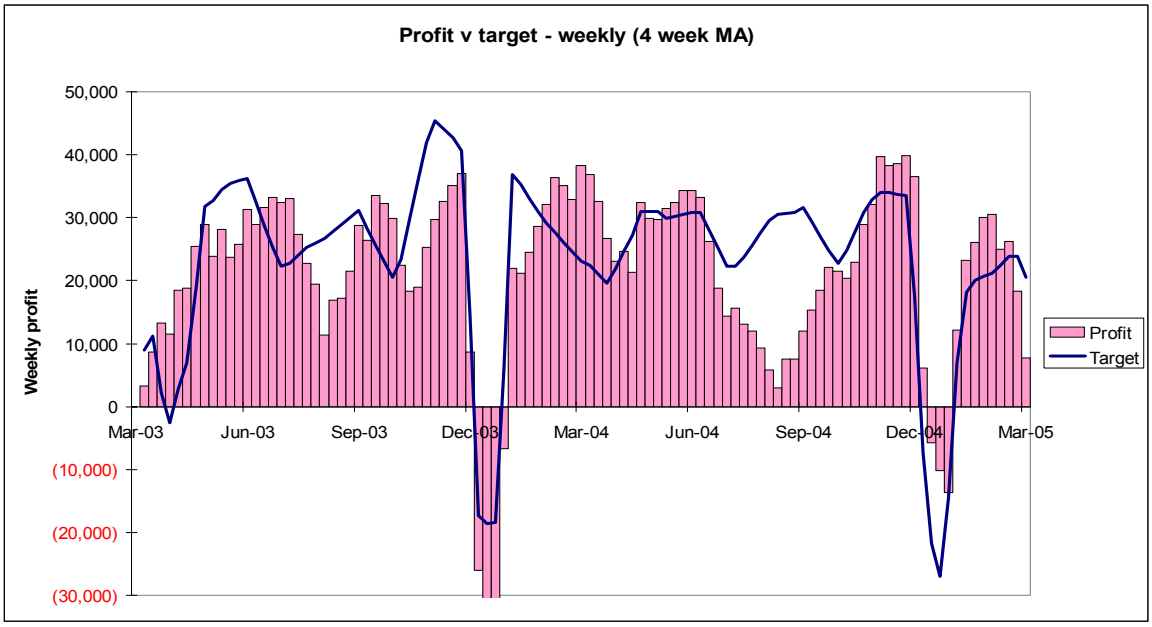

Figure 23-1: Corporate – profit vs. target

Profitability is assessed as being driven by the excess of the profit from the Profit centres reviewed in Section 22 over the cost of unallocated central overheads as demonstrated by Figure 23-2 (see appendix D.1 for make up)

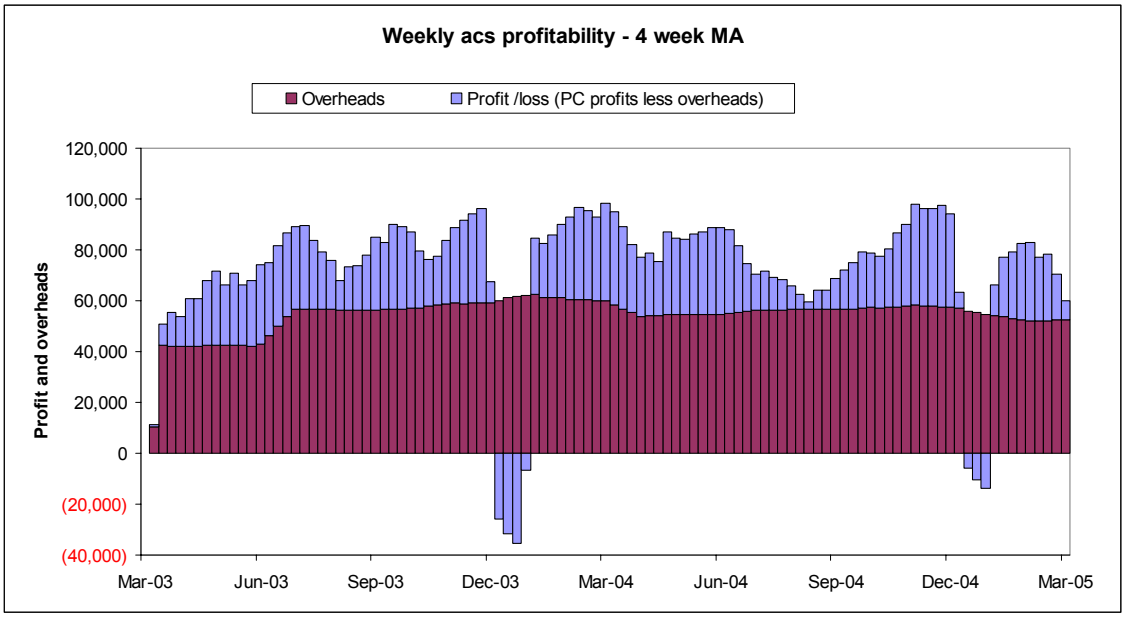

Figure 23-2: Weekly account profitability – profit v overheads

Total profitability from the Profit Centres is relatively stable, particularly over the year as shown in Appendix D.1 - Mar 04: £3,999k vs. £3,925k Mar 05 . However, within this overall stable performance in line with the findings of Section 3, there is a large degree of changes and movement. This is demonstrated by Figure 23-3 which shows profit performance of PCs grouped by comparing on a year by year basis if profits are up, down, or stable (less than 10% movement) or were PCS where the customer's business was won or lost during the study period.

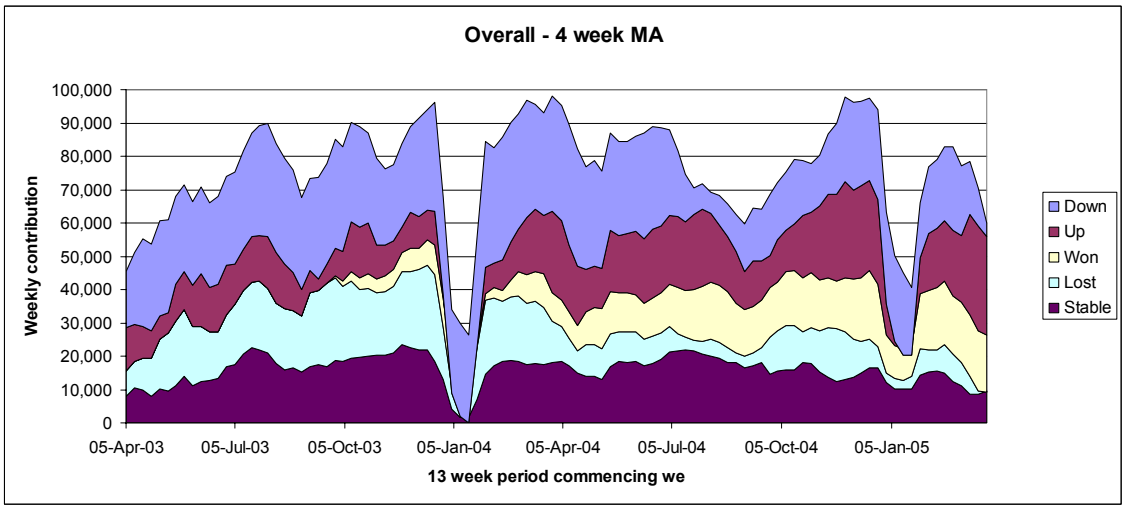

Figure 23-3: Weekly accounts profitability - movements

The same degree of variability is shown by examining the level of variances of actual against variance for the individual PCs. This is demonstrated by Figure 23-4 which shows, over the eight quarters of the study period, the level of make up of the different variances of the individual PC. The largest net negative variance (difference between positive and negative variances) occurred in the quarter to September 2004 which was

the most significant downturn, as reviewed above. Full details of the variances by PC are shown in appendix D.3 which also demonstrates that variances are not consistently among individual PCs.

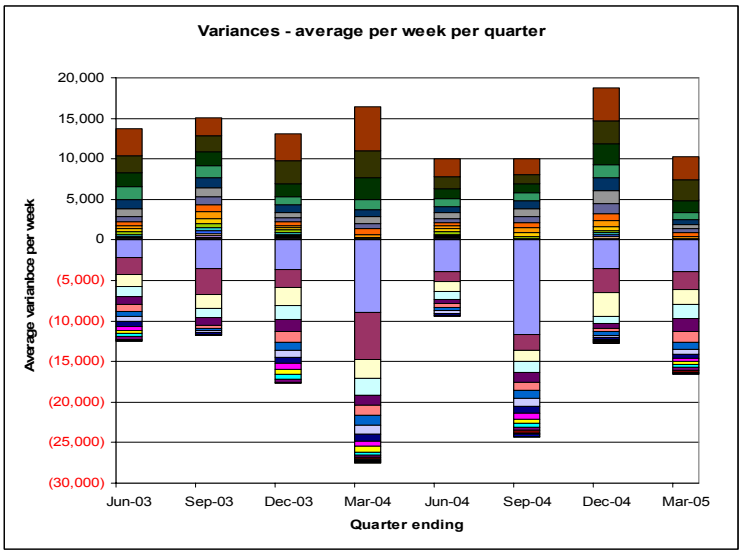

Figure 23-4: Weekly accounts - variances vs. target

The operational responses to this high level of changes and fluctuations have been assessed in Section 22, with those responses that were stimulated by direct central intervention highlighted. However, even the devolved response was triggered and its effectiveness assessed by information produced by the weekly system. As the nature and content of this system is driven by corporate management systems, there is the potential for a major impact for corporate involvement in instigating effective devolved action to improve profitability. From the perspective of the weekly accounts, five elements – cost allocation, bonus, plans, targets, new sales - were identified as being controlled by central management and having a significant impact on the nature and content of the feedback information used to stimulate operational responses intending to improve profitability. (see Appendix C.1(b) for a précis of this evidence)

Cost allocation – weekly accounts

Cost allocation has the greatest impact on the quantum of the PC profitability levels. As reviewed in Section 22, the core mode of reporting for the weekly accounts is via customer and product profitability – an activity based perspective. This brings with it issues of cost allocation which are endemic to any activity based mode of aggregation. In section 22 this issue was noted in relation to several of the PCs, where there is a sharing of resource with other PCs. At the corporate level there is another dimension as overall profitability is recorded after charging central costs. The impact of central costs is illustrated in Figure 23-2 which show that the majority of 'profit' from the PCs is covered by central costs. Clearly the level of profitability of the PCs will be impacted if this cost could be allocated to the PCs using, as recommended by ABC proposal, the drivers of the costs. The make up and level of the overheads is largely driven by the company organisational structure. Over the study period this was split into six profit

centres – central, operations, sales and marketing, projects, IT and Holding company. The movement in the costs is summarised in the Figure 23-5 with make up details included in Appendix C-4.

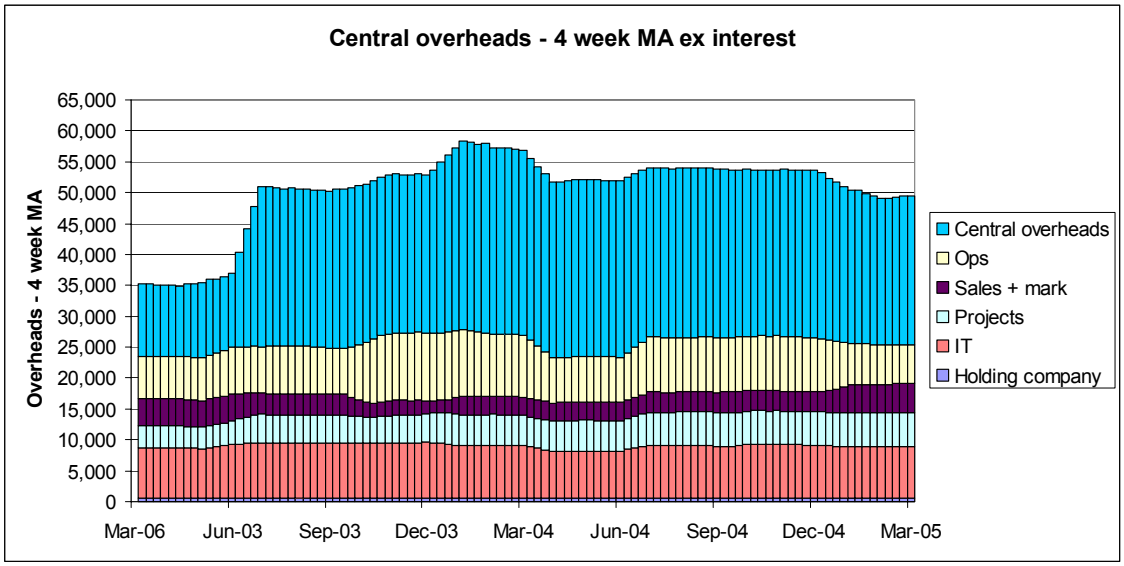

Figure 23-5: Weekly accounts – make up of central overheads

The increase in June 03 arose from the decision to include a provision of £6k pw to cover unexpected costs and an additional £5k for a reassessment of insurance costs. The drivers for these came from reconciliations with the monthly accounts and are assessed below. A further reason for the increase arose from the appointment of a General manager to assist divisional operational Directors in Jun 2003. This was reversed in January 2004. In September two divisions were merged in response to the profit downturn of July/October 2004 with the aim of reducing costs. This led to the reduction in costs from December 04, and the approach was planned to be further extended beyond the study period.

The treatment of cost allocation does not directly impact on overall profitability, as any changes in allocation from one profit centre to another have a neutral impact on profitability. However, its relevance is that changes in allocation will change interpretation of individual PC profitability; this may then change how feedback is interpreted which may feed through into changes in operational actions. The default treatment was not to allocate these overheads cost on the reasoning that, while many of the costs such as operational Directors and General management, IT, projects and insurance, related to operational activities, as they were spread across a range of PCs, allocation, apart from on a percentage of sales, would be problematical. In May 2004 the issue of costing for work, when knowing that new business will produce spare capacity, triggered a general review to see if costs could be made to fit sales more flexibly. Two approaches to the overhead allocation were adopted – a simple allocation of cost by sales and a full ABC costing exercise. As reported in the diary '*Split up the overheads into categories HR, IT, acs, Ops, projects, insurance and then identified several way of allocating costs to the profit centred by staff, sales, computers and vehicles. This gives different % overhead allocations. Decided by IT by number of*

computers, ops and acs by staff, projects , HR and insurance by staff…….. compared to the allocation that the CEO was already doing of based on 'throughput' sales i.e. third party sales plus interco sales. Concluded that as all the methods of allocation were subjective best and easiest to stick with the throughput sales allocation as this was already being accepted, and the differences were marginal' The issue arose again in November 04 when it was concluded that the central management time spent on 20(a) and (b) was not being reflected in the profitability being recorded. As reported in the diary '*However the reason for the poor result is that several of the contracts are showing performance at significantly less than 10% margin. From this it would seem essential for the company to focus on ensuring that its core multi use contracts are run effectively. Currently however with all the senior management resource focussed on PC20 this is not achievable. This leads to changing the strategy to a more focussed approach - Get out of PC20 as it absorbs too much management time for marginal profitability and use spare senior management from PC20 withdrawal to provide support to increase profit'.* As shown by these extracts, the overall conclusion was that no precise mechanism could be identified to allocate costs to PCs as the relationship was in continual change, driven by the constant changes in operational activities identified above. Nevertheless, the relationship had to be continually monitored, and where a relationship could be clearly identified, appropriate actions could be triggered.

Bonus – weekly accounts

During the period the intention was to aim to improve performance through bonuses on selected managers who it was considered it would motivate to improve profitability. While the general principle was that they were paid based on profitability performance level achieved for a quarter, within that the schemes were kept flexible and were subject to continual change. The documentary evidence highlights various issues with payment of bonuses. A diary entry of April 04 highlights the dilemma of at what level of profitability a bonus should be paid. *'CEO proposed that better to link the bonus to individual performance than the group as a whole to overcome the problem of last month when the difficulties at PC28 meant that the no one got a bonus on the basis of the scheme although for example the North performed in line with intention. In practice we overcame this by giving a discretionary bonus, which is effect what can be done by basing the figures on the quarterly projections as can agree number that are confirmed by the numbers but fit our subjective interpretations of worth'*

A further issue is illustrated by a diary entry of November 2004 which highlights both the benefits and potential de-motivating aspects of a bonus scheme ' *Discussion with CEO on the Q3 bonus scheme for the North. Recently there has been a step increase in profitability in the North, which may result form the spreading of the bonus scheme to the general management and the contract managers. However this has led to the bonus targets now being fairly readily achievable given normal levels. This brings up several dilemmas. If we raise the target the manager may be de-motivated as they say that is a penalty for the improvements they have caused. If we don't raise the targets the bonus will effectively be incorporated in their salary and there is no incentive to improve profitability. If we say that it will remain as current and we will reassess next financial year, there is an incentive for the managers to reduce performance so they can start at a lower base point……. there is no overall answer and the specific answer depends*

on context. It seems that they are not currently getting the full 20% bonus so CEO will try and rejig the bonus so that it relates to previous levels, but the top 20% level is still a stretch target. We will leave it vague and next year when there is a change in the composition of the contract we can adjust it without there being a straight comparison'

A further issue relates to the profitability record on which the bonus should be paid. The intention was to pay on the weekly accounts (flash) but as discussed below these are subject to revision through reconciliation with the Financial accounts.. The entry of February 2004 summarised the issue '*A second major issue was the payment of the bonus. There are several one off payments e.g. PC35 fuel +£54k,PC20 extras +£39k, PC35 claims -£39k, hire company claims -£40k. In additional many variances on the flash such as subbies -£45k and agency -£19k which relate to prior period, and may even not have been incurred as the cost were allocated to the wrong account s and accrual will be included in the BS. I argued that we must pay the bonus based on the flash as that was the figures that the management used and which they treated as accurate. While it was subject to many potential adjustments, the flash still showed a materially accurate link between operational outcome and its financial outcomes. If we change it too much management would then doubt its accuracy and the benefit of using it would be lost as use would degenerate into nit picking about what cost was in and out, where it had been allocated and who was responsible for the changes. We had had this issue before when we used to distribute the management accounts, and had overcome it by only relying on the flash. Changes should only be made when it could be clearly linked to failure of the ops to provide information that they accepted they should have e.g. missed agency costs. However the current controls are not adequate to demonstrate this at present. JC to make major adjustments to the flash to calculate the bonus on the basis of figures that can be clearly demonstrated. He will also make the point there are additional cost that have been incurred but as they cannot be clearly linked to a quarter they will be support info.'*

The overall conclusion is that despite these problematic issues bonuses can provide a method, albeit flawed, for motivating staff to meet profitability goals, as reflected in this summary from the July 04 diary *'Agreed that result especially in the North have been improved as bonus schemes for contract managers are in place'*

Planning – weekly accounts

Over the period there was a constant use of ad hoc financial projections, testing the future financial outcomes of known or potential changes to profitability arising from profitability of the PCs less the overhead costs. These include assessing what the implication and possible cost would be of Gaining/losing /extending customer contracts, how to optimise the relationship between central costs and profits from operations, the impact of differing funding options on profitability, and the desirability of keeping specific contracts, and aiming to identify the type of customer and contracts that would lead to increased profitability. The plans were undertaken on a rolling basis in response to constantly changing situations, but also in a context of uncertainty about future changes. An example of a potential change which could have had major implication was in August 2003 where alleged tachograph offences made by DEFRA, the governing body responsible for issuing operators license, could potentially have led to the

withdrawal of licences to operate, at least in some part of the county, which would have had a major impact on profitability.

The overall conclusion of the evidence is that these planning projections provided a rolling input into the developing strategic direction of the company through, in a scenario manner, informing corporate decisions of the type of operational activity that should be conducted. However, apart from the assessment of the profitability results that arose as a consequence of the decisions, which may have been impacted by events and changes unforeseen in the planning projections, there was not a method undertaken to assess the effectiveness of the approach,

Target – weekly accounts

As reviewed in Section 22, targets were set on a quarterly basis for each profit centre. As recorded in the diary for Jul 03, the agreed aim of the procedure was *'to identify the targeted performance on the basis on current information so that deviation can be identified which will highlight performance not being in line with intention and stimulates action to respond to the changed situation'.* The terminology used was not standardised and other words such as budget and benchmark forecast, were used. The targets were generally produced and agreed during the first three weeks of the start of each quarter. The process was fluid but at its core was the development of a first draft target centrally which was then reviewed, adjusted and agreed in discussion with operations management. The diary of April 04 provides a good description of the general and evolving process, and the issue associated with it: '*The issue is do we give the operational directors a target and ask them to work it out, or prescribe the target to set and say they should meet it. The approach taken which varies was that the CEO sent in total terms for each profit centre what he felt the target should be. I then reconciled the weekly to the monthly accounts for Q4 and updated the flash to incorporate extra costs that had not been recorded. I then forecast Q1 on the basis of rolling out the fixed costs and taking an average of the variable or better word changing costs for Feb and Mar. I then produced a spread sheet comparing the results with JC. They were broadly similar subject to adjustment for bank holidays, and ensuring all the costs. The next stage is to produce the flash for the first week and compare the actual with the forecasts…..(Later)…..Q1 forecast finalised. …..Went to Bradford and did a full review of Q1. For the first time we reviewed it by reference to the detailed make up not just the totality and made specific adjustments to specific cost e.g. vehicle insurance. The aim was to try and agree the average intended performance over the next quarter so that can assess whether the result is in line with intention……..(later)…….Updating the Q1 forecast was easier than before as the forecasting model is better set up. This ensures there is a flow through of numerical logic in the forecasting. So while the assumption behind the number may be wrong, there is an element of control in the logic itself. Having done the number I then reviewed with JC on the phone to ensure that he agreed with the logic of the forecasts i.e. to show the average intended result for the next 13 weeks with the weekly noise of fluctuation taken out on the basis that the average without the short term non core fluctuation should meet the intended result'.*

In a file note, the author commented '*the key seems to be to ensure that it is clear in the projections what are the operational realities driving the projections…… this seems*

much more important than any theory behind how the projections are although it means that the projection must be done in a way so that the trace between the number and the reality is clear. This means that the numbers must not be aggregated in a manner that loses that trace which is the potential core problem behind producing accounts that comply with accounting principles' The key elements of the process are that it is undertaken quickly on a top down/ bottom basis with the top down element driving the process, but linked as far as possible to operational realities. This process therefore sets up the target basis for the assessment of target v actual variances, the impact of which was reviewed in Section 22 for each PC.

Sales assessment – weekly accounts

Sales are relevant as the contractual terms agreed drive the type of service to be provided and therefore the cost structure, the level of income to be received, and the utilisation of spare capacity. The approach taken was to involve operations management in the development of all quotes for new business, generally using a pricing mechanism developed from the weekly cost analysis of equivalent types of customer. In January 2004 a New Commercial Director was appointed from a background in the more structured environment of larger companies. The brief was to provide a more structured approach to sales and marketing, with the aim of targeting new contracts that were assessed as providing most profitability, and wherever possible utilising spare capacity within the existing contracts. This approach was not successful. A rift developed between the Commercial Directors and the operational management, and by November it became apparent that the only new business being gained was through referrals from existing business generated by contacts of the operational management. This issue was in the process of being addressed at the end of the study period.

The evidence demonstrates the relevance of a close relationship between new business activity and the financial evaluation of operational proposals in a manner that is understood by operational management, and the danger that can occur if a distancing in this relationship occurs.

Profitability per monthly accounts

As discussed above, the role of the monthly accounts was twofold – to report performance in FA terms to financial stakeholders and to validate the weekly accounts. The start assumption implicit in the documentary data is that, since both the weekly and monthly report the financial outcomes of the same operational actions, the outcomes should be the same. Nevertheless, the reconciliation between the weekly accounts and monthly accounts, which were undertaken in detail and consistently over the two year study period, showed a consistent record of difference between the two accounts as demonstrated by Figure 23-6. (See Appendix C.5 for the numerical make up).

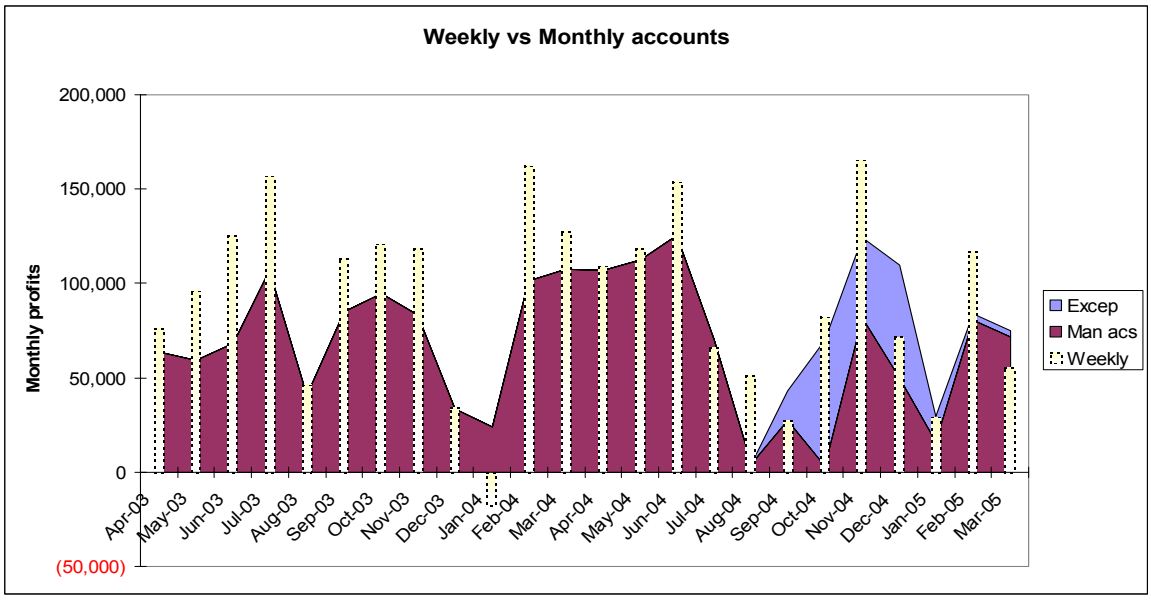

Figure 23-6: Weekly vs. monthly accounts

A large amount of the documentary evidence recorded relates to the process of producing the monthly accounts and the relationship and reconciliation between the monthly and the weekly accounts, and the aim to develop a cost control systems that can control this reconciliation (120 passages as summarised in Appendices C.2 (a+b)). In addition to the specific issue and techniques relating to the production of the monthly accounts and their reconciliation with the weekly accounts, a major systems development, called the 'Cost Control system', was initiated to ensure the accuracy of the accounting systems. The premise of this system is described in the notes of the start up meeting of this initiative on 20th June 2003. '*how to develop a PO system that will catch all costs as they are incurred. Thus giving a real time view of costs to ensure that cost data is captured as incurred not by the accounting instruments. Aim is to provide better information than accounts nearer the operational source so that link between ops and financials are clearer'.* At the end of the meeting it was agreed that this should be achieved by the development of a company wide database. Development was hindered as not being of immediate operational relevance. Development was slow until June 2004 from when it effectively stopped as concentration was placed on the turnaround of summer 2004 and corporate finance activities related to the company sale.

Assessment of the documentary and financial evidence indicates that the core basis of the difference between the monthly and weekly accounts arises from the consequences of their differing principal roles. The monthly accounts can be classified as Financial Accounts (FA) as their primary role is to report corporate financial performance using a Financial Accounting perspective. The weekly accounts can be classified as Management Accounts (MA) as their primary objective is to provide information to inform and control management decisions. Arising as a consequence from these differing roles, differences in content become apparent, principally centred on the differing control processes which underpin the control of the validity of the information being reported. The primary control process of the weekly accounts is to ensure that all costs are recorded at point of initiation – a company led process. The primary control

process of monthly accounts is to reconcile costs to third party demands for payments. This process is therefore supported by third party verification, and provides a clear link between costs incurred and cash payments.

The process adopted, intended to ensure consistency between these two differing processes, was to use monthly accounts to post hoc validate the weekly accounts. Indeed, this was the intended purpose of the Cost Control project. However, this validation was hindered by differing aggregation levels and time periods of the two sets of accounts. The aggregations for monthly accounts were by supplier/customer for monthly periods; a stable consistent approach, centred on debtors, creditor and general ledger using procedures generally common to all UK trading entities, and undertaken monthly in arrears. The aggregations for the weekly accounts are by the activity to which they relate. Units of aggregation and perspectives change and differ as indicated in section 22, and the aggregation have to be produced within three days of the end of the week to ensure relevance. Furthermore, there is no consistent relationship between weeks and months. These factors can be illustrated by a major component part of costs – truck rentals. The company used on average around 250 trucks rented from a range of suppliers on a range of contracts (spot to 5 years) with the number required changing in response to assessed operational requirements. The main FA concern is that the costs of all trucks are recognised, and this is undertaken by ensuring that the charges made in the supplier invoices, normally covering calendar months and checked in arrears, relate to cost obligations the company has incurred. The focus of the weekly accounts is to ensure that each profit centre recognises the cost of the trucks used for each week, in an environment when trucks are continuously hired/ de-hired and moved between PC, even being stood up if not required but hired by the company on a long term contract. The following diary of extracts in July 2003 illustrates the point *'the vehicles and related costs and trailer … move around and therefore need tracking' 'The Financial controller produced the figures as an accountant and so does not organise the information in a manner that reflects the ops i.e. a list of income and expenditure, but in a manner that fits the calculation method e.g. all the vehicle costs are mixed up' 'Vehicles not clear what is core, what is replacement or what is spot'*.

A further uncertainty arose from some costs being irregular and lumpy that crystallised as a consequence of a reassessment of the financial consequences of historic actions. Examples include dilapidations that crystallise at the end of a lease but are of unknown amount until agreed, quarterly utility costs sometimes including catch up amounts, retrospective insurance charges based on declarations, delays in suppliers to invoices. Approaches to counteract these issues included general provisioning in both weekly accounts (e.g. by £6k contingency into weekly accounts to cover unexpected costs) and monthly accounts (e.g. provision for unknown cost when results were good in July 03). However, these did not address the issue of the utility of information such type of provisioning can not be either verified or allocated to informing and controlling specific operational decisions.

The consequences of these issues were that the management accounts and weekly accounts continually showed variances, as indicated by the Figure 23-6. Nevertheless there were two mitigating factors. Firstly, the reconciliation of the weekly accounts to the monthly accounts ensured that there was a fair degree of consistency between the

weekly and monthly accounts, as while differences were identified retrospectively, action could then be initiated to ensure that changes in the weekly cost collection system picked up underreported costs in the future. Much of the data in the 120 passages on which this section is based cover this issue. Secondly, as the weekly accounts use was internal, the use of the information produced related to reporting relative performance (i.e. improvement or reduction / high or low profitability), not absolute accuracy. The system was therefore a guide to performance, not an absolute assessment.

The overall approach adopted was therefore that the reconciliations between weekly and monthly accounts were of prime importance in ensuring the relative validity of the weekly accounts so that decisions and actions based on their interpretation would lead to an outcome which improved profitability. This can be summarised by the following diary entry of 9th July *'Coming to accept that the management accounts will never tie into the weekly accounts as they are showing different things. The weekly accounts are to show income over expenditure for that week trying to show the gain produced by trading for that period, regardless of expenditure in prior periods. The key is to develop sufficient profitability to cover the one off lumpy costs e.g. dilapidations, professional costs, claims that happen continually but at irregular intervals. The management accounts which are financial accounts try to incorporate these items, but do it using accounting conventions such as depreciation, provisions and consolidation adjustments. The change here is the acceptance that the flash accounts are of a different nature to the management accounts and cannot tie in, but that they are the key measure as they show how the income over expenditure is created by the operational management'*

Profitability per annual accounts

The audited annual accounts provide the formal evaluation of the profitability performance to external third parties, reported under company and produced to generally accepted accounting standards. Thus, it provided the authoritative record of the level of profitability recorded, and thus the measure of the goal for which the MAS is being used. The process for producing the final accounts started with a conversion of the last set of management accounts into a first draft of the annual accounts. This was produced in a layout that was consistent with both the monthly accounts layout, and the layout and disclosure requirement of the annual statutory accounts. This was then audited by external auditors over a period of around three to six months after the year end. Adjustments arising from the audit were then agreed between senior management and the auditors and the accounts were finalised and lodged at Companies House. For the March 2005 accounts two sets of audited accounts were produced. The first made up using the same procedures and interpretations as previous years. The second incorporated adjustments to these figures to include the alternative accounting interpretations of the acquiring company; interestingly and coincidentally, both sets were audited by the same international audit firm, although from different UK offices.

Figure 23-7 summarises the annual accounts of all the sets of accounts – weekly, monthly, annual pre sale, and annual post sale. It also includes an assessment of underlying performance based on the exclusion of costs which with hindsight were not

related to the period covered by the accounts, and prior to the acquiring company's adjustments.

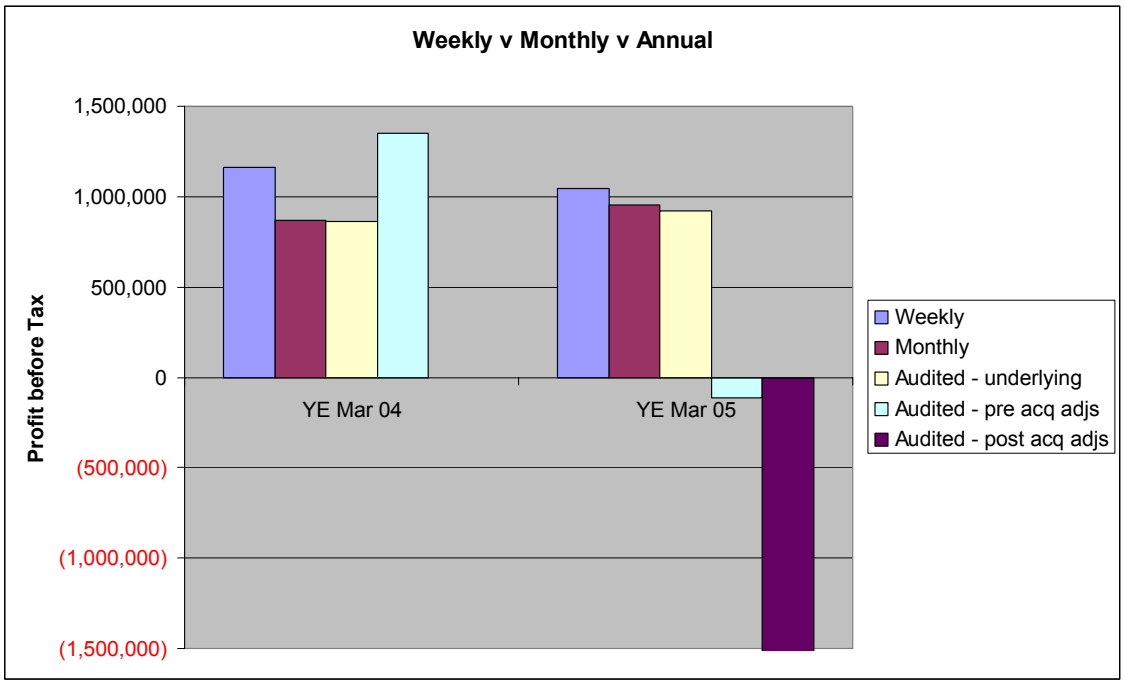

Figure 23-7: Weekly vs. monthly vs. Annual

Appendix C6 shows a numerical reconciliation of the movement between the profitability as recorded by the monthly accounts at the cumulative end of year stage, with the audited profitability and the assessed underlying profitability. The elements that make up the reconciliation have been classified according to their assessed nature of their cause – retrospective validation, accountancy treatment, judgement timing and triggered timing. Retrospective validation covers the situation where a cost is only recognised retrospectively after the accounts for the period to which it relates have been closed off. When the cost is recognised, it has to be charged into an accounting period in which the benefit of the cost was not received. An example of this is where an operational cost – say hire of a truck – has not been initially invoiced, and the cost is charged later on a catch up basis. Accountancy treatment covers costs where the treatment is specifically determined by national accounting policies – the examples here relate to goodwill write off and FRS4 treatment of borrowing costs. Judgement timing relates to costs charged where the cost is charged to a period based on the assessment of the management. An example here is the changes made by the acquirer post acquisition who judged that the costs of dilapidations and empty rents would be £736k to cover dilapidations cost on the termination of the leases and possible empty periods of usage. The judgement of the management pre sale was that this cost could be negotiated away or greatly minimised. The final element is triggered costs. These occur when some event triggers a cost that previously has only been contingent. Examples of this are costs triggered by the sale or the business, or redundancy costs triggered by the reducing staff levels.

These specific examples further emphasise both the differences and commonalities between the way the FA based audited accounts and the MA based weekly accounts

operated. For the weekly accounts the purpose of recognising costs is to inform and control management decisions. Costs that are therefore recognised either retrospectively or do not relate to the consequences of operational actions, have no basis in informing decisions, and are therefore not relevant. However, given a goal of improving profitability, it is necessary that the targeted profitability objectives that are achieved flow through into the FA based accounts. Their value at that stage for overall corporate performance will be impacted by other costs or income that are absorbed corporately.

Financial Stakeholders

The financial stakeholders determined the quantification of the profit objectives, along with management assessment of what was feasible. The bank lenders provided a minimum floor on profitability by specifying, through profit related covenants the minimum level of profitability required to support bank borrowing. The shareholders had an unlimited potential benefit from profit upsides, and therefore provided pressure to optimise profitability. The two were interlinked in that profitability, or prospective profitability, was paid out to shareholders via dividends and/or repayments of capital, funded by bank borrowing.

This interlinking occurred in the financial restructuring which happened in January 2003. At this restructuring, institutional investors received repayments of capital against a lower future equity share. The funding was applied by the bank who lent money on the security of future cash flow from future profitability. The main covenant was that interest payments should initially be covered by 2.25 pre-tax profit, rising over the next three years to 3.0 times profit cover. The institutional shareholders were therefore in effect taking an advance payment of future profitability, with the funding for that future profitability provided by the bank. A minimum certain future profit requirement was therefore set, although, as concluded in section 3, future profitability is subject to impact by a range of potential uncertainties. A certain requirement was therefore set against an uncertain potential.

This situation was addressed by the sale of two warehouses owned by the company. One was vacated and sold, and the other was sold and leased back. This had the result of reducing the core term debt from £5m to £1m, as shown in Figure 23-8, and reducing the interest from an annualised basis at September 03 of over £420k pa (£105k per quarter), to an annualised basis £120k pa (£30k pq), as shown in Figure 23-9. See Appendix C.7 for detailed make up.

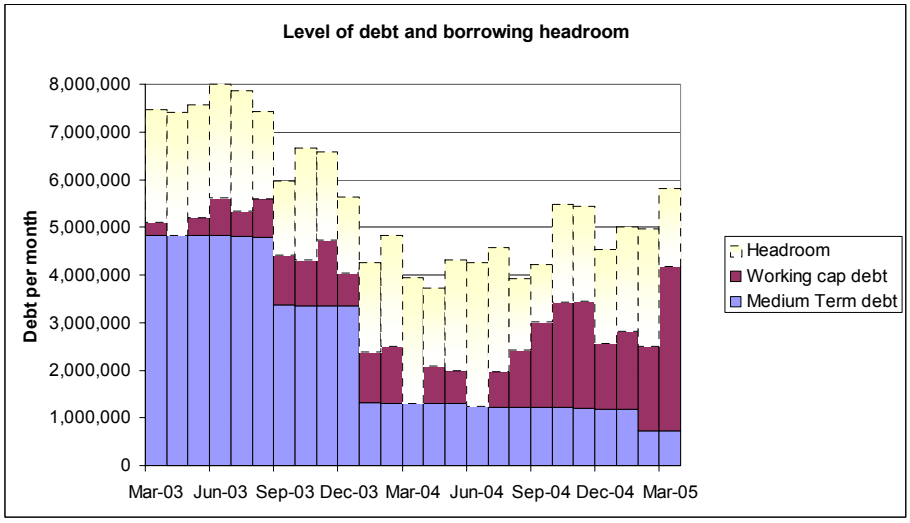

Figure 23-8: Debt and borrowing headroom

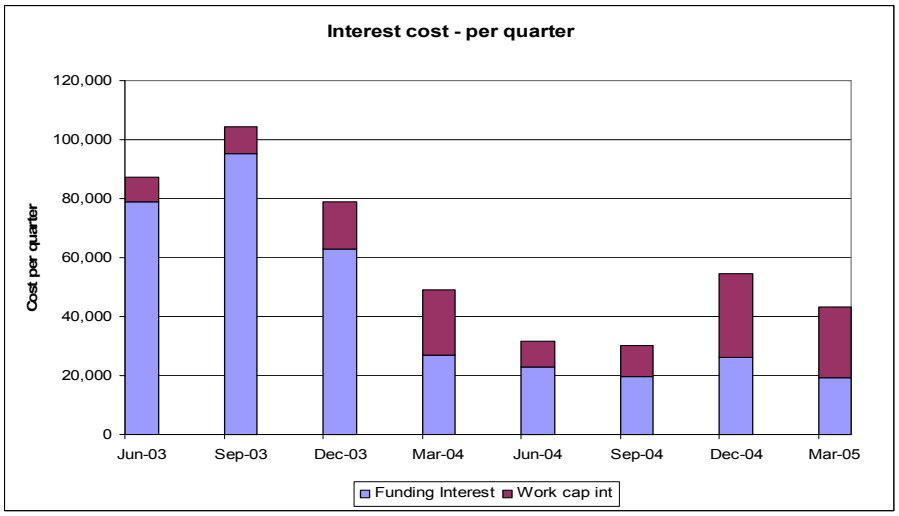

Figure 23-9: Interest cost

The implication for profitability was that the hurdle for minimum pre interest profitability was reduced from £945k pa (£420k * 2.25) to £270k (£120k *2.25), a significant increase in potential for the company to absorb fluctuations in profitability. The adverse consequence was that additional rent obligations were taken, both for the warehouse that was retained and for the need to rent additional capacity to replace the warehouse sold. This impact was to therefore transfer interest cost for increased rental costs, thus increasing operational costs, as rental income is generally, following FA conventions, treated as an operating costs, but reducing interest cost. This changes the interpretation of achieved profitability from an external reporting perspective, and adds another level of complexity to the interpretation of the weekly accounts. This example shows how the financial structure can have a major influence on both the minimum profitability requirements and the level of reported operational profitability. It also demonstrates the potential for beneficially using MA information to inform on the

nature of the uncertainty inherent in future profitability as guiding the capital structure that funds the operational activities, thus suggesting a link between the use of MA and corporate finance.

The shareholders' interest was to optimise profitability, so that benefits can either be received directly through dividends, and the value of their equity is based on an assessment of the future profitability. In April 2004 an expression of interest was received by a larger competitor to acquire the business. A corporate finance house was hired to advise on valuations, and their advice was that valuations would be based on a multiple of historic and potential profitability, with evaluation validated by audited accounts. After some negotiations, terms were agreed in August 2004, with the main thrust of the negotiations based on assessment of current levels of profitability and the potential for their maintainability. In October 04, following the downturn in profitability recorded (see Figure 23-6) negotiations were put on hold until the outcome of the profit improvement action being implemented was determined. In January 05 it was assessed that profitability levels had recovered (Figure 23-6) and a due diligence exercise was triggered. The principal focus from a shareholder value of this was on profitability as recorded in the monthly accounts and their reconciliation with audited accounts, as these were assessed by the acquirer and its professional advisors as the principal valid recorder of profitability. The results of the weekly accounts were considered to be of secondary relevance. The sale of the company was finalised at the end of March 2005, at the end of the study period.

The sale process of the company illustrates the central role of MA in informing the financial stakeholders' evaluation of the quantum of the objective of improved profitability. In effect, it shows how the context of what is improved profitability and how it should be interpreted is assessed.

23.3 Review against P2 framework

Objective

The findings show how the objective of improved profitability was set at corporate level, driven by the requirements of two groups of financial stakeholders – shareholders and bank lenders. The bank funders provided a minimum requirement, driven by their assessment of the minimum level of profitability required to ensure their lending is repaid. The shareholders, who had corporate management control, aimed to reduce the minimum requirement to protect the downside, while maximising the upside to increase shareholder value and dividends. The property sale shows an approach to reducing the downside. The continual actions to improve profitability, as evidenced by the findings, show the commitment to maximise profitability, although with the goal being relative rather than absolute. The relationship between profitability and assessed shareholder value was demonstrated by the company sale process, with the profitability downturn in September / October 2005 causing the process to be put on hold, and the upturn in profitability in November in response to profit improvement actions enabling the process to be resumed.

Improve profitability - Plans, Target, Feedback

As concluded in the operational perspective, these three issues drawn from Otley (1999), all relate to differing dimensions of either actual or projected profitability. Targets and feedback provided the principal elements of the weekly accounts systems, the central element of the MAS. Plans were based on ad hoc projections principally to inform decisions on the pricing, desirability and impact of gaining/losing/ maintaining customer contracts, but using cost analysis models that developed in the weekly accounts. The corporate level used this information to interpret the significance of the results and to stimulate any responsive actions which were not initiated at operational level Thus the use of quarterly targets and feedback of actual profitability against target provided the agenda for action at the operational level.

Multiple perspectives

The findings show that Customer/Product perspectives (weekly accounts) and Financial Accounts (monthly/ annual) were the main perspectives through which performance was viewed at the corporate level. The weekly accounts provided the main MA perspectives with the role of informing and controlling management actions. The role of the monthly accounts was to provide a bridge between the informing/controlling role of the weekly accounts and the external reporting role of the annual accounts, and to provide an interim reporting role to financial stakeholders on a weekly basis. The evidence highlights the difference between MA and FA, led by their differing roles. The role of FA is to report overall portability with no concern for cost analysis and no requirement for immediacy, with controls of validity based on Balance Sheet reconciliations linked back to the cash transactions resulting from the transactions. The role of MA requires immediacy and specific, localised cost aggregation with validations dependant on cost and income being captured as it is incurred.

The extent of the data relating to difficulties in the reconciliation between the two indicate the difficulties in reconciliation arising from the differences in level of aggregation, speed of production and production controls making them difficult to compare. The inherent difficulty in agreeing on a consistent measure of profitability is further highlighted by the reconciliation between the annual and monthly accounts, with issues relating to cost and income recognition being classified as retrospective validation, accountancy treatment, judgement timing and triggered timing. Nevertheless, the overall conclusion was that there was sufficient compatibility between the three sets of accounts to enable valid conclusions on implications for FA profitability to be made on the basis of interpretation of weekly accounts performance, although this was subject to continual reconciliation being undertaken to ensure that results recording did not drift apart substantially.

A further area of difficulty apparent from the corporate perspective was significance of central costs. The level of central costs was determined by spending decisions made at corporate level. The level of profitability reported at operational level is dependant on the costs allocated to each profit centre, which was a function undertaken by corporate management, although overall profitability reported would not be affected by such decisions. The results indicate that there was awareness that central costs were caused

by activities occurring at Profit centre level, with clear demonstration of the central costs used at Profit centre level when there was central management situation. However, the results indicate that, given the continually changing situation, no format could be agreed that would give a meaningful and beneficial method of cost allocation; consequently overheads were treated as a central cost, and objectives were framed to optimise overall contribution from Profit centres, and, where feasible minimise the level of central costs.

Real time

Weekly accounts were undertaken with the intention of producing near real time financial information. The Cost Control system project was intended to be an IT led approach to address the problems of reconciling weekly and monthly/annual accounts. The rationale was that all accounts were differing aggregations of the same individual financial transactions, provided the transactions were recorded as they were incurred, and the power of IT processing should enable the transactions to be aggregated to reflect the multiple perspectives, while retaining compatibility, effectively through a data warehouse. The outcome of the project did not comprehensively meet these objectives, but is was not clear from the evidence whether this resulted from failure of implementation or intrinsic difficulties in capturing financial transactions as they were initiated and recording them in a data warehouse.

Impact of endemic tensions

The MAS was designed and structured to set the context and overall to meet corporate objectives, devolving responsibility to the operational level, subject to checks to control performance. This is evidenced by the reporting systems, cost allocation procedures, commercial and customer terms, and the interpretation of the significance of results all being centrally controlled. Responsibility for implementation was devolved through the top down/ bottom up process for agreeing targets using weekly accounts produced by operational management, not from the double entry system. The dangers of not keeping this relationship was highlighted by the period when the new sales activities appeared to become detached from both operational level. A significant difficulty was presented by the problems of validity in the weekly accounts compared to the FA based monthly accounts.

The main aspects of the control/inform and fixed flexible tensions relating to the weekly accounts have been reviewed in the operational section. The monthly and annual accounts bring a different dimension, with a control function to ensure that the profitability outcomes of the weekly accounts flow through to the FA based accounts, and an inform function to external stakeholders. No annual budget was produced, as the overall direction was governed by ad hoc projections, and quarterly review to ensure that activities were in pace to improve profitability. In line with traditional accounting practice, the monthly accounts were classified as ‘management accounts’, although they did not fulfil the MA role of informing and controlling internal management actions. The ‘management’ classification rather covered their position of being FA accounts produced by management, but not subject to external review unlike the annual accounts, generally referred to as ‘audited’ accounts.

Bonus

Bonuses were assessed as potentially being beneficial in stimulating operational management. The basis approach was to agree quarterly targets at the start of each quarter, and pay bonuses upto 20% of salary on a sliding scale, depending on the level of achievement. A major issue was that the requirement to improve profitability led intrinsically to an increase in profitability targets This had the potential to become a disincentive, as managers appreciated that if performance improved, the targets would become more difficult. A further issue arose when reconciliation with the monthly FA led to reassessment of the profit figures reported. These issues led to a flexible and varying ranges of bonus schemes being adopted, with changes in the operational base of the company being used as a reason from reframing the nature of the bonus and its target.

Uncertainty

Figure 23-2 and Figure 23-3 show the high degree of changes and movement from target which flows though from the individual Profit Centres to the corporate performance. Yet the overall Profit Centre performance for both years of £3.9m is very consistent. These results flow through into relatively stable annual profitability levels, recorded by the monthly accounts and the underlying accounts (see Figure 23-8). This is despite the difference, discussed above, of reconciling the weekly accounts with the monthly accounts. However, another area of unanticipated changes become apparent in the audited accounts, with the year to Mar 2004 showing audited results well in excess of weekly accounts, and the year to Mar 2005 showing a reduction, due to the reconciliation items discussed above and detailed in Appendix C6.

The apparent result is that the high level of uncertainty of individual profit centres is cancelled out via a portfolio effect, perhaps influenced by the general thrust of management policy to continually engineer responses to negative variances. This fits the requirement of the bank funders for a level of certainty in the predictability of the minimum level of profitability, and supported the agreement by the corporate management of the ‘white wash’ projections (see above) which require the corporate management to forecast future profitability levels in line with company law requirements. However, over and above this another set of unforeseen factors create a second level of uncertainty for the audited accounts as discussed above and detailed in appendix C-6.

23.4 Conclusion

The overall conclusion is that the principal role of the corporate use of MA was to create the context within which operational actions were undertaken, unlike the operational role which directly impacts on operational actions and their profitability consequences. Table 23-2 summarises the impact and role of the elements as assessed against the P2 framework

Question	Role/impact	Evidence
Objective		
	Provides objective	− Shareholders provides the impetus to maximise improved profitability. − Bank funding covenants provided minimum requirements.
Improved Profitability		
Plan	Inform strategy and objective quantification	− Ad hoc projections feed into identification of what is assessed as achievable, and the type of activities to be undertaken − Mode of analysis linked to weekly accounts , but with extended time horizons
Target	Key to Feedback	− The agreement of the quarterly targets provide a central element of feedback make up
Feedback	Key inform/control mechanism	− The principal source of information for inform and control, arsing from the monthly accounts.
Impact of multiple perspectives		
Financial Accounts	Key external reporting perspective	− Provides the measure of the level of profitability achieved via the monthly and annual accounts − Monthly accounts not used to inform and control, despite the misnomer of being called 'management accounts' − Difficulties in reconciling to weekly accounts − Annual accounts subject to adjustment for cost identification and period allocation
Product /Customer	Key MA perspective	− Central basis of weekly accounts – the basis of the MAS. − Validity of data questioned by completeness and allocation difficulties
Process	None	− No evidence
Throughput	None	− No evidence
Real time		
	Basis of systems	− Weekly operational system dependant on IT real time system. − Challenge is to reconcile and validate output. Not clear if failure to ensure full reconciliation results from intrinsic problem or failure of implementation
Impact of endemic tensions ?		
Central v devolved	Context determined centrally, implementation is devolved	− Centrally designed and controlled reporting systems set the context of operational actions − Joint involvement in the agreement of targets which form the basis of feedback information − Conflict between usefulness of devolved information and greater potential validity of centrally produced FA based information − Nature of the relationship has key influence on effectiveness of sales approach
Control v Inform	Both	− Weekly accounts as per operational perspective.
Fixed v Flexible	Both	− Weekly accounts as per operational perspective.

Uncertainty		
	Major impact	− Operational changes drive continued uncertainty − Information validation make interpretation of results difficult − External reporting shows apparent relatively stable situation
Bonus		
	Problematically Beneficial	− Appear to enhance performance − However problematic given: Basis of reporting difficult given difference MA/FA; need to increase hurdles to maintain continual improvement; determination of individual responsibility

Table 23-2: Assessment against P2 framework

24 Discussion

24.1 Introduction

The section starts by discussing how the case MAS answered the research question - *How can management accounting inform and control operational decisions and actions to facilitate the achievement of improved profitability?* This is initially addressed in section 24.2 by summarising the core aspects of how the MAS functions, identifying the limitations of its effectiveness, and concluding with an overall assessment. The key findings are then discussed and assessed in 24.3 against the principal relevant P2 findings of prior research. Building on this, in 24.4 an update of the P2 framework is proposed to reflect the actual operation of the case MAS, and allow for the P2/P3 differences to be identified and reviewed. Finally, in 24.5 the limitations of the work are reviewed.

24.2 Answer to research question

How the Case MAS functions

The objective of the MAS was to meet the profit aspirations of the shareholders and bank lenders by informing and controlling the implementation of operational actions in a manner that resulted in improved profitability. The approach taken to achieve this was through an MAS that interlinked planning, targets and feedback, with staff motivated by bonuses. Customer based aggregations were used as the basis for internal financial reporting and pricing, process, and to some extent throughput analysis for assessing operational changes to improve, and FA based reporting as the basis for reporting to external stakeholders.

The base unit of analysis for operational planning, targets, feedback and rewards was weekly profitability by customer based Profit Centres and overhead Cost Centres. For existing customers weekly targets were agreed for profitability over the 13 weeks of a quarter, to provide a basis of controlling the achievement of the targeted levels, and providing a signal to instigate profit improvement responses if a material variance was identified. This included factoring in the potential impact of any identified future changes, and where necessary using process analysis to try and identify the most profit

effective response. For a new customer or significant changes in operations, process analysis was undertaken to assess the profit impact of potential approaches to pricing or changes to operational process, normally on a customer centred basis. On a weekly basis the results of actual performance were collated from records of the financial transactions incurred, and feedback of variance from target was used to trigger responsive actions when variances were identified. Staff were motivated to achieve the targeted performance through bonuses linked to performance for which they were assessed to have responsibility based on financial performance assessments over the quarter.

At a corporate level profitability was assessed by aggregating the results of all the Profit and Cost Centres to give target, actual and variance profitability on both a weekly and quarterly cumulative basis. Projections forward, based on actual and potential Profit and Cost centres, provided a method of assessing the potential profit impact of differing options for future activities. Thus, the segmentation of performance into customer based profit centres provided a central input into corporate management assessment of the activities that could potentially lead to profitability. From this the corporate management could, on a rolling basis, assess the type of activities to be undertaken, judged on the basis of an assessment of what would lead to greater levels of profitability.

The actual v target feedback thus provided the core of the system, and a rolling input based on the latest results into the assessment for future planning. This was underpinned by the implicit assumption that historic future performance will roll forward into future performance, unless some indicator has been identified that the position will change. The default position was thus devolved responsibility, subject to central agreement of targets and central intervention where variance were assessed as signalling that the devolved management was not capable of developing an effective response. Targets were fixed but only for a quarterly period to allow flexibility to respond to underlying changes in operational context.

Limitations on effectiveness

The factors that most impacted on the potential of this approach to facilitate the achievement of improved profitability can be grouped together under the final theme identified in P2 - uncertainty. Pulling together the results of the research in section 22 and 23, four principal drivers of uncertainty can be identified –customer driven changes, market factors, reporting validity and management effectiveness.

The first uncertainty driver is customer driven changes. An underpinning assumption behind the system was that historic performance would flow through into future performance, subject to adjustment for identified future changes. The ideal situation for profitability would be that the implications of any impending changes or opportunities to increase profitability would be anticipated before the event, and proactive actions be developed and implemented that resulted in changes or opportunities in manner that improved profitability. The evidence of Section 22, however, shows that there was a continual flow of changes that occurred that were not anticipated, driven by internal customer driven changes that impacted on the operational activities required and the

cost income relationship. In section 22.4, the two main uncertainty factors were identified related to this issue – pricing and operational profile - suggesting two dimensions to customer driven changes. These two dimensions fit the logic of the building blocks of accounts –financial transactions. As discussed in P1, financial transactions are calculated by the formula – 'Price terms * Volume'. The price terms element is dependant on the resource to be supplied and the unit price that can be agreed with the customer. The content of the resource is determined by the process decisions resources of the service/goods provider, in response to the customer requirements. If the customer changes the requirement (or in this context profile), the service/goods supplier will have to change the resource to be supplied which will impact on one side of the price terms element of the financial transaction equations. Therefore, in the case context, if the customer changes his logistics requirement profile, the supplier has to recalculate how best to provide the resource to meet the requirement in the most cost effective manner (operational profile change) and then negotiate with the customer for changes in pricing (pricing change) that will enable target profitability to be achieved. Overall therefore, this customer driven change uncertainty directly imbues the 'price terms' part of the financial transaction calculation with uncertainty. This therefore then flows through to all plans and targets that use projected aggregations of financial transactions.

The ideal response was to have a pricing structure that was able to provide an automatic proactive response to customer changes, such as an agreed level of profitability (e.g. PC29). However, the findings show this was not generally achievable, and that the alternative approach was a reactive response to negative variances. As analysed in section 23.2, the two most common reactive responses directly related to the two dimensions of customer changes - renegotiating the pricing and improving cost effectiveness through operational changes (i.e. minimising resources required, and therefore, cost to meet the service required). While the findings indicate that such responses, in the majority of situations, led to an increase in profitability, before this was achieved there was generally a downturn in profitability. Therefore, the higher the incidence of customer led changes, the greater the potential impact on profitability; both before the response has been initiated and with the risk, as demonstrated in the minority of situations, that an effective response could be developed. Where effective responses could not be achieved, the analysis in 22.3 suggests that this may have been as a consequence of the two other uncertainty factors – market factors and management effectiveness - as discussed below.

The second uncertainty factor is market factors. This relates to the other side of the financial transaction equation – volume. Again the sub-dimensions can be identified from 22.4, with three being identified - contract wins, contract losses, and sales volume changes from existing customers. The impact on profitability is both directly in relation to the quantum of profit contribution, and indirectly on its impact on cost allocation and the ratio of overheads to volume. The direct impact is illustrated by Figure 23-3 which shows that a large degree of the profit movement results from new customer gains and losses; in relation to the sub-dimension of sales from existing customers it is illustrated by Table 22-6; a further difficulty also occurs in that, for new business, profitability levels may not necessarily be achieved in line with those planned at the tender stage The indirect impact is demonstrated by Figure 23-2 which shows that corporate profitability

was dependant on the relation between central overheads and contribution from Profit centres. The response was to try to obtain more sale volume than was lost. However, while the MAS could identify the desirable financial profile of new sales volume, its achievement is dependant on normal sales and marketing issues and customer requirements. This difficulty is indicated by Table 22-6, where increased volumes were identified as the appropriate response to volumes reduction, but in six of the seven instances this was not achieved. A final issue is linked to the customer changes uncertainty, for which one of the central responses is to renegotiate prices, but is not always successfully achieved, as shown in Table 22-6. This can lead to customers being assessed as net loss makers, and in these cases the response identified was to exit from the customer to eliminate the losses, which had the impact of improving overall corporate profitability.

The third uncertainty driver was reporting validity. The intention behind the weekly operational based profitability assessments was that they would be closely connected to operational realities, being based on assessments of the cost/income consequences of operational actions. Operational management taking cost decisions on the use of resources to service specific customers (e.g. wages, vehicles, fuel) would be able to clearly relate the cost of providing these services to the income received from the customer, thus informing the ability to manage the provision of the services in a way that is most cost effective. The intent was to ensure the validity and link of the MA weekly accounts to the FA based monthly and annual accounts by reconciling the weekly with the monthly accounts, and producing the annual accounts from the twelve month cumulative performance of the monthly accounts. However, the findings showed that there were significant variances between both the weekly and monthly accounts (Figure 23-6), and the monthly and annual accounts (Figure 23-7). From the reasons behind these variances (section 23.2) three underlying issues can be drawn out as causing these differences and impacting on the validity of all the sets of accounts - cost identification, period allocation and profit centre allocation.

Cost identification issues arose when costs were incurred, but not recognised. Between the weekly and the monthly figures, the main reason was the absence of the standard cash based financial controls and reconciliations. This issue also, however, continued between the monthly and annual accounts, as analysed in 23.2. In the section on ‘profitability per annual accounts’, four different causes of reconciliation difference between monthly and annul accounts were identified - retrospective validation, judgement timing, triggered timing and accountancy treatment. Of these, the first three (retrospective validation, judgement timing, triggered timing) relate to cost identification issues. Period allocation issues occur either when a cost is identified which can be traced back to an earlier period (e.g. dilapidations, wages, environmental claims), or where a current expenditure is made that will impact on future periods (e.g. the fourth cause of annual accounts differences identified in 23.2 - accountancy treatment). Profit centre allocation issues are essentially an ABC issue. The difficulties of achieving an objective allocation were highlighted by the findings related to shared costs among the profit centres in the section 22.23 mini case studies (e.g. PC3, PC13), and in section 23 by the allocation of the corporate overheads to costs centres. A further indirect factor impacting on reporting validity was that the continual changes in

operational base hindered the development of a stable approach to addressing these issues.

Figure 24-1 illustrates graphically the relationship between the timing of cost identification and the allocations, horizontally to profit and cost centres and vertically to accounting periods. Its significance is that it demonstrates how costs that are identified, recognised or crystallised after the period to which they relate will either cause the prior period to be restated, or distort the reported performance of the period to which it is allocated. It also illustrates how the allocation of costs, either sideways to cost centres, or forward to future periods, is a matter which requires management determination. If the period to which cost is to be allocated is unclear (e.g. identifying the period of future benefits to be achieved), this decision will in many case include a high degree of subjectivity. Given that profit is often a very low percentages of total costs (in the instance of the study case, around 3%), the impact of even a very small percentage of costs that fit into such categories can have a major impact on reported profitability, as demonstrated by Figure 23-7.

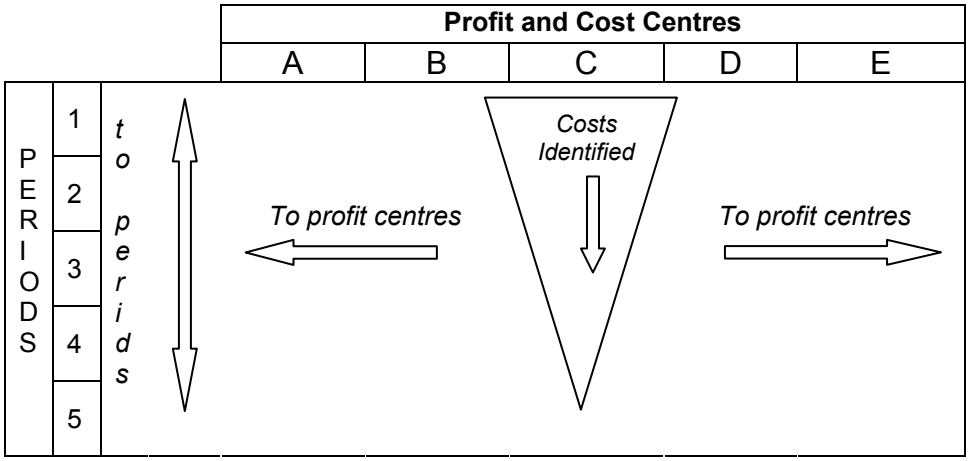

Figure 24-1: Reporting validity issues

The major implications are twofold. Firstly, a continued undercurrent of uncertainty over whether the information which is being used to inform and control management actions is reliable, at both the individual profit centre level and at the aggregated corporate level. The response to this adverse impact was to treat the information as being sufficiently valid as to give the direction of profitability performance, and subjecting reported information to financial reconciliation identified on a rolling forward basis. Secondly, a question mark over whether apparently improved performance reported by the weekly accounts flowed through to the final audited accounts, which are generally taken to be the 'authoritative' determinant of performance (See Figure 23-7). The response to this was to treat the audited accounts as authoritative, subject to providing explanation of 'non recurring' costs to all relevant financial stakeholders (see Appendix C6).

The fourth uncertainty, management effectiveness, arises implicitly rather than explicitly from the findings. As discussed, the system provided no objective measure of assessing to what extent optimum performance levels were being achieved. There was

no objective feedback that could inform that responses to customer changes or market factors could have been better achieved in some cases by proactive rather than reactive profit responses; that profit improvement responses to changed customer profiles could have been more effective; or that profit target levels understated the potential for achieving profitability. Further, it was clear that the use of financial controls, reconciliations and cost collection systems could improve the validity of cost collection and allocation; but it was not clear how further improvements could potentially eliminate all problems identified. This uncertainty therefore overlays the three other uncertainty factors. Further, it was never clear how optimal management effectiveness was in addressing the implications of these uncertainties, especially as the uncertainties led to a changed situation which did not have some existing benchmark. Nevertheless, two specific responses can be drawn from the findings. Firstly, the use of interpretations of negative profit variances feedback provided a key signal for questioning management effectiveness and triggering further investigations; if these were assessed by central management as indicating that management was ineffective, interventions were undertaken to initiate changes. Secondly, the use of bonuses to motivate staff with the purpose of ensuring that their management approach was focused on the objective of improved profitability.

Overall assessment.

The Findings suggest the adverse impact of the four uncertainty factors - market factors, customer changes, reporting validity, and response effectiveness – provided a continuing limitation on the potential effective functionality of the MAS. These factors, their sub dimensions, their impact and the responses to their impact. are summarised in Table 24-1. Key elements of the uncertainty factors are their interrelationship and their direct impact on financial transaction, the building blocks of accounting reports. Figure 24-2 demonstrates this interrelationship and how the content of financial transactions and their aggregations as plans, target and actual performance reports are suffused by uncertainty implicit in resource cost (change uncertainty) and volume (market uncertainty). It demonstrates how reporting uncertainty and dependence on uncertain management effectiveness adds to this. A further aspect is the self referential nature of profitability feedback which is a central element of the MAS; it both informs on the impact of the uncertainties through feedback of target vs. actual, but is informed for target setting by assessments of the impact of the uncertainties. The partial break to this self referential uncertain system is provided by the unifying goal of requirement for improved profitability. While this also has an element of circularity – the potential for future profitability is informed by past profitability – it is also subject to the aspirations of financial stakeholders, who provide an external element of both minimum profit requirements and upside profit aspirations, based on comparisons of profitability from equivalent companies and funding pressures (section 23.2).

Directly responding to the research question, the findings indicate, taking the underlying annual profit (Figure 23-7), that profitability was maintained but not improved (on a ongoing profitability assessment – see Figure 23-7). However, underlying this there were continuing high volumes of reductions and increases in profitability in PC performance (see Figure 23-3 and Figure 23-4). The reduction resulted from changes in the operational context which the MAS was not able to proactively address. The profit

improvements generally resulted from actions triggered in response to feedback. It would seem a reasonable assessment therefore that without the signal to trigger response actions, and without these responses generally leading to improvements of profitability, the profitability performance would have seriously deteriorated. It is not possible to assess precisely how optimally the MAS enabled the negative impact of these factors to be addressed; however, an assessment of profitability outcomes achieved does provide some measure. This suggests that the MAS was critical to the company maintaining profitability, and without its use it is likely that the consequences of these factors would have led to a serious deterioration of profitability. It also suggests. However, that the four uncertainty factors identified have an intrinsic limiting impact on the potential effectiveness of a MAS.

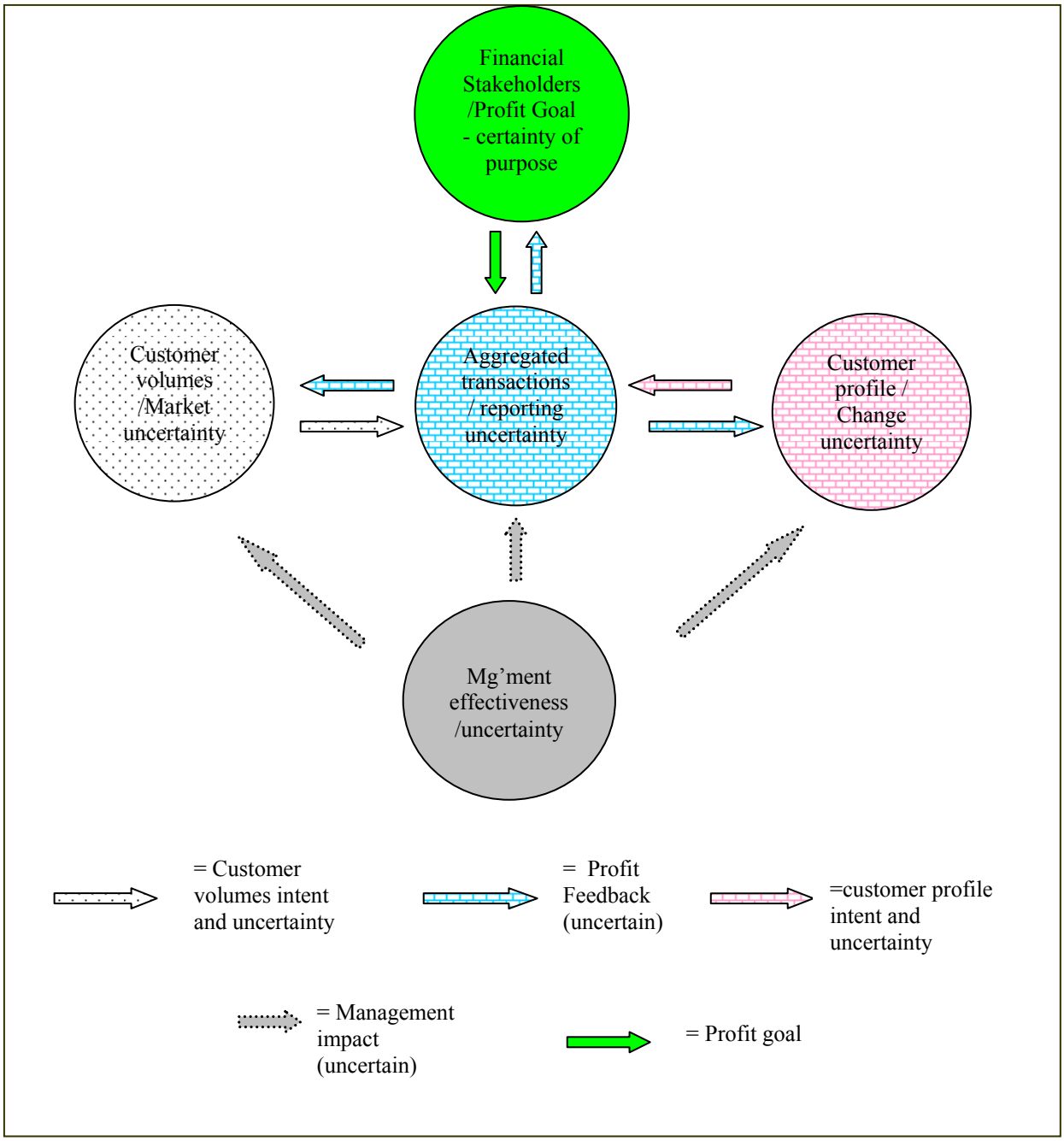

Figure 24-2: Uncertainty impact on recording financial transactions

Uncertainty factors	Operational perspective		Corporate perspective	
	Uncertainty impact	Response	Uncertainty impact	Response
	•	•		
Customer changes • Pricing • Op profiles	• Changes potential of planned profitability • Reduces profit until response implemented	• Feedback to inform • Use MA to contest pricing with customer • Improve/ change process • Aim for in built pro active response	**Internal.** Problematic identification of underlying cause of variances and best response **External**. Questions level of profitability achievable	**Internal.** Monitor for variance and then stimulate change. **External**. Down play expectations to minimum. Portfolio gives an apparent air of solidity
Market factors • Customer win • Customer losses • Existing customer volumes	• Change profit contributions • Change cost allocation/ capacity use • Uncertainty over profitability of wins	• Aim for new customers to replace losses • Continually reassess cost allocations/ capacity use • Keep cost base flexible • Quit loss makers	**Internal.** Problematic optimal relations between central overhead and operations **External**. Questions level of profitability achievable	**Internal.** Close involvement in planned profitability **External**. Down play expectations to minimum. Portfolio gives an apparent air of solidity
Reporting validity • Cost identification • Period allocation • Profit centre allocation	• Questions utility of information to inform and control	• Treat as accurate unless know otherwise • Update on new information • Maximise level of reconciliations and financial controls	**Internal facing**. Questions reliability of feedback to inform control decisions **External facing.** Questions confidence of interim reporting	**Internal facing**. Continually monitor, reconcile and control to reduce impact **External facing** - Treat audited accounts as 'authoritative result' BUT highlight non recurring items
Management effectiveness • Optimal target • Reporting • Management	• Questions validity of target • Cost/ benefit of improving systems • Questions level of central involvement /man change	• Targets based on historic performance plus assessed realistic improvements • Constant system improvement • Corporate decide on management effectiveness based on feedback • Bonus	**Internal.** Questions of causal link between reported performance and response effectiveness, and if / how to improve it. **External**. Questions level of profitability achievable	**Internal.** – Continual analysis of feedback – Central management make assessment and management changes – Monitor post management change feedback to assess impact **External**. Financial stakeholders minimum profitability requirement provide downside benchmark.

Table 24-1: Impact and response to uncertainty factors

24.3 Against findings from P2.

Core basis of MAS

The core structure of the MAS was closely aligned to the five issues that (Otley, 1999) proposed must be addressed by a performance management system for it to be effective, and which provide the core base of the P2 framework. This is demonstrated by detailing how the MAS addressed each of the five questions used by Otley (1999) to present his framework.

The objective was improved profitability, as defined in FA terms (Objectives):

1) Operational plans were developed by using process analysis to assess the potential profitability impact of differing operational options for individual profit and cost centres. Strategic plans were developed by rolling aggregations of individual profit and cost centre projections, to test the overall potential profitability impact of differing mixes of options. (Plan)

2) Performance levels required were identified via rolling quarterly profit targets, analysed by customer based profit centres and corporate based cost centres. (Targets)

3) Bonuses based on quarterly profit performance reward managers for improving profitability.

4) Comparison of performance to target on weekly basis, and rolling updated future targets and plans provide feedback and feed-forward loops to enable learning and adaptation. The reconciliation of the weekly customer based analysis with the FA based monthly accounts reconciles customer based and FA based perspectives.

Within this base framework, the functions of the MAS reflect some of the key recent proposal for the design and content of a MAS. The basic unit of aggregation for plans, targets and feedback analysis – profit and cost centres – fits the 'activity based profitability analysis' (ABPA) of Meyer (2002), proposals that were specifically developed as an alternative approach to the BSC proposals of (Kaplan and Norton, 2001; Kaplan and Norton, 1996). The underpinning assumption of this proposal - that it overcomes the problems of dissimilar measures inherent in the BSC with a unified single financial measure - fits the underlying assumption of this study. The absence of a fixed budget fits the proposals of (Hope and Fraser, 2001; Hope and Fraser, 2003) that budget should be abolished, and the proposals for flexible rolling quarterly targets can be seen as being consistent with their call for a flexible, adaptive, devolved approach. Building on this, the linkage of planning on a rolling basis into the systems of target setting and feedback fits the proposals of (Neely et al, 2001) by linking between planning and budgeting in a flexible responsive manner. The MAS described also reflects the requirement for multiple accounts, as proposed by (Johnson and Kaplan, 1987) although with different uses – process is longer term, and product/customer is

shorter term. This therefore moves away from the original strand arising from (Johnson and Kaplan, 1987) of ABC as long term product cost towards the second strand of ABCM, as identified in P2.

Uncertainty

However, while the core operation fitted these recent proposals, the findings also indicate that the effective operation of the MAS was limited significantly by the impact of the four uncertainty factors. The is consistent with one of the key themes identified in P2 – uncertainty – as being of critical importance in affecting the extent to which MA can be used to facilitate improved profitability. The P2 findings scoped the theme of uncertainty in general terms, using the broad terms of uncertainty in relation to – context (characterised as uncertainty over both the consequences and the objectives for action), content (characterised as differing perspectives), and process (characterised in management tension); this was then partially narrowed down via two of the other key themes – multiple perspectives and endemic tensions, which were then reviewed in more concrete terms. The P3 findings, however, drawing directly from empirical research, tie down the issue of uncertainty to four factors which relate directly to the operational effectiveness of the MAS: reporting validity, market factors, customer changes, management effectiveness. The discussion therefore continues by assessing how this classification of uncertainty, and the evidence behind it, impacts on the remaining three issues that were identified as central in P2 – multiple perspectives, real time systems and endemic tensions. Table 24-1 summarises the outcome.

Uncertainty against multiple perspectives

Multiple perspectives are discussed first as these relate to the content of the information produced by the MAS, and thus provide the information which is the subject of the endemic tensions. In P2 five accounting perspectives were identified - Product, Customer, Process, Throughput, Financial Accounting, drawn principally from (Johnson and Kaplan, 1987) and Goldratt (1984). Their different stances were demonstrated by a restaurant example (product= individual dishes, customer = total customer bill, process = product delivery cost, throughput = total volume through restaurant less marginal costs, FA = total restaurant profit). As demonstrated by the answers to the (Otley, 1999) question, all the perspectives were incorporated in the P3 MAS. Of the four uncertainty drivers it is reporting validity which has most impact on the multiple perspectives. As all the perspectives are based on aggregations of financial transactions, they are all affected by the impact of the reporting validity issues on these transactions. However, as perspectives work in different time periods and are subject to different financial control, this impact is not even.

The first two perspectives to be assessed are Customer and Product, as these provide the core perspectives behind the system of weekly Profit and Cost Centres, assessed as being the core of the MAS. The findings show these weekly aggregations incurred problems of cost allocations, cost identification and period allocation. The cost allocation issues reflect and provide examples of ABC issues which were concluded in P2 as being inherent in product/customer perspectives. Cost identification and period allocation were also very significant as the requirement to identify costs on a near real

time basis at the start of the time cycle for determining cost identification, and without the benefit of retrospective financial accounting controls. Consequently, the MA information produced is subject to continual reassessment in future period. These findings suggest the underlying cause behind the conclusions of Meyer (2002) on the implementation difficulties of ABPA.

Nevertheless, the conclusions of the P3 Findings were that while the information produced could not be seen as objectively 'true', it was treated by its users as being materially accurate, and sufficiently valid to inform and control decisions. However, it is clear that this validity was only maintained by ensuring that the results and the trends of the results correlated with the monthly accounts, thus providing a link between the control/ informing role and the FA profitability outcomes arising from this use. It is instructive that this parallels the key control between costing and financial accounts reported as being developed at the start of the industrial revolution in the 1770s in the Wedgwood case (Hopwood, 1987).

This leads on to the role of FA, the next perspectives to considered. The findings and analysis show FA accounts also being subject to cost identification and period allocation differences; indeed the variances between the cumulative monthly management accounts, which were intended to record FA performance over the year, and the annual audited accounts are larger than those between the weekly and monthly accounts (see Figure 23-7). The findings showed these to be caused either by one off income/costs (e.g. compensation, deal costs), or changes in judgment by management on identifying cost not yet crystallised (e.g. dilapidations) and period allocation decisions (e.g. Loan costs). Stripping these out gives a more consistent view of 'underlying' profitability. This demonstrates how FA recorded performance is subject to the potential for continual reassessment based on management judgement and one off costs. However, it also demonstrates that these judgement and one off cost can be stripped out and, provided financial stakeholders agree from a realist perspective an authoritative result determined (Mattessich, 2003) based on a clear link back to operational reality. This enables FA to be reinstated as 'triumphant' as it defines the definition of the level of achievement of the objective (profitability) and provides a direct link to MA, where the role is to inform and control actions to ensure that the targeted FA performance is achieved. Thus, while the reporting validity issues hinder the obtainable precision of both MA and FA, with sufficient controls, reconciliations and reporting systems, information can be produced which from a realist perspective can be treated as 'fit for purpose'. It also implies that FA results are not detached and self referential as argued by some studies e.g. (Macintosh et al, 2000), and place the use of FA in a more relevant and integrated position than the conclusion of Johnson and Kaplan (1987) .

The process and throughput perspectives were less affected by reporting validity as their use was principally confined to operational planning and target setting at an operational level. As such, the analysis behind the planning and target was based on assessments of the resources required, not the cost actually incurred. The link to actual cost incurred was achieved by the feedback of actual costs against targets, when the financial impact of the processes to be adopted had been converted to targets.

For the other three uncertainties - market factor, customer change and management effectiveness - the role of the multiple perspectives was to provide the framework for analysis and a record of the outcomes. Process and throughput analysis provided the analysis to determine the response to new/lost customers or required changes in operational processes. The customer profitability analysis recorded the profitability outcomes achieved, and the FA performance provides the overall measure of how effective the response has been in relation to the goal of achieved profitability.

Uncertainty against real time systems

The weekly profit and cost centre reporting system can be classified as a near real time system, and was dependant on the use of IT systems for the collection and aggregation of cost and income transactions. However, for the reasons discussed above these transaction were subject to reporting validity issues. Therefore while the use of IT systems provides the potential for use of real time information, this is subject to the feasibility of ensuring the validity and completeness of that information. This point reflects the problematic issues identified by (Cooper and Kaplan, 1998) on the use of real time systems.

Uncertainty against endemic tensions

The default resolution of the endemic tensions at the operational level was fixed/control/ devolved, moving in stages to flexible/ inform/ central (Table 22-13). At the corporate level (see Table 23-2) only the central / devolved tension was relevant, mainly in determining the context of operational actions and the need for central intervention to address shortfalls in management effectiveness. Two uncertainty factors – customer changes and management effectiveness – therefore drove the resolution of the endemic tensions. Customer change drove a requirement for flexible targets and inform, within a context set by central management. Management effectiveness was assessed using a fixed target to control performance, with a signal (inform) of potential ineffectiveness if the target was not met, which was interpreted centrally. Reporting validity then added another dimension by raising the potential question of validity impacting about the information used to control and inform . The final uncertainty factor – market factors – was not directly involved in the resolution of the endemic tension, as it related to the amount of trading activity to be undertaken. Table 24-2 summarises these conclusions.

	Uncertainties			
	Reporting validity	**Customer changes**	**Market factors**	**Management effectiveness**
Multiple perspectives				
FA	Period and allocation	N/A	N/A	Ultimate test
Customer/Product		Pricing	Pricing	N/A
Process		Assessment	Assessment	N/A
Throughput		Capacity	Capacity	N/A
Real time systems	Response v accuracy	Response speed	N/A	Speed controls
Endemic tensions				
Fixed v Flexible	N/A	Requires flexible	N/A	Test by fixed
Control v inform	N/A	Requires inform	N/A	Requires control
Central v devolved	N/A	Central - context	N/A	Central - assess

Table 24-2: Uncertainty vs. P2 framework for analysis

An indication of the potential generalisability of these findings is demonstrated by the close parallel they have with Kurt Lewin's model of organisational change (Hatch, 1997) of unfreeze/change/refreeze. This can be rephrased in MA terms as unfix/ flexible/ fixed or variance/inform/control. It also fits ideas generating from complexity theory of pockets of stability interspersed with period of significant fluctuation. This implies that, as intermittent but asymmetric change is endemic in organisational activities, an effective MAS must be able to respond to both periods of stability and periods of change, and that past experience may not necessarily be repeated in the future, although for periods it may be repeated. Therefore, while future targets and plans can be based on an assessment that identified trends will continue into the future, a MAS must be prepared to react if this is not the case. This situation is well illustrated by case study PC35. For the past 18 years this contract had been a model of stability with steadily and ever increasing profitability – parallel in stability to PC26. Given this background of stability, it was very difficult for management to come to terms with the nature of the contract changing, and that a different approach would be required in the future.

The findings that the corporate level set the context, with implementation devolved, fits the conclusions of an in depth study by (Ahrens and Chapman, 2002) that performance reports disseminate central strategic vision to operational units, subject to internal contests of accountability around the significance of these reports. They also fit similar finding were made by (Cowton and Dopson, 2002) who concluded that while management control provided a degree of disciplinary power and surveillance, this was mitigated by a large degree of agency within the overall context of the control systems. However, neither of these studies extend to an assessment of the overall impact on the achievement of corporate goals, and have a greater focus on the sociological impact of MAS at the operational level, and do not address how change is achieved if performance is assessed at the corporate level as being inadequate. This is highlighted by comparing the focus of (Ahrens and Chapman, 2002) on the use of MA to inform internal contest of accountability against a focus of this study on the impact of the use of MA to inform external contests with customer, when feedback is assessed at corporate level as requiring price levels to be contested with customer.

This approach of devolved responsibility against fixed target, moving to corporate involvement with flexible targets if performance is assessed to be below target, provides a partial approach to the uncertainty paradox of (Hartmann, 2000). This was defined in P2 as*' a need for decentralised autonomy to respond to uncertainty if bottom line targets are to be met, also a desire to ensure though centralised control that actions are focussed on the achievement of bottom line results'*. The aim of the approach was to get the benefits of devolved autonomy, with the fallback of central intervention if results were unacceptable. However, this is only achievable if there is a flow of information from operational to corporate that allows operational performance to be closely monitored. The flexibility and interrelationship of the MAS described also indicates a more interrelated and interactive approach than the proposal of Simmons (1995) which made much sharper distinctions between differing levers of control.

A further significant aspect of the resolution undertaken of the central/devolved tension is that the effective use of the MAS is dependant on the effectiveness of corporate management. The definition of what are achievable targets, the significance of variances, the effectiveness of operational management, and the terms to be agreed with customers are all dependant on the interpretation of the corporate management. These findings are supported from differing stances by other studies. (Fernandez-Revuelta Perez and Robson, 1999) report on a case where corporate management allowed the use of a MAS to be highjacked by an 'organisational hypocrisy' that allowed rolling explanation of variances to block remedial action to improve profitability; this underlines the dependency on central management to determine the key goals. (Moon and Fitzgerald, 1996) highlighted the need for a strong corporate champion to drive the effective of a system which they classified as meeting the requirement of a framework for an effective system produced by Otley (1987) (a forerunner to (Otley, 1999)); this illustrated the need for management to proactively operate and use the MAS. (Euske et al, 1993) concluded that while performance management systems reflected corporate strategic objectives, site managers provided a hinge converting corporate requirements to operational requirements, although in times of crisis normal controls were abandoned and central intervention instigated; again this provides an illustration of devolved responsibility subject to context, with central involvement when performance was assessed as being unacceptable.

Bonuses

A final issue to be considered is rewards and bonuses. Rewards were one of the five elements of the (Otley, 1999) framework, although the only element not linked to the flow of information. As such it has been treated separately. It relates to motivations for management based on the interpretation of the information produced, rather than defining the content of the information. While the P3 Findings concluded that bonuses motivated staff to enable the achievement of objectives, and that these bonuses should be addressed at targets over which they have an influence, two main limitations were identified. Firstly, relating to the requirement to keep raising the bar if profitability is to be improved, rather than remain static; secondly, on the use of profitability reports that were subject to reassessment because of the reporting validity issue. The principle that bonuses should be related to what they can effect is reflected by the finding of P2 (e.g.

(Kerr, 1995),(Jensen, 2001),(Dearden, 1987)), but none of the finding from P2 address directly how to overcome the two specific issues raised in this study.

24.4 Development of P2 framework

The P2 conceptual framework was proposed to identify the functions and interrelationships required for a Management Accounting System (MAS) to effectively perform its role. A further finding of P2 was that very few studies attempt to assess the effectiveness of a MAS in relation to actual performance of improved profitability. As this study focuses on actual profitability performance levels, it provides an opportunity to identify key differences between the proposed MAS framework of P2 against the actual framework of P3, and draw out some implications of the differences arising.

Figure 24-3 shows the P2 framework redrafted to reflect the actual MAS reported in the P3 findings. The first change is that the endemic tensions and the differing corporate perspectives have been merged into the operation of the system. The second change is that actual performance is split into the three levels of accounts that were used in practice. The third change is that the FA based annual budget has been taken out, and the operationally based weekly target v actual is shown being used at the corporate level as its replacement. The fourth change is that the model is presented more precisely in terms of accounting aggregations, with the financial transactions separated from their aggregation into accounts at both operational and corporate level. Finally, the four uncertainty factors are introduced to demonstrate that they feed through the whole system from the point of financial transaction identification.

The perspectives and tension are merged into the framework as in practice they have to be resolved, and cannot be left as considerations, as shown in the P2 framework. The differing accounting perspectives are allocated to the separate horizontal Otley (1999) element, reflecting the differing purposes of their use. The endemic tensions are not explicitly shown as their resolution is determined by the impact of change, as discussed above. The default ‘fixed/control /devolved’ moved to ‘flexible/inform devolved-central’ in order to respond to change. The need for the three levels of accounts was driven by the differing requirements of MA and FA, and reflected the differing speed of production, period length and aggregation. The framework demonstrates how accounting aggregations move through various stages before they reach the annual accounts stage which is taken as the authoritative (although flawed) representation of the level of achievement of the profitability objectives. The different accounts are shown as being integrated, as their difference is caused by validity issues arising from the collection, recognition and allocation of financial transactions, not any innate difference between them. These different sets of accounts reflect the call of Johnson and Kaplan(1987) for three sets of accounts, but suggest a differing mix of aggregation types and timescales. The replacement of annual budget reflects the problematic issue of fixed annual budgets identified in the BBRT proposals (Hope and Fraser, 2001; Hope and Fraser, 2003), but shows an approach providing a method of linking target setting to planning (Neely et al, 2001) which is not specifically covered in the BBRT proposals. It also shows an approach to replacing FA based accounts as the main financial control

with operational based financial analysis following (Cooper, 1996) and (Jazayeri and Hopper, 1999). Representing the model in system in specific accounting terms shows more precisely the medium which is the focus of this study. The inclusion of the uncertainty factors show how they impact on the whole systems, imbuing all aspects of the systems with their implications, as demonstrated by Figure 24-3

24.5 Limitations of the study

A major limitation of the study is that the information was collected and analysed by the same person who is Executive Chairman with a major personal shareholding. As a consequence, it is likely that the judgement and interpretation made are influenced by personal preconceptions. The study, however was undertake with the specific objective of collecting and analysing the data in a transparent manner. While much of the documentary data was based on a personal diary, wherever realistic this was supplemented by third party information. Moreover the financial data was drawn almost exclusively from data and reports produced by the staff of the company, and was subject to external review by financial stakeholders and auditors. The converse of this limitation is that the author's position has allowed total access to all aspects of the business over the two year period of the data collection period, thus providing a width and depth of data not apparent in other studies identified by the author.

A second related issue is that the findings relate to one case only, and therefore the generalisability of the findings is restricted. However, the framework for analysis was based on prior research which was itself based on a wide range of studies. The relevance of the finding therefore becomes more specific when the findings are compared to the prior studies, and common themes or differences behind the findings are identified.

A third limitation is that the author has had a primary influence on the development of the MAS analysed. He has had a continuing interest in the theory of accounting, which has been informed by involvement in the DBA programme since 2001, well before the advent of the study period. It is therefore likely that some of the elements of the system were influenced by his interpretation of interim findings for the completion of the DBA. There is therefore a potential that the findings are circular – the initial conclusion stimulated changes in the system that are then fed back as primary findings. However, the impact of this is limited by the implementation of any theoretical pre understandings being qualified by the practical pressures of implementation.

A final limitation is that the dimension of performance is narrowly scoped to cover profitability and does not cover cash flow which is generally considered to be the final determinant of corporate performance. Clearly therefore there is further work to be done to explore the impact of MAs on cash flow. However the restriction to profitability was chosen as it is this dimension of performance which is the subject of day to day management actions, and the conversion of profitability to cash flow is a linked issue which would be covered separately.

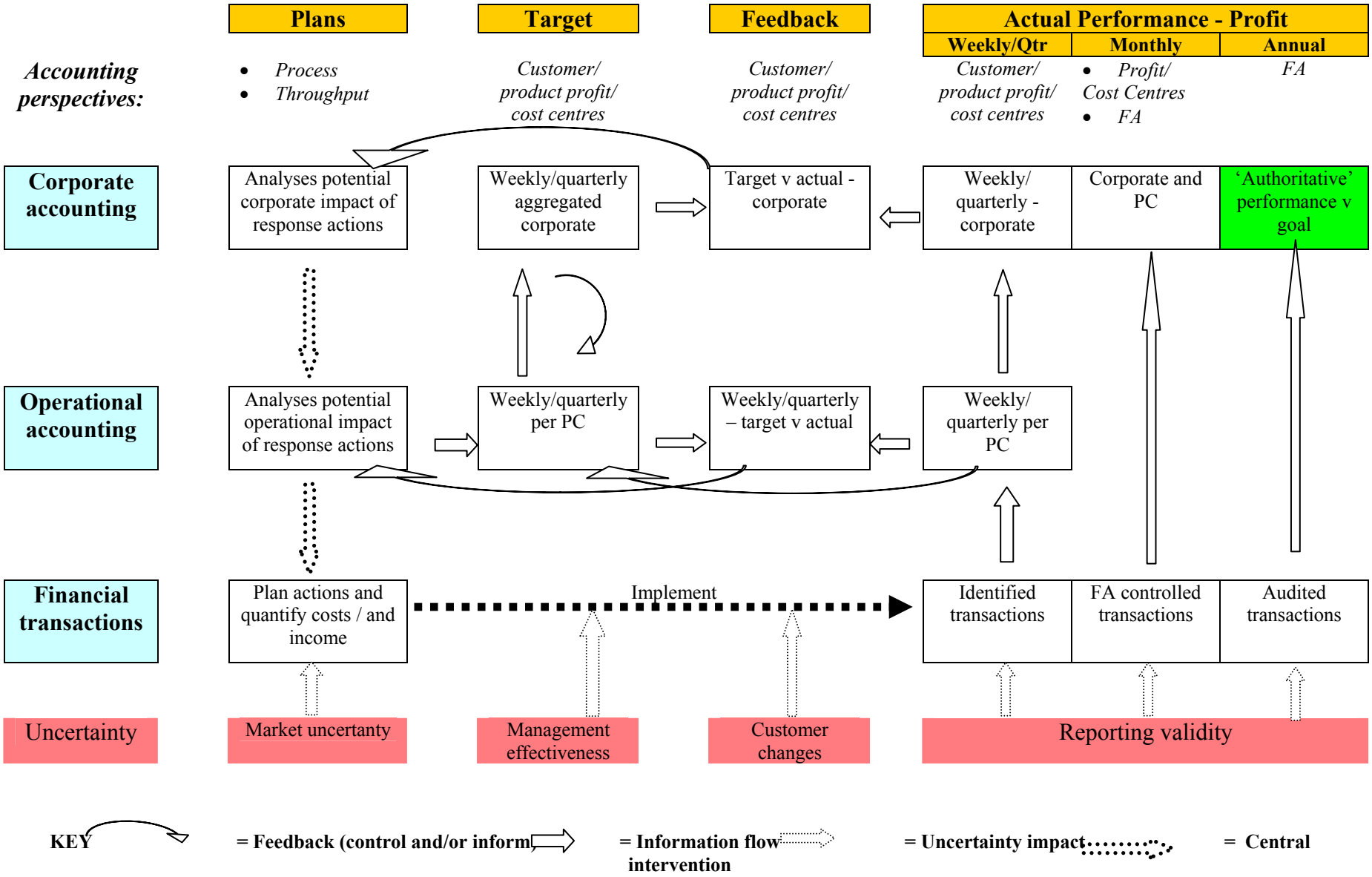

Figure 24-3: P3 MAS following P2 framework format

25 Conclusion

25.1 Overall

The core structure of the MAS researched follows the P2 framework developed from the framework proposed by Otley (1999), and operationally reflects the impact of the key themes identified in P2. However, the conclusion of the findings it that the operation of the MAs is fundamentally governed by the impact of one of the key themes identified by P2 – uncertainty. While this impact is fundamental, it is also transient and asymmetrical leading to pockets of time with apparently relatively high certainty interlinked with periods of changes. The outcome fits Kurt Lewin's model of organisational change (Hatch, 1997) of unfreeze/change/refreeze. Four dimensions of uncertainty were identified –customer change, reporting validity, market factors and management effectiveness. Each of these has a direct impact on the effectiveness of a MAS – specifically by impacting directly on the nature of the financial transaction and their aggregations which make up the base elements of MAS transactions.

The customer changes factor has two sub-dimensions, - pricing and operational profile changes, which directly impact on the price terms element of the financial transaction equation – price terms * volume. Customer change is the main driver of the resolution of one endemic tensions theme of P2. In conditions of relatively certainty the approach is to plan through analysis of the optimal approach, set this in terms of a fixed target to be implemented by management, and control this implementation through feedback of actual v variances, treating negative variances as a failure of management requiring rectification. This resolves the endemic tensions as devolved/ fixed/ control. It is an approach based on a Scientific Management command and control approach which provides the root basis of traditional MA techniques (Miller and O'Leary, 1987) (Hope and Fraser, 2001). However, when customer change occurs there is a direct impact on the resources costs and consequent income requirements to achieve profitability. This changes the resources required to meet the changed demand profile, and thus the costs and income structure required to achieve profitability. This leads to a requirement to reassess the plan, flex the target and use the feedback to inform of the financial consequences of the changed and changing situation. To achieve this effectively, additional support may be required for the operational management from central resources. Thus, the endemic tensions are resolved as central-devolved/flexible-inform. The limitations of the MAS to facilitate profitability are highlighted ,with the potential that the responses may not lead to target profitability, and a reduction in profitability before response actions can be implemented. A similar impact will be had however if there are changes in the availability of resources, or the technology used to meet the service required.

The market factors uncertainty is closely related to the customer changes uncertainty, effecting the volume side of the financial transaction equation. This has three sub-dimensions - customer gains, customer losses and changes to existing customer volumes.

The reporting validity factor adds a further level of uncertainty by problematising the base data of the financial transactions which make up profitability reports. Three sub-dimensions are identified - cost identification, period allocation, profit centre allocation – whose interrelationship is demonstrated in Figure 24-1. Accordingly, any reported profitability is subject to revisions and challenge, if differing assumptions are made about cost recognition, period allocation, and profit/cost centre allocation. A further consequence of the reporting validity uncertainty is that it questions the potential benefits of real time systems by identifying how its benefits are hindered by the issue of reporting validity, especially as it is not possible to use traditional accounting controls to provide further validation.

A final level of uncertainty is added by the management effectiveness uncertainty. Again, three sub-dimension were identified - uncertainty over optimal target identification, over effectiveness of reporting systems and effectiveness of operational management. The implication is that it is never clear how effective any response has been to the market changes, customer volumes or reporting validity issues, and therefore it is difficult to rectify if assessed shortfall in profitability levels are caused by management ineffectiveness or the impact of these other factors. This uncertainty is reinforced by the difficulty in determining optimal profitability.

The limitations arising from the impact of the uncertainty factors are partially addressed in the following manner:

1. Accepting profitability as providing a certainty of purpose against which performance can be assessed, and accepting audited annual performance, subject to consideration of one off costs, as defining the level of achievement.

2. Quantifying the target in terms of financial performance that meets the requirements and aspirations of financial stakeholders. While this is intrinsically self referential, the inclusion of external financial stakeholders provides some external input, conjecturally supported by a portfolio assessment of what is achievable in the current environment of equivalent companies.

3. Accepting that the key importance and responsibility of central management to set the context of its operation by interpreting the significance of feedback, determining the assessed competence of operational management, and instigating remedial response when this is not achieved automatically by the devolved operational management.

4. Ensure that the MAS provides constant feedback of actual versus target performance, with the analysis reflecting as far as possible operational realities, and financial control and reconciliations limiting uncertainty relating to reporting validity

5. The smooth overall corporate results over the two years suggest that the impact of a portfolio may even out some of the consequences of underlying profit centre swings, although the data is insufficient to support any firm conclusion, even in the current case context.

6. Provide devolved management the appropriate information to identify a requirement to respond, and initiate appropriate changes responses.

7. Where possible have pricing that responds to change, although this is dependant on both agreement with the customer and anticipation of the dimensions of change that are likely to occur.

8. Continually reassess the bases of bonuses to ensure continued relevance

The other key theme identified in P2, not yet addressed, is multiple perspectives. In P2 these were treated in general terms, whereas in the P3 framework their role is more precisely identified, as shown in Figure 24-3.

A final point is a proviso to the conclusion of P1 that the primary role of the MAS is to instigate operational actions to achieve profitability. The P3 findings indicate that the context and determination of performance is governed by central management informed by the output of the MAS. Therefore, while the direct relationship is with operational outcomes, the overarching role is to inform central management about the assessed optimal context, content and process within which these operations should be undertaken. This has implication for the overriding importance of central management, even in a context of devolved operational responsibility, and suggests the weakness of research that focuses on activities at the operational level, as any results recorded are largely as a response of the structure and processes set up centrally, and are thus of limited relevance unless placed in the overall organisational context.

25.2 Contribution to Theory

The paper provides the following contribution to theory.

1) Identification of the central role of uncertainty in fundamentally impacting on the operation of the MAs leading to two broad dimension of operation depending on the oscillating impact of uncertainty.

2) Identification of the four uncertainty factors - customer change, market forces, reporting validity and management effectiveness - and that are of specific relevance to the operation of a MAS. Their interrelationship is summarised in Figure 24-2, and their impact and management responses in Table 24-1. These uncertainties provide a more focussed definition of uncertainty specifically related to the use of an MAS than that provided by earlier studies.

3) Identification of the sub-dimension of the factors that impact on accounting validity, and the proposal of a model showing their application. (Figure 24-1) This provides a contribution to the understanding and limitation of the potential of accounting representation of underlying organisational realities.

4) Placing the P2 framework in an empirical setting and thus continuing the development of the Otley (1999) proposals to produce the updated framework, as

shown in Figure 24-3. This revised framework incorporates the impact of the four key themes identified in P2 into the operation of the system.

5) Adding to the stock of empirically based MA studies, and meeting the gap identified in P2 in studies that specifically relate empirical research into MA to the achievement of defined profitability levels.

6) Provide evidence of the practical implication of recent MA proposals (Meyer, 2002; Hope and Fraser, 2001; Johnson and Kaplan, 1987; Neely et al, 2001), identifying both their practical implementation and some areas of potential weakness.

25.3 Contribution to practice

The paper provides the following contribution to theory

1) Further develop the framework proposed in P2 as a map of the functions an interpretations required of an MAs that can facilitate the achievement of improved profitability

2) Specify the element of uncertainty that impact on the effectiveness of an MAS, and which affect the interpretation and sue of the information produced.

3) Show that the implications of uncertainty require the development and implementation of a MAS that reflect operational activities, linked these to financial outcomes, provides control to eliminate as far as possible the negative impact of accounting validity, and provides swift feedback to allow effective responsive actions

4) Provide further evidence based on analysis of the danger of using a fixed annual FA budget as the principal form of financial control, and provides an example of an alternative solutions

REFERENCE LIST

Accenture (2001), *Planning for value*, Accenture, New York.

Agrawal, S. and Siegel, P. (1998), 'Cost management system: An operational overview', *Managerial Finance,* Vol. 24, No. 1, pp. 60-78.

Ahrens, T. (1997), 'Talking accounting: An ethnography of management knowledge in British and German brewers', *Accounting, Organizations and Society,* Vol. 22, No. 7, pp. 617-637.

Ahrens, T. and Chapman, C. (2002), 'The structuration of legitimate performance measures and management: day to day contests of accountability in a UK restaurant chain', *Management International Review,* Vol. 13, pp. 151-171.

Ahrens , T. and Chapman , C. (2006), 'New measures in performance management', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 1-20.

Ahrens, T. and Chapman, C. (2007), 'Management accounting as practice', *Accounting, Organizations and Society,* pp. 525-541.

Allen, D. (2001a), 'Working in the margins', *Financial Management - CIMA,*

Allen, P.M. (2001b), 'The Dynamics of Knowledge and ignorance: Learning the New Systems Science', in Matthies, M., Malchow, H., and Kriz, J. (Eds), *Integrative Approaches to Natural and Social Dynamics*, Springer Verlag, Berlin,

Allen, P.M. (2001c), 'What is the science of complexity? Knowledge of the limits of knowledge', *Emergence,* Vol. 3, No. 1,

Allott, A. (2000), 'Management Accounting Change', *Management Accounting,* Vol. July/August, pp. 54-55.

Argyris, C. (1990), 'The dilemma of implementing controls: The case of managerial accounting', *Accounting, Organizations and Society,* Vol. 15, No. 6, pp. 503-511.

Armstrong, P. (2002), 'The costs of activity based management', *Accounting, Organizations and Society,* Vol. 27, No. 1-2, pp. 99-120.

Asch, D. (1992), 'Strategic Control: A Problem Looking for a Solution', *Long Range Planning,* Vol. 25, No. 2, pp. 105.

Axelson, B., Laage-Hellman, J. and Nilsson, U. (2002), 'Modern management accounting for modern purchasing ', *European Journal of Purchasing & Supply Management,* Vol. 8, pp. 53-62.

Azofra, V., Prieto, B. and Santidrian, A. (2003), 'The usefulness of a performance measurement system in the daily life of an organisation: a note on a case study', *The British Accounting Review,* Vol. 35, No. 4, pp. 367-384.

Baiman, S. (2006), 'Contract theory analysis of managerial accounting issues', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 20-42.

Bakke, N.A. and Hellberg, R. (1991), 'Relevance Lost? A Critical Discussion of Different Cost Accounting Principles in Connection with Decision Making for Both Short and Long Term Production Scheduling', *International Journal of Production Economics,* Vol. 24, No. 1,2, pp. 1-18.

Banker, R.D. and Morey, R.C. (1993), 'Integrated system design and operational decisions for service sector outlets', *Journal of Operations Management,* Vol. 11, No. 1, pp. 81-98.

Barrett, R. (2003), 'The search for prophet ability.', *Financial Management (CIMA),*

Baxter, J. and Chua, W. (2006), 'Reframing management accounting practice: a diversity of perspectives', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 42-69.

Bayou, M.E. and Bennett, L.B. (1992), 'Profitability analysis for table-service restaurants', *The Cornell Hotel and Restaurant Administration Quarterly,* Vol. 33, No. 2, pp. 49-55.

Benaroch, M. (1999), 'A Case for Using Real Options Pricing Analysis to Evaluate Information Technology Project.', *Information Systems Research,* Vol. 10, No. 1, pp. 70-86.

Bhattacharjee, S. and Ramesh, R. (2000), 'A multi-period profit maximizing model for retail supply chain management: An integration of demand and supply-side mechanisms', *European Journal of Operational Research,* Vol. 122, No. 3, pp. 584-601.

Bhimani, A. (1994), 'Modern Cost management : putting the organization before the technique', *International Journal of Production Economics,* Vol. 36, pp. 29-37.

Bhimani, A. and Bromwich, M. (1992), 'Management accounting: evolution in progress', in Drury, C. *Management accounting handbook*, Butterworth-Heinemann, London,

Bhimani, A. (2006), 'Management accounting and digitization', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford,

Bih-Ru Lea and Lawrence D Fredendall (2002), 'The impact of management accounting, product structure, product mix algorithm, and planning horizon on manufacturing performance', *International Journal of Production Economics,* Vol. 79, No. 3, pp. 279.

Bititci, U.S. (1994), 'Measuring your way to profit', *Management Decision,* Vol. 32, No. 6, pp. 16.

Blaikie, N. (1993), *Approaches to social enquiry*, Polity Press, Cambridge.

Brignall, S. (1997), 'A contingent rationale for cost system design in services.', *Management Accounting Research,* pp. 325-346.

Brown, L. (1996), 'Influential accounting articles, individuals, Phd granting institutions and faculties, a citational analysis', *Accounting, Organizations and Society,* Vol. 21, No. 7/8, pp. 723-754.

Bruggeman, W. (1988), 'How Management Control Systems can Affect the Performance of Service Operations.', *International Journal of Operations & Production Management,*

Burchell, S., Clubb, C., Hopwood, A., Hughes, J. and Nahapiet, J. (1980), 'The roles of accounting and organizations and society', *Accounting, Organizations and Society,* Vol. 5, No. 1, pp. 5-27.

Burns, J., Ezzamel, M. and Scapens, R. (1999), 'Management accounting change in the UK', *Management Accounting,* Vol. 77, No. 3, pp. 28.

Burns, J. and Scapens, B. (2000), 'Conceptualizing management accounting change: an institutional framework', *Management Accounting Research,* Vol. 11, pp. 3-25.

Burrows, G. (2001), 'Real-time cost management of aircraft operations.', *Management Accounting Research,*

Carr, C. and Ng, J. (1995), 'Total cost control: Nissan and its U.K. supplier partnerships', *Management Accounting Research,* Vol. 6, No. 4, pp. 347-365.

Carter, L. (2001), 'Cisco's virtual close', *Harvard Business Review,* Vol. April, pp. 22-23.

Chandler, A. and Deaems, H. (1979), 'Administrative coordination, allocation and monitoring: a comparative analysis of the emergence of accounting and organisation in the USA and Europe', *Accounting, Organizations and Society,* pp. 3-20__.

Chapman, C. (2005), 'Not because they are new: Developing the contribution of enterprise resource planning systems to management control research', *Accounting, Organizations and Society,* Vol. 30, pp. 685-689.

Chapman, G. (1997), 'Reflections on a contingent view of accounting', *Accounting, Organizations and Society,* Vol. 22, No. 2, pp. 189-205.

Chen, M.-S. and Lan, C.-H. (2001), 'The maximal profit flow model in designing multiple-production-line system with obtainable resource capacity', *International Journal of Production Economics,* Vol. 70, No. 2, pp. 175-184.

Chenhall, R.H. and Langfield-Smith, K. (1998), 'The relationship between strategic priorities, management techniques and management accounting: an empirical investigation using a systems approach', *Accounting, Organizations and Society,* Vol. 23, No. 3, pp. 243-264.

Chenhall, R. (2003), 'Management control systems design within its organizational context: finding from contingency-based research and directions for the future', *Accounting, Organizations and Society,* Vol. 28, pp. 127-168.

Chenhall, R.H. and Langfield-Smith, K. (1998), 'Adoption and benefits of management accounting practices: an Australian study', *Management Accounting Research,* Vol. 9, No. 1, pp. 1-19.

Chien, Y.I. (2000), 'Incorporating production planning in business planning: a linked spreadsheet approach.', *Production Planning & Control ,*

CIMA (1996), 'Management accounting official terminology', in CIMA *Management accounting official terminology* London,

CIMA (2001), 'Activity based management - an overview', *Technical Briefing - CIMA,*

CIMA (2002), *Syllabus*, CIMA, London.

Cleland, K. (2001a), 'Basic Instincts', *Financial Management - CIMA,*

CLG (2001), *Maximising shareholder value through enhanced budgeting and planning*, CLG, London.

CMA Canada (2002), 'Customer profitability analysis', *Good Practise Guide - ICAEW faculty of finance and management,*

Collier, P. (2005), 'Entrepreneurial control and the construction of relevant accounting', *Management Accounting Research,* pp. 321-339.

Collier, P. and Berry, A. (2002), 'Risk in the process of budgeting', *Management Accounting Research,* Vol. 13, pp. 273-297.

Coombs, R., Knights, D. and Willmott, H.C. (1992), 'Culture, control and competition: towards a conceptual framework for the study of information technology in organizations. ', *Organisation Studies.,* Vol. 13, No. 1, pp. 51-67.

Cooper, R. (1996), 'The changing practise of management accounting', *Management Accounting,* No. March, pp. 26-35.

Cooper, R. and Kaplan, R.S. (1998), 'The promise - and peril - of integrated cost systems', *Harvard Business Review,* Vol. 76, No. 4, pp. 109-120.

Cooper, R. and Slagmulder, R. (2006), 'Integrated cost management', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 117-146.

Cowton, C.J. and Dopson, S. (2002), 'Foucault's prison? Management control in an automotive distributor', *Management Accounting Research,* Vol. 13, pp. 191-213.

Davial, T. and Wouter, M. (2005), 'Managing budget emphasis through the explicit design of conditional budgetary slack', *Accounting, Organizations and Society,* Vol. 30, pp. 587-608.

Dawood, N. and Marasii, R. (2001), 'Stockyard layout planning and management for the precast concrete products industry', *Logistics Information Management,* Vol. 14, No. 5/6, pp. 328-336.

Dearden, J. (1987), 'Measuring Profit Center Managers', *Harvard Business Review,* Vol. 65, No. 5, pp. 84--89.

Dechow, N. and Mouriten, J. (2005), 'Enterprise resource planning systems, management control and the quest for integration', *Accounting, Organizations and Society,* Vol. 30, pp. 691-733.

Demmy, S. and Talbott, J. (1998), 'Improve Internal reporting with ABC and TOC', *Strategic Finance,* Vol. 80, pp. 18-24.

DeWitt, K. (2002), 'How profitable is that load?', *Commercial Carrier Journal,* pp. 30-34.

Ditillo, A. (2004), 'Dealing with uncertainty in knowledge-intensive firms: the role of management control systems as knowledge integration mechanisms', *Accounting, Organizations and Society,* Vol. 29, pp. 401-421.

Draman, R., Lockamy, A. and Cox, J. (2002), 'Constraint-based accounting and its impact on organizational performance: A simulation of four common business strategies', *Integrated Manufacturing Systems,* Vol. 13, No. 4, pp. 190-200.

Drury, C. (1994), 'Product costing in UK manufacturing organizations.', *European Accounting Review,* Vol. 3, No. 3, pp. 443-469.

Drury, C. and Dugdale, D. (1992), 'Survey of management accounting practice', in Drury, C. *Management accounting handbook*, Butterworth-Heinemann, London,

Drury, C. and Tayles, M. (1995), 'Issues arising from surveys of management accounting practise', *Management Accounting Research,* Vol. 6, pp. 267-280.

Drury, C. and Tayles, M. (1997), 'Evidence of the financial accounting mentality debate: a research note', *The British Accounting Review,* Vol. 29, No. 3, pp. 263-276.

Dugdale, D. and Colwvn Jones, T. (1998), 'Throughput accounting: transforming practises', *British Accounting Review,* Vol. 30, No. 30, pp. 203-220.

Dugdale, D. and Colwvn Jones, T. (2002), 'The ABC bandwagon and the juggernaut of modernity', *Accounting, Organizations and Society,* Vol. 27, pp. 121-163.

Dugdale, D. and Colwvn Jones, T. (1996), 'Accounting for throughput - Part 1 the theory', *Management*

Accounting, Vol. April,

Easterby-Smith, M., Thorpe, R. and Lowe, A. (1991), *Management research - an introduction*, Sage, London.

Eden, C. and Huxham, C. (1996), 'Action research for the study of organisations', in Clegg, S., Hardy, C., and Nord, W. (Eds), *Handbook of organization studies*, Sage, London, pp. 526-542.

Emsley, D. (2000), 'Variance analysis and performance: two empirical studies', *Accounting, Organizations and Society,* Vol. 25, pp. 1-12.

Emsley, D. (2001), 'Redesigning variance analysis for problem solving', *Management Accounting Research,* Vol. 12, No. 1, pp. 21-40.

Euske, K.J., Lebas, M.J. and McNair, C.J. (1993), 'Performance management in an international setting', *Management Accounting Research,* Vol. 4, No. 4, pp. 275-299.

Euske, K.J. and Riccaboni, A. (1999), 'Stability to profitability: managing interdependencies to meet a new environment', *Accounting, Organizations and Society,* Vol. 24, No. 5-6, pp. 463-481.

Ezzamel, M. and Bourn, M. (1990), 'The role of accounting systems in an organisation experiencing financial crisis', *Accounting, Organizations and Society,* Vol. 15, No. 5, pp. 399-424.

Ezzamel, M., Lilley, S. and Willmott, H. (1997), 'Accounting for management and managing accounting: reflections on recent changes in the UK', *Journal of Management Studies,* Vol. 34, No. 3, pp. 439-463.

Ezzamel, M., Lilley, S. and Willmott, H. (2004), 'Accounting representation and the road to commercial salvation', *Accounting, Organizations and Society,* Vol. 29, pp. 783-813.

Fanning, J. (2000), '21st century budgeting', *Good Practise Guide - ICAEW faculty of finance and management,* No. 29,

Fernandez-Revuelta Perez, L. and Robson, K. (1999), 'Ritual legitimation, de-coupling and the budgetary process: managing organizational hypocrisies in a multinational company', *Management Accounting Research,* Vol. 10, No. 4, pp. 383-407.

Fernie, J., Freeathy, P. and Tan, E. (2001), ' Logistics Costing Techniques and their Application to a Singaporean Wholesaler.', *International Journal of Logistics: Research & Applications,* Vol. 4, No. 1117-131,

Fisher, L. (2002), 'One step beyond', *Accountancy,* pp. 32-34.

Fraser, R. (2001), *Beyond budgeting - managing performance better without budget*, London.

Froud, J. (2000), 'Shareholder value and Financialization: consultancy promises, management moves.', *Economy & Society,* Vol. 29, No. 1, pp. 80-110.

Gagne, M.L. and Discenza, R. (1995), 'Target costing', *The Journal of Business & Industrial Marketing,* Vol. 10, No. 1, pp. 16-22.

Glaser, B. and Strauss, A. (1967), *The Discovery of Grounded Theory*, Aldine, Chicago.

Goldratt, E. and Cox, J. (1984), *The Goal*, Creative Output, New York.

Goold, M. and Quinn, J. (1990), 'The paradox of strategic controls', *Strategic Management Journal (1986-1998),* Vol. 11, No. 1, pp. 43-57.

Gordon, L., Loeb, M. and Tseng, C.-Y. (2006), 'Capital budgeting and informational impediments: a management accounting perspective', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 146-166.

Granlund, M. (2001), 'Towards explaining stability in and around management accounting systems', *Management Accounting Research,* Vol. 12, pp. 141-166.

Granlund, M. and Lukka, K. (1998), 'It's a small world of management accounting practise', *Journal of Management Accounting Research,* Vol. 10, pp. 153-179.

Granlund, M. and Malmi, T. (2002), 'Moderate impact of ERPS on management accounting: a lag or permanent outcome?', *Management Accounting Research,* Vol. 13, No. 3, pp. 299-321.

Gupta, M. (2002a), 'TOC-based performance measures and five focusing steps in a job-shop manufacturing environment.', *International Journal of Production Research,* Vol. 40, No. 4, pp. 907-930.

Gupta, M.C. (2002b), 'Integrating ABM/TOC approaches for performance improvement: a framework and application.', *International Journal of Production Research,* Vol. 40, No. 14, pp. 3225-3251.

Gurd, B., Smith, M. and Swaffer, A. (2002), 'Factors impacting on accounting lag: An exploratory study of responding to TQM', *The British Accounting Review,* Vol. 34, No. 3, pp. 205-221.

Hartmann, F.G.H. (2000), 'The appropriateness of RAPM : towards the further development of theory', *Accounting, Organizations and Society,* Vol. 25, pp. 451-482.

Hatch, M.J. (1997), *Organization Theory: Modern Symbolic and Postmodern Perspectives*, Oxford University Press., Oxford.

Heier, J.R. (2000), 'The foundations of modern cost management: the life and work of Albert Fink.', *Accounting, Business & Financial History,* Vol. 10, No. 2, pp. 213-243.

Helden, G.J.v., Meer-Kooistra, J.v.d. and Scapens, R.W. (2001), 'Co-ordination of internal transactions at Hoogovens steel: struggling with the tension between performance-oriented business units and the concept of an integrated company', *Management Accounting Research,* Vol. 12, No. 3, pp. 357-386.

Hennell, A. and Stiles, A. (2002), 'Real options techniques in capital investment', *Good Practise Guide - ICAEW faculty of finance and management,* No. 40,

Henri, J.-F. (2006), 'Management control systems and strategy: A resource based perspective', *Accounting, Organizations and Society,* Vol. 31, pp. 529-558.

Hope, J. and Fraser, R. (2001), *Beyond budgeting white paper*, CAM-I, London.

Hope, J. and Fraser, R. (2003), 'Who needs Budgets ?', *Harvard Business Review,* Vol. February,

Hopwood, A.G. (1972), 'An empirical study of the role of accounting data in performance evaluation', *Journal of Accounting Research,* Vol. Supplement, pp. 156-182.

Hopwood, A.G. (1987), 'The archaeology of accounting systems', *Accounting, Organizations and Society,* Vol. 12, No. 3, pp. 207-234.

Horngren, C.T. (1977), *Cost accounting a managerial emphasis*, Prentice Hall, USA.

Horngren, C.T. (1995), 'Management accounting: this century and beyond', *Management Accounting Research,* Vol. 6, pp. 281-286.

Hoskin, K., Macve, R. and Stone, J. (2006), 'Accounting and strategy: towards understanding the historic genesis of modern business and military strategy', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 166-198.

Housel, T. (1995), 'Reengineering business processes: a complexity theory approach to value added', *INFOR,* Vol. 33, No. 4, pp. 248-261.

Hussain, M., Gunasekaran, A. and Laitinen, E.K. (1998), 'Management accounting systems in Finnish service firms', *Technovation,* Vol. 18, No. 1, pp. 57-67.

Huxham, C. (2000), *The new public management : An action research approach* (unpublished Working paper series thesis), University of Strathclyde,

Huxham, C. and Vangen, S. (2000), 'Leadership in the shaping and implementation of collaboration agendas: how things happen in a (not quite) joined up world', *Academy of Management Journal,* Vol. 42, No. 6, pp. 1159-1175.

Huxham, C. and Vangen, S. (2001), *Research design choices fro action research: Comparative case studies from research on interorganizational collaboration* (unpublished Working paper series thesis), Strathclyde, Glasgow.

Inderfurth, K. (2002), 'Optimal policies in hybrid manufacturing/remanufacturing systems with product substitution', *International Journal of Production Economics,* Vol. In Press, Corrected Proof,

Ittner, C. and Larcker, D. (2001), 'Assessing empirical research in managerial accounting: a value-based perspective', *Journal of Accounting and Economics,* Vol. 32, pp. 349-410.

Ittner, C., Larcker, D. and Randall, T. (1997), 'The activity-based cost hierarchy, production policies and firm profitability', *Journal of Management Accounting Research,* Vol. 9, pp. 143-162.

James, P. (2002), 'Managing for shareholder value - the investor's perspective.', *Good Practise Guide - ICAEW faculty of finance and management,* Vol. 38,

Jazayeri, M. and Hopper, T. (1999), 'Management accounting within world class manufacturing: a case study*1', *Management Accounting Research,* Vol. 10, No. 3, pp. 263-301.

Jensen, M. (2001), 'Corporate budgeting is broken - lets fix it', *Harvard Business Review,* No. November, pp. 94.

Johnson, H.T. (1992), *Relevance regained - from top down control to bottom up empowerment*, The Free Press, New York.

Johnson, H.T. and Kaplan, R.S. (1987), *Relevance lost - the rise and fall of management accounting*, Harvard Business School Press, Boston.

Jones, C.S. (1985), 'An empirical study of the role of management accounting systems following takeover or merger', *Accounting, Organizations and Society,* Vol. 10, No. 2, pp. 177-200.

Kaplan, R.S. (1988), 'One cost system isn't enough', *Harvard Business Review,* No. January, pp. 61-66.

Kaplan, R.S. (1998), 'Innovation action research: creating new management theory and practice', *Journal of Management Accounting Research,* Vol. 10, pp. 89-118.

Kaplan, R.S. and Norton, D. (1996), *The Balanced Scorecard - translating strategy into Action*, Harvard Business School Press, Boston.

Kaplan, R.S. and Norton, D. (2001), *The strategy focussed organisation.*, Harvard Business School

Press, Boston.

Kerr, S. (1995), 'On the folly of rewarding A, while hoping for B', *The Academy of Management Executive,* Vol. 9, No. 1, pp. 7-14.

Kogan, K. (2004), 'Scheduling parallel machines by the dynamic newsboy problem', *Computers & Operations Research,* Vol. 31, No. 3, pp. 429-443.

Koons, F.J. (1994), 'Applying ABC to target costs', *Transactions of AACE International,* Vol. 1994, pp. 70-74.

Kulmala, H.I., Paranko, J. and Uusi-Rauva, E. (2002), 'The role of cost management in network relationships', *International Journal of Production Economics,* Vol. 79, No. 1, pp. 33-43.

Labbe, M. (2002), 'Know operating costs for a reasonable return.', *Refrigerated Transporter,*

Lackner, D. (2003), 'Putting VBM into practice', *Management quarterly - faculty of finance and management,* Vol. May, pp. 3-10.

Laitinen, E.K. (2002), 'A dynamic performance measurement system: evidence from small Finnish technology companies', *Scandinavian Journal of Management,* Vol. 18, No. 1, pp. 65-99.

Langfield-Smith, K. (1997), 'Management control systems and strategy : a critical review', *Accounting, Organizations and Society,* Vol. 22, No. 2, pp. 207-232.

Lea, B.-R. (2003), 'Selection of management accounting systems in Just-In-Time and Theory of Constraints-based manufacturing.', *International Journal of Production Research,* Vol. 41, No. 13, pp. 2879-2910.

Lebas, M. (1999), 'Which ABC? Accounting based on causality rather than activity based costing', *European Management Journal,* Vol. 17, No. 5, pp. 510-511.

Lee, T. (1996), 'Maximizing product mix profitability--what's the best analysis tool.', *Production Planning & Control,* Vol. 76, pp. 547-553.

Lillis, A. (2002), 'Managing multiple dimensions of manufacturing performance - an exploratory study', *Accounting, Organizations and Society,* Vol. 27, pp. 497-529.

Loft, A. (1986), 'Towards a critical understanding of accounting: the case of cost accounting in the UK 1914-25', *Accounting, Organizations and Society,* Vol. 11, No. 2, pp. 137-169.

Long, J.A. (2002), 'A User Friendly Financial Reporting System.', *Quality Progress,* Vol. January, pp. 60-65.

Low, K.H. and Sorensen, E. (2004), 'Simultaneous optimal design and operation of multipurpose batch distillation columns', *Chemical Engineering and Processing,* Vol. 43, No. 3, pp. 273-289.

Lowry, J. (1993), 'Management accounting's diminishing post industrial relevance: Johnson and Kaplan revisited', *Accounting and business research,* Vol. 23, No. 90, pp. 169-180.

Lucas, M. (1999), 'The pricing decision - economists versus accountants', *Management accounting,* Vol. June, pp. 34-35.

Lucas, M. (2000), 'The reality of product costing', *Management Accounting,* Vol. February, pp. 28-30.

Lukka, K. and Granlund, M. (2002), 'The fragmented communication structure within the accounting academia: the case of activity-based costing research genres.', *Accounting, Organizations and*

Society, Vol. 27, pp. 165-190.

Mabin, V.J. (2003), 'The performance of the theory of constraints methodology.', *International Journal of Operations & Production Management ,* Vol. 23, No. 6, pp. 568-595.

Macintosh, N., Shearer, T., Thornton, D. and Welker, M. (2000), 'Accounting as simulacrum and hyperreality: perspectives on income and capital', *Accounting, Organizations and Society,* Vol. 25, pp. 13-50.

Mackenzie, J. (2001), *Budgeting and planning for the 21st century*,

Malmi, T. (2003), 'Value Based Management practices—some evidence from the field.', *Management Accounting Research,*

Malmu, T. (1997), 'Towards explaining activity base costing failure: accounting and control in a decentralised organisation', *Management Accounting Research,* Vol. 8, pp. 459-480.

Mattessich, R. (2003), 'Accounting representation and the onion model of reality: a comparison with Baudrillard's orders of simulacra and his hyperreality', *Accounting, Organizations and Society,* Vol. 28, pp. 443-470.

McKernan, J. (2007), 'Objectivity in accounting', *Accounting, Organizations and Society,* Vol. 32, pp. 155-180.

McSweeney, B. (1997), 'The unbearable ambiguity of accounting', *Accounting, Organizations and Society,* Vol. 22, No. 7, pp. 691-712.

McSweeney, B. (2000), 'Looking forward to the past', *Accounting, Organizations and Society,* Vol. 25, pp. 767-786.

Menninger, D. (2003), 'Information on demand.', *Strategic Finance,* Vol. September, pp. 50-53.

Meyer, M. (2002), *Rethinking Performance Measurement*, Cambridge University Press, Cambridge, UK.

Miller, P. (1998), 'The margins of accounting', *European Accounting Review* , Vol. 7, No. 4, pp. 605-621.

Miller, P. and O'Leary, T. (1987), 'Accounting and the construction of the governable person', *Accounting, Organizations and Society,* Vol. 12, No. 3, pp. 235-265.

Mintzberg, H. (1994), 'Rounding out the Manager's Job', *Sloan Management Review,* Vol. Fall, pp. 11-26.

Modell, S. (2005), 'Triangulation between case and survey methods in management accounting research: An assessment of validity implications', *Management Accounting Research,* Vol. 16, pp. 231-254.

Moon, P. and Fitzgerald, L. (1996), 'Delivering the goods at TNT: the role of the performance measurement system', *Management Accounting Research,* Vol. 7, pp. 431-457.

Morginson, D. and Ogden, S. (2005), 'Coping with ambiguity through the budget: the positive effects of budgetary targets on managers' budgeting behaviours', *Accounting, Organizations and Society,* Vol. 30, pp. 435-456.

Mouck, T. (2004), 'Institutional reality, financial reporting and the rules of the game.', *Accounting, Organizations and Society,* Vol. 29, pp. 525-541.

Mouritsen, J. and Hansen, A. (2006), 'Management accounting, operations, and network relations: debating the lateral dimension', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 266-291.

Neely, A. (2001), *Measuring business performance why, what and how*, Profile Books, Cranfield.

Neely, A. and Adams, C. (2001), *Perspectives on performance: the performance prism*, Cranfield School of Management, Cranfield.

Neely, A., Sutcliff, M., and Heynes, H. (2001), *Driving value through strategic planning and budgeting*, Accenture, London.

Neely, A., Gregory, M. and Platts M. (1995), 'Performance measurement system design - a literature review and research agenda', *International Journal of Operations and Production management,* Vol. 15, No. 4, pp. 80-116.

Ness, J.A. and Cucuzza, T.G. (1995), 'Tapping the full potential of ABC', *Harvard Business Review,* Vol. 73, No. 4, pp. 130-138.

Nicolini, D. (2000), 'Can Target Costing and Whole Life Costing be Applied in the Construction Industry?: Evidence from Two Case Studies.', *British Journal of Management,* Vol. 11, pp. 303-324.

Nilsson, F. and Rapp, B. (1999), 'Implementing business unit strategies: the role of management control systems', *Scandinavian Journal of Management,* Vol. 15, No. 1, pp. 65-88.

None, B. and Griffin, P. (1999), 'Managing the long-term profit yield from market segments in a hotel environment: a case study on the implementation of customer profitability analysis', *International Journal of Hospitality Management,* Vol. 18, pp. 11-128.

Otley, D. (1999), 'Performance management: a framework for management control systems', *Management Accounting Research,* Vol. 10, pp. 363-382.

Otley, D. (2001), 'Extending the boundaries of management accounting research : developing systems for performance management', *British Accounting Review,* Vol. 33, pp. 243-261.

Otley, D. and Berry, A. (1994), 'Case study research in management accounting and control', *Management Accounting Research,* Vol. 5, pp. 45-65.

Otley, D. and Fakiolas, A. (2000), 'Reliance on accounting performance measures : dead end or new beginning', *Accounting, Organizations and Society,* Vol. 25, No. 4-5, pp. 497-510.

Otley, D. and Pollanen, R. (2000), 'Budgetary criteria in performance evaluation : a critical appraisal using new evidence', *Accounting, Organizations and Society,* Vol. 24, No. 4-5, pp. 483-496.

Otley, D. (2006), 'Trends in budgetary control and responsibility accounting', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 291-308.

Partington, D. (2000), 'Building Grounded Theories of Management Action', *British Journal of Management,* Vol. 11, pp. 91-102.

Partington, D. (2002), 'Grounded theory', in Partington, D. *Essential skill for management research*, Sage, London,

Patterson, M.C. (1992), 'The product mix decision: A comparison of the theory of constraints and labor based management accounting', *Production & Inventory Management Journal,* Vol. Third

quarter, pp. 80-85.

Patterson, M.C. (1994), 'Constraint analysis in profit planning - An empirical comparison of 2 approaches', *International Journal of Management,* Vol. 11, No. 1, pp. 562-569.

Phelan, S.E. (1997), 'Exposing the illusion of confidence in financial analysis', *Management Decision,* Vol. 35, No. 2, pp. 163-168.

Plato (1955), 'The Republic', in Lee, H.D.P. (Transalator), *The Republic*, Penguin, London,

Quattrone, P. and Hopper, T. (2005), 'A 'time-space' odyssey': management control systems in two multinational organisations', *Accounting, Organizations and Society,* Vol. 30, pp. 735-764.

Radcliffe, V., Campbell, D. and Fogarty, T. (2001), 'Exploring downsizing: a case study on the use of accounting information', *Journal of Management Accounting Research,* Vol. 13, pp. 132-157.

Rajan, M.V. (1992), 'Management control systems and the implementation of strategies', *Journal of Accounting Research,* Vol. 30, No. 2, pp. 227-248.

Richards, L. (2002), 'Using Nvivo in Qualitative Research', *QSR,*

Salafatinos, C. (1996), 'Modelling resource supply and demand: Expanding the utility of ABC', *International Journal of Production Economics,* Vol. 44, No. 3, pp. 177-187.

Sale, M.L. (2003), 'Survey-based comparison of performance and change in performance of firms using traditional manufacturing, JIT and TOC.', *International Journal of Production Research,* Vol. 41, No. 4, pp. 829-844.

Scapens, R. (2006), 'Changing times: management accounting research and practice from a UK perspective', in Bhimani , A. (Editor), *Contemporary Issues in Management Accounting*, Oxford University Press, Oxford, pp. 329-355.

Seal, W. (2001), 'Management accounting and the challenge of strategic focus', *Management Accounting Research,* Vol. 12, No. 4, pp. 487-506.

Shank, J. (2006), 'Strategic cost management: upsizing, downsizing and right (?) sizing', in Bhimani , A. (Editor), Oxford University Press, Oxford, pp. 355-380.

Sherrat, M. (2003), 'Aligning Costs with Revenues.', *Financial Executive,* Vol. October, pp. 59-62.

Sievanen, M., Suomala, P. and Paranko, J. (2003), ' Product profitability: Causes and effects', *Industrial Marketing Management,* Vol. Article in Press,

Simons, R. (1995), *Levers of Control*, Harvard Business School Press, Boston.

Smith, M. (2003), 'Application of the TOC thinking processes to challenging assumptions of profit and cost centre performance measurement.', *International Journal of Production Research,* Vol. 41, No. 4, pp. 819-828.

South, J.B. and Oliver, J.E. (1998), 'What Is a Profitable Product?', *Industrial Marketing Management,* Vol. 27, No. 3, pp. 187-195.

Spekle, R.F. (2001), 'Explaining management control structure variety: a transaction cost economics perspective', *Accounting, Organizations and Society,* Vol. 26, pp. 419-441.

Stainer, A. (1997), 'Productivity and strategic management accounting', *International Journal of Technology Management,* Vol. 13, No. 1, pp. 57-67.

Sunder, S. (2002), 'Management control, expectations, common knowledge and culture', *Journal of Management Accounting Research,* Vol. 14, pp. 173-187.

Suwignojo, P., Bititci, U. and Carrie, A. (2000), 'Quantitative models for performance measurement system', *International Journal of Production Economics,* Vol. 64, pp. 231-241.

Taninecz, G. (2002), 'Cost Accounting Undercuts Lean.', *Industry Week,* Vol. October, pp. 73-74.

Tatsiopoulos, I.P. and Panayiotou, N. (2000), 'The integration of activity based costing and enterprise modelling for reengineering purposes', *International Journal of Production Economics,* Vol. 66, No. 1, pp. 33-44.

Themido, I., Arantes, A., Fernandes, C. and Guedes, A.P. (2000), 'Logistic costs case study - an ABC approach', *The Journal of the Operational Research Society,* Vol. 51, No. 10, pp. 1148-1157.

Tollington, T. (1998), 'ABC v TOC Same cloth as absorption v marginal, different style and cut', *Management Accounting,* Vol. April, pp. 44-45.

Tranfield, D. and Denyer, D. (2003), 'Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review', *British Journal of Management,* Vol. 14, pp. 207-222.

Turney, P.B.B. and Anderson, B. (1989), 'Accounting For Continuous Improvement', *Sloan Management Review,* Vol. 30, No. 2, pp. 37-47.

Van Damme, D. and Van der Zon, F. (1999), 'Activity based costing and decision support', *International Journal of Logistics Management,* Vol. 10, No. 1, pp. 71-82.

Van der Stede, W. (2000), 'The relationship between two consequences of budgetary controls: budgetary slack creation and managerial short term orientation', *Accounting, Organizations and Society,* Vol. 25, pp. 609-622.

Verdaasdonk, P. and Wouters, M. (2001), 'A generic accounting model to support operations management decisions', *Production planning and control,* Vol. 12, No. 6, pp. 605-620.

Verma, R., Thompson, G., Moore, W. and Louviere, J. (2001), 'Effective design of products/services: An approach based on integration of marketing and operations management decisions', *Decision Sciences,* Vol. 32, No. 1, pp. 165-193.

Vámosi, T. (2000), 'Continuity and change: management accounting during processes of transition.', *Management Accounting Research,* Vol. 11, pp. 27-63.

Walsh, E.J. and Stewart, R.E. (1993), 'Accounting and the construction of institutions: The case of a factory*1', *Accounting, Organizations and Society,* Vol. 18, No. 7-8, pp. 783-800.

Watson, K. (2003), 'Comparison of DRP and TOC financial performance within a multi-product, multi-echelon physical distribution environment.', *International Journal of Production Research,* Vol. 41, No. 4, pp. 741-765.

Whetton, D. (1989), 'What Constitutes a Theoretical Contribution', *Academy of Management Review,* Vol. 14, pp. 490-5.

Whetton, D. (2002), 'Modelling-as-theorizing: A Systematic Methodology for Theory Development', in Partington, D. (Editor), *Essential skill for Management Research*, Sage, London, pp. 45-71.

Wieslaw J Jurkiewicz (1999), 'Theory and practice with dual entry in project cost accounting and control', *AACE International Transactions,* pp. C51-57.

Wouters, M., Kokke, K., Theeuwes, J. and van Donselaar, K. (1999), 'Identification of critical operational performance measures-- a research note on a benchmarking study in the transportation and distribution sector*1', *Management Accounting Research,* Vol. 10, No. 4, pp. 439-452.

Wouters, M. and Verdaasdonl, P. (2002), 'Supporting management decisions with ex ante accounting information', *European Management Journal,* Vol. 20, No. 1, pp. 82-94.

Yeager (1999), 'Costing software helps Sappi mills make the grade more efficiently.', *Pulp & Paper,* Vol. December, pp. 63-66.

Zambon, S. and Zan, L. (2000), 'Accounting relativism: the unstable relationship between income measurement and theories of the firm', *Accounting, Organizations and Society,* Vol. 25, pp. 799-822.

Zimmerman, J.L. (2001), 'Conjectures regarding empirical managerial accounting research', *Journal of Accounting and Economics,* Vol. 32, pp. 411-427.

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