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日本管理会計学会誌『管理会計学』

日本管理会計学会誌『管理会計学』は，年2回発行される．本学会誌には，掲載区分として，論文のほか，研究ノート，研究資料，事例研究，書評などがある．論文は，二重匿名方式によるレフェリー制度にもとづき選定された後，掲載される．受理可能な論文の範囲には，その論文が学会誌編集委員会で制定された基準を満足している限り，管理会計学および関連分野に関する幅広いテーマが含まれる．その他の掲載区分の投稿原稿は，学会誌編集委員会で決定された基本政策に従って，1人の査読者による査読に準じた審査にもとづき掲載される．

1994年から1996年までの学会誌編集委員会委員は次の通りである．

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目　次

日本管理会計学会

日本管理会計学会は，1991年7月に設立された．本学会は管理会計の研究，教育および経営管理実務に関心を持つ研究者や実務家から構成される組織である．会員には年2回学会誌『管理会計学』が送付される．

1995年から1998年までの役員の構成は次のとおりである．

本学会の年会費は次のとおりである．

正　会　員：6,000円
準　会　員：2,000円
賛 助 会 員：1口（50,000円）以上

特集：“業績評価”について
── 編集委員長あいさつ ──

伏見　多美雄 *

学会誌『管理会計学』では，初の試みとして特集論文のコーナーを設けました。本号での特集テーマは“業績評価”です．学会誌編集委員会では，かねてからいろいろな専門をお持ちの委員の方に，特集テーマの企画をお願いしてきましたが，その第1回の成果として，このように魅力に富む論文で特集を組むことができたことはご同慶のいたりです．

業績評価というテーマは，会計技法としての測定・評価の側面と同時に，人間の心理的側面を取り扱う行動科学とも深い関わりをもつため，管理会計のみならず，経営管理の多くの分野にまたがるチャレンジングなトピックです．

業績評価は，企業その他の組織体のコントロール・システムの中心をなすものであり，予算管理システムの構築や，各階層の管理者の計画管理行動，および多様な従業員の動機付け，さらには企業内外のアカウンタビリティーの問題など，さまざまな経営問題を解決するための基礎になるものです．また，優れた業績評価システムをもつことは，将来の経営業績をよりよくするためにも不可欠だと言われています．

本号に掲載された3つの論文は，業績評価に関するさまざまな適用分野を取り扱っており，それぞれの分野の複雑な問題を理論と実践の両面から解明しています．

改めて言うまでもないことですが，特集号への執筆原稿といえども，「論文」としてご投稿いただいたものは，当学会の基本原則である「ダブル・ブラインド方式によるレフェリー制度」がしっかり適用されます．そのようなルールをご承知の上で論文を投稿され，査読者のコメントにも辛抱強く対応して下さった著者の方々，すなわちMs. Lin Fitzgerald, Dr. Philip Moon, Dr. Nathalie Halgand, Professor Takeo Yoshikawa, Professor John Innes, Professor Falconer Mitchell の各氏に対して，心から敬意と感謝を申し述べます．

* 学会誌編集委員長，東京理科大学教授
Tamio Fushimi (Editor in Chief), Professor, Science University of Tokyo

今回の特集は，たまたま英文による論文だけでしたので，読者への便宜を考えて，各著者のアブストラクトを邦訳して，本稿のあとにつけておきます．ただし，投稿論文に対して解説やコメントをつけることは筋違いですので，あくまで論文の大要を紹介することを目的として，著者ご自身のアブストラクトを邦訳するにとどめました．多少は意訳した部分があることをご了解下さい．
なお，今回の特集号では，編集副委員長で国際担当常務理事の吉川武男教授に企画段階から種々のアレンジメントの段階まで，「縁の下の力持ち」的な仕事をサポートしていただきました．ここに記して謝意を表したいと思います．

特集号という企画は，私どもの学会誌『管理会計学』では初めての試みでしたが，今後も折にふれて取り上げるつもりです．また，今回の特集は英文による論文集になりましたが，日本語による特集号が組まれる可能性もおおいにありましょう．この企画についての会員諸兄諸姉のご理解・ご協力をお願いするとともに，ご意見・ご要望もお聞かせいただければ幸いです．

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This issue of Journal of Management Accounting, Japan (JMAJ) ßis dedicated to the subject of "performance measurement." Justification for this lies in the varied but central role which performance measurement plays in effective management and in the research challenge provided by a topic which closely links the technical and behavioral aspects of management accounting. Performance measurement provides the core of management control system, namely, a focus for budget design, a basis for incentivising employees and a foundation for both internal and external measurement systems to initiate and support constructive improvement in future performance.

JMAJ welcomes to add three papers written in English in this issue, which exemplify and illuminate many of the above attributes of performance measurement and so contribute to deepen our understanding of both practice and theory in this complex area.

We would like to express our heartful thanks to Ms. Lin Fitzgerald, Dr.Philip Moon, Dr. Nathalie Halgand, Professor Takeo Yoshikawa, Professor John Innes, and Professor Falconer Mitchell who submitted their papers for JMAJ.

<特集論文のアブストラクトの邦訳>

コスト・マネジメントのための業績評価

――「工数」の本質と役割――

吉川武男（横浜国立大学）
ジョン・イネス（ダンディー大学）
フォークナー・ミッチェル（エディンバラ大学）

原価企画と原価改善は，競争戦略をサポートする原価管理のメソッドとして，かなりの評価を得てきた．しかし，これらの手法を活かすために是非必要なことは，組織内での資源の消費を効果的に削減するためのポリシーを提示し，フィードバックを用意するための内部原価情報システムをもつことである．この論文は，まさにそのようなシステム，つまり工数リポーティング・システムについて探求したものである．そのシステムには，各職能ごとに様々な作業にかかる時間を把握することによって，エネルギー変換コストという視点で資源の消費をモニターすることが含まれている．これによって，資源の消費を目に見えるものにするのである．また，所要時間の動向を明示することによって，前期の実績を超えねばならないという「改善」のフィロソフィーをサポートし，予算上の目標と改善のためのアイディアを統合することで原価管理を促進するのである．これは現業部門の非財務的な評価をベースにするので，直前の意思決定のインパクトが反映されることになり，比較的はっきりしたフィードバックによって，資源の消費，資源の節約に関する未来の行動を導くのである．

*

フランスの公共事業における業績評価

――ニュー・パブリック・マネジメント法とレパブリカンの中央集権主義――

ナタリー・アルガン（モンペリエⅡ大学）

この論文は，フランスのニュー・パブリック・マネジメント法の一部である「業績評価」の項を取り上げ，中央・地方の両方のレベルから，その構造および手法的な局面を分析するものである。このシステムの具体的な特徴に注意を向けると，中央集権主義の影響が読みとれ，コントロールの仕組みの中にある種のゆがみがあることが浮かび上ってくる．会計システムは，限られた政治目的に沿って，執行部に都合がよいようにできており，公共事業を分散化するという最近の動きは，トップ政治家の強力なサポートに起因することが明らかにされる．業績評価方法の開発を妨げているのは，中央集権主義であり，これは，レパブリカンの価値観に深く根ざしている．公共事業のシステムも政治システムもその上に構築されており，少数のエリート集団の手にマネジメントも政治のパワーも握られていて，公共事業システムは政治システムの影響下にある．最後に，著者の考察が述べられるが，これは，全システムを再構築するためのガイドラインを提案するものである．

サービス・プロセスが業績評価に与える影響

リン・フィッツジェラルド（ウォーウィック大学）
フィリップ・ムーン（リーズ大学）

企業は，財務的な業績指標だけでは表すことのできない広範な領域で競争しているのだという認識は，ますます広まりつつある．この論文は，こんにちの顧客オリエンテッドな競争戦略の中で，品質，サービス，フレキシビリティーといった要因をとらえるための非財務的な指標を開発しようとするものである．サービス業ではこの試みはさらに難しい．サービスは消えてしまう（保存ができない）ので，製造業のように需要の変動に備えて在庫管理のポリシーを用いるというわけにはいかないからである．その上，サービス提供の場では，比較的若い従業員が顧客と接触することが多く，サービスの質を一定に保つことがむずかしい．

この論文は，業績のいい２つの英国企業，つまり職能的専門家としてのサービスを提供するアーサー・アンダーセン社，および，マス・サービスを提供するＴＮＴ社をとりあげ，この２社が採用しているアプローチを検討することによって，サービスが業績評価システムに与える影響を考察する．両社の業績評価システムには３つの共通点と２つの相違点がある．３つの共通点とは，Clarity（明瞭さ），つまり組織に属する一人一人に戦略がはっきりと伝えられること，Consistency（首尾一貫性），つまり採用されている業績評価システムが全社戦略にそっていること，および Range（評価の範囲），つまり業績評価は財務指標だけでなく，非財務的な指標でもなされるというように範囲を明示していることである．一方，２つの会社の相違点は，サービスの質を測るために用いられるメカニズムと，サービスにフレキシビリティーをもたせるためのアプローチの仕方，および業績評価の仕方という諸点についてである．

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The Influence of Service Process on Performance Measurement

Lin Fitzgerald*, and Philip Moon†

Abstract

There is an increased recognition that companies compete on a wide range of dimensions whose evaluation cannot be confned to narrow financial performance indicators The challenge is to develop non-fmancial indicators which capture the quality, service and flexibility issues of today's customer oriented competitive strategies For service businesses the challenge is intensified; services are perishable so fluctuations in demand cannot be managed using the stock control policies common in manufacturing environments. Further, relatively junior personnel are ftequently the key points of contact with customers in the delivery of the service; so ensuring consistency of quality is difficult. This paper explores the influence of service process on performance measurement systems, by investigating the approaches adopted within two successful UK organisations, one a professional service (Arthur Andersen), the other a mass service (TNT). There are three common properties of the performance measurement systems and two areas of divergence. The common properties are *clarty*; there is clear communication of strategy to individuals within the organisation, *consistency*; the performance measures adopted support the corporate strategy, and *range*; both organisations measure performance over a range of financial and non-financial dimensions as advocated in the literature. Differences emerge in the mechanisms used to measure *qualty* and the apphoach to providing *flexibilty*, the *how* of performance measurement.

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1. *Inroductiton*

A central question for management of any organisation is *how well are we doing?* The answer to this has traditionally been expressed in terms of financial performance but as organisations face increasingly challenging competitive environments the focus has switched to other measures such as quality, flexibility and customer service; concentrating on a single indicator of performance, such as profit, is no longer enough. How, though, does an organisation decide which measures are relevant to its partcular business? The act of measuring something can itself drive the business, for as most managers now understand "what gets mesured gets managed". Equally what is not measured tends to be ignored, so a company must ensure that those things are measured which it believes are its true drivers of success. Additionally, many factors interrelate so improvement on one dimension can lead to deterioration on another, hence any measurement activity must be integrated into a coherent performance measurement system. The focus of this paper is to investigate how two successful, yet very different types of service business in the UK are coping with these challenges by comparing their performance measurement systems with prescriptions from recent literature on performance measurement; that is, how does the service process influence the choice of performance measurement system. The two organisations considered are Arthur Andersen, the professional accounting and consultancy firm, and TNT, the mass distributor of parcels.

This paper is arranged in six sections. The next section identifies a set of common prescriptions for performance measures from a review of three performance measurement frameworks. Section three explores the special characteristics of service businesses leading to implications for performance maesurement. A brief commentary on the performance measurement systems used in the two case organisations is provided in section four (for more detail readers are referred to Moon and Fitzgerald [5] and Fitzgerald and Moon[1]). The discussion in section five compares the empirical results with the prescriptions in the literature and the final section offers some conclusions.

2. *Frameworks for Performance Measurement*

Traditional performance measurement systems which focus largely on fmancial indicators have been criticised for their failure to measure and monitor non-financial indicators which "directly answer questions about quality, service and flexibility ... (and are) ... more appropriate for the customer-oriented strategies that have emerged during the past decade" (Nanni et al. [6]). In response to this dissatisfaction a number of performance measurement frameworks have been developed within the last five years. Three of these are outlined below.

The Performance Pyramid

The performance pyramid (Lynch and Cross [4]) proposes that we measure performance on nine dimensions; market satisfaction, financial measures, customer satisfaction, flexibility, productivity, quality, delivery, process time and waste. The horizontal divisions in the pyramid (see exhibit 1) represent organisational levels with organisational strategy and operations being linked by translating objectives, based on customer priorities, from the top down and performance measures from the bottom up.

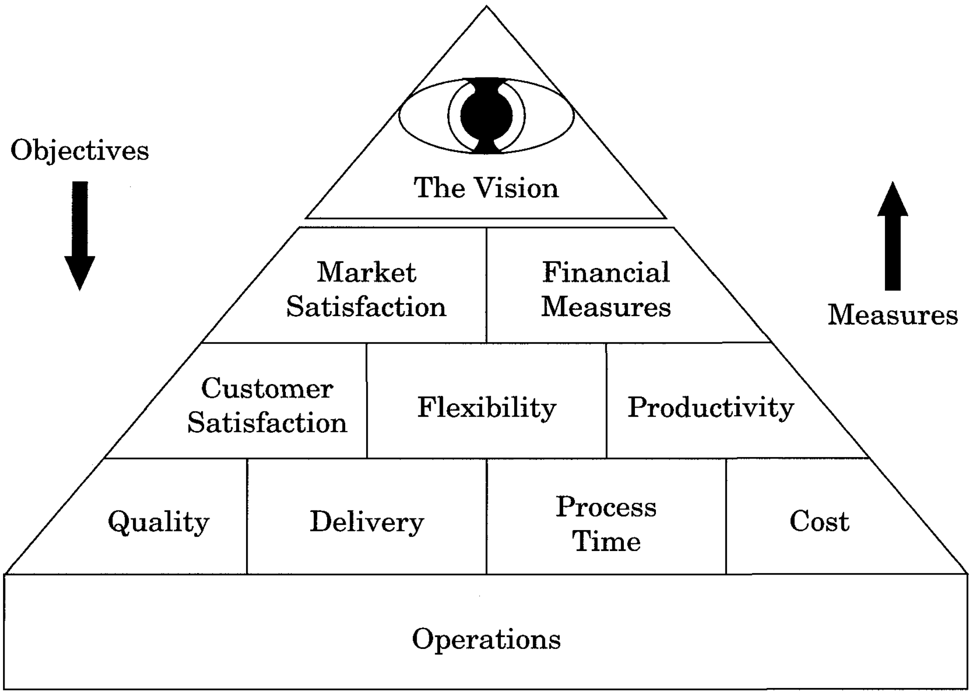

Exhibit 1 : *The Performance Pyramid*

At the top level a 'vision' for the business is articulated by corporate management. This is translated at the next level into individual business unit objectives defined in market and financial terms; that is, in the 'language of money'. Strategies are then developed for meeting these objectives and translated at the third level into objectives defined in terms of customer satisfaction, flexibility and productivity. the '1anguage of money and things'. At the base of the pyramid objectives are converted into specific operational criteria: quality, delivery, cycle time, waste, 'the language of things'.

The model addresses both extemal effectiveness and internal efficiency. External effectiveness can be tracked down the left side of the pyramid, with market measures such as market share being supported by the building blocks of customer satisfaction and flexibility. The right hand side measures internal efficiency in producing the goods and services with financial measures being supported by productivity and flexibility.

The Balanced Scorecard

The second framework is the Balanced Scorecard (Kaplan and Norton 13], see exhibit 2). It proposes that performance should be measured in a balanced way from four alternative perspectives - that of customers, the internal business perspective (what must we excel at), innovation and learning (can we continue to improve and create value), and the financial perspective (how do we look to shareholders). Supplementing traditional financial measures with criteria that measure performance from three additional perspectives enables companies to track financial results while simultaneously monitoring progress in building capabilities and acquiring the intangible assets needed for future growth. The framework implies that mangers select a limited number of critical indicators, grounded in the organisation's strategic objectives, within each of the four perspectives.

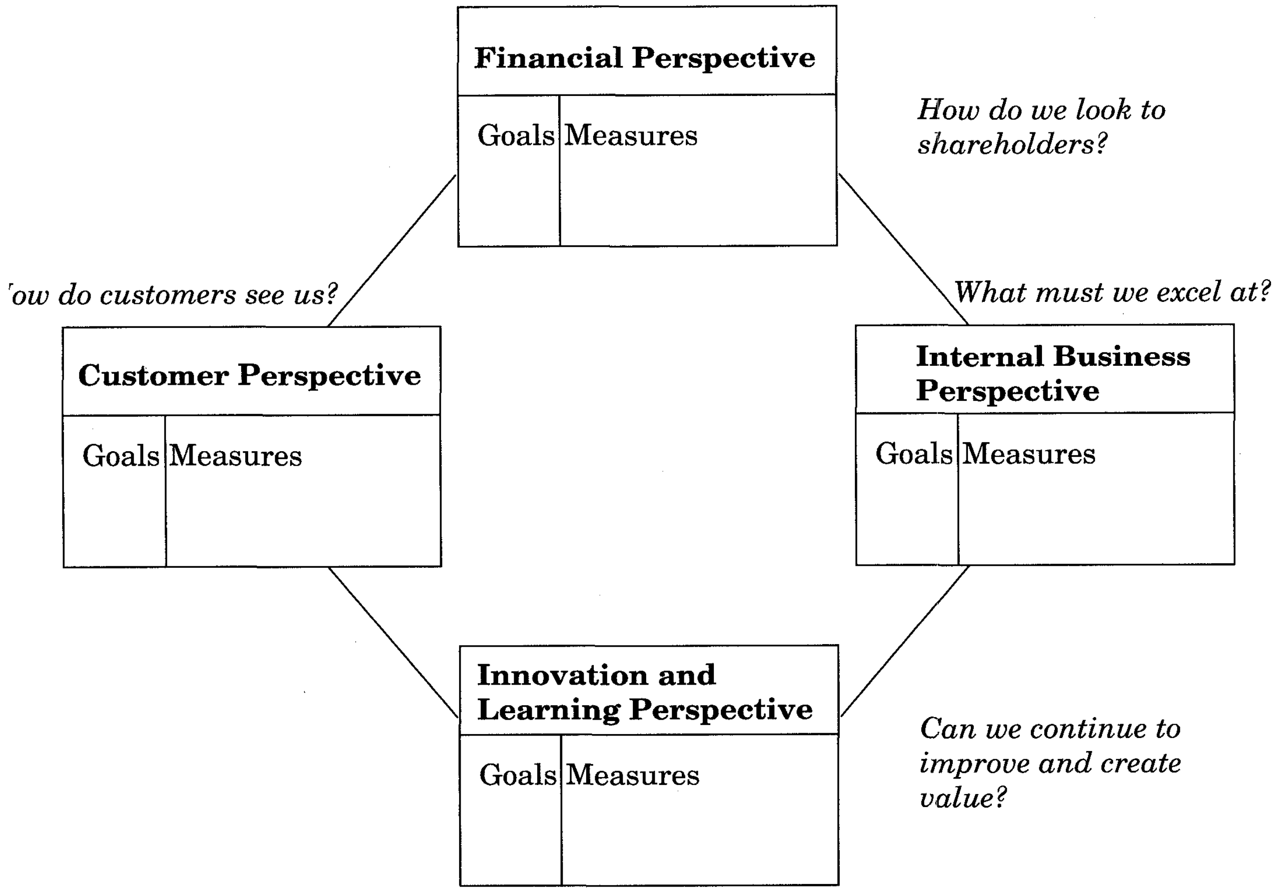

Exhibit 2 : *The Balanced Scorecard*

	Dimensions of Performance	Types of Measures
RESULTS	Competitiveness	Relative market share and position Sales growth Measures of the customer base
	Financial perflormance	Profitability Liquidity Capital structure Market ratios
DETERMINANTS	Quality of service	Reliability Responsiveness Aesthetics/appearance Cleanliness/tidiness Comfort Friendliness Communication Courtesy Competence Access Availability Security
	Flexibility	Volume flexibility Deiivery speed flexibility Specification flexibility
	Resource utilisation	Productivity Efficiency
	lnnovation	Performance of the innovation process Performance of individual imovations

Exhibit 3 : *The Results and Determints Matrix*

The results and determinants framework (Fitzgerald et al [2]) has been developed from research in the service sector, though it could be applied just as easily to the manufacturing sector. It proposes six generic dimensions of performance; competitive performance, financial performance, quality of service, flexibility , resource utilisation, and innovation. These six dimensions fall into two conceptually different categories (see exhibit 3). Measures of the first two reflect the success or 'results' of the chosen strategy, while the other four factors are 'determinants' of competitive success. While all companies will wish to measure the results of implementing their strategy, the mix of factors that determine that strategic success will vary. In consequence, there may be relatively little difference between companies' definitions and use of competitiveness and financial measures but their measures of determinants and the weightings applied will differ acoording to their strategy. This framework addresses the 'shorttemism' criticism frequently levelled at financially focused reports by emphasising the notion that improvements in quality. for example, may not hit the bottom line in the current period, but if these quality improvements are valued by customers future financial results will reflect this.

Some common threads emerge from the three performance measurement frameworks. First, that performance measures should be linked to corporate strategy; second that they should include both external (customer service type and competitor comparisons) and internal measures; third, they should include both financial and non-fmancial measures and finally that there needs to be a balance of measures.

3. *Charaeteristics of the Service Sector*

Service businesses are not homogeneous; the service sector is diverse embracing tourism, fmancial services, retail businesses, health care, catering and conununications. There are some commonalties among these organisations which have been used to identify three generic service archetypes: professional services, service shops and mass seivices (Silvestro et al [8]). Their key characteristics are represented in exhibit 4. Previous research suggests that the service archetype influences the measurement mechanisms for service quality, the scope for providing flexibility and the means by which flexibility is provided (Fitzgerald et al [2]). The current study explores this further by comparing the performance measurement system adopted within a professional (Arthur Andersen) and a mass service (TNT), the two extreme archetypes.

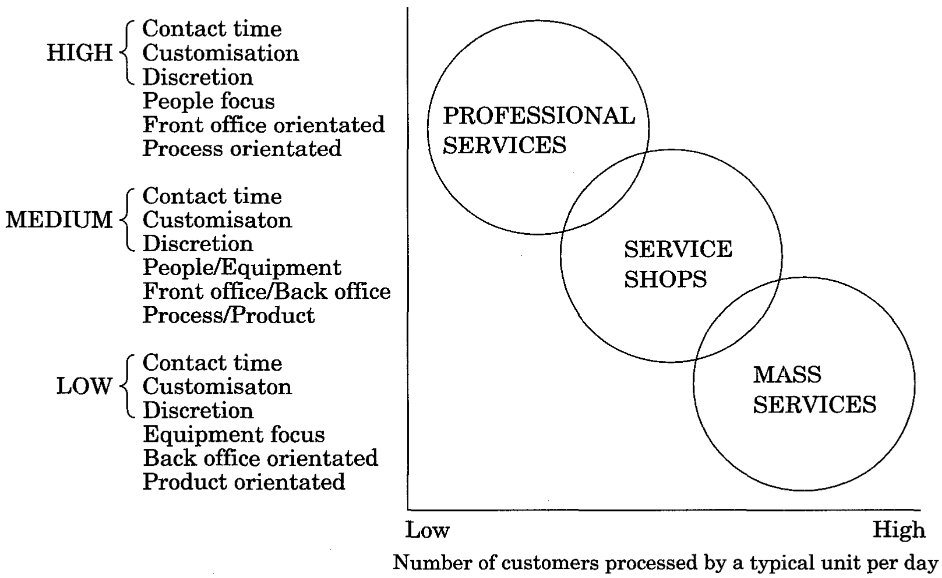

Exhibit 4 : *Service Classification Scheme*

Although service businesses have a wide range of service delivery processes, mixes of inputs and types of output, there is a set of four key features which distinguish them from manufacturing and influence the approaches to control and performance measurement. These features are *simultaneity, perishabilty, heterogeneity and intangibilty* (Shostack [7]). and together they pose extra strains on service managers in terms of identifying what to measure and in particular when and how to measure performance.

The production and consumption of many services are simultaneous; for example, receiving tax planning advice. The customer has to be there during the process. Most services therefore cannot be counted, measured, inspected, tested or verified in advance of sale for subsequent delivery to the customer. Second, while having excess capacity can enable any organisation to respond to fluctuations in demand, services are perishable; a delivery vehicle's journey cannot be stored, for TNT spare capacity in a van at one end of the country is not transferable to the other end of the country. Controlling quality and matching supply to demand are, therefore, key management problems in services which are often exacerbated by the presence of the customer during the service delivery process. Third, many services have a high labour content, particularly professional services. Consequently the standard of service may vary; the service outputs are heterogeneous. This places particular pressures on the measurement and control systems to try to ensure consistent quality from the same employee from day to day and to gain comparability of performance between employees. Finally most services, unlike manufacturing outputs, are intangible. When buying consultancy services, for example, there are tangible measures of performance such as the completion of the project on schedule but other less tangible factors such as the helpfulness and responsiveness of the staff during the process influences the overall level of customer satisfaction. Identifying what the customer values from the complex mix of tangible goods and intangible services makes the process difficult to control.

4. *Case Studies*

4.1 Arthur Andersen

Background

The Arthur Andersen World-wide organisation is one of the largest Accountancy and Consulting firms in the world employing over 80,000 people world-wide with offices in over 75 countries. The partnership provides a comprehensive range of financial and businesses services to clients. Andersen's has a reputation for the breadth, depth and excellence of the financial services which it offers its many and varied clients. They provide Audit & Business Advisory Services, Financial, Taxation and

Business Consultancy to businesses and individuals. The case focuses on one of the ten regional offices through which Arthur Andersen operate in the UK. All offices provide a full range of services although the mix of those services varies from regional office to regional office, all have access to central databases and there is great stress on knowledge sharing to improve processes and customer service. Although staff are attached to a particular office there is some flexibility of movement between offices for specified periods to cover temporary staff shortfalls or for particular jobs such as corporate recovery where staff with specific areas of expertise may need to be brought together at fairly short notice.

Andersen's operate a "one firm concept" throughout the partnership, they guarantee their quality of service across the world. One partner has overall responsibility for any one client whatever the mix of services required by the client and that partner has the authority to command resources world-wide, if necessary. Standard methodologies and planning procedures are used world-wide, with all staff undergoing extensive training to give a uniform level of high quality in systems, processes and people. They have invested in a "Global Best Practice Knowledge Database" giving access to leading edge business practices from around the world to enhance client service. The partnership has seen constant growth and profits are shared on a world-wide basis. Critical to the success of the partnership is offering a consistently high quality of service, in terms of managing the technical task and managing the relationship with the client through providing consistent standards, culture, quality and approach throughout the world-wide organisation. The financial strength of Andersen's in terms of profitability and growth is dependent on providing this high level of service. In this market the ability to do the technical job is an "order qualifying criteria", a necessary pre-condition. The "order winning criteria" which Andersen's believe differentiate it in the market place are its reputation, its style and quality of service offered and its world-wide partnership network.

An issue that places significant demands on the performance monitoring and measurement systems used, is the fact that every job is different, some lasting a few days to others lasting several months. There are, however, some common elements. The first 'event' within any job is actually gaining the business. There is a dual aspect here; retaining established clients and recruiting new ones. Established clients have evidence of the previous quality of work, so the task is to maintain the client / partner responsible relationship. Potential clients are targeted at partner planning meetings and various presentations, social events, sponsorships, or partner visits are arranged accordingly. Whilst the expenses of these initiatives are easily measured their effectiveness, in terms of getting business is not.

Having gained new business, Andersens devote considerable energy at the outset in trying to define exactly what the client wants, the time scale involved and the budget, recognising that clients have different expectations and that a “happy client” pays up readily and will repeat business. This is formally recorded in a letter of engagement which can be referred to during the contract period. The feasibility of producing a letter of engagement is partly a function of the service offered; for example it is much more difficult to forecast the complexities, and hence the time needed, on a corporate recovery job compared with a routine audit.

In carrying out the work, the team allocated to the job, through the job scheduling system, will reflect the nature and perceived complexity of the job. Progress of each job is measured against the job budget; this gives early warning of potential problems such as whether the job is likely to overrun because its level of complexity was underestimated or because of staff problems. It is important that this reviewing process takes place during the job so that any problems or issues can be identified and resolved immediately. On completion of an assignment, the partner responsible will formally meet with the client to discuss their perceptions of the work done and the quality of service provided.

Performance measurement system

Each Arthur Andersen partner owns shares in the overall profits made by the world-wide organisation, so it is not surprising that, at a partnership level, fees earned and profits made are keenly and regularly monitored. In the long run these depend, though, on the ability of Arthur Andersen to deliver a quality service. The service is highly labour intensive with a large proportion of staff having direct contact with clients. Apart from the post-completion client visit described above, the performance measurement systems predominately focus on staff. For monitoring purposes staff are classified as ‘support’ or ‘practice’. Support staff (for example, in personnel and administration) do not have their time charged directly to clients while practice staff do. There are four levels of practice staff, partners, managers, seniors and assistants each with clearly defined roles within the organisation. Apart from their seniority implications, these roles dictate the amount of time that should be charged to clients; for example, partners are expected to devote time to gaining new business - practice development - thus, less of their time is planned to be charged directly to clients than, say, managers whose role is predominately delivering the service to clients. Two sets of performance measures follow naturally from the staff classification; *headcount* and *chargeable time*.

Headcount or “managing the pyramid” is a key issue for control and refers to the ratio of the number of partners to managers to seniors to assistants employed, see exhibit 5. Andersen's have a clear notion, developed over the years, of an ideal shape of the pyramid which will lead to profitability and growth.

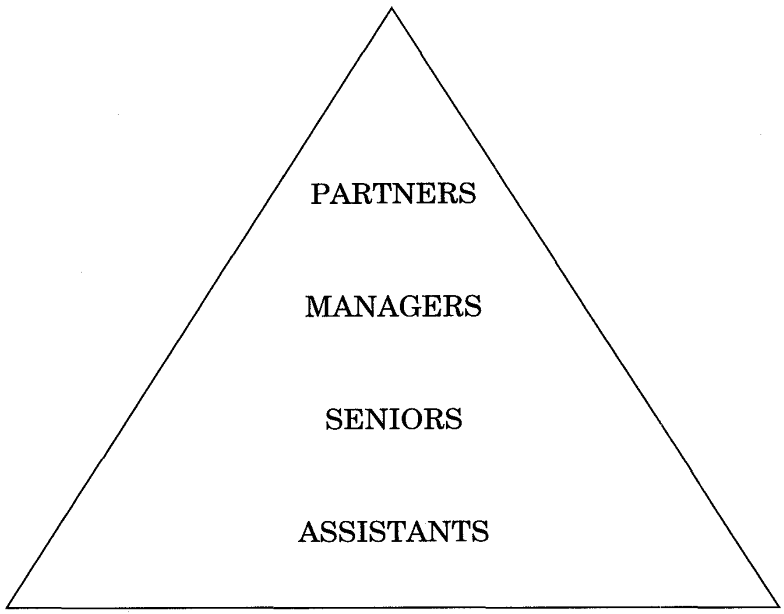

Exhibit 5 : *The Arthur Andersen Staff Pyramid*

Chargeable time is the amount of staff time which is directly charged to a client. Each staff layer in the pyramid has a target amount of chargeable time. As with the shape of the pyramid these chargeable time targets have been built up from experience within the organisation. There is an acknowledgement that although exceeding the targets may lead to increased short term profitability, if this was at the expense of for example, training, it may lead to a fall in longer term quality and hence profitability.

As stated above the pyramid provides all practice staff with a very clearly defined career structure. Staff who join the organisation are under no illusions as to the future. This is "an up or out organisation", "you are better paid but have to work harder", "it's a meritocracy". Regular counselling and performance appraisal is provided for everyone; the process and regularity of staff evaluation varies with staff grade and to a lesser extent with division. Initially, some staff find this process threatening but there is general consensus that it is used in a positive manner.

Partners are reviewed every two years via the partner evaluation system. Financial rewards are directly related to this review. The first part of the process is a peer group review by division head, managing partner and any other partner they may have worked with. The results of this review are passed to a central (world-wide) review committee and this committee takes a comparative view on partner performance throughout the organisation so that equity between partners is maintained on a world-wide basis.

Every *manager* has a strictly confidential annual review with his counselling partner. The process is driven by an annual reporting document; sections of this document are completed by the manager prior to interview. The personnel department add factual details such as courses attended and planned and the form is completed by the counselling partner during the interview. The outcome of this process is an agreed set of actions, by the individual manager and the firm, to achieve objectives for future personal and career development. Target dates for achieving the actions are agreed and responsibility for the firms actions is assigned to a particular individual.

Seniors and *assistants* are evaluated after every job by the manager or senior they have been working for. The document used to discuss performance is a rating form: “it is the primary piece of documentation which provides evidence of individuals performance - across the board performance”. The form contains detailed questions grouped into six areas: Technical Skills, Quality of Work Product, Job Ownership and Wrap-up, People Development, Client Service, and Professional Attributes.

An overall evaluation is provided at the end of the form with a ranking scale from “exceptional performance” to “Performance is below what is expected of an individual at the level of experience both in the present job and the requirement to demonstrate long term potential for progression within the firm”, this latter rating would be problematic for an individual. Extensive guidance notes are provided for the reviewer responsible for completing the form. The sources of information suggested for the reviewer are the quality of the work product, client’s comments and observation of the individual in action. The review process is treated seriously, clear advice is given on conducting the review discussion which includes giving praise and thanks for work well done and providing constructive criticism where appropriate. There is an emphasis on asking for and listening to individual’s views. The outcome is a rating for the individual plus a series of suggestions for improving performance.

Secretarial staff are evaluated every three months. The review ranges from technical competence to personal appearance and conduct. The outcome is a rating from 1 “Far exceeds Job Requirements” to 5 “Does Not Meet Job Requirements”, plus identification of training needs which could improve skills.

The importance which Andersens attach to staff appraisal is evidenced by the time devoted to the appraisal process, the frequency of appraisals and the positive way in which they are used. This is captured in the declaration at the top of every appraisal form;

"It is the Firm's policy to develop the competence and creative ability of all its employees to their fullest potential."

4.2 TNT

Background

TNT is an international group principally engaged in freight transportation. TNT was first established in the UK in 1978, and now approximately one seventh of its world-wide workforce are employed there. The case study is concerned with TNT Express Delivery Services, which offers a comprehensive range of nation-wide door to door express delivery services throughout the UK. The most expensive service provided is the *Next Day before 9.00 a.m.* service, cheaper variants including *Next Day before 10.30 a.m., Next Day before Noon.* and *Next Day* (time unspecified).

The critical success factor for TNT is to deliver the goods to the right place at the right time. If marketing claim at the point of sale that a delivery is possible, then operations need to ensure that the delivery actually takes place at the required time and place. Reliability is essential. Success in this area is dependent on a carefully planned operational system and a smooth operational flow. Fundamental to successful, reliable delivery is the extent of TNT's geographical coverage of the UK, and hence its number of potential customers. This is straightforwardly dependent on the number, size and location of the depots.

The operational system adopted is structured like a giant wheel, with a central hub and a set of spokes (motor ways and major trunk roads) running between the hub and the outer rim. On this outer rim are 28 depots, situated strategically around the country with each of these depots having a clearly defined, non-overlapping territory, so that the whole of the UK is broken-up across the 28 responsibility centres, thereby ensuring nation-wide coverage. Every weekday, each depot is responsible for the co-ordination and collection of all packages that customers in their territory wish to send. These are sorted at the depot, those for delivery in the same territory being retained separately. The remainder are packed into large trailers (trunks) which are then driven to the hub. Depots might send anything from one to ten trunks each night, though arrival times at the hub, and therefore departure times at the depots, are coordinated centrally in an extensive computerised scheduling exercise. On arrival at the hub the trunks are unloaded, again according to strictly controlled schedules, and parcels are mechanically sorted by destination on the purpose built conveyors. The reverse process then takes place with trunks being loaded with parcels for delivery in a particular region, prior to making the return journeys to each depot, where they are again unloaded, and the parcels sorted into appropriate delivery rounds in time for the 9 o'clock deadlines that morning.

Responsibility for the smooth running of this system essentially falls on the General Manager for network operations at the hub, and on the 28 depot management teams at the rim. Within each depot there resides a depot general manager, who has overall responsibility, an operations manager and a finance and administration manager. It is these individuals, then, who effectively control the fortunes of the organisation, and whose actions will determine how near TNT come to achieving the strategic objectives of profitability and growth via coverage and reliability.

The performance measurement system

TNT's mission is to be the number one express parcel delivery service in the UK. Gaining and sustaining such a market position has obvious implications for profitability and growth. These are monitored regularly at Board level through an analysis of the management accounts against targets. Profitability and growth, though, are the results of success rather than the determinants of success. Critical to being successful is the quality of service offered: are parcels delivered to the right place at the right time? Customers will be quick to change their allegiance if reliability is questionable. Accordingly, a key performance indicator measured on a weekly basis is the overall "delivery-on-time" performance; the number of consignments delivered on time expressed as a percentage of the total number of consignments booked. The actual performance level achieved is compared with the prior week's performance and with the company target. For this to be sustained by the depots, it is imperative that the hub is operating effectively. As such, the company monitors the "end-of-sort-time" on a daily basis, with updated predictions being made throughout the night to act as an early warning system. Currently the company target is 3.00 a.m., it being estimated that every 15 minutes beyond this will significantly increase TNT's cost due to consequent money back guarantees or the need for some depots to employ sub-contractors to meet the delivery deadlines.

At the depot level, four separate performance measurement mechanisms are used. Although each one carries implications for the other three, there is no formalised connection made. The four relate to (i) the depot overall, (ii) sales, (iii) deliveries, and (iv) finance and administration.

(i) <u>The depot overall</u>

The need to generate a profrt at the company level is driven down directly to the depots. A detailed Profit and Loss statement is produced weekly for each depot showing its results for each week in that quarter, and the cumulative actual against budget. Each week a memorandum is sent out to all Depot General Managers from the Managing Director. This memorandum focuses exclusively on the revenue and profits earned by individual depots, these being displayed in the form of "league tables" in order of actual profits achieved for that quarter. Specific mention is made of the top six profit makers for the week, and all the managers earning in excess of budgeted profits for their depot. The memorandum is not perceived as a document to be taken lightly.

(ii) Sales

The transference of corporate objectives for growth to sales employees is simple. All concerned are encouraged to make as high a volume of sales as possible, in accordance with nationally set price schedules dependent on size, weight, distance and location. Actual performance against sales targets is rewarded on a commission basis, though this is not adjusted for any delays or shortfalls relating to debt collectability. In addition to standard commissions, bonus prizes are awarded for those employees exhibiting outstanding sales performance. Further incentives are available for sales leads initiated by non-sales staff. For example, drivers are paid 10% of the first four weeks revenue from any new customer introduced by their actions.

As part of their overall marketing strategy, TNT Express Delivery Services have adopted a formal customer care programme, for which it has gained awards from the Motor Transport industrial sector. A copy of their Commitment to Customer Care statement is shown as exhibit 6. Performance against this standard is monitored regularly, partly on an informal basis, partly as a by-product of other parts of the performance measurement system, and partly by "random" comprehensive checks. For example, outside organisations are employed to research TNT's performance by sending consignments through the system. This tests out TNT's claims that they will "answer your incoming telephone calls promptly, courteously and within six rings", that the parcel will be properly collected, weighed, Iabelled and delivered, that invoicing will be clear and easily understood, and any queries dealt with efficiently.

Our Commitment to Customer Care

- We will answer your incoming telephone cafls promptly, courteously and within six rings.
- When calling you will always be able to speak directly with the TNT person you ask for. irrespeclive of seniority and without having to state your name. your company or the reason for your call.
- A team of one field sales person and one telephone sales person dedicated to a defined postcode area will be made personally responsible for the day to day handling of your account. This enables us to establish a sound business relationship and provide you with unparalleled levels of sales and after sales servvce.
- As a TNT Express customer. you will be contacted on a regular basis at least once every six weeks to ensure that we maintain a close liaison and provide excellence in customer care.
- Should we ever fail to collect your consignment as agreed we will ensure delivery is made meeting your orignal time criteria wherever possible at no extra cost to you.
- We pledge to check your collected consignments against their consignment documentation and to verify the number of items. their weight. destination, selected service level and postcode, we will then ensure that all your parcels are accurately routed and delivered on time.
- In the unlikely event that we mis-direct one of your parcels, we guarantee to deliver the item direct within the shortest possible time at no extra cost to you.
- We will provide instant access confirmation of delivery information 24 hours a day, 365 days a year via our automatic telephone response system - TNT Tracker Personal confirmation of delivery is available immediately on request the next working day.
- TNT Express invoicing will always be clear and easily understood. Any query you may have regarding invoicing or accounts will be quickly and efficiently resolved. All enquiries will be responded to immediately.
- Our reputation for safe and secure handling enables us to offer Free Transit Liability cover of up to £15,000 per consignment with confidence, providing extra peace of mind for you.
- In the unlikely event that you have to make a claim. we guarantee that a written response will be forwarded to you within 24 hours and if necessary, a full investigation will be undertaken to resolve any claim.
- We will communicate with you regularly to ensure that you are fully informed of our developments and to seek your opinion on the services we provide. our people and our standards.
- All TNT employees are our ambassadors and they are trained to be efficient, helpful and courteous at all times Despite the rarity of complaints, we guarantee that should you ever complain about the behaviour, attitude or road manner of any TNT person. the issue will be taken up and we will reply to you within 24 hours.

CUSTOMER CARE AWARD WINNER

Tom Bell,
Managing Director, TNT Express Delivery Services.

Exhibit 6 : *The TNT Customer Care Statement*

(iii) Deliveries

Delivery performance is reported in the weekly 7 Star Service Performance Report. In keeping with other TNT Express systems, this is set out in the form of a league table, depots being ranked in descending order of delivery-on-time performance. This is the first of the seven indicators included. The others are the proportion of "failures" (where the whole system has broken down for a particular consignment), the proportion of deliveries that result in credit notes or that are unmatched with invoices, the proportion of misroutes, the number of late trunks (that is, trunks arriving late at the hub and therefore potentially delaying the end of sort time), and the amounts of loss claims and damage claims expressed as a percent of revenue. Further weekly reports are circulated that present more detailed analysis about each of the categories above.

There is incentive scheme based on delivery-on-time performance, the actual percent achieved being compared with a depot specific, regularly monitored and updated, target. Meeting this standard on average over a four week period earns a bonus for the depot manager and a further bonus to be shared out across the team. Poor performance on delivery does not only impact personal bonuses, however, it also leads to adverse profit and loss account charges. Each depot will be charged for any loss and damage claims for which it is responsible, will foot the bill for sub-contractors hired as a result of misroutes, and will be fined £500 for each trunk that is late on arrival at the hub (unless there are mitigating circumstances outside the depot's or driver'scontrol).

(iv) Finance and administration

The monitoring and evaluation process of the finance and administration function again involves the circulation of regular league tables detailing the finance and administration performance for each depot on a monthly basis. The focus of these reports is almost exclusively on the level of outstanding sales ledger balances. Thus, there are reports ordered by debtors weeks, and by the percentage of debt over 60 days old. Again, related financial bonus schemes operate.

5. *Discussion*

Although the two organisations operate in very different service sectors, there are some striking similarities in the systems they have adopted for performance measurement. Both organisations attach great importance to the 'bottom line', profits being regularly monitored at top level. Both, however, recognise this as the 'results' of success rather than the 'determinants'. Thus, both Arthur Andersen and TNT incorporate a range of financial and non-financial measures, and use both internal and external measures of performance. This is consistent with the prescriptions of the literature outlined in section 2. There is an implicit balance between the range of performance measures used, their belief is that if the "determinants" of performance, such as service quality and efficiency, are monitored and controlled then profitability and market position will result.

In each case, performance measures are linked to corporate strategy which seems to reinforce the organisation's critical success factors to all employees. At Arthur Andersen, internal perceptions indicate that the firm's strategy is very well understood throughout the organisation. Individuals understand their individual and collective responsibility for the reputation, style and quality of the organisation and this is clearly motivating individual performance. "No surprises" was a recurring phrase during our research interviews; the idea being that if you keep clients fully informed of issues or problems during the process of a project, for example taking an aggressive stand on a tax issue the outcome should not come as a shock. The same "no surprises" philosophy underpins the staff reviewing process with the rating forms giving regular feedback prior to the annual or six monthly reviews. These rating forms are a recurring feature of life at Andersens. As one employee commented, "you are rated as soon as you walk through the door", comprehensively, from how you dress and conduct your relationships with colleagues and clients to your technical skills. The rating forms also reinforce the emphasis on client service, as one partner explained;

> "we tell people all the time the focus is the client, we are about client service, our rating forms right down to assistant rating forms are on technical skills and client service. They know all the time that client service is of fundamental importance and they learn what aspects are going to be critical to their own advancement in the firm"

In similar fashion, TNT needs to ensure that it delivers the goods at the right time and to the right place. This is well understood throughout the organisation. Almost all personnel interviewed mentioned the overriding need to "get the service level right", and could see how their own roles, whether in management, sales, operations, or administration, helped with this objective. The specific sets of (functional) performance measures also echoed different aspects of TNT's corporate strategy. For example, operations' measures have a clear focus on deliveries-on-time, sales' measures on volumes achieved. In both Arthur Andersen and TNT the benchmarks for comparing performance results are internally generated. While extemal benchmarks might be desirable, these are not available in the public domain for either organisation.

Quality of service, then, is seen as critical. Section 3 proposed that the service archetype would influence the measurement mechanisms for service quality. Evidence from the two cases supports this. Both organisations recognise that service quality means more than saying 'have a nice day', it is the entire package, the goods, the tangible physical objects that are used within the service system or removed from it by the customer; the environment where the service takes place and the service provided. For a "professional" service like Arthur Andersen this means measuring the quality of the customer experience from initial contact to job completion and beyond, which is done by a partner who has overall responsibility for planning and co-ordinating all the services on behalf of his/her client. This customer perception of the quality of service provided is matched with an internal review of the staff involved in the service provision evaluating a range of technical and personal skills. For a "mass" service like TNT the critical success factor is to deliver the goods to the right place at the right time so a key performance indicator, keenly monitored, is "on time delivery". In addition they have adopted a formal customer care programme and performance against this standard is monitored regularly, by internal management checks and the use of 'mystery shoppers'. The essential difference in the measurement of quality for these two organisations, then, is that for Arthur Andersen quality is measured for every customer whereas TNT relies on sampling, a direct result of the differing sizes of the customer base. The mechanisms and measures for monitoring service quality at Arthur Andersen and TNT are summarised in exhibit 7.

Quality	Arthur Andersen	TNT
Measure	contract fulfilment	on time delivery
Mechanism		
Internal	staff rating forms	delivery statistics
External	client evaluation interview	mystery shopper, customer surveys

Exhibit 7 : *Quality Measures and Mechanisms*

Section 3 also suggests that there is a link between the service archetype and the scope for and means of providing flexibility. The perishability of services implies that managing capacity is important; there is a need to respond to fluctuations in demand whilst keeping costs under control. Flexibility is fashionable, but it is used by managers to mean different things. There are three types of flexibility: volume, delivery speed and specification (Fitzgerald et al [2]). For a professional firm, providing all three types of flexibility is important, dealing with peaks of demand (volume flexibility), satisfying widely differing customer needs in terms of project completion times (delivery speed flexibility) and designing a customised project for each client (specification flexibility). The key to providing flexibility in Arthur Andersen is the extensive training provided to staff. In keeping with the one-firm concept, many courses are run on an international basis so employees have the opportunity to meet and study with colleagues from around the world. This in turn provides consistent standards throughout offices and consequently facilitates both project and staff sharing between offices to satisfy customer needs. The problems in providing flexibility faced by a "mass" service like TNT are somewhat different. In the short term, volume flexibility can be managed by hiring extra delivery vans, but in the longer term volume flexibility can only be met with increased capacity in the whole system, through perhaps a larger central hub or additional, smaller hubs on a localised basis (recently, TNT have indeed opened a second hub in the south-east for London specific freight). There is limited scope for varying delivery speed such as a faster processing time to meet specific customer needs, or a customised service to satisfy a particular requirement, since essentially a standardised service is being provided. Exhibit 8 summarises these differences in providing service level flexibility. While both organisations employ some mechanisms for providing flexibility, neither formally measure this aspect. The nature of flexibility does not really lend itself to regular, routine reporting.

Type of Flexibility	Arthur Andersen	TNT
Volume	high degree of flexibility	limited flexibility
mechanism	world-wide transferability of staff	sub-contracting collections and deliveries
Delivery Speed	some flexibility	little flexibility - average response times built into the system
mechanism	job scheduling, staff transferability	delivery speed governed by the (limited) product range
Specification	high degree of flexibility	little flexibility
mechanism	customised service is provided for each customer	standardised product range

Exhibit 8 : *Scope for Providing Flexibility*

6. *Couclusions*

This paper has investigated the performance measurement systems adopted within two successful UK organisations - one a professional service, the other a mass service - and compared them in the light of theoretical prescriptions from performance measurement frameworks in the literature. There are three common properties of the system and two areas of divergence. The common properties are *clarity*; there is clear communication of strategy to individuals within the organisation, *consistency*; the performance measures adopted support the corporate strategy, and *range*; both organisations measure performance over a range of financial and non-financial dimensions as advocated in the literature. These companies recognise that performance measurement is an essential part of any feedback control system and that what gets measured gets managed. Unsurprisingly, the measures of "results" are fairly consistent between businesses; competitiveness, in terms of market share and repeat business, and financial performance in terms of profrt and liquidity. Differences, though, emerge in the mechanisms used to measure *quality* and the approach to providing *flexibility*, the *how* of performance measurement.

The paper has focused on identifying the dimensions of performance to be measured and the influences of business archetype on the mechanisms used. This is only the first stage of the management control process. These measures need to form part of a control system where standards or targets are set for measures, achievement of targets is monitored and corrective action taken; a feed-forward / feed-back control system. Further case study based research into such control systems across all three service business archetypes would be fruitful in providing further insights to the theory and practice of performance measurement. In addition, such studies might examine whether there is any evidence that trade-offs between different performance measures lead to conflicts within an organisation; for example conflicts between cost and quality of service, or between short-term and medium or long-term performance.

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Performance Measurement in the French Public Services : New Public Management and Republican Centralism

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Abstract

The article analyses the structural and technical aspects of Performance Measurement as part of New Public Management in the French context, at both central and local levels. The centralist influence is analysed through concrete features of the system. Some biases are highlighted in the control structure. The accounting system is described as focused on limited political purposes to the benefit of the Executive, and the recent organisational decentralisation revival in central state public services proves to be due to a strong top political support. An in-depth view of the impediments to performance measurement developments then shows that centralism is deeply rooted in cultural republican values, which shape the foundations of both the public service system and the political one, the former being influenced by the latter, through the concentration of managerial and political powers in the hands of a small elite clan. Finally, some emerging reflections are reported, which propose guidelines to reform the whole system.

Key Words

Performance Measurement, New Public Management, Public Accounting, Public Control

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1. *Introduction*

The New Public Management (NPM) has been characterized by Hood [8] by first, a reduced difference between the public and the private sectors, and second a greater emphasis placed on result oriented management. Performance measurement is hence a central concept in this context, and accounting is held as a key element of NPM.

This article aims at first describing and analyzing the performance measurement system (i.e. structures and techniques) of the French public service and second examining the impediments towards this process development, in a context which is strongly influenced by republican centralism. After an overview of the French context and the politico-administrative framework (2.), the structures of the performance measurement system (3.) and techniques (4.) are examined. The accountability patterns and the cultural values are then analyzed as obstacles to performance measurement developments (5.), and a means of restructuring the public service is presented (6.).

2. *Context and Politico-administrative Structures :*

The institutional context is strongly influenced by a tradition of written law. According to Hofstede's model [7], the French cultural values include a small power distance, which is highlighted by the people's attachment to the republican value of equality, and results in a high degree of uniformity in terms of accounting system features (Gray & Radebaugh [6]). Centralism and secrecy are also prevalent features of the politico-administrative system. The republican central state is entrusted with safeguarding the general interest and the public services are considered as the operational means of shaping action on French society, including both social and economic aspects.

2.1 Political Structures and the Role of Central State

The political structure is semicentralized, with a powerful center and a three level periphery, which has become independent since the early eighties, through the decentralization laws. The three local authorities include the municipalities[1] (about 36,000), the departments (i.e. general councils) and the regions (i.e. regional councils). They are responsible for specific public service missions, which have been transferred from the central level, and which border their competence scope. Hence, there is no hierarchical relationship between the three territorial authority types.

At both levels (i.e. local and central), the power pattern is strongly rooted in centralism to the benefit of the executive body. At the central level, the fifth republic constitution gives little attention to the opposition rights, and has aimed at providing the

1 'municipality' is used in the paper to translate the French word 'commune'.

executive with political stability. The weakness of the Parliament stems from the electoral system, which was originally designed in order to guarantee the government a legislative support through an over-represented majority. On another hand, some procedures (e.g. the decree) enable the Executive to make decisions without requiring the support of the two chambers (i.e. the Parliament and the Senate). On financial matters, the control of Parliament is widely denounced and similarly ineffective (Muzellec [14]). At the local level, in order to resist against the centralist pressures, the decentralization laws have entrusted the territorial authority executives with huge powers, placed in the hands of a notable class, at the expense of the opposition rights. As a result, the power pattern is strongly personalized, as though the government model had been imitated at the local level, with a similar reluctance towards transparency (Mény [11]).

2.2 Overview of the French Public Service System

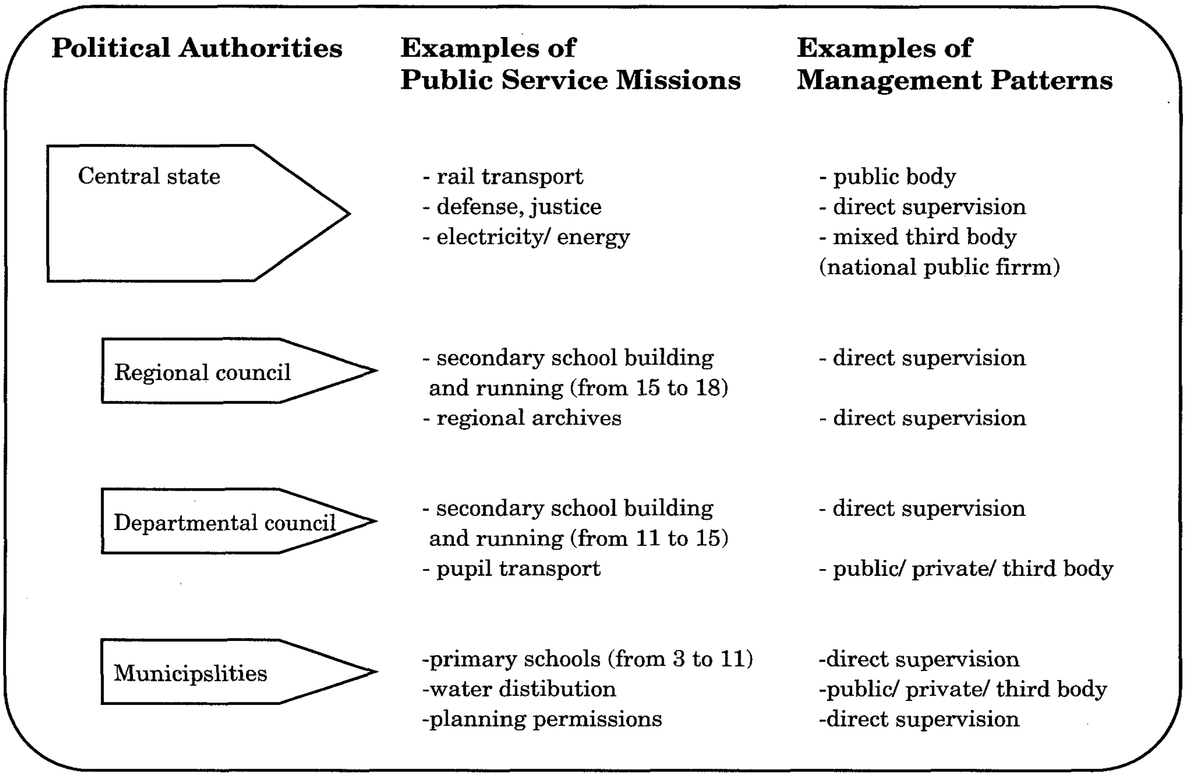

Figure 1. Description of the French politico-administrative system

Every state authority, which is elected by the people and hence represents the will of the people (i.e. the nation), either at the central or local level, is entrusted with a specific range of public service missions. For many of them, it is empowered to choose their management pattern. It can run them directly, in which case it concentrates both political and managerial powers. An alternative solution would involve delegating the management to a third party, which can be either public (e.g. a public establishment like a university), private or mixed (i.e. a firm with mixed private / public shares). The decentralization laws have widened the local authority scope, inducing the rise of the delegated management model to the benefit of the private sector, especially at the municipal level.

3. Structures of the Performance Measurement System

The structures of the system do not prevent centralist pressures, which induce biases in the control and controller capture situations.

3.1. The Internal Control Structure

The basic principle in public accounting (introduced in 1822) consists of sharing the managerial power between two persons : the first one is the decision maker (e.g. the minister, at the central level, or the elected chief executive of the territorial authority, at the local level), the second one is a public accountant (i.e. a civil servant), who executes the order (Labie [9]). This dissociation into the administrative and accounting phases stems from the need to control frauds (Muzellec [14]). Hence, the public accountant, playing the role of a cashier, is in charge of the day-to-day control of the regularity of the order (i.e. procedure control) that is given to him, and is responsible on his personal funds (i.e. he has to reimburse a payment that he has done without having controlled its legality) for the payment operations that he executes.

The public accountant is hierarchically depending upon the 'General Payer Treasurer', at the departmental level, and can be controlled by the 'Finance General Inspection', which is the internal auditing body of the Minister of Finance. On the other side, the order giver (e.g. a Secretary) is controlled and advised by a financial controller, nominated by the Minister of Finance.

The case of public national firms (e.g. SNCF for railways) is specific. They are managed along the private sector rules, but are controlled by the central state through the tutelage system. The technical tutelage is under the responsibility of the relevant minister, while the financial one is in charge of one state controller.

3.2. The State Account Auditing

Public service auditing distinguishes between two situations. When the public service mission is under the central state scope, the auditing body is the Account Court. Symmetrically, the Account Regional Chambers are in charge of the auditing task, at the local level. This apparatus guarantees that the entire public sector, including the public firms, is externally controlled by an independent body. The structure and missions of the local and central sub-systems are basically similar, since the regional chambers have been created in 1982, as part of the decentralization process, by central imitation.

At the central level, the Account Court aims at controlling the account conformity to the Law of Finance, which is the annual financial expression of the intended government action. An annual auditing program is defined in order to control each public service every fourth or fifth year, on average. The object of the auditing process has gone beyond the regularity control of the public fund use (i.e. comparing it with the Law of Finance), to assess managerial performance of public units, embracing the order givers and public accountants' actions. But the task division between regional and central bodies has shown some limitations when faced with global object assessment. For example, investigations concerning the decentralization process consequences have required the cooperation of both levels. Moreover, the effects of this control have highlighted some weaknesses and meant reducing it to an information tool. For example, the problems identified in a minister by the Court result in mailing a letter to the concerned secretary, but cannot lead to any sanction. The Court can audit an institution (i.e. a public firm) at the government request. It also enlightens the Parliament control through a feed-back control report on the executive action, and contributes to detecting financial scandals. The weaknesses of the Court control resources, faced by the huge amount of operations to be controlled is also worth noting (Muzellec [14]). In any case, the Account Court power is limited to a moral judgment and has no compulsory means of imposing its recommendations.

At the local level, the Account Regional Chambers audit the territorial authorities (i.e. municipalities, departments and regions) and the institutions included in their scope. To the account auditing have been added some management control recommendations. Although the decentralization laws have tried to provide the Chambers with a comprehensive control power over the public fund utilization, the 1982 text was refined in 1988 under the pressure of local elected people, and the utilization review was restricted to a 'regular use of funds' (Labie [9]). Once again, the Chamber has not been empowered to impose its management recommendations. It also stresses that this institution has no jurisdictional power on the local order giver, by contrast with the public accountant. Furthermore, some analysts stress the weakness of an ex-post control which can only state the critical situations, instead of preventing them. Some attempts to improve the financial information provision have resulted in the 1992 laws, setting first, that the prefect can request Regional Chamber audit of any financial commitment of the local authority, and second, that the prefect or the decentralized authority can order an investigation on any private institution which benefits from public funds. Nevertheless much remains to do in terms of preventive control (Mignot [13]). Moreover, the Regional Chambers are not allowed to get access to the relevant real time information, if no claim has been referred to them (Froment-Meurice & al. [5]), which tends to demonstrate the need for an external systematic audit of the territorial authorities' accounts (Ohnet [15]).

3.3. Systemic Level : program and policy evaluation

Recognizing that the regularity control had priority over management control (Vidal in Muzellec [14]), a public policy evaluation system was introduced in 1990, as part of the state modernization process. The purpose of the reform was to provide the state action with an effective performance measurement tool, which took into account the specificity of the public activities (i.e. global). Because of their wide scope, the public policies and the public programs (the latter being used to implement the former) require a systemic approach. The evaluation system has a two body structure. The Evaluation Inter-ministerial Committee has focused on public policies and the Evaluation Scientific Committee (ESC) has aimed at assessing public programs. While the former belongs to the Executive itself and can hence be considered as part of a self-controlling process, the latter has been defined as an independent body. The evaluation object, displayed as policies, are actually restricted to methodological aspects of public programs. In 1994, an independent audit (TECNED International), ordered by the committee, highlighted the procedure biases resulting in the progressive transformation of the role of the ESC into a project design adviser (Conseil Scientifique de l'Evaluation [3]). First, the evaluation process is partial and never systematic, since the committee only works at the project authors' request. Second, the evaluation system structure has been put into question by the absence of any superior authority (e.g. a high court) regulating controversies between the requester (i.e. the executive) and the committee, and guaranteeing the independence of the latter. Furthermore, the committee power is limited to the issuing of advisory conclusions. Finally, the opacity of the projects submitted by the executive has led the consultants to analyze it either as purposeful, the authors keeping some core details for them, or as a proof of their inability to properly define a project.

4. Performance Measurement Techniques

The performance measurement techniques are examined in terms of their accounting and managerial aspects.

4.1 Public Accounting at both Central and Local Levels

The double entry bookkeeping principle was introduced in 1808 in the state accounting system and has fostered the identification of the public accountants' frauds, consisting of their appropriation of some of the tax revenues, that they were in charge of recovering (Berthier [1]).

- Budgetary and Financial Accounting Systems

The French public finance distinguishes between two parts : 'budgetary accounting' which is specific to the public services and 'financial accounting' , which is close to the private French accounting system. These two parts can either build separate systems, which are articulated (i.e. at the central state level), or constitute an integrated system (i.e. at the local authority level). They pursue different goals and are ruled by specific procedures. The budgetary system first provides the order givers and the public accountants with a basis of the execution of the Budget, which results from the annual Law of Finance voted by the Parliament, and second, constitutes the reporting system used to review the public fund utilization. The Law of Finance has a special importance, since it a priori restricts the public fund allocation to the government for a given year, and is the main means in the hands of the Parliament and the Account Court to control the action of the Executive, a posteriori. By contrast, 'financial accounting' is the usual bookkeeping system, the principles of which evolve towards an accrual basis, although this has not been reached yet. Indeed, the tangible assets acquired in the year are no longer considered as charges, but the tangible assets bought before 1981 are not included in the balance sheet account. Furthermore, the inventories are not described, since the constitutional yearly budgeting principle doesn't allow to forecast expenses over the year. This means that the goods bought during the year should be consumed at the end of the same year. No allowance for doubtful accounts is either recorded, because it would imply that the state is not able to impose the payment of taxes on individuals.

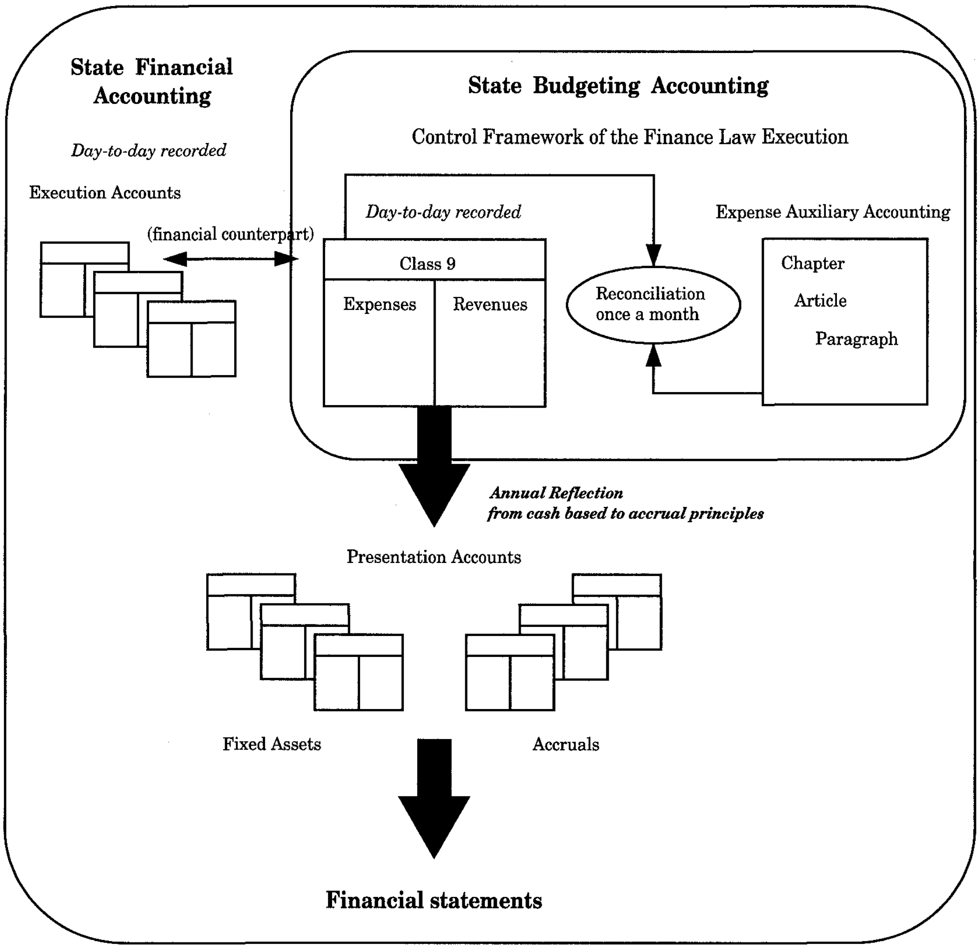

Figure 2 . The Articulation between Budgeting and Financial Accounting Systems

At the central level, the two systems have remained distinct. This can first be explained by the strong emphasis placed upon the budgetary accounting system dealing with democratic stakes, while the other part is associated with managerial purposes, considered as much less important. Furthermore the changing nature of the budgeted expense nomenclature can hardly cope with the stability of the 'General Chart of Accounts' used for financial accounting. Finally, the articulation of the two systems is done through data processing, which is not labor intensive. Then, while 'budgetary accounting' is ruled by the simple entry bookkeeping principle, an annual reflection procedure enables its articulation with financial accounting, in order to produce annual financial statements. This procedure also aims at making the budgetary accounting outputs, ruled on a cash basis, consistent with the financial accounting principles. During the year, the budget account class (i.e. class 9) is used to record the execution of the expenses and the revenues, that have been formerly authorized in the Law of Finance, with a financial counterpart in a cash financial account. An auxiliary expense accounting system is set in parallel, in order to match the highly detailed codification required by the Law of Finance. A reconciliation between the expense part of class 9 and the auxiliary system is done every month. Recording an operation in the class 9 includes the computing of a code which identifies the associated account in the financial chart, used at the end of the year.

The budgetary expense nomenclature is dominated by a resource oriented logic. This means that the credits are apportioned first between ministers and second by type of resources (e.g. personnel, traveling expenditures). An alternative solution could be to allocate public funds on a functional basis, namely on operational goals and projects. This is only effective for investment flows, the need for which enables a clear identification of the expected fund utilization. As a result, the vote of the Law of Finance is done blindly (Berthier [1]), and its financial reporting system (i.e. budgetary accounting) cannot provide a real management accounting tool.

The financial state chart of account, issued in 1988 has been inspired by the so-called 'General Chart of Accounts' used by the private sector since 1982. Nevertheless, the former has still not reached the full accrual basis of the latter : its evolution stage can be translated into English by 'stated rights accounting' ('comptabilité de droits constatés'). For example, a charge that has been incurred by the order giver, but which has still not entered the accounting phase, is not recorded. On another hand, the description of the assets remains uncompleted on several points. First, neither inventories nor bad debts are described. The fixed asset accounting has been improved, since the annual investment flow (e.g. buildings) are accounted in a fixed asset class, while they were considered as a charge until 1988. Nevertheless, the existing fixed assets, that have entered the state patrimony before 1981 are not recognized in the accounts, and hence not depreciated (Berthier [1]). The amortization question, as for inventory, has suffered from the strong influence of the budgetary accounting system : the separability principle assumes that every charge must be attached to the current year and consumed during it ; hence, it cannot induce other charges in the future. Violating this assumption would result in weaker control of the public finance by Parliament.

- The Accounting Reform at the Local Level

At the local level, the budgetary and the financial accounting systems have been integrated. The unique chart of accounts, issued in 1970 has been refined for municipalities, to evolve towards a full accrual accounting system. This reform will come into effect in 1997, and is considered as the first step on a larger process of renovating the territorial authority accounting system, which has become more acute with the growth of the local public service scope, resulting from the decentralization process. The target consists of making it consistent with private financial practices, in order to match the requirements of the lenders (Bidart & Moraud [2]). Since 1985 the deregulation of the funding system of local authorities has opened the market to private banks, which have asked for harmonizing their financial statements. In the same idea some consolidation procedures have been set by a 1992 law. Although they do not match the usual accounting requirements, they tend towards a ‘fair and true view’ of the local authority global financial situation (Meyssonnier & Pourtier [12]).

At the central level, a project of reforming the state financial accounting system towards full accrual principles is under examination, but is not likely to come into effect (if ever it comes) before a decade. The lack of management accounting is also critical. It constitutes the only means to enhance the traceability of the public expenditure, and hence to improve both democracy, through the enlightenment of the fund apportionment by the political power, and performance measurement of public services by providing a relevant accounting basis, used in the private sector.

4.2. Structural Decentralization and Result-Oriented Management

Implementing result oriented management practices requires the public service organization to provide structural decentralization. This movement has been applied to the public services that are directly supervised by the central state, under the general label of administration / state modernization. The structural decentralization, called disconcentration, consists of transferring the organization from Paris to the province, in order to better meet the population needs. The physical transfer is then associated with a managerial power one, giving more autonomy to the peripheral unit. This trend has been required to meet the new needs of flexibility emerging from the territorial authorities, as a result of the decentralization process started in the early eighties. Experienced as a strong limitation to the deepening of the decentralization process, the low pace of disconcentration, considered by some analysts as being blocked (Mabileau [10]), has been problematic until the nineties.

On the other hand, the modernization process, consisting of introducing various management tools in the public services, has gained strength from the mid eighties, thanks to a strong political support. In 1986, the Secretary of Finance, E. Balladur fostered the spread of total quality management and his secretary in charge of consumption issues has initiated performance contracts, which included some incentives in the civil servants' wages, based on their collective productivity gains (Trosa [19]). In 1989 and 1990, two circulars about the 'renewal of Public Service' was issued by Prime Minister M. Rocard, providing the process with an integrated framework. These texts have aimed at improving the image of civil servants' action, stressing the importance of the quality of service, by legitimating the public utilities by the public interest service, and by demonstrating the agents' efficiency and effectiveness. A strong emphasis has been placed upon disconcentration, the second text providing an organizational solution through responsibility centers and project management has been encouraged. The human resource management aspects have proved to be one of the main features of the circulars, by aiming at developing responsibility at the organizational level. Hence, the reform has been based on a bottom-up approach, by contrast with the 'RCB' (rationalisation des choix budgétaires) of the seventies, known for its bureaucratic ineffectiveness (Trosa [19]), which was a transplantation of the US PPBS (Planning, Programming and Budgeting System); the logic of empowerment has been preferred to that of enforcement, through a voluntary criterion to implement the reform without any compulsory timetable. The development of responsibility centers, which can be considered as the first step towards the transformation of the bureaucratic structure into result-oriented management units, has been associated with a diplomatic thesaurus adopting the word 'evaluation' instead of 'control' which has negative connotations.

These orientations have then been confirmed by recent official texts, like the public service (March 1992) and disconcentration (July 1992) charts, one major current concern being getting greater flexibility in human resource management (e.g. assessment procedures, functional mobility) (Rouban [18]). The main directions of the state reform have been summarized in the 1995 Prime Minister circular and include to clarify the missions of state and the scope of public services, to better meet the users' requirements, to change the central state, to delegate responsibilities and modernize public management.

4.3. Contracting in Public Services

Another way to introduce performance measurement consists in focusing on effectiveness, by defining goals and setting contracts. This has been done at several levels in the French public services. First, at the central level, national planning has aimed at providing state action with long range strategic targets. Although it played a major role during the reconstruction and the following thirty year growth (1945-75) period by fostering the economic activity and modernizing the infrastructure, its importance has much decreased for a decade. Actually, economic internationalisation, especially in the European Community context, makes it increasingly hard to control the strategic success factors at the national scale. To this must be added the ideological decline of socialist policies, fostered by the general deregulation movement. Furthermore, from a financial point of view, the annual state budget has priority over the five year national plan (Muzellec [14]).

The contracting practice is also used by the central state to keep the decentralized authorities, which are supposed to be independent on both political and managerial matters, under financial control. For example, the so-called 'state-region plans' , introduced by the decentralization laws, transfer some public service missions from the center to the periphery. The local authorities can also be involved in several year specific plans (e.g. 'University 2000' plan), through a financial contribution to the execution of decisions made by the central state (Delafosse [4]). This is also the case in political crises (e.g. 1995 December troubles in universities) when urgent plans are issued at the central level (e.g. the Secretary of Education), requiring some support from the decentralized authorities.

On the other hand, contracting-out can also be seen as a regulation means used by the state authorities over third parties in charge of running public services. At the central level, this practice is implemented in national big firms (e.g. Electricity and Gas of France), through objective plans set with the state tutelage (i.e. the concerned Secretary). Nevertheless, this practice is criticized as being an illustrative case of the regulator capture, rooted in an economic and social power deal benefiting the huge national firms, which would tend to bias control. This phenomenon has also spread at the local level, especially in municipalities. The horizontal concentration movement of private firms, which have widened the range of services that they offer to match the local public requirements, has worsened the state authorities' negotiating position. Moreover, despite some attempts to improve the transparency of the local public commitments (see Sapin's law, 1992), the decentralization process does not prevent corrupt practices.

Finally, contracting can be considered as an organizational management tool, trying to develop a supplier-provider approach between internal units, aiming at making employees aware of their responsibilities. This has started to develop in network national firms (e.g. railways since 1991). It constitutes one way to bridge the gap between their current public monopoly situation and the competitive future one, towards which the Maastricht Treaty urges them to evolve for the service part of their activity (the infrastructure level remaining a state monopoly) in the next future (see the disintegration of the SNCF, for railways).

5. Cultural Values and Accountability Patterns as Impediments to Performance Measurement Developments

The resistance met by the performance measurement techniques can be explained in the light of cultural values which are reflected in management patterns.

5.1. Equity and Opacity : the Jacobinic Vision of Unitary Central State

Centralism can be considered as a major French society feature. Indeed it is rooted in cultural republican values which are linked to the Revolution. The Jacobins' vision of an unitary central state aimed at suppressing the privileges of the nobles, and hence at guaranteeing equal treatment to every citizen. In this philosophy, the representative democracy has been perceived as a means to empower some lobbying groups defending particular interests, that is to say, as a threat to general interest safeguard, and has been accepted in the 19th century as a stop-gap. Nowadays, this conception of the republican central state is still prevalent in the French political life, and does not match the traditional left vs. right wing party division. Indeed, it has proponents on both sides and the opposed philosophy (e.g. Valery Giscard d'Estaing for the right, Rocard or Delors for the left) has always found less support in the public opinion. As a result, the legitimacy of public action is deeply anchored in the sole election of the state authority executive chief, which can be considered as its citizens' validation. This implies that the opposition expression is interpreted as resisting forces towards general interest safeguard, for which the elected persons are responsible. Hence, the Jacobinic vision of central state hindered the development of pluralism in public life during the mandate periods, and so limiting the democracy game to the electoral periods. This has also consequences on accountability patterns and transparency. For example, the Budgetary and Financial Disciplinary Court, created to compensate for the weaknesses of the Account Court towards the order givers (i.e. public decision makers), has not put an end to their hierarchical top's legal irresponsible situation, which allows politicians to remain beyond any control, if the government does not change (Muzellec [14]). In fact, the opacity is part of the Jacobinic philosophy, since the ability of the people to take part in the public decision is questioned. Rather than a vision where the people chooses its representatives, these elected are viewed as letting themselves be elected by the people (Hermet, cited by Ohnet [15]).

5.2. Consequences for Performance Measurement : Game Playing

This conception of central state, along with the cultural values that it carries, have provided the French public service with its solid foundations, which induce resistance to any attempted change such as the introduction of New Public Management. The bureaucratic structure can be considered as the organizational realm of equality through uniformity. By contrast, the divisional structure based on responsibility centers and result-oriented management techniques lead to individualize performances, which is inconsistent with the public service culture, according to which every agent is assumed to be good, since he or she has passed the civil servant entry examinations. Any assessment practice implicitly puts this statement into question, by admitting some eventual bad performances. Basing wages or service budgets upon performances is also highly problematic, since profits are then locally run, which means that they escape the general interest logic, which requires a central management. For example, financial commitments linked to the implementation of reforms, can be escaped by the central state, when the political agenda sets other priorities than modernization (i.e. reducing the public deficit), which result in cuts in funds at the expense of the services implementing modernization. In other cases, when responsibility centers have been created, autonomy is perceived by the central level as a grant, rather than a sound management mode (Trosa [19]), and the efficiency gains can be withdrawn from the following year budget, since the units have proved to be able to work with reduced resources. Furthermore, the lack of incentives and sanctions if reforms have not been implemented not only limit the modernization process to motivating agents but also confirm the strength of these cultural barriers.

5.3. The Reluctance to Reform the Whole Fiscal System

On financial matters, the centralist forces result in a steady reluctance to reform the fiscal system, even though all political parties agreed on the need for it. The financial situation of decentralized authorities is worsening with the rise of public service mission transfers, while the resources are strongly feeding the center level. An increasing number of financial support types brought by local authorities to the central state are reducing the territorial authorities' room for maneuver in a scarce resource context. This phenomenon, which can be interpreted as financial central control preventing the decentralization process being pursued, is associated with the opacity of the funding system. A recent report ordered by the Prime Minister stressed the incapacity to display a reliable statement of the global amount of financial transfers between the central state and the decentralized authorities. First, the multiplicity of fund origins, does not allow a complete consolidation, were it ex-post ; second, there is no integrated reporting framework about the allocation of cash flows. Moreover, some transfers are calculated ex-post, on fluctuating economic and environmental factors (Delafosse [4]), which prevent the local decision maker from getting a relevant estimation of the available public funds, that he has to manage.

5.4. The Concentration of Powers in the Hands of an Elite

An in-depth analysis shows that the centralist model, which characterizes the political life at both central and local levels, benefits a small elite clan. This concentration has been fostered by the legal system which enables cumulating electoral mandates : for example, a mayor can be a member of Parliament. The attempt to restrict the mandate number to two, which has been introduced in a 1985 law, has resulted in setting a two mandate cumulating rule (Mény [11]). This closure of the political system is enhanced by a socialization phenomenon induced by the qualification standardization. Indeed, both top civil servants and politicians have been trained in the same selective state high schools, the most prestigious of which is the National School of Administration ('ENA' , Ecole Nationale d'Administration). The staff transfers between political life and public sector top management tends to reinforce the interweaving of both spheres, and to strengthen the elite values. As a result, the centralism culture, which prevails in the political field, can be transmitted to the public service sphere, and contributes to strengthening a reluctance towards reform processes.

6. A Restructuring Project of the Public Service System

Some reflections have recently emerged, aiming at identifying the eventual corrective actions which would help solve these deeply anchored problems.

6.1. Searching for the Relevant Local Authority Level

One of the main problems raised by the conception of a control system lies in the definition of the right detail degree of modeling : which are the levels of analysis that highlight the correction levers of the identified critical problems ? For example, the absence of hierarchy in the local authority structure induces some inefficiencies through the emergence of competition between the different levels. The disconnected territorial elections, added to the independence of the authorities, result in a global inconsistent utilization of public funds, especially between departmental and regional levels. Indeed, university building, cultural life or healthcare are good electoral marketing themes (Fréville, in Puech & al. [17]). The hospital building plan, developed in the seventies, illustrates the public resource waste, through the over-equipment induced by the lack of coordination of the various territorial authorities. Because of the subsequent low site activity, the high skill level of specialized professional staff, and hence the quality of care can no longer be guaranteed. On another hand, the municipality atomization (36,000 municipalities, among which 32,000 have less than 2,000 inhabitants), partly due to the rural nature of the country, along with its history, stresses the need for a more global control. One solution stems from a complete change in the local authority structure, focused on the 'local country' concept, rooted in both historical and socio-economic grounds. Indeed it corresponds to an employment basin (i.e. bigger than a municipality), which would be substituted for the municipal level (Ohnet [15]). Some experiments have been started and are supposed to foster the grouping process of municipalities. The local country concept has strong historical roots, since it was already used twenty centuries ago, when France was called 'Gaul'. More recently the ecologist school of thought has highlighted the benefit from its use, calling for a comeback to the country. Actually the objective is to improve the coordination of the various levels of economic activity support (including professional ones) by identifying a relevant space territory. The local country concept is aimed at better meeting the solidarity need between populations by containing a urban part (i.e. more wealthy) and a wide rural periphery. Yet, although the recent 1995 reform state orientations recognize the existence of the local country, they do not institutionalize it. Indeed, if the relevant spatial level to develop economic action efficiently is the local country, it means that it should become the basic local government level, with both administrative missions and democratic political power. Given the intermediate size of the local country, when compared to the municipality and the department, such an institutional recognition process puts into question the role and the legitimity of the actual local government levels. Going further in this direction could imply the suppression of the departmental level in favor of the empowerment of the regional or inter-regional level, in order to reach a global government level, which would be consistent with other European country local authority maps, and could hence best benefit from the Community's aid. In other words such a restructuration would induce a profound change in the local government map and in the relationships of its parts. Moreover it would break with the decentralization principle of total independence of the various authorities for the sake of coordination and public action efficiency. Finally, this restructuration would be at the expense of the actual chief executives of departments, which helps explain why the 1995 law remains unfinished on this point.

6.2. Restructuring the Central State and Creating Local Matrix Structures

The state missions would also need to be reformed, in order to match the actual liberal context, which reduces them. The decentralization process, which would be deepened, should be associated with a parallel mission delegation process from the center to the peripheral public service units, which would be organized in autonomous agencies, following the British 'Next Steps' (Picq [16]). The central state level would focus on the sole critical global missions, while some strategic activities should be transferred to the regional / inter-regional authorities, the center intervention being ruled by the subsidiary principle.

At the local level, the problem lies in the multiplication of public units meeting the same needs. In order to fulfill the requirements of the local state authorities, the central state has devolved some local administrative units at both departmental and regional levels without any global frame of sharing responsibilities. In order to cope with this confusing situation a restructuring proposition consists of discoupling the devolution map from the decentralized authority one. This would imply to put together the actual departmental and regional administrative units depending from the central level (i.e. ministers) into a few territorial directions, the action of which would be led by the prefects, but which would still depend from the central state level for budgets. These territorial directions would be created at the 'relevant level', meaning ad hoc territories, like big cities or a group of municipalities or a region.

This administrative map would be expected to be progressively imitated by the decentralized authority one, leading to a similar restructuration. The region prefect would then be at the core of a coordinating process of units of both structures, meaning those depending upon decentralized authorities and central state. This important task would imply to control public services from different kind and would entrust the prefect with some transversal responsibilities, like a project manager in a matrix structure. The functional division corresponds to the hierarchical lines between either the administrative units of the territorial directions and the concerned minister or the local administrative units and the decentralized authority ; the prefect would then be in charge of a group of these various units from both hierarchical lines. Some of the recent orientations tend to be consistent with this proposition through reinforcing his power. Nevertheless, some analysts interpret this evolution as a means used by the central level to develop its control over the local public life, since the prefects are state representatives.

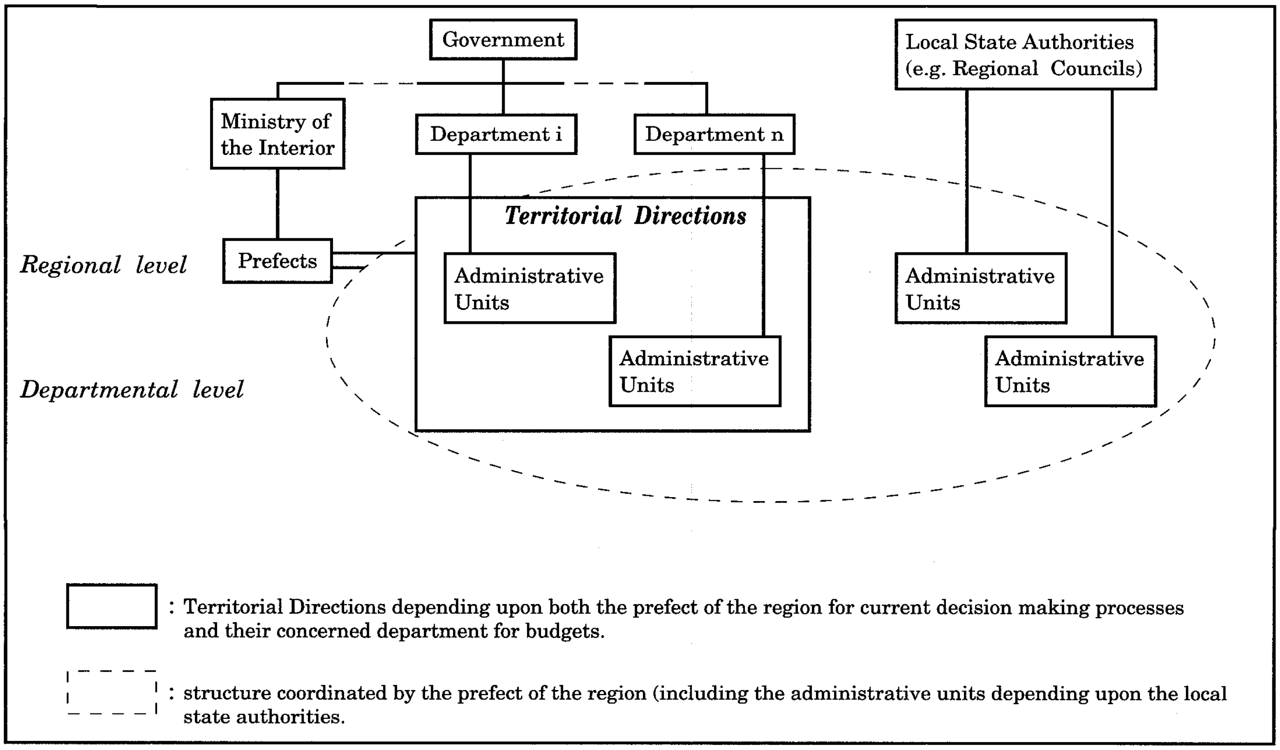

Figure 3 . The Local Matrix Structure Proposition

6.3. Managerial Freedom vs. Democratic Control

Giving the interweaving of managerial and political powers, one can suggest the decentralization process as a favorable context for New Public Management developments. But one can wonder whether a direct democracy can cope with the resulting managerial autonomy. Once again, this stresses the need for first improving the opposition rights in a representative democratic model, second spreading and widening the concept of accountability on both political and organizational levels, which is consistent with result-oriented practices.

7. Conclusion

Performance measurement is central to New Public Management. Despite the progress that has been experienced at the local level, especially through the rise of the delegated management model to the benefit of the private sector, much remains to be done at the central level, in terms of financial transparency and public fund utilization review. One of the most critical points is the need for a management accounting system, which would help to identify the link between the inputs (i.e. public resources) and the outputs (e.g. the results of a program). This first requires a budgetary framework implying a finalization (i.e. the expected objectives) of the fund allocations, through a functional budgetary structure. This evolution has been hindered by the French cultural values, the first of which is centralism, as the structures of control and the resistance facing the organizational decentralization prove its shaping influence. The primacy of political matters in public life, reinforced by the interweaving of the political and managerial powers, stresses the symmetry between the governance patterns. This would hence lead to a political reform focused on the empowerment of the opposition forces as a pre-requisite to NPM developments.

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Performance Measurement for Cost Management: The Nature and Role of Kousuu

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Abstract

The practices of target costing and kaizen costing have received considerable prominence as cost management methods which can support competitive strategies. However these techniques do require the support of internal cost information systems which provide both guidance and feedback on policies to effectively reduce resource consumption within the organisation. This paper explores the operation of just such a system - the kousuu reporting system. It involves the monitoring of resource use in the conversion cost area by profiling the various work times associated with component functions. This gives visibility to resource consumption, it supports the kaizen philosophy of beating previous actual performance by revealing time trends and facilitates cost management by integrating budgetary targets and ideas for improvement. As it is based on straightforward non-financial measures it provides a relatively unambiguous source of feedback which indicates the impact of previous decisions and guides future action on resource consumption and reduction.

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1. Introduction

Japanese management accounting has consistently been characterised as strategically driven, supportive of cost effectiveness, and market oriented (see for example McMann and Nanni, 1995 for a review which emphasises these factors). Exemplifying these features and central to Japanese management accounting system design is the practice of target cost management (Tanaka, 1995; Tani et al, 1994; Kato, 1993; Monden, 1992). This approach is widely used among companies in Japan's key industrial sectors. While target costing has been high profile and accorded considerable credit for its contribution to the economic success of Japanese companies, it is, in essence, a very straightforward procedure. The determination of a target cost involves the estimation of expected market price from which an expected profit margin is deducted. Achievement of the resultant figure becomes the responsibility of product designers and all those involved in the production and selling process. Thus it is an approach which possesses the great attraction of creating an explicit market interface with the organisation's internal costing system. Another key attribute lies in its capacity to be used at the stage of product planning and design when the significant cost commitment decisions are made. At this stage its motivational impact can be most effective not only in ensuring the delivery of viable product innovation but also by screening out those new product ideas which are unlikely to meet the market test. However it is an approach that can also be used throughout the product life cycle to help maintain profitability and provide guidance on the composition of the existing product portfolio.

While the process of setting target costs and some of the work functions (e.g. value engineering, functional cost analysis, inventory and supplier management) associated with attempting to meet the target have been subject to research and review (Sakurai, 1990; Horvath 1993; Tanaka et al, 1992), there has been a comparative neglect of the technical attributes of the accounting information systems available within Japanese companies to support these activities. This paper provides some redress to this imbalance by examining one common, yet fundamental, aspect of Japanese internal accounting information provision, the Kousuu reporting system. A clear and current knowledge of how resources are consumed within the organisation is fundamental to the effective management of cost in accord with set targets. Managerial demand for this knowledge is one major reason why activity based costing (ABC) has become so popular so quickly in the West (Innes and Mitchell, 1995). However, in Japan, interest in the practical development of ABC has been both slower and later. In part this has occurred because one of the most common characteristics of costing systems in Japan is the detailed information which they generate on resource use in the various processes (manufacturing and support) which constitute the core internal value chain of the organisation. A key feature of the traditional Japanese costing system is the regular and periodic generation of report sets which contain detailed profiles of how key resource sets have been used. Conventionally this is provided for management in both non-financial (Kousuu) and financial forms (Kousuu based charge rates). The Kousuu reporting system produces information which is used to both initiate cost reduction initiatives and provide feedback to help judge the success of action already taken. It thus supports the programmes of design modification and continuous improvement which underlie the effective utilisation of target costing methods.

2. *The Study*

This paper is based on a case study of the Kousuu reporting system in a large Japanese manufacturing company. The use of the case method is appropriate as the research is merely exploratory and descriptive (Yin, 1984; Scapens, 1990). The purpose of the study is to illustrate the nature of Kousuu and to explain the role which it played in cost accounting, cost management and performance measurement within the Japanese company. The emphasis of the research was therefore on the technical nature of the Kousuu system.

The study was undertaken in the first half of 1995 at the company headquarters. As the case focussed on the specific nature of certain accounting information being produced within the company, data were gathered by interviews and discussion with the cost management team responsible for both the design and operation of the Kousuu Reporting System and with a small sample of the key managerial users of the information. The interviews were conducted over a period of three months while the researchers assimilated the system and obtained clarification on problematic issues. In addition documentation comprising the various reports generated by the system were obtained and studied. The case report which follows is a condensation of the Kousuu Reporting System, but one which includes all of the key reports which comprised the information provided to company management. While no generalisations can be drawn from one case, the literature on Kousuu and the authors' experience suggest that this example is not untypical of the Kousuu systems which are widely used in Japan.

3. *The Nature of Kousuu*

Kousuu are units of resource consumption expressed in physical terms. They encompass all of the major resource elements of conversion and support cost and typically are measured in terms of either the direct or indirect labour time or machine time of the production factors which constitute the organisation. A complete set of Kousuu thus represents a detailed inventory of all of the conversion and support activity undertaken in the firm. Thus Kousuu can be based on production processes, work cells, machines and service functions such as maintenance and materials handling. This type of information can be usefully presented in various ways. For example, with an input object focus it can be designed to represent the time distribution of the various work elements comprising a production line, a shift, or a factory for any specified period of time. However, by focussing on an output object, Kousuu may also be expressed in terms of the various time components of the work required to produce one unit of final product. In this latter form it is known as Gentani. A Gentani therefore profiles the pattern of conversion work resource consumption by individual product lines. This approach provides one basis for both the derivation and assessment of standard costs, as well as providing a working performance measure in its own right. Finally to accommodate the financial dimension, a charge rate can be computed for each Kousuu based on the cost of the resources which contribute to the labour and/or equipment and service input of the relevant activity. This can then be used to convert the Kousuu work times into costs which can be applied to all of the above types of cost object. In Japan, Kousuu are extensively used in the manufacturing sector and their design and operation are widely referenced in applied texts (eg DES, 1989; GBD, 1991).

One of the strengths of the system of Kousuu is the level of detail which it captures and feeds back to management. For example, Figure 1 contains an illustration of a Kousuu based on labour working hours for a particular production process for a specified time period. From left to right there is a hierarchical decomposition which first classifies working time into that which adds value (basic working hours) and that which does not (line management hours) and then a further subdivision is made into direct or support work and finally a segmentation into the detailed activities which constitute each of these components.

This decomposition is one of the advantages of Kousuu as it highlights how resource is consumed and in so doing it facilitates the identification of non-production time and guides managerial policy on continuous operational improvement. Monitoring the Kousuu over time (often daily) also assists in locating problems at an early enough stage to permit prompt remedial action not only by managers but by operatives.

These attributes are further enhanced by establishing responsibility linkages for Kousuu components. For example, all of the basic working hours will typically be the responsibility of the production engineering department. They will attempt to devise new work methods and work support services which will improve the utilisation of direct work time. The line management hours will be the responsibility of the production department who will attempt, over time, to reduce and/or eliminate the non value added work time from this component.

Figure 1

Working Hours for Kousuu

Type of working hours			Activities
Working hours (WH)	Basic working hours (BWH)	Net working hours (NWH)	1. machine loading and unloading 2. working manually or operating machines 3. supplying parts daily 4. washing processed parts and finished products 5. measuring processed parts and finished products
		Incidental working hours (A)	1. walking between process 2. dressing parts and products 3. loading parts on automatic machines 4. adjusting machine tolerance 5. checking size of processed parts and finished products by random sampling 6. cleaning for checking size of processed parts and finished products by random sampling
	Line management hours (LMH)	Incidental working hours (B)	1. turn on and off the main switches 2. preparing parts for manufacturing 3. preparing and checking tools 4. checking machine and supplying oil 5. cleaning machines and floors 6. warming up and training machines 7. holding preliminary meeting and making contact with workers 8. checking blue print
		Incidental working hours (C)	1. changing cutting or grinding oil 2. changing running or lubricating oil
		Set up hours (SU)	1. changing fitting and fixing tools 2. changing manufacturing tools
		Artificial delay hours (AD)	1. relating to abnormal shop floor works 2. relating to factory management 3. relating to personal issues
		Waiting hours (W)	1. waiting for manufacturing parts and products

Kousuu therefore represents a set of regularly available performance measures for use at many levels within the business. In this role they relate to various dimensions of performance, including production line productivity, production support efficiency, cost management effectiveness and human resource management and allocation. Frequently for performance measurement they are expressed in the form of Gentani (computed by dividing the columns in Figure 1 by the number of funded products manufactured). This type of analysis highlights the significance of the various Kousuu components in a way which is directly related to actual achievements in respect of meeting target costs. They allow progress towards meeting a cost target to be monitored and reflect over time the success of the firm's efforts to continually improve.

One notable feature of Kousuu is the segregation of work time into its value added and non-value added components. Identification of non-value added hours provides a focus for cost reduction effort. It also facilitates the common use of the ratio of value added to non value added time components which represents another important kousuu based performance measure for production management. Pressure to reduce this measure intensifies the quest for elimination of non-value added work time. Indeed it is a key test of most Japanese cost management policies and initiatives that they will impact favourably on the organisation's Kousuu. Reduction of Kousuu is a key indication of cost effectiveness. Without clear evidence of this the cost implications of any new development can be called into question as they will lack managerial credibility. Thus the analysis of any new production initiative's impact on Kousuu will be a crucial element of the case for its adoption.

Kousuu do however require to be used with care as they impinge on the sensitive issue of employees' work time. They put the employee under the microscope, and in so doing they do promote a pressure on both the individual and group to continuously improve. If taken too far such pressure can be dysfunctional. For example, while the elimination of slack does appear to offer a ready means of improving costs it may have other consequences. Employees may lose some of their freshness as work intensity increases, innovation and creativity may be stifled and ultimately both workforce morale and output quality are compromised. Kousuu are therefore best used as a constructive support system for improvement rather than as a punitive control device.

4. Kousuu-Based Reports

The above description provides a general perspective on the type of information provided by Kousuu. However to improve its analytical potential the Kousuu results need to be put into meaningful context. In addition to the tracing of actual trends, expectations and improvement targets can be incorporated into a system of Kousuu reporting. Consequently in addition to the decomposition analysis shown in Figure 1, Kousuu can also form the basis of a set of periodic reports. These permit management (1) to feedback and match operational performance with locations and employees, (2) to set it in the context of expectations and, (3) to link it to suggestions and policies for improvement. Five reports lie at the heart of the Kousuu-based reporting system which achieves these three objectives. The nature of each of these reports is now considered in turn.

REPORT I

Detailed actual Kousuu Statement

(1) Working section	(2) Line No.	(3) Line Name.	(4) Total Kousuu	(5) Production units	(6) Trial product units	(7) 1) Trial product	(8) 1) Process Management	(9) 1) Loss	(10) 1) Product Mix	(11) 1) Total extra hour	(12) 2) New production learning time	(13) 2) Teaching	(14) 2) Quality	(15) 2) Total

Columns 1-3 specify the Kousuu location. Column 4 and 5 provide the actual Kousuu allowance for the actual production units of established products. Where a new or trial product or technology is in process an additional section is included (columns 6-11). This specifies the units produced and the total expected Kousuu allowance. In addition the breakdown of any extra Kousuu time caused by product or technology novelty is provided (columns 8-10). Finally an analysis of support work times for all products is given (columns 12-14).

Report I is produced daily as a means of tracking the actual level of Kousuu achieved in the factory. A variety of this style of report is produced, each specified for individual work sections on particular production lines. Its content, which is summarised above, can be extended to incorporate the level of detail shown in Figure 1. To provide further detail and context, information is also produced on trial products which are being manufactured for the first time and on product mix, losses occurring, teaching or instruction time and quality of output. Thus the performance of several dimensions of actual operational work activity is captured in a regular and detailed manner which permits management to monitor key trends in its effectiveness and efficiency. To fulfil its feedback role the report is, typically, checked daily and also submitted on a monthly basis to managerial meetings. Importantly it is also used to provide useful daily feedback to those involved in carrying out the operational work. Its daily appearance shows trends clearly, guides remedial action and fosters the motivation for staff to keep improving on past actual performance.

Columns 1-7 locate and summarise the data from Report I. Columns 8-11 provide a comparison of current and past Gentani for established product work-time and for identifying work hour savings made. Columns 12-15 provide the same information for the support work.

REPORT II

Detailed Kousuu Reduction Statement

(1) Working section	(2) Line No.	(3) Line Name.	(4) Total Kousuu	(5) Producti on units	(6) Trial product units	(7) 1) Trial product	(8) 1) Process Management	(9) 1) Loss	(10) 1) Product Mix	(11) 1) Total extra hour	(12) 2) New production learning time	(13) 2) Teaching	(14) 2) Quality	(15) 2) Total

Report II is based on the daily actual Kousuu statement. Its focus is however on the savings made in Kousuu during the last six month period. These savings are presented by expressing the Kousuu in Gentani (hours per unit) form. Thus the average actual performance for the current and preceding half years can be compared and savings highlighted. The availability of this report emphasises managerial interest in continual improvement and therefore stimulates employees to continually make efforts to effect the savings which will show up as a positive attribute of their performance on this report. The use of Gentani helps all concerned to appreciate the potential significance of their efforts in terms of improving the unit cost of outputs and so enhancing the competitive strength of the firm.

REPORT III

Kousuu Established Product Budget Statement

(1) Cost centre	(2) Line section	(3) Line Name.	(4) Last ½ year actual Kousuu/unit	(5) Current ½ year	(6) Total Kousuu	(7) Production units	(8) Kousuu /unit	(9) Saved Kousuu	(10) Saved %	(11) Next ½ year	(12) Total Kousuu	(13) Production units	(14) Kousuu /unit	(15) Saved %

Columns 1-3 locate the data. Column 4 provides the most recent Gentani as a comparator. Performance for the most current half year is then summarised in columns 5-10. Finally lines 11-14 provide a projection of the expected Kousuu for the forthcoming half year and the Kousuu savings expected are explicitly identified.

Report III incorporates the budget expectations for the firm's established products Kousuu for the forthcoming half year. To provide a context for this the actual performance for the most recent half year is provided. The budget specifically incorporates a target for Kousuu savings expressed both in absolute and percentage terms and so again reinforces the quest for continual improvement. It is at this stage that the system can be formally linked to the practice of target costing by ensuring that the budget incorporates the levels of performance required to meet the market determined production standards established by target costing exercises.

REPORT IV

Kousuu for Kaizen Activity Statement

(1)	Working hour structures	(NWH)	(A)	(B)	(C)	(SC)	(AD)	(W)
(2)	Production Process							
(3)	Process X (Actual Working Hours)	(NWH)	(A)	(B)	(C)	(SC)	(AD)	(W)
(4)	Process Y (Actual Working Hours)	(NWH)	(A)	(B)	(C)	(SC)	(AD)	(W)
(5)	Process Z (Actual Working Hours)	(NWH)	(A)	(B)	(C)	(SC)	(AD)	(W)
(6)	Standard working hours (for each process)	(NWH)	(A)	(B)	(C)	(SC)	(AD)	(W)
(7)	Kaizen activities Proposal	1,2,3	1,2,3	1,2,3			1,2	1,2

Abbreviations: The abbreviations used are listed below, they correspond to those used for the component figures in Figure 1.
(NWH) = Net working hours, (A) = Incidental working hours of A (B) = Incidental working hours of B, (C) = Incidental working hours of C, (SU) = Setup hours, (AD) = Artificial delay hours, (W) = Waiting hours.

Line 1 gives the columnar headings. Lines 3-5 provides the actual Kousuu for three production processes. Line 6 identifies the standard Kousuu which applies to each of the production processes. Finally line 7 contains the Kaizen activities proposed to redress the unfavourable Kousuu variances. The numbers given relate to those contained in Figure 2.

Report IV links the Kousuu control and feedback system to managerial action. This is achieved by presenting the Kousuu in the segmented form outlined in Figure I and by providing a direct comparison of it with the budgeted specification. Variances between budget targets and actual performance are therefore identified and the report construction also visually highlights the extent of variances by recording the actual figures for the components of each process Kousuu in rectangles which are in proportion to their actual magnitude vis-a-vis the standards established. Thus the boxes (for each process) above for the actual working hours will normally be larger or smaller than the size of the corresponding standard working hours box to indicate favourable or unfavourable variances. Finally the proposals for addressing variances are listed in the report. For example, the specific suggestions listed in Figure 2 would, in fact, be listed in the final box of the report and would provide the basis for improvements to bring actual performance, at least, in line with the budgeted specification. To ensure that remedial action is under way, these Kaizen activities would have to be specifically listed in some detail with their Kousuu impact quantified in order to facilitate future ex-post audits.

Figure 2

Kaizen Activities*

Net Working Hour Variances	
1	Speed up work activity
2	Eliminate/reduce non-value added activity
3	Introduce new machinery
Incidental Working Hour (A) Variances	
1	Change work layout
2	Increase productivity of lines
3	Introduce more automation
Incidental Working Hour B, C and Set-up Hour Variances	
1	Change approach
2	Adopt one-lathe tool changing system
3	Reduce number of changes
Artificial Delay Hour Variances	
1	Reduce machine watch staffing
2	Re-balance work to staff
Waiting Hour Variances	
1	Re-schedule throughput to minimise
2	Find alternative work for employees to do

* Numbers correlate to those on Report IV, line 7.

REPORT V

Kousuu Budget Statement when Investment and Kaizen Activity are Planned

(1) Trial products for next % year	(2) Extra Kousuu for next % year	(3) Last % year actual Kousuu/ unit	(4) Current % year: Total Kousuu	(5) Producti on units	(6) Kousuu/ unit	(7) Saved Kousuu	(8) Saved %	(9) Next % year: Total Kousuu	(10) Production units	(11) Kousuu/ unit	(12) Investment effectiveness	(13) Kaizen effectiveness	(14) Saved Kousuu	(15) Saved %

Columns 1-3 establish the products concerned and their budgeted total Kousuu. Columns 4-8 provide data on current performance and columns 9-11 and 14-15 provide comparable projections for the coming half year during which investment and Kaizen activities are planned. Two further types of projection are included (columns 12 and 13). First (column 12) the expected reduction in Kousuu from new capital investments in manufacturing technology is specified. Second (column 13) the expected Kousuu reduction from Kaizen activities is also specified.

Report V is a close adjunct to the fourth. It is essentially a budget supplement which is specifically devoted to situations where capital investment and Kaizen activity are expected to occur. Columns are included which establish the returns which these initiatives should generate in terms of reductions in the Kousuu. It is particularly pertinent in organisations where the product range is extensive and the product life cycles are short. In these circumstances emphasis is given to the expected return (in terms of Kousuu reduction), to be achieved from investment in capital equipment and from Kaizen activities as these are normally the key ways in which new product manufacturing time can be reduced, lead times to market improved, cost effectiveness enhanced and the commercial exploration of innovation enhanced.

5. *Using The Kousuu System*

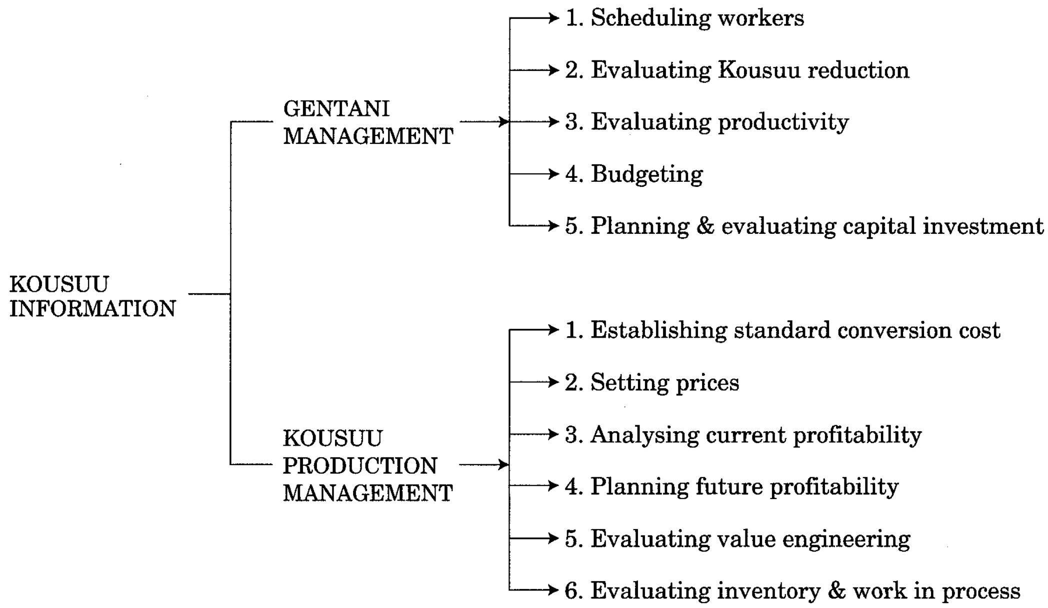
As illustrated above, Kousuu provides the basis for generating a regular flow of highly detailed information on operational performance. This information not only provides timely feedback to management but provides the foundation for three specific areas of cost management.

(1) Operational Management

Figure 3 outlines how the analysis of Gentani and Kousuu can provide a wide ranging input into the management process.

Figure 3

Operational Management



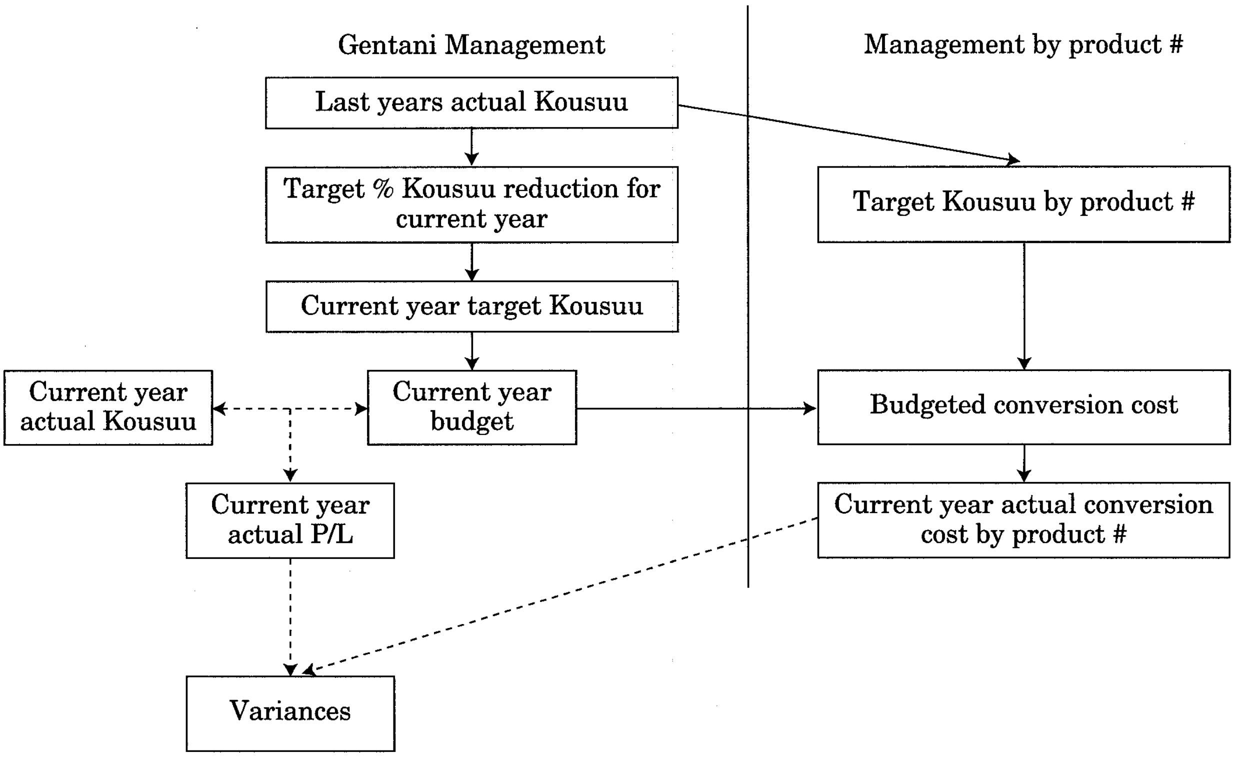
Kousuu information allows a comprehensive monitoring of the conversion cost elements of all in-house products, and enables relevant standards of performance to be established and communicated to all concerned. When multiplied by the appropriate charge rates, Kousuu forms the basis of a cost accounting system for products. Consequently it provides one of the key decision inputs for the manufacturing company. For example, in Gentani form it underlies unit cost levels and is therefore a useful basis for evaluating productivity and establishing future plans and targets. Moreover Kousuu provides insight into product portfolio analysis and planning. Controlling cost is one way of improving profitability and reductions in Kousuu are one means of achieving this aim. Alterations in Kousuu also have implications for pricing policies to be adopted by the firm. Finally, the success of value engineering activity (undertaken to achieve target cost levels) can also be achieved by delivering changes in Kousuu and the work time spent in producing for inventory rather than specific customer orders can be identified and assessed.

(2) Kousuu, Budget and Costs

One important aspect of Kousuu is the key role which it plays in establishing meaningful targets for the production function and in the translation of these targets into budgets. Figure 4 outlines how Kousuu is used for these purposes.

Figure 4

Kousuu, Budget and Costs



The generation of budgets in Kousuu form underlies the financial budgeting process. Thus the work time implications of budgets are also available and can be used to communicate both the budget and variance feedback to the appropriate areas of responsibility in the firm. In this way the Kousuu contributes to the conversion cost budgets and through this element of the master budget to the overall profit plans and budgets of the organisation.

(3) Kousuu and Value Engineering

Kousuu provide an important part of the Japanese firm's value engineering work. Targets are established at divisional level in terms of revenues, costs and profit margins. These are then decomposed to provide guidelines for the production sections in the firm. For conversion cost these take the form of Kousuu. The production section will use the firm's value engineering section to assist it in modifying its process of manufacturing (and in altering the product design) to achieve the set targets. Where significant cost reductions are required the necessary changes are identified from analysis of past Kousuu and are expressed in the time and work changes profiled by the Kousuu. Thus Kousuu, rather than costing, provides the basic guidance for identifying and managing the continuous process of enhancing productivity and reducing cost.

6. Conclusion

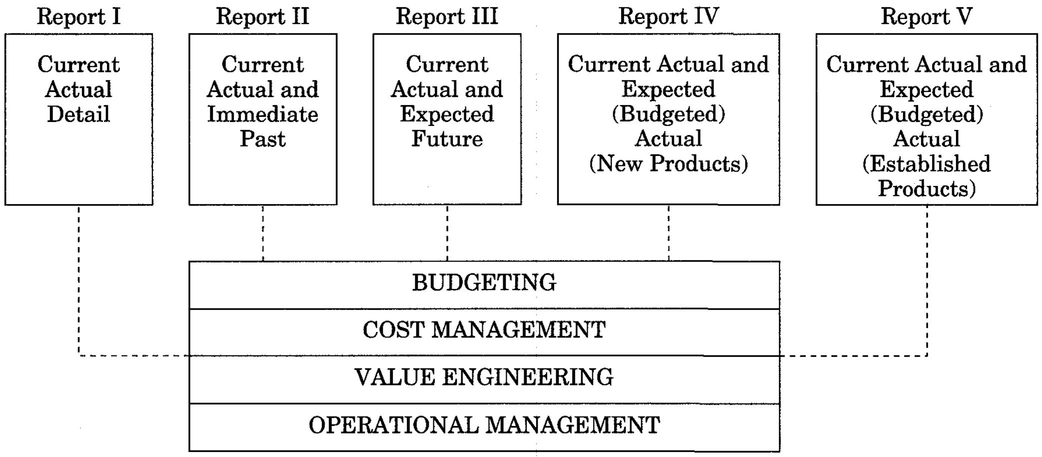
The set of five reports described above constitutes the formal documentation of the Kousuu system. Together they give a constructive visibility on how resources have been and are expected to be consumed in the organisation. They play an important role in operational management, budgeting, and value engineering and cost management. Figure 5 illustrates how these reports combine to support their underlying objective of improving the economy of resource use, so reducing cost and enhancing financial performance. All of the reports can (ex-ante) initiate and (ex-post) indicate the success of Kaizen activity. They therefore support an ongoing cycle of improvement and feedback which operates both at managerial and operative levels.

Each of the reports are related to the previous ones. Each draws on the information content of the prior one to ensure that together they first identify, and then place current work performance in the context of the recent past achievements and the expectations which were previously set for it. In this way an assessment can be readily made of how successful the operational conversion work has been and guidance provided for future action.

This information provides a basis for reporting to higher management. It readily allows the operational activity of the firm to be monitored by them. However it has an important dual function for it also contains the detail and is in a form (non-financial) which makes it suitable as feedback (both the absolute figures and the comparisons with past and budgeted figures) to those carrying out the operational work. The formal linking of results with operational action on a daily basis re-enforces and intensifies the pressure to deliver cost savings. In addition it informs operational personnel about the success of their past efforts. Their responsibility for improving performance is clarified by the system and their actions given the visibility which encourages staff involvement. In these aspects lie the great strengths of Kousuu.

Figure 5

The Kousuu Reporting System



Thus Kousuu is a fundamental part of many of the cost management systems in Japan. It allows managerial strategies to be translated into meaningful targets, it allows progress to be monitored closely and it gives visibility to employee efforts to improve Kousuu and therefore enables performance measurement to be linked in a constructive manner to the functions of control and decision making. It underlies the success of more prominent processes such as target cost management and continuous improvement. If cost reductions are to be effected it is to Kousuu that Japanese management and operatives look both for a source of ideas and for a measure of the success of their efforts. The acid test for new policies or practices aimed at improving cost effectiveness is their ability to eliminate or reduce Kousuu.

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事例研究

ITによる製造間接部門のコスト低減活動：産業機械メーカー「コマツ」の事例

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＜研究要旨＞

ビジネスプロセスリエンジニアリング（BPR）は，急速に進歩している情報技術を積極的に取り入れることにより間接部門の抜本的な業務改革を断行する方法として注目すべきものである．しかし，BPR手法をそのまま日本企業に適用することは容易ではないことが既にいくつかの報告で指摘されている．

本研究では，BPRを狭義に「IT（情報技術）による間接部門のコスト削減活動」ととらえ，その方法論について検討した上で，産業機械メーカー「コマツ」における素材製造，溶接板金製造，機械加工，組立の各生産準備業務に適用した．同社では，業務改革プロジェクトが発足され，まず，ビジネス プロセス フローが帰納法と演繹法の両方で詳細に分析された．すなわち，従来プロセスの重複を解消するだけではなく，最先端のITにより可能となる新しいプロセスの導入を考え，複数の従来プロセスを省略することが検討された．例えば，コンピュータ ネットワークでデータベース化されたコストテーブルを共有化し，コスト見積業務を効率化すること，カスタマイズされたCADを開発することにより図面管理と作図業務を効率化する，EDIにより関連会社とのデータ交換をより迅速に正確に行うことなどが進められた．これにより，今まであまり改革が進んでいなかった製造間接部門のコスト低減が実現された．

＜キーワード＞

ケーススタディ，産業機械メーカー，リエンジニアリング，情報技術，生産準備業務，コスト削減，間接業務

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1. はじめに

M. HammerとJ. Champyの著書「Reengineering The Corporation」[4]が話題となり，日本でもビジネスプロセスリエンジニアリング（BPR）を検討する多くの企業が現れた．M.Hammerらの提唱するドラスティックな改革は大きな効果が期待できる反面，リスクも大きくボトムアップで行われてきた日本的な業務改革のプロシージャには受け入れられにくいという問題点が指摘されている（例えば，[1]，[2]，[11]，[12]，[13]，[14]）．また，最近では，ABC / ABMから最適なリエンジニアリングへのアプローチについて研究がさかんに行われている（例えば，[10]）．しかし，事例研究については十分公表されているとは言えず，BPRの実践方法については，依然として各者各論があるという状態にとどまっている．

一方，ここで取り上げた産業機械メーカーのコマツなど日本の製造業では，厳しい経営状態の中で，とくに間接部門の生産性向上が重要課題のひとつとして挙げられている．従来から，生産工場の現場では，製造直接費を下げるために産業ロボットや自動機械がラインに並べられ，合理化が積極的に進められてきた．しかし，製造間接費の内訳でそのウエイトが高い生産準備業務などにおいては十分な改善が実施されてきたとは言い難い．これに対して，進歩著しい最近のIT（情報技術）を適用すれば，間接部門のコスト低減が実現できる可能性は大きい．

以上のような背景から，本研究では， BPRそのものを適用するのではなく，それを狭義にとらえた「ITによる間接部門のコスト削減」を実現することを目標に，その方法論について検討した．さらに，著者自らが実際にコマツの生産準備業務のコスト低減活動に携わり，その方法論の効果を実証した．本稿ではその概要について報告する．

2. 「コマツ」での生産準備業務

事例研究を実施した産業機械メーカー「コマツ」では，製品設計から量産まで以下のような流れで業務が行われる．すなわち，設計部門で新しい製品の構想図が作成された後に，まず，ひととおりの生産性検討が行われる．さらに，その結果を考慮して設計部門から部品図が出図され，各製造部門において量産に入る前の数々の準備業務が行われる．同時に，営業部門やカスタマーサポート部門にも新製品に関する情報が伝達され，営業戦略や販売促進活動計画が立案される． 図1にその情報の流れを模式的に示す．設計部門から出た「図面情報」は各部門に伝達された後，「パーツブック」や「機械加工のNCデータ」，「工程設計書」というように様々に加工され，その姿を変えていく．このデータ変換作業の一

つひとつが生産準備業務である．

図2に，量産に至るまでの生産準備業務に関する各プロセスの関係を示す．例えば，鋳造素材製造部門では，素材をつくるための方案設計，型設計が行われ，製造ラインでの作業指示票が作成される．板金溶接部門の場合には，切板図の作成，工程設計，ロボットのティーチングなどの作業が行われる．機械加工部門では，工程設計，治工具設計などが行われ，とくにFMSラインの場合には重要な準備業務として複数のワークの生産計画の立案などが実施される．組立部門では，需要に合わせた生産計画，作業者の数とラインピッチを考えた組立作業指示票の作成が重要である．

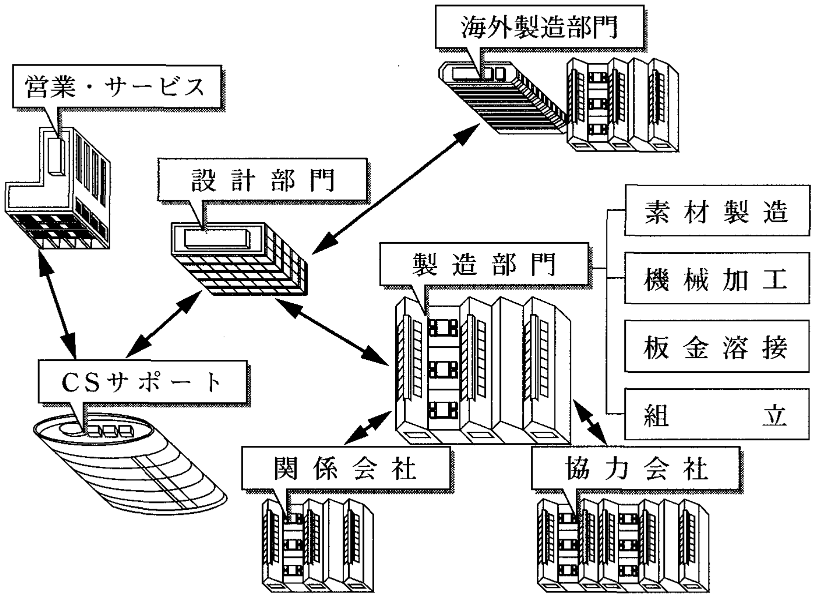

図1.　製品情報の流れ（模式図）

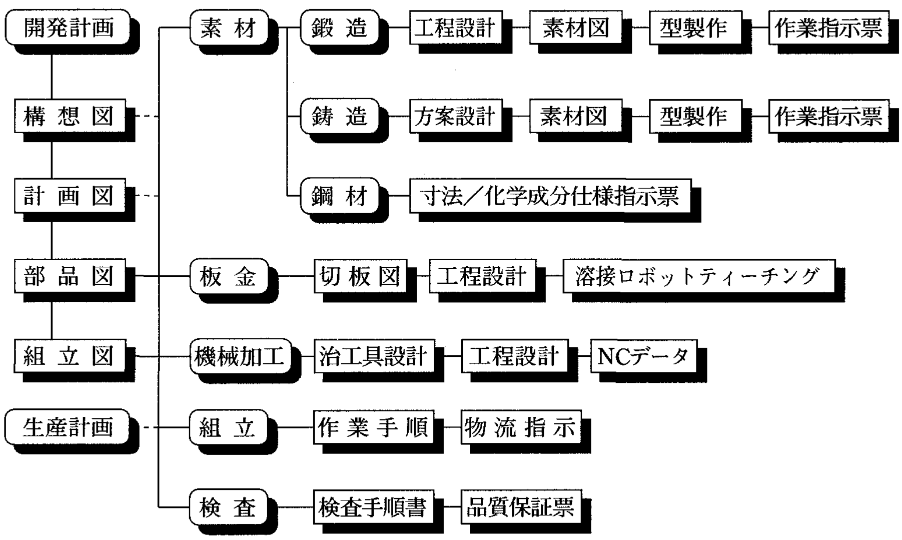

図2.　製造間接部門での生産準備業務

量産プロセスについては，従来から多くの投資が繰り返され，FMSを中心とした自動化ラインが稼働し，完全な無人化工場も実現されるに至っている．その一方，製造間接部門の重要な業務である生産準備業務については，改革が積極的に行われてきたとは言えない．そればかりか，従来に比べ産業ロボットの稼働台数が大幅に増加し，NCデータの作成業務が飛躍的に増えている．また，最近とくに需要動向の変化が激しく，ライン編成の組み替えが頻繁におこり，作業指示票などの多くの帳票類を作成し直すという業務が増えている．さらに，自社内の稼働率を考慮しながらの海外からの部品調達，内外製区分の決定や原価計算業務が従来よりも複雑になっている．

これらの生産準備業務は多様であり，業務結果は何等かの帳票類またはコンピュータデータとして保存される．そこでは多くのホワイトカラーの手作業をともなうことになり，製造間接費の増大をまねいている[5]．

ここでは，生産準備業務にたいして最先端のITをうまく取り入れた業務の形態に変更することによって，間接部門のコスト低減を目指した．

3. 「ITによるコスト低減活動」の定義と実施方法

3.1 間接費の低減とBPR

渡辺の著書[13]を参考にして，従来の合理化，SIS（戦略的情報システム），BPRという3つの合理化活動の特徴を比較したのが表1である．

	リエンジニアリング	SIS	合理化
期待効果	人員削減　収益向上　コスト削減		
成果の享受者	経営者	経営者	各担当部門
志向性	トップダウン	トップダウン	ボトムアップ
合理化対策	ビジネスプロセス	経営企画	各単体業務
リスク	大	中	小

表1　経営合理化活動の比較

一般的な合理化活動は「改善活動」と称され，各担当者が自らの業務の効率化のために実施し，その成果を享受するとともに結果的にその企業の経営に貢献するものである．従来は，このボトムアップ活動が日本企業の強みであると言われ，とくに製造業の直接部門では大きな効果を生み出してきた．

従来（とくに1980年代まで）の間接部門における情報技術の利用では，人間にとって

煩わしいことを如何にコンピュータで効率的に代替できるかについて考えられていた．つまり，単純な事務業務については効率が向上したものの，種々雑多なデータを柔軟に処理しなければならない生産準備業務では，依然としてその適用効果は限られたものであった．

一方，経営判断のために情報を収集，分析するツールとして構築されたSISでは，企業トップのための情報収集ツールとして有効であるが，生産準備業務の効率化に直接結びつくものではない．

BPRは，部門間の壁をこえ，プロセスに注目して抜本的に業務の改革を行うものである．つまり，過去の方法，組織をすべて否定し，本来のあるべき姿，あるべきプロセスの体系を新たに構築するというものである[4]．大きな効果が期待できる点で経営者にとって魅力的であるが，反面リスクも大きいという特徴がある．この基本的な考え方を受けて，具体的な方法論に展開した例がいくつか報告されているが[6]，[11]，ここで対象としている生産準備業務への適用を考えた場合にはさらなるブレークスルーが必要となる．BPRで掲げる「白紙の状態からの不連続的飛躍」が果たして合理的であるかどうか疑問視する意見[1]，[14]やいわゆる日本的経営との適合性に問題があるとの指摘[2]が報告されている．

一般の製造業では，「製品を生産し世の中に送り出すことが第1の目標であり，それによって企業が成り立っている」というパラダイムが存在する．「モノづくり」にこだわり，従来から何年もの間ノウハウの蓄積や改善活動を続けてきた結果として現在の業務プロセスが存在しているという意識は根強い．それをすべて否定して，抜本的に改革されたまったく別のプロセス案が考え出せるかどうか．考え出せたとしてもその有効性をどのように証明し，誰がどの立場で具体的に実行するのか．また，日本企業での雇用に関する規約，慣例を十分に考慮する必要がある．BPRの実践では，パラダイムや企業文化などのいくつもの壁にぶちあたる．とくに，ここで対象とする間接部門の生産準備業務の場合には，考え出された改革案が生産技術の成熟度を現実的に反映したものでないかぎり意味がない．

日本企業でのリエンジニアリング成功の条件として次の4つの項目があげられている[9]．①経営トップの不退転で強力なリーダーシップ，②顧客満足向上に基づく明快な経営ビジョンの提示，③中間管理職の説得，再教育など適切な「余剰人員対策」，④オープン，ネットワーク系を中心とした情報技術の有効活用．仕事の流れが抜本的に見直された結果，余剰となったホワイトカラーの受け皿がなければ，BPRの実現は難しい．また，ミドル（中間管理職）の日本企業における権限，実質的な責任範囲が，日本企業と米国企業では異なる点も注意されなければならない．事実，日本企業ではミドルの個人的な才覚で，仕事の流れがスムーズになったり，逆に情報の流れを遮断してしまうことが多い．ミドルがBPRの必要性を認識することが是非とも必要である．すなわち，Hammerらの定義をそのまま用いて，

BPRを日本企業の生産準備業務へ適用し成功することは容易ではない.

そこで，本研究では，BPRでの「プロセスに注目すること」という考え方を応用しながら「情報技術による間接部門のコスト低減活動」を実施することにした．しかし，企業の既存の問題に単に情報技術を適用しただけでは，旧来の考え方や行動パターンをそのまま継承することになり無意味である．情報技術の適用によって解決策を発見するためには演繹的な発想が必要である．その点では，BPRでいわれる「根本的な改革」と共通した考え方が必要である．従来のプロセスの問題を認識し，それに対する解決策を見つけ評価するという帰納的な思考だけでは，有効な解決策が見いだせない．ここでは，演繹的なアプローチを明確に示すために，「近年急速に変化，進歩している情報技術を適用すれば生産準備業務プロセスが刷新できるはずである」という基本となる指針を設定した．そして，M.Hammerらのトップダウン型，劇的なBPRの進め方に対して，ここでは，目標は同じように大きくとらえるものの，ミドルアップ型，漸進的な進め方を推奨する．ただし，その背景には経営トップの理解とリーダーシップが必要であることは言うまでもない.

3.2 実施方法

上述した定義と基本方針に沿って本研究で実施したITによるコスト低減活動の具体的な進め方について説明する（その概要を図3に示す).

(1) ITによるコスト低減活動の責任者

活動は，事業責任者の指示からスタートするべきであると考えた．この点は，Hammerらが BPRにおいて指摘しているとおりであり，その改革を実施できる権限をもったリーダーとして経営トップのうち最低1人が必要である．ここでの事例研究でも，経営トップの指示からBPRが始まった．その点では表1のBPRの欄にあるようにトップダウン型であるとも言える.

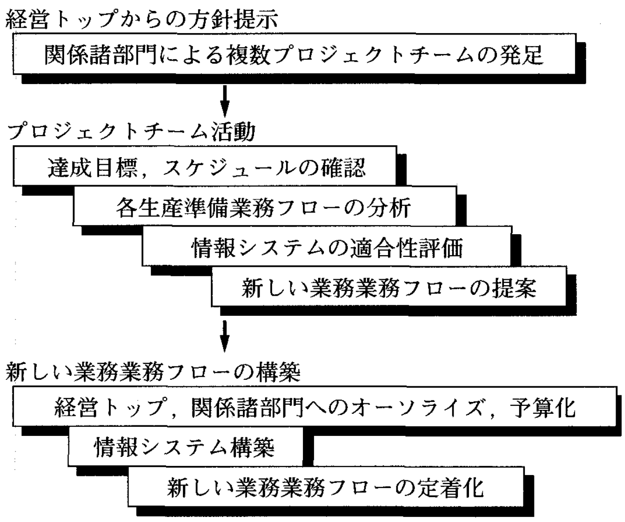

図3. ITによるコスト低減活動の進め方

(2) プロジェクトチーム制

実際の企画，実行は中間管理職（いわゆるミドル）によるプロジェクトチームで行い，ミドルが自らの問題としてこの活動を行った．形態的にはトップダウン型であるものの，実質的には活動の途中で経営トップのコンセンサスを得ながら成果をあげていくというミドルアップ型の活動を実施した.

これは，BPRをあくまでトップダウンのアプローチによって実行すべきであり，変革に対する恐れを抱いているミドルを中心に実行するべきではないとするM.Hammerらの考えに対抗するものである．

恒久的な企業の発展を望むための活動であるならば，トップが組織のメンバーの可能性を信頼することが不可欠であり，将来の変革をも継続させるミドルの支持を得ることが成功の必要条件であるという考えは重要である[14]．

具体的には，経営トップからの指示により各専門部門および本社管理部門，情報システム部門，研究所からスタッフを集めプロジェクトチームが構成された．つまり，職能横断的なチームに情報技術部門のスタッフを組み合わせてチームが構成されたのである[11]．

(3) ITによるコスト低減活動の目標設定

活動の目標は，人員削減ではなく，コスト低減であることを明確にすることが重要であった．ここでは，劇的に改革するという将来プランを構築した後，実行にあたっては中期目標を定め，漸進的に実現していくという方法をとった．M.Hammerらは，小さな前進を積み重ねる文化が強化されることは悪であり，それは勇気のない会社をつくり上げてしまうことに結びつくと指摘している．しかし，ここでは日本的企業経営へ適応性を考え，あくまでプロジェクトの最終目標を劇的な改革に置くものの，漸進的に成果をあげていくという進め方をとることにした．

ここで，プロジェクトチームの達成目標とスケジュールを検討，確認し，経営トップの理解を得ることが必要であった．

(4) 業務分析

「プロセスに注目する」ことを念頭に，3つの着眼点を用意し，帰納的および演繹的に各生産準備業務のフローを徹底的に分析した．業務フローの記述には，従来のデータフローダイアグラム（DFD）や最近ではCALSに準拠したIDEFOなどがよく用いられる．IDEFは米空軍が1977年にスタートとした研究開発プロジェクトICAMの中で開発されたもので，機能分析，データフロー記述，ER図記述，ワークフロー分析などの，業務分析から始めて情報システムを構築するための各種ツールセットの総称である．IDEFOは，その中で業務システムにおける決定・動作・活動のプロセスをトップダウンで，階層的に詳細化し，図式表示するものある．一方，山本らの「経営改革の実践方法」[3]には鳥瞰図として業務フローの記述法が紹介されている．それらを参考にし，ここでは，各組織でどの業務を担当しているかではなく，その生産のためにどのようなプロセスが行われているかを図4のような業務フローチャートとして詳細に記述した．このとき，書式はとくに問わないものの，平均作業時間，停留時間，その各プロセスでのアウトプット（帳票やコンピュータ入力されるデー

タ）についてとにかくありのまま列挙することが重要であると考えた．

工　程	作業時間	停留時間	作成される帳票類 コンピュータデータ
画面検討	1 D		
工程設定	2 D	1 D	工程設計書
切板図作成	1 D	1 D	切板 CAD 図
原価見積	3 H		見積原価計算書
手配書作成	2 H	1 D	手配書
ロボットティーチング	1 D	2 D	NCデータ
試　作	2 D	1 D	試作指示票
検　査	1 D	2 D	品質検査書
工程見直	1 D	3 D	工程設計書
量　産			
合計時間	9.5D	11D	

図4.　業務フローチャートの記入例

業務フローを書き出した後には，改革案の導出を行うための分析が必要である．近年，ABCのマネジメントとしての活用を総称したABM（Activity Based Management）がBPRと結びつき，注目されている．そこでは，＜1＞ビジネスプロセス分析，＜2＞プロセス・アクティビティの定義，＜3＞プロセス・アクティビティ別原価集計，＜4＞プロセス価値分析，＜5＞改善案の作成という5つのステップで改革案の捻出が行われる．このアクティビティ分析では，アクティビティを細分化したプロセスのレベルで業務フローを記述した後，プロセスを処理時間ばかりでなくコストとして定量的に把握する．つまり，各プロセスについて付加価値を生むものかどうかを検討し，その価値（V）は，機能（F）/コスト（C）の算式で表され，コスト低減余地（C－F）を計算し比較することができる．アクティビティの分類は，例えば，2区分（付加価値活動と非付加価値活動）または3区分（コア，支援，付随アクティビティ）などに分けられ，吟味される．一般的なアクティ

ビティの割合は，コア30％，支援35％，付随35％であるといわれている．

このABMでは，実際の業務に適用する場合に，価値Vの定量値をどのような基準で算出するかが課題である．また，実際の間接業務でアクティビティ分析を行うには，アクティビティごとの工数に関するデータを収集する仕組みが必要である．本事例研究の場合，短期間にコスト低減の目標設定を行うことが要求されたこともあり，ABMのコスト低減活動への適用については今後の課題とした．また，このような価値分析は目的ではなく，業務改革案を考え出すための手段であると言える．従って，このような帰納的なアプローチ以外に，演繹的に改革案を考える切り口も必要であると考えた．

ここで実施した業務フローの分析方法は次のとおりである．すなわち，以下のような着眼点（a），（b），（c）を用意し，業務フローチャートを書き換えていく（図5参照）．着眼点（a），（b）は，帰納的な分析方法であり，（c）は演繹的な分析方法である．

（a）メインプロセスとサブプロセスの区分

①必要不可欠であるメインプロセス，②メインプロセスに付帯したプロセス（付帯サブプロセス），③第3者への説明，報告のためのプロセス（説明サブプロセス）の3つに分けた後，サブプロセスの省略やコンピュータ化を検討する．図5の着眼点（a）に，この切り口による分析の結果を模式的に示す．この例では，プロセス2と3がプロセス1の付帯サブプロセスであり，プロセス5がプロセス4の説明サブプロセスであることを示している．このようなプロセスの区分については，複数のスタッフによって付加価値を生む業務であるか否かの分析的検討を行い，決定した．

（b）重複プロセスの摘出

プロセス別に分析し，客観的に見て形態は異なっても内容が重複しているプロセスを摘出した．とくに，担当部門内では唯一のプロセスであると思っていても，他の部門まで横断的にみれば，形態は若干異なるものの内容の同じプロセスがないかどうかについて注目した．図5の着眼点（b）の例では，プロセス2とプロセス4，プロセス1とプロセス5が重複していることを模式的に示したものである．

（c）新プロセスの組込

図5の着眼点（c）で示すように，新しいプロセス（とくに情報技術を駆使したプロセスを創成し（図5着眼点cではプロセスA），組み込むことで他の複数のプロセス（図5着眼点（c）ではプロセス3，プロセス4）を省略する，あるいは大幅に改善することを狙った．

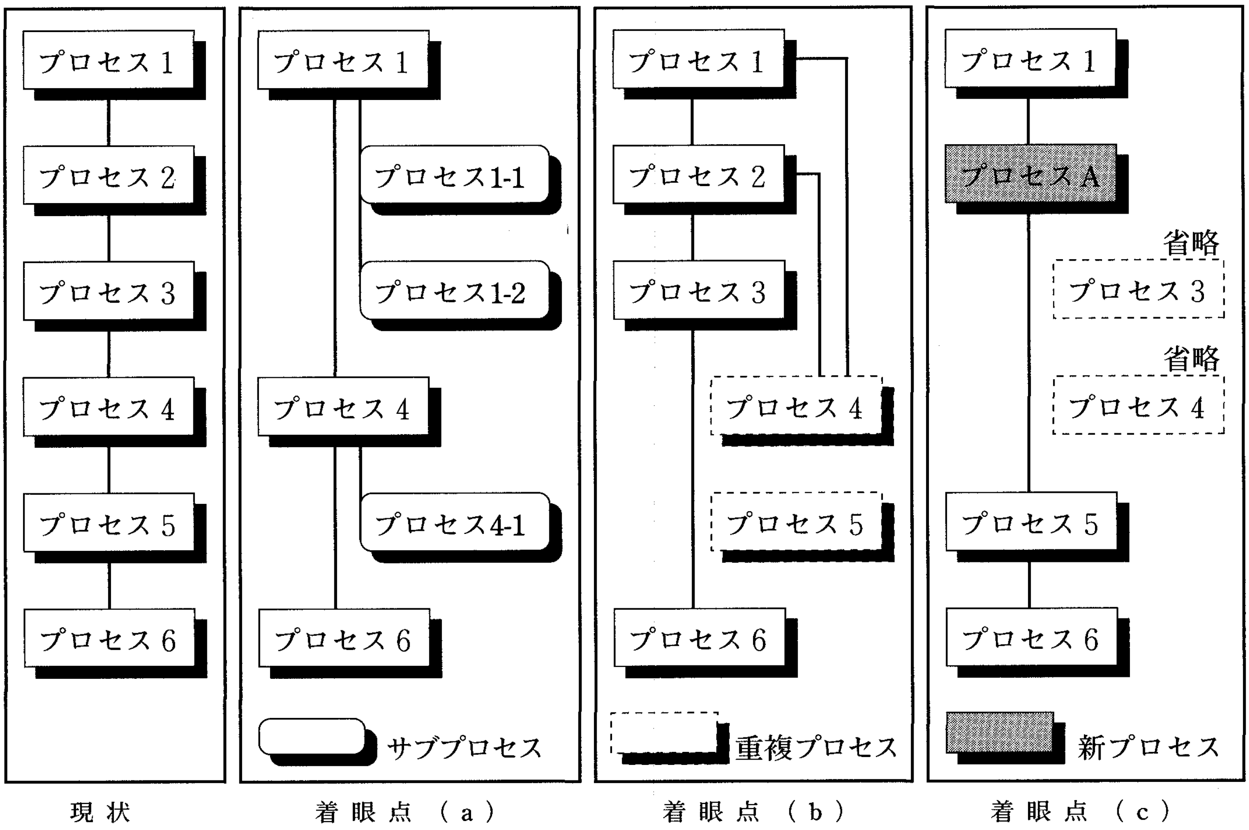

図5．業務フロー分析の模式図

(5) 情報技術の適用

各着眼点で整理された業務フローに対して情報技術の成熟度を評価して，その適用を検討した．必要でかつ投資効果の認められるものの導入案やアプリケーションソフトウエアの開発案を立案した．既存パッケージソフトウエアが適用できるもの，既存パッケージソフトウエアをカスタマイズすれば対応できるもの，新たにソフトウエアを開発すべきものを整理した．このとき，投資効果と，開発する場合にはその開発期間を精度良く見積もることが必要であった．また，ネットワーク整備やデータベースシステムの統一など，必要な全社的インフラストラクチャーについても検討した．その上で，各情報技術ツールの開発，導入計画の立案および予算化を実施し，最終的には，情報技術を織り込んだ業務フローを新しく構築して定着化を図った．

ここでのITによるコスト低減活動の特徴は，M.Hammerらのトップダウン型，劇的なBPRの進め方に対して，ミドルアップ型，漸進的な進め方を適用したことにある．ただし，その背景には経営トップの理解とリーダーシップが必要であったことは言うまでもない．ここで述べたITによるコスト低減活動の進め方は，一般的な日本企業に対しても共通的に

適用することが可能であろう.

4. 実施結果および考察

実際には，プロジェクトチームとして，情報インフラストラクチャー，鋳造素材生産準備，機械加工準備，板金溶接加工準備，組立生産準備に関する5つのチームが構成された.

以下に，一例として，鋳造素材の生産準備業務に対して本研究で提案したITによるコスト低減活動の方法論を適用した結果について述べる.

(1) 生産準備業務の現状把握

コマツでの鋳造素材は，それそのものがひとつの製品であると考えることも可能である．すなわち，設計部門において，ある部品に鋳造素材を使いたいと考えた場合，同一企業内の鋳造部門へ部品図がわたり，そこで，生産性検討と原価見積が行なわれる．コストと納期について部門間で合意された場合，鋳造部門としては注文を受けたことになり，正式に生産準備業務に入る．この業務の流れは，コマツというひとつの企業内の素材供給部門として鋳造素材を製造する場合でも，また，社外から素材単品の注文を受けた場合でも同様である．とくに，社外からの引合いに対しては競合他社が多数存在し，通常は，QCD（品質，コスト，納期）が評価指標となって受注できるかどうかが決定される.

生産準備の主な業務は，素材形状の決定，ランナー（湯道），ゲート（堰）などを決める方案設計，原価見積，型設計，型製造の指示書，製造ラインでの作業指示票，品質検査票の作成などである．この準備業務の詳細をフローチャートにまとめた例が図6である．ひとつの製品の素材を生産するために多くの準備業務が存在し，その業務にともない多くの帳票類が作成されていることがわかる．まず，客先から引合いがあった場合，商談を開始して見積書と回答書を提出する．その受注に成功した場合には，素材図作成，方案図作成，作業指示票などの量産準備資料の作成と型製作を行ない，試作と検査を経て量産に至る．この間，客先（または，同一企業内の社内設計部門），営業部門，管理部門，生産設計部門，模型製作部門などに情報が往来し，多くの帳票が作成されるか，または，参照される.

(2) 業務フローの分析

この業務フローチャートに対して，前述した業務分析の着眼点（a)，(b)，(c）を適用してみる．整理した結果が図7である.

着眼点（a）を適用した結果，必要不可欠な業務として，仕様検討，原価見積，素材図作成，方案図作成，型製作のための3次元モデル，NCデータの生成，型の設置，検査があげられた．残りの業務は，付帯業務または第3者への説明業務である.

着眼点（b）を適用して，重複業務としてあげられたのは，原価見積のための概略方案設計と受注確定後の正式な詳細方案設計業務，方案図の中に包含されているにも拘わらず別に行っている素材図作成業務などである．原価を見積もるためにとりあえず行なう概略方案設計は，受注が確定した後，もう一度正式に行なわれる．もちろん先に立てた概略方案の考え方は継承されるが，図面および帳票は2枚できることになり無駄である．ただし，受注できるかどうか不明な場合に対して，見積のためだけに最初から正式方案図を作成することは難しい．不成約になった時の損失が大きいからである．したがって，出来る限り受注確度の高い状態でこの工程を行ないたい．さらに，概略方案図に詳細情報を付加していけば正式方案図が出来上がるようにしたい．

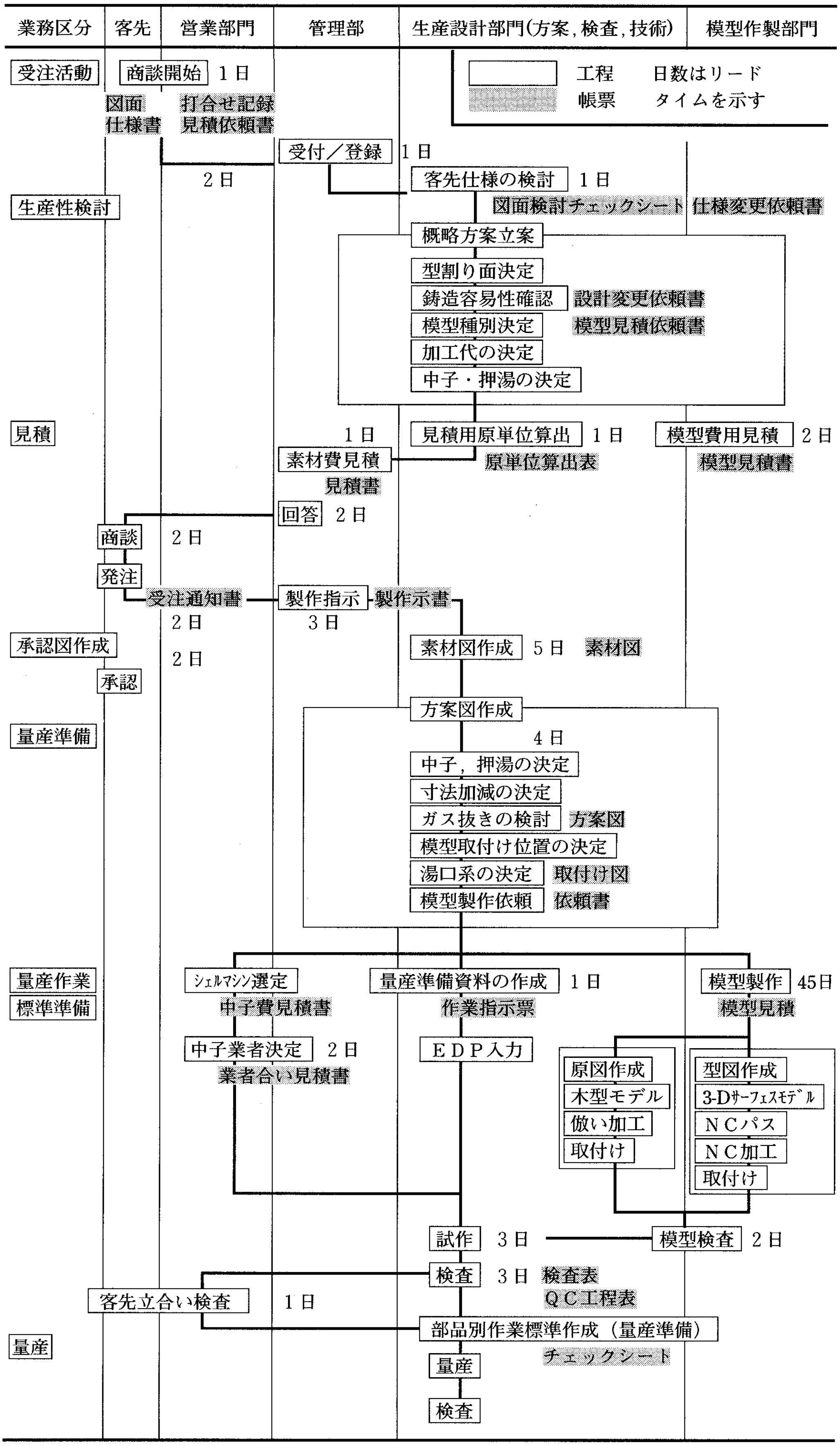

図6. 業務フローチャート（例）

現状		着眼点a（区分）			着眼点b（重複プロセス）	着眼点c（新プロセスの追加）
	工程	メイン	付帯	説明		
1.	受付，登録			○		コスト見積システム
2.	仕様検討	○				
3.	概略方案立案		○		*	
4.	見積用原単位算出	○			▼	省略
5.	模型費見積		○			省略
6.	素材費見積	○			▼	省略
7.	回答書作成			○		省略
8.	製作指示書作成			○		
9.	素材図作成	○			★	2-D専用CAD
10.	方案図作成	○			* ★	
11.	模型製作依頼			○		3-Dソリッドモデル
12.	型図作成		○		☆	
13.	３Ｄモデル作成	○			☆	省略
14.	ＮＣパス作成	○				
15.	ＮＣ加工	○				
16.	模型取付け	○				
17.	模型検査	○				
18.	製造準備資料作成		○			
19.	試作造型	○				シミュレーションによる品質予測
20.	初物検査	○			△	
21.	客先立合い検査			○	△	省略
22.	工程作業標準作成		○			
23.	ゲージ類作成		○			
24.	量産	○				コストDB

図7. 業務フロー分析結果（例）

着眼点（c）として新しい情報技術プロセスの挿入を考えた結果，「営業部門でのコスト見積システム」，「方案図専用2次元CADシステム」，「型製作用ソリッドモデル」，「品質予測シミュレーションシステム」が実施すべきものの候補となった．ここでは，製造部門がいちいちコスト見積り作業を行なうのではなく，出来る限り営業部門で客先に見積回答が行なえるようにすべきであることが指摘された．そこで，営業部門が材質，ライン，型コスト，作業性，副資材コストを考慮して精度の高い見積が行なえる「コスト見積システム」の開発が望まれたわけである．

また，現在，多くの設計部門では，三角法による2次元図面で立体を表現しているが，もし，3次元の立体データ（ソリッドモデル）で設計が行なわれ，製造部門にそのデータがわたってくれば，型製作のためにいちいちマスターモデル（木型，樹脂型）を作成した

り，NCテープ作成のためのサーフェスモデルを作成する必要はなくなるはずである．さらに，コンピュータシミュレーションの適用によって，机上で品質が予測できれば，試行錯誤の試作 / 検査の繰返しはなくなり，品質保証能力の向上により客先の立合い検査もなくすことができるかもしれない[6].

(3) 業務フロー改善案の実施検討

(2) で述べたように，いくつかの業務改革のアイデアが出るが，次のステップとしては，それを達成するためのシーズ技術の成熟度と投資規模，さらには，期待効果（経済性，将来性）を把握しなければならない．そして，中期的な目標を定めて，具体的に業務改革に取り組むことが必要である．そこでは，将来動向を睨んでリスク回避のために，または，インフラストラクチャー整備の一環として投資するものと，あくまで経済効果が見込めて投資が短期に回収できるものと2つの場合が存在する．合理化に対する戦略と照らし合せて最終的な判断を下すべきである．

ここでは，パソコンをプラットホームとした汎用のデータベースシステムを用いて「コスト見積システム」を作成するとともに，EWS用の汎用2次元CADシステムをカスタマイズし「方案図専用2次元CADシステム」を構築することにした．

先に述べたように「コスト見積システム」の目的は，営業部門から工場へ見積依頼する点数を激減させることである．営業部門だけでは原単位ごとのコスト見積りを行うことは難しく，ここでは，コストテーブルをベースにした見積方法を採用した．この方法によって精度よい見積りを実現するためには，コストテーブルを木目細かく整備するとともにネットワークを通じて工場の原価部門と営業部門でコストデータの相互通信も可能にし，営業部門で適格なコストテーブルが参照できるようなキーワード検索機能の充実が必要である．例えば，検索キーワードとしては，材質，サイズ，肉厚，重量，生産量，品名，類似形状（ポンチ絵），ユーザー名，適用機種，機能などがあげられる．このとき，ポンチ絵の検索にはいわゆるイメージデータの取り扱いが必要である．また，形状のGT分類によって行なったWCT (Weight Cost Table)を回帰式としてデータベース化するとともに，実績点のグラフ化も可能であるようした．各ライン別に，枠サイズ，型締め力の違いによる型材質の選択から型コストが異なることなどを如何にうまくWCTの中に組入れることができるかが本システムの重要なポイントであった．これにより，従来常識であった営業から工場へ依頼して原単位を計算して総コストを見積もるという業務フローを，営業部門のみで見積もりするという新しい業務フローに変更することができ，見積工数が半減し，見積書を客先へ提出するまでのリードタイムは1 / 10になった．

一方，「方案図専用2次元CADシステム」は，作図作業を半自動化し，パートタイムの

CADオペレータの採用によって作図コストを大幅に削減しようとするものである．ここでは，次のようなCADを利用した素材図，方案設計図の作成方法が考えられた．

① 設計部門での製品図作成時に加工面を後で識別できるようなクラス分けしておく．

② 方案技術者（固有技術熟練者）が方案指示図（押湯種類と位置，加工代位置，巾木種類と位置を記入）を作成．

③ CADオペレータが方案指示図を元にCADで方案設計図を作成．このとき，製品形状，押湯，中子，巾木，加工代（設計部門で指示された加工面に自動的に加工代を付加）をクラス分けして作図．

④ クラス分けされたものから，素材図，方案設計図それぞれに必要なものを抜き出し，プロッタ出力する．この抜き出し作業はCADのカスタマイズ機能によって自動的に行う．

さらに，類似形状部品群については，基本寸法を入力すればデータベースを参照して，予め用意されたパラメトリック図形に寸法を挿入，自動的に素材図と方案設計図を作成できる機能も追加した．但し，これは，頻繁に扱う類似形状部品群のみで有効である．これによって，従来，固有技術をもった熟練方案設計者が1つの部品について基本設計から方案図，素材図の仕上げまですべての作業を担当していたのに対し，基本設計については熟練方案設計者が担当して，その図面化については専用CADを用いてパートタイムのオペレータが次々に行うという業務フローに変えることができた．これによって，40％以上の工数低減が達成された．次のステップとして，設計段階でコストプランニングが可能であるように，コストテーブルとCADを連携させたシステム構築が望まれている．

以上のように，従来の業務フローに情報技術ツールを導入することで，ダブリ業務の統廃合や付帯業務，報告業務の自動化（図面の自動作成）などが可能になり，新しい業務フローを提案することができた．

(4) 種々の生産準備業務への適用

（1）～（3）では，鋳造素材製造の例を述べたが，機械加工，板金溶接，組立の生産準備業務の各々においても，それぞれの特徴に合わせて最も投資効果の高い情報技術ツールが選択された．検討結果では， 機械加工準備業務において類似部品技術情報データベースと工程設計システム，板金溶接加工準備業務においては切板図EDIとオフラインティーチング，組立生産準備業務では組立工程設計システムの開発が必要であると判断された．

結果的には，源流である設計部門から出たCADデータを如何に効率的にコンピュータ上で加工し，新たな情報を付加して生産準備業務を達成するかがポイントであった．また，報告業務に必要な帳票類は元データがそろえばコンピュータ上で自動作成されるようにし

て，帳票作成のための業務を排除することも重要であった．

これらは分散処理が可能なネットワークシステムで稼働され，共通のデータベースで管理されるべきであり，インフラストラクチャーとしての企業内ネットワークの整備（ホワイトカラー１人１台のノートパソコンとグループウエアの配布）も同時に進められた．

5. おわりに

ここでは，生産準備業務に対して最新のIT（情報技術）を適用して間接部門のコスト低減を図る方法論について検討し，実際にその効果を実証した．とくに各企業に適合した方法論が必要であること，また，改革案を合理的に見出すためには従来の方法だけでは不十分であることが認識された．コスト低減活動の推進にあたっては，本社管理部門と各専門部門の職能横断的なチーム構成が有効であり，経営トップのリーダーシップも不可欠であった．

本研究の内容をまとめると以下のようになる．

(1) ITによるコスト低減活動を進めるにあたって，コマツではBPRをそのまま適用することは難しく，企業文化に適合した方法論が新たに必要であった．

(2) 間接部門のコスト低減活動の進め方として，漸進的，ミドルアップ型の活動として進めることが有効であった．

(3) 業務フローの分析方法には，演繹法と帰納法の両方が必要であった．その着眼点は，種々の業務分析にも共通して適用できる可能性がある．

今後，情報技術の更なる進歩につれてビジネスプロセスの見直し，更新をどのように実施していくか，タイミングと投資効果についての考え方についても整理していく必要がある．

本研究を進めるにあたり，終始有益なご指導，ご協力いただいた関係各位に深く感謝いたします．

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Cost Reduction Activity of Indirect Work for Manufacturing by Information Technology: Case Study of an Industrial Machinery Manufacturer, Komatsu Ltd.

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Abstract

Reengineering proposed by M.Hammer and J.Champy is noteworthy right now for the revolution of indirect work division in a company by introducing advanced IT (Information Technologies). However, it is not easy to apply directly to Japanese companies. Although dramatic improvements of business performance may be expected by the reinvention, it is considered a high risk endeavor.

In this case study, reengineering is regarded as a process innovation by information technology, and applied to practical pre-production processes for material processing, welding, machining and assembling in Industrial Machinery Manufacturer, Komatsu Ltd. A project team was established in Komatsu Ltd. and the conventional process flow has been analyzed by the deductive and inductive method. A moderate, middle up activity was important. The conventional duplicated processes were rearranged. And also, the new processes, which were possible for practical operation by using advanced information technology, could eliminate some conventional processes. For instance, cost tables as a database in computer network was required for more efficient cost estimation process. A customized CAD (Computer Aided Design) system was necessary for the management and improvement of drawing. As a result, drastic cost reduction especially for indirect work could be expected.

Key Words

Case Study, Industrial Machinery Manufacturer, Reengineering, Information Technology, Pre-production Process, Cost Reduction, Indirect Work

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日本管理会計学会会則

第1章　総 則

（名称）
第1条　本学会は，日本管理会計学会（英文名：The Japanese Association of Management Accounting）と称する．

（支部）
第2条 本学会は，総会の議決を経て，必要の地に支部を置くことができる．

第2章　目的および事業

（目的）
第3条　本学会は，管理会計学および関連分野の研究・教育ならびに経営管理実務の指導・改善に資することを目的とする．

（事業）
第4条　本学会は，前条の目的を達成するために，次の事業を行う．
1. 大会，研究発表会および学術講演会の開催
2. 学会誌，学会ニュースおよび出版物等の刊行
3. 会員の研究，教育，その他の活動の支援
4. 国内外の関連機関との提携および交流
5. その他目的を達成するために必要な事業

第3章　会 員

（会員の種別）
第5条 本学会の会員は次のとおりとする．
1. 正会員　　大学，短期大学，専門学校等の研究教育機関において管理会計学および関連分野の研究教育に従事する者，公認会計士，税理士等の職業専門家，および企業等において経営管理実務の経験を有する者
2. 準会員　　管理会計学および関連分野を専攻する大学院学生
3. 賛助会員　本学会の目的に賛同して本学会の事業を援助する個人または法人
4. 名誉会員　管理会計の研究，教育もしくは実務について顕著な功績があり，理事

会の議決をもって推薦された者

5. 特別会員　正会員期間10年以上かつ70歳以上の者で，理事会の議決をもって推薦された者

（入会）

第6条　本学会に入会しようとするときは，正会員1名の紹介を得て入会申込書を提出し，常務理事会の承認を受けなければならない．

（会費）

第7条　会員は，総会で定める会費を納入しなければならない．

2. 特別の支出を必要とするときは，総会の議決を経て臨時会費を徴収することができる．
3. 既納の会費は，いかなる理由があっても返還しない．
4. 名誉会員および特別会員は会費を納めることを要しない．

（賛助会員の権利）

第8条　賛助会員は，会費1口につき正会員5名と同等の扱いとする．

（資格の喪失）

第9条　会員は，次の事由によってその資格を喪失する．

1. 退会したとき
2. 除名されたとき
3. 死亡または団体の解散のとき

（退会）

第10条　会員が退会しようとするときは，退会届を提出しなければならない．

（除名）

第11条　会員に次の事由が生じたときは，理事会の議決を経て，除名することができる．

1. 本学会の名誉を傷つける行為があったとき
2. 本学会の目的に反する行為または会員の義務に反する行為があったとき
3. 会費を3年以上にわたり滞納したとき

第4章　役員

（役員）

第12条　本学会に，次の役員をおく．

1.	会長	1名
2.	副会長	3名以内
3.	常務理事	20名以内
4.	理事	50名以内
5.	監事	若干名
6.	参事	若干名

（役員の選任）

第13条　会長および理事は別に定める規程により，総会で選任する．

2. 副会長，常務理事，監事および参事は，理事会で選任する．

（役員の職務）

第14条　会長は，本学会の会務を統括し，本学会を代表する．

会長は，理事会および常務理事会を召集し，その議長となる．

会長は，前条第2項の規定にかかわらず，2名以内の常務理事を選任することができる．

2. 副会長は，会長を補佐する．

会長に事故あるときは，副会長のうちの1名がその職務を代行する．

3. 常務理事は，会長を補佐し，本学会の常務を分掌処理する．

4. 理事は，理事会を構成し本学会の運営につき審議する．

5. 監事は，役員の業務執行状況および会計・財務の状況を監査する．

6. 参事は，常務の処理につき常務理事を補佐する．

（役員の任期）

第15条　役員の任期は3年とする．ただし任期の終了は，次期役員の選出される総会終了のときとする．

2. 会長は，連続して3期就任することはできない．

3. 補欠または増員により選任された役員の任期は残任期間とし，この期間は1期と数えないものとする．

第5章　会　議

（会議の種別および構成）

第16条　本学会の会議は，総会，理事会および常務理事会とし，その構成は次のとおりとする．

1. 総会は，正会員，準会員，賛助会員，名誉会員および特別会員をもって構成する．
2. 理事会は，会長，副会長，常務理事および理事をもって構成する．
3. 常務理事会は，会長，副会長および常務理事をもって構成する．
4. 監事および参事は，理事会および常務理事会に出席することができる．

（会議の召集）

第17条　会議を召集するときは，前以て会議の日時，場所，議案等を会議構成員に通知する．

2. 通常総会は，毎年1回，会長が召集する．
3. 臨時総会は，理事会が必要と認めたとき，会長が召集する．
4. 理事会は，会長が必要と認めたとき，または理事会構成員の3分の1以上から書面をもって請求されたとき召集する．
5. 常務理事会は，会長が必要と認めたとき，または常務理事会構成員の2分の1以

上から書面をもって請求されたとき召集する.

(会議の定足数)

第18条　理事会および常務理事会の会議は，会議構成員の2分の1以上の出席によって成立する．ただし，委任状を提出したものは出席とみなす.

(議事の議決)

第19条　会議の議事は，出席者の過半数をもって決する.

2.　会議の議決事項は，会議構成員に報告する.

(議事録の作成)

第20条　会議の議事について議事録を作成し，議長および出席者2名の記名押印をえた上で保存する.

(総会議長の選出)

第21条　総会の議長は，総会においてその都度選出する.

(総会の議決事項)

第22条　総会は，本会則に別に定めるもののほか，次の事項を議決する.

1.　事業報告および収支決算についての事項
2.　監査報告についての事項
3.　事業計画および収支予算についての事項
4.　その他本会の運営に関する重要事項

(常務理事会の業務)

第23条　常務理事会は本会則に別に定めあるものを除き，本学会の業務に関する一切の事項を立案，決定および執行する.

第6章　委員会

(学会誌編集委員会の設置)

第24条　本学会は第4条第2項の学会誌刊行業務を行うために学会誌編集委員会を設置する.

2.　学会誌編集委員会の構成および運営については別に定める.

(学会ニュース編集委員会の設置)

第25条　本学会は第4条第2項の学会ニュース刊行業務を行うために学会ニュース編集委員会を設置する.

2.　学会ニュース編集委員会の構成および運営については別に定める.

第7章　会 計

（事業計画および収支予算）

第26条　常務理事会は，事業計画および収支予算を編成し，理事会の議決を経て総会に提出し，その承認を得なければならない．

（事業報告および収支決算）

第27条　常務理事会は，事業報告，会員異動状況報告，収支決算報告，貸借対照表および付属明細書を作成し，理事会の議決を経て総会に提出し，その承認を得なければならない．

（監査報告）

第28条　監事は，監査結果についての意見を総会に報告し，その承認を得なければならない．

（会計年度）

第29条　本学会の会計年度は，毎年4月1日に始まり翌年3月31日に終わる．

第8章　会則の変更

（会則の変更）

第30条　本会則の変更は，理事会および総会において出席者の3分の2以上の賛成議決を得なければならない．

（解散）

第31条　本学会の解散は，前条に準じて行う．

付 則

1. 本会則は，1992年10月3日から施行する．
2. 本会則施行の際現に在任する役員は，本会則により選任されたものとみなす．
3. 1995年度の役員の選任方法は常務理事会の議決によることができる．
4. 本学会の事務所は，1993年3月まで，〒162　東京都新宿区神楽坂1丁目3番地　東京理科大学工学部経営工学科内におき，それ以降は，〒346　埼玉県久喜市大字下清久500番地　東京理科大学経営学部内におく．
5. 会費の年額は，第7条の規定にかかわらず，総会で定めるまでの間，次のとおりとする．

　　正会員　　会費6千円
　　準会員　　会費2千円
　　賛助会員　会費1口（5万円）以上

学会誌編集委員会運営規程

(総則)

第1条 この規程は，日本管理会計学会会則第24条の定めに基づき設置される学会誌編集委員会（以下，編集委員会という.）の構成と運営について必要な事項を定めることを目的とする.

(編集委員会の構成)

第2条 編集委員会は，編集委員長，2名以内の編集副委員長，および編集委員をもって構成する.

2．編集委員長および編集副委員長は，学会長の推薦に基づき，常務理事会で選出する．その任期は3年とする．ただし，重任を妨げない.

3．編集委員は，常務理事会で選任する．その任期は2年とする．ただし，重任を妨げない.

(編集委員長の職務)

第3条 編集委員長は，原則として毎年度2回以上編集委員会を開催し，会務を執行する.

2．編集委員長は，編集委員会にあたって，議案および必要な資料を整理し提出する.

3．編集委員長は，編集委員会の運営に当たる.

4．編集委員長は，編集委員の中から若干名の常任編集委員を任命し，常任編集委員会を構成し運営する.

5．編集委員長は，常任編集委員会が行った業務の大要を編集委員会に報告する.

(編集副委員長の職務)

第4条 編集副委員長は，編集委員長を補佐する．また，編集委員長に事故あるときは，編集副委員長のうちの1名がその職務を代行する.

(編集委員会の業務)

第5条 編集委員会は，下記の事項に関する方針を立案・審議する.

(1) 学会誌の企画および編集に関する事項

(2) 投稿論文等の受付，審査および掲載に関する事項

(3) レフェリー委員の選出に関する事項

(4) 査読者の選定に関する事項

(5) 学会誌の発行に伴う予算請求および料金設定等に関する事項

(6) その他編集委員会が行うのが適当と考えられる事項

(常任編集委員会の構成)

第6条 常任編集委員会は，編集委員長，編集副委員長，および常任編集委員をもって構成する.

（常任編集委員会の業務）
第７条　常任編集委員会は，第５条で規定される編集委員会の業務の中から委任を受けた経常業務を分掌処理する．

（投稿論文等の学会誌への掲載）
第８条　投稿論文等は，編集委員会の決定により，次の掲載区分にしたがって学会誌に掲載する．
　(1) 論　　文：問題意識から結論への推論過程が明確にされ，かつ得られた知見が創造的である研究成果
　(2) 事例研究：フィールドスタディにもとづき特定の企業または産業に関する事例を調査し，特定の問題意識や課題を明示した研究成果
　(3) 総合報告：特定の研究分野や領域または手法等に関する総合的サーベイを目的とし，その現状と課題を明確に提示した研究成果
　(4) 研究ノート：問題意識が明確であり新しい知見も得られているが，結論に至る推論が十分でない研究成果の報告
　(5) 論　　壇：学会誌編集委員会からの招聘を受けた研究成果の報告
　(6) 書　　評：おおむね１年以内に発表された著書や論文などの論評
　(7) 経営フォーラム：上記の掲載区分のほかに，管理会計や経営管理に関する研究，教育または実務において有益とみなされる様々なジャンルの原稿を掲載する場の提供．

（レフェリー委員の選出）
第９条　レフェリー委員は，別に定める「レフェリー委員選出手続規程」に従って選出する．

（投稿論文の審査手続き）
第10条　投稿された論文は，次の各号の手続きに基づいて審査する．
　(1) 投稿論文の論文要旨等を参照して，審査に当たる査読者を選定する．１編の投稿論文に対する査読者は原則として２名とし，レフェリー委員名簿の中から選定する．ただし，必要に応じてレフェリー委員以外の学識経験者に審査を依頼することができる．
　(2) 選定した査読者に対し，所定の書式を用いて論文の審査を依頼する．
　(3) 査読者は，所定の書式により所定の期日までに，審査結果を編集委員長に報告しなければならない．
　(4) 審査は，査読者に投稿論文を郵送した消印日より１ヶ月以内とする．ただし，当該査読者が予め返却期日を指定して審査を了承した場合は，査読者に投稿論文を郵送した消印日より予め指定した返却期日までを審査期間とする．
　(5) 査読者が，審査期限経過後10日を過ぎても返却しない場合は，代替の査読者を選定し，審査を依頼することができる．
　(6) 投稿論文の改善・訂正を要請された投稿者が査読結果のお知らせを送付した日か

ら2ヶ月を過ぎても訂正投稿論文を再提出しない場合は，投稿論文を取り下げたものとみなし，審査を終了する．ただし，正当な理由により投稿者から編集委員長へ期限延長の申し出があった場合は審査を継続することができる．

(7) 投稿者は，査読者より投稿論文のタイトルを訂正するよう指摘された場合，論文タイトルを訂正することができる．

(投稿論文の審査結果の表示とその取扱い)

第11条　査読者は，以下の各号に基づき投稿論文の総合審査結果を表示する．

(1) 評点A：適格であり，受理してよい．
(2) 評点B：指摘した事項の改善・訂正を要請するが，再査読は不要である．
(3) 評点C：指摘した事項の改善・訂正を要請し，再査読をする．
(4) 評点F：不適格であり，受理すべきでない．

2. 投稿論文の総合審査結果に基づき，次の各号によって投稿論文の取扱いを決める．

(1) 各査読者による総合審査結果がいずれも評点B以上の場合は，投稿論文を受理し審査を終了する．ただし，総合審査結果が評点Bである場合には，指摘された事項につき投稿者にたいして改善・訂正を要請し，その改善・訂正を確認した後に投稿論文を受理する．
(2) 一方の総合審査結果が評点C，他方のそれが評点C以上の場合は審査を継続する．
(3) 一方の総合審査結果が評点C以上，他方の総合審査結果が評点Fである場合は，原則として評点Fを与えた査読者に代えて，新たに別の査読者を選定し審査を継続する．各査読者の総合審査結果がいずれも評点Fである場合は，投稿論文を拒否し審査を終了する．
(4) 投稿者が，審査の過程で投稿論文を取り下げた場合は，審査を終了する．
(5) 上記の（3）号に該当する投稿論文が，第3回目の総合審査結果においていずれも評点C以下のときは，投稿論文を拒否し，審査を終了することができる．

3. 編集委員長は，査読者が3名以上である場合，前項の各号を準用して審査結果の取扱いを決める．

4. 編集委員長は，論文の投稿者に審査結果を通知する．

(事例研究，総合報告，および研究ノートの投稿原稿の審査手続き)

第12条　事例研究，総合報告，および研究ノートは，次の各号の審査手続きに基づいて審査する．

1. 事例研究，総合報告および研究ノートは，査読者1名により掲載区分に見合った査読を実施する．
2. 投稿原稿の研究要旨等を参照して，レフェリー委員名簿の中から1名を選定し，審査を依頼する．
3. その他の審査の手続きは，投稿論文の審査手続きに準ずる．

（事例研究，総合報告および研究ノートの審査結果の表示とその取扱い）

第13条　事例研究，総合報告，および研究ノートの審査結果の表示とその取扱いは，投稿論文の審査結果の表示とその取扱いに準じる．

（論文，事例研究，総合報告，および研究ノート以外の投稿原稿の審査とその取扱い）

第14条　論文，事例研究，総合報告，および研究ノート以外の投稿原稿は，編集委員会の審査を経て学会誌への掲載を決定することができる．

（投稿論文等の掲載）

第15条　投稿論文等は，各掲載区分に見合った審査の結果に基づき，学会誌への掲載を決定する．ただし，掲載する投稿論文等の編数，その他学会誌の企画，体裁および編集の細部に関する事項は，編集委員会で決定する．

（投稿論文等の校正）

第16条　投稿者の校正は原則として1回とし，印刷上の誤りのみを訂正した後，受領後1週間以内に返送する．期日内に返送がない場合は，事務局の校正をもって校了とすることができる．

（本規程の変更）

第17条　本規程の変更をする場合は，常務理事会における出席者の3分の2以上の賛成決議を得なければならない．

付則

1. この規程は1992年2月1日から施行する．
2. この改正は1995年11月8日から施行する．

日本管理会計学会誌投稿規程

(学会誌の目的)

第1条　本学会誌は，管理会計及びその関連領域における理論ならびに方法論の発展とその普及を主な目的として刊行される．

(著者の資格)

第2条　投稿論文等の著者は，原則として日本管理会計学会の会員とする．ただし，学会誌編集委員会からの依頼原稿についてはその限りではない．共著による投稿論文等については，学会誌編集委員会の承認をえた上で，非会員との投稿論文を受け付けることができる．

(投稿論文等)

第3条　投稿論文等は，第1条に定める領域における研究成果を報告するものであり，その研究目的と結論とが明確に示されていなければならない．投稿論文等は，他に刊行済み，または投稿中でないものに限る．

2．投稿論文等は，日本管理会計学会誌執筆要領に従う．

(投稿論文等の受理)

第4条　投稿論文等の受理は，掲載区分に見合った審査結果に基づき学会誌編集委員会で決定する．

2．学会誌編集委員会は投稿論文等の改善を要請することができる．その場合の再提出の期限は原則として2ヶ月以内とし，それを越えた場合は新規投稿論文の扱いとする．

3．投稿論文等の受付日は本学会へそれが到着した日とする．受理された論文の学会誌への掲載順序は，原則として受理順とする．

(著作権)

第5条　掲載された論文等の著作権は原則として本学会に帰属する．特別な事情により本学会に帰属することが困難な場合には，著者と本学会との間で協議の上措置する．

2．著作権に関する諸問題は，著者の責任において処理する．

3．著者は自己の論文等を複製・転載等の形で利用することができる．ただし，著者はそのむねを本学会誌編集委員長宛にに書面で通知し，掲載先には出典を明記する．

(投稿の申込み)

第6条　論文等の投稿は，本学会指定の投稿申込書に記入して申し込むものとする．

2．学会誌掲載の際に別刷りを希望する場合は，そのむねと必要部数を投稿申込書に記入して申し込む．ただし，別刷り代金は，その実費を別刷り送付時に徴収する．

(原稿の送付)

第7条　投稿論文等は，前条に定める投稿申込書とともに，原稿3部を学会誌編集委員長宛に送付する．

2. 提出された投稿論文の原稿等は，返却しない．

（最終原稿の送付）

第8章　受理済みの最終提出論文等の原稿については，原稿1部とともに，使用機種，ソフトウェアおよびそのバージョンを記したフロッピーを学会誌編集委員長宛に送付するものとする．

2. 提出された投稿論文原稿およびフロッピー等は，返却しない．

付則

1. この規程は1991年11月10日から施行する．
2. この改正は1993年 8月 1日から施行する．
3. この改正は1995年11月 8日から施行する．

日本管理会計学会誌執筆要領

（総則）

第１条　本学会誌への投稿論文の執筆は本要領に従う．論文以外の投稿原稿もこれに準じるものとする．

（投稿論文等の言語）

第２条　投稿論文等は横書きとする．

2．投稿論文等はワードプロセッサにより作成する．日本語による投稿論文は，A4判用紙に１枚42字×34行＝1,428字とする．英語による投稿論文は，A4判用紙に１枚約90字×40行を目安として作成する．

（投稿論文等の枚数）

第４条　投稿論文の枚数はワードプロセッサ原稿で20枚以下とする．図表に要するスペースもこれに含める．

2．原稿のタイプにより，学会誌編集委員会が妥当と認めた場合，前項の枚数を越えることができる．ただし，その場合には超過枚数１枚につき5,000円を掲載時に徴収するものとする．

（投稿論文等の体裁）

第５条　投稿論文等には通しページ番号を付ける．

2．投稿論文等の第１ページには内容を正確に表す表題，著者名および所属機関を日本語と英語両方で書く．また，投稿者（共著の場合は代表者）の住所，氏名，電話番号およびファックス番号を明記する．

3．日本語による投稿論文等は，第２ページに日本語の表題（第１ページと同じもの），著者名，18行（720字）程度の論文の要旨および５～８語程度のキーワードを記し，また脚注に著者の所属機関と役職名を記し，また脚注に著者の所属機関と役職名を記す．

4．投稿論文等の第３ページ以降に本文，謝辞，注，参考文献，付録の順に記述する．図および表はその後に一括して１つずつ別ページとして添付する．なお，本文中に図および表の挿入箇所を明示して，必要な大きさを行数で示すものとする．

5．日本語による投稿論文等は，最後のページに英語により表題，著者名，20行程度の論文要旨および５～８語程度のキーワードを記し，また脚注に著者の所属機関と役職名を記す．英語による投稿論文は，最後のページに日本語により表題，著者名，18行程度の論文要旨および５～８語程度のキーワードを記し，また脚注に著者の所属機関と役職名を記す．

（投稿論文等の書き方）

第６条　投稿論文等の書き方は以下を原則とする．これに合致しない場合は，学会誌編集委員会は修正を要求したり，修正を行うことができる．

2．本文は章節項などで構成し，“1.”，“2．3”，“4．5．6”のような見出し番号とタイト

ルを付ける.

3. 日本語による投稿論文は新仮名遣い，常用漢字を用い，平易な口語体で記す．漢字については専門語はこの限りではない．副詞，接続詞，連体詞，助詞は原則として平仮名，同音多義で誤読のおそれのあるものは漢字，送り仮名は活用語尾を送る．数字の書き方は，原則としてアラビア数字を用いる．成語・慣用語・固有名詞．数量的意味のうすいものは漢字とする．例えば，一般的，一部分，第三者などである．ただし19世紀，第1四半期等は例外とする．英語による投稿論文も自然で正確な表現を用い，できるだけネイティブスピーカー等の校正を受ける.

4. 約物の使い方

(1) 句点（。）と読点（、）は用いず，ピリオド（.）とコンマ（,）を用いる.

(2) 中グロ（・）はあまり使うと目立ちすぎるので，名詞並列の場合等に使う.欧文略字には中グロを使わないで，ピリオドを用いる.

例：J. M. Keynes

しかし最近はピリオドを入れないものも多くなった．この場合は一般的な慣例に従う.

例：EEC,IMF,OECDなど

(3) 引用文は「」を用い,クォーテーションマーク，例えば“”などは，欧文引用のみに用いる.

(4) 二重ヒッカケ『』は書名や重引用符に用いる.

(5) 述語および固有名詞の原綴りを書く時は，パーレン（ ）でくくった中に欧文を書く．必要な場合はキッコー〔 〕やブラケット［ ］を用いてもよい.

(6) ダッシュは挿入句などの場合，2倍のものを使う.

(7) ハイフン－またはダブル・ハイフン＝はシラビケーションのほか，複合語や外国固有名詞などを使う.

(8) リーダー…は中略の際に使う.

5. 人名は原則として原語で表記する．ただし，広く知られているもの，また印字の困難なものについてはこの限りではない.

6. 数式は別行に記し，末尾に通し番号を付ける．文中で使用する場合には特殊な記号を用いず，“a／b”“exp（a／b)”などの記法を用いる．数式は筆者による指定が大切であるから，複雑な場合は青色鉛筆で植字上の注意を書き入れる．数字や記号にはイタリックが多いから，必ず落ちないようにアンダーラインを朱記する．活字の格差は，大，中，小と指定する．上ツキ，下ツキはα^c, x_yのように指定する．C，O，P，S，Wなど大文字と小文字の字形の同じものは，はっきりと区別する．ギリシャ文字α(アルファ)，γ（ガンマ)，χ（カイ）,ω（オメガ）と，アルファベットのa（エイ）,r（アール）,x（エックス）,k（ケイ）,w（ダブリュ）を区別する.

7. 注はなるべく使わない．やむをえず使用する場合は，通し番号を付け，本文中の該当箇所にその番号を記す．そして注釈文を本文のあとにまとめて記すこととする.

8. 数字はアラビア数字で横書きし，三桁ごとにコンマ（,）をつける.

9. 図および表の書き方

図および表（写真を含む）には“図1，図2”，“表1，表2”のように通し番号を付ける．投稿原稿は正確にパソコン等の用器を用いて，そのまま写植して版下に使えるように書く．ただし，そのまま写植して利用できない図や表を提出した場合は，版下作成の実費を掲載時に徴収するものとする．

（参考文献）

第7条　文中で参照する文献および特に関連のある文献のみを，本文末に一括してリストする．

2. 参考文献のリストの順序は，欧文和文を区別せず，原則として第4項の方式で配列する．

3. 単行本の場合は，著書名，表題，発行所，発行年をこの順で記す．また，雑誌論文の場合は，著者名，表題，雑誌名，巻号，発行年をこの順に記す.表題,書名，および雑誌雑誌名等は略記しない．

4. 参考文献の配列は，著者の，あるいは第1著者の姓によってアルファベット順にする．下にその例を示す．

[1] Anthony, R . N.：*Planning and Control Systems : A Framework for Analysis*, Harvard University Press, 1965；高橋吉之助訳『経営管理システムの基礎』，ダイヤモンド社，1968年．

[2] Charnes, A. and W. W. Cooper： “Goal Programming and Multiple Objective Optimizations," *European Journal of Operational Research*, Vol.1, No.1, 1977, pp.39-54, 1977.

[3] 井尻雄士：『計数管理の基礎』,岩波書店，1970年．

[4] 黒沢清：「企業会計の技術的構造と理論的構造」，企業会計，第5巻第5号，1953年．

[5] Monden,Y.and M. Sakurai(ed.)：*Japanese Management Accounting*, Productivity Press, 1989.

[6] Schumpeter, I. A.：*Business Cycles : A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, Vol.1, 1939, p.35; 吉田昇三監修，金融経済研究所訳『景気循環論』，有斐閣，1969年，p.50.

[7] 末永茂喜：「ジョン・スチュアート・ミルの恐慌論」，玉城肇・末永茂喜・鈴木鴻一郎，　『マルクス経済学体系』，岩波書店，1957年，pp. 330-331.

5. その他，特に理由のある場合は，通常認められている別種の方式を一貫して使用することができる．

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