



Towards explaining activity-based costing failure: accounting and control in a decentralized organization

Teemu Malmi*

Many of the activity-based costing (ABC) systems introduced in recent years are said to fail (e.g. Cooper *et al.*, 1992; Argyris and Kaplan, 1994; Shields, 1995; Roberts and Silvester, 1996). The use of ABC for surveillance by the group management, with no consequent actions, leads us to propose that claims on ABC failure result, in part, from assessing the use and value of ABCs from the decision-making perspective. The decision-making perspective may be insufficient for capturing the multitude of uses to which ABCs are put in practise. As this study shows, in the context of strategic decision-making the success of ABC cannot depend on whether its results require any actions or decisions to be taken, but on its ability to make a correct diagnosis of the situation. Consequently, some of the so-called ABC failures may not be failures. They may merely reflect a limited appreciation of the uses of accounting and control systems in practise. Nevertheless, failures and resistance are real in a number of organizations. This study explored the origins of resistance to ABC in a case setting, looking at diverse interests of organizational stakeholders, and the role of existing control and information systems in ABC implementation. We show that the resistance may have several sources; some related to the cost and benefits of ABC, some associated with organizational power and politics, and some pertinent to organization culture. The practical implication of this study hinged on the notion that although the resistance to ABC may come from various sources, these sources appear fundamentally structural and are unlikely to be dealt with by employing implementation-based strategies.

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* Department of Accounting and Finance, Helsinki School of Economics and Business Administration, Runeberginkatu 22–24, 00100 Helsinki, Finland.

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1. Introduction

Many firms have designed and implemented activity-based costing (ABC) systems in recent years. In addition to numerous success stories, there is growing evidence, however, that many of these firms are experiencing difficulties with ABC (e.g. Cooper *et al.*, 1992; Cobb *et al.*, 1992, 1995; Argyris and Kaplan, 1994; Bromwich and Bhimani, 1994; Shields, 1995; Anderson, 1995). Few studies have focused on the problems or failures of ABC, and consequently little is known about what gives rise to these difficulties.

Most of the few studies which have addressed ABC success and/or failure have been the so-called factors studies¹ (e.g. Cobb *et al.*, 1992; Shields, 1995; Anderson, 1995). The focus has been on identifying factors which influence ABC success or failure. Shields (1995), for example, found top management support, linkage to competitive strategies, linkage to performance evaluation and compensation, training in implementing ABC, non-accounting ownership and adequate resources all positively correlated with ABC success. Cobb *et al.* (1992), in turn, suggest that the major problems experienced with ABC relate to the lack of adequate internal resources, particularly staff time and computer resources. Anderson (1995) identified 21 factors, related to the individuals involved, the organization structure, the task, the technology employed and the external environment, which influenced ABC implementation at General Motors. One problem with the factors approach, however, is that there is hardly any limit to the number of possible factors affecting the implementation outcome.² Although it may be possible to establish the relative importance of various factors at various implementation phases, such factors models fail to address both the competing and complementing ways of obtaining information and controlling activities in organizations, and the existence of many stakeholders in the ABC implementation process. So, complementing approaches are required to provide a detailed understanding of questions such as why did change initiatives become thwarted, and what were the sources of resistance to change.

Argyris and Kaplan (1994) seek an alternative way of explaining ABC failure by presenting a behavioural model of why and how employees resist ABC. They build on Argyris (1985, 1990), noting that '...barriers to change arise from the defensive routines that participants trigger to protect themselves from experiencing embarrassment and threat from the new ideas' (p. 83; see also Cooper *et al.*, 1992). Apart from the ABC context, Markus (1983) has argued that resistance to new information systems can be understood in terms of organizational power and politics. In the similar vein, Scapens and Roberts (1993) illustrated how division's attempts to increase unit accountability led unit management to resist a new accounting system.

¹The term 'factors study' is borrowed from information technology (IT) implementation literature (Kwon and Zmud, 1987; Lucas *et al.*, 1990; Cooper and Zmud, 1990), where it refers to studies which "try to identify those 'factors' most related to IS implementation success and failure" (Kwon and Zmud, p. 228). Most of these studies are typically cross-sectional seeking statistical correlation between factors hypothesized to influence implementation outcome and some measure of that outcome (see footnote 3).

²In his extensive review of IT implementation literature, Kivijärvi (1987) identified 183 different independent factors used to explain IT success.

Although these studies appear promising at this early stage of understanding accounting change in general, and ABC implementation in particular, more empirical studies seeking alternative and complementing explanations for problems, failure and resistance to ABC are required. Such studies, it is hoped, would also lead to an increased understanding of barriers to accounting change (cf. Cobb *et al.*, 1995).

This study aims to contribute to the discussion on the success and failure of ABCs in two ways. First, we question the currently dominant decision-making perspective in assessing the success and failure of ABCs. We refer to Simons' (1990, 1995) work on the use of controls by senior management, and present a case where the corporate management of a decentralized organization made cost accounting interactive by introducing an ABC system in one of its sub-units. Although no decisions ensued and the system is not maintained anymore, both indications of failure in traditional implementation literature, we argue that the ABC system served the purpose senior management intended for it; thus it was a success. As it is widely acknowledged today that accounting may be used for various purposes and in various ways (Simons, 1995; Burchell *et al.*, 1980), the success and failure of accounting systems should be assessed against this diversity of use. Thus, we contend that some of the so-called failures of ABC systems may not actually be failures, but merely reflections of partial appreciation of the uses to which accounting and control systems are put in practise.

Second, as a number of ABC projects truly fail, the study aims to increase our understanding of resistance to ABC. We explored the origins of the resistance towards a centrally-initiated, but apparently well-organized ABC project, from the perspective of sub-unit management in a decentralized firm. We sought to illuminate rational, political and cultural motives for such behaviour in this particular case. We focused on the organizational context in which this change takes place, paying attention especially to various stakeholders in the ABC implementation, and the competing and complementing ways of obtaining information and controlling activities in organizations. Here, the study builds on the work of Markus and Pfeffer (1983) and Scapens and Roberts (1993) showing that although the sources of resistance to ABC may be numerous, they are fundamentally structural and are unlikely to be dealt with by implementation-based strategies, such as participant involvement.

The case analysis conducted in this study aimed at explanation (cf. explanatory case studies, Ryan *et al.*, 1992, p. 115). Although the distinction between explanatory and exploratory case studies is not clear-cut, the attempt here is not to derive hypotheses to be tested in subsequent studies, but to explain the reasons for an observed 'ABC failure' in its specific setting. It is hoped that the explanations generated from this and other case studies will help ABC failure as a phenomenon to become understandable (cf. theoretical generalization, Ryan *et al.*, 1992, p. 117). Simons' framework of levers of control as well as the work by Markus and Pfeffer (1983) on organizational power and culture and Scapens and Roberts (1993) on

³The key to distinguishing this study from factors studies is the role of theory and empirical data in the research process. Whereas factors research starts with some theory and uses empirical evidence to test or support that theory, this study starts from the case and seeks the most suitable theories to explain ABC failure. The political research stream within IT implementation studies (Kwon and Zmud, 1987) bear perhaps the closest resemblance to the present study, although we do not restrict our explanation of resistance to only political motives. Nevertheless, this study, like studies in the political research stream, seeks the underlying causes which induce individuals to resist new accounting systems.

resistance to accounting change, are used to help to focus the inquiry, and to make sense of what we see (Ryan *et al.*, 1992; Scapens and Roberts, 1993). We used these contributions as an initial focus, but our explanations come from the case, not from these theories (the word 'theory' is used here in its widest sense to mean ways to see, Scapens, 1994, p. 302).³ The case study evidence in turn serves to illustrate the capacity of adopted theories to explain the phenomenon under review, both extending the current domain of these theories⁴ and further developing these theories and arguments.

Let us start by presenting two short and somewhat simplified case studies: one an ABC success story, although not a usual one, and one a story of ABC failure. These will lead us to discuss the concepts of use, value, success and failure of ABC. After that, we will turn our attention to the reasons for resistance in more detail. The method for data collection and further details on the research setting appear after the case descriptions. The findings of the study are summarized in the concluding section.

2. Two ABC case descriptions: success and failure

ABC success: serving strategy

'My conception was that we did not necessarily know which products, and volumes, the money came from. And that is exactly what I wanted to know before deciding on how to develop that particular business strategically. This is what we were thinking of; we did not have any true knowledge about that.'

At the beginning of the 1990s, the first signs of the forthcoming recession were evident: order-books for the main products of a decentralized Finnish-based organization were not filling as usual. At that time, the group comprised three main divisions, two of which were closely related, generating together roughly 70% of the group turnover. Most of this turnover came from the domestic market, which now seemed to be contracting. Consequently, the declining demand for these products threatened the health of the whole group. The group management, though not aware of how severe the recession would actually be, were considering alternative options to sustain company profitability. It seemed appropriate to reduce group dependence on the domestic market.

In searching for alternatives to boost exports, operations in all three divisions were considered. One of the sub-units in the third division, a factory, seemed to have the qualities required to support the intended strategy. This particular factory, a profit centre as it was called, served mainly internal company customers; both those two divisions forming the backbone of the company, and other sub-units within the same division. It manufactured components which were used in final products of all divisions. The factory had gone through a major investment programme; as a result it featured sophisticated manufacturing technology, such as FMS, the production process was organized into workshops, and manufacturing cells were established inside each workshop, and it aimed at JIT production. As the factory was enlarged recently there was excess capacity. In face of decreasing internal demand for the

⁴Keating (1995) describes such an approach to case research as theory illustration (see also Otley and Berry, 1994).

factory output, and given the advanced production facilities with excess capacity, the group management found the idea of boosting external sales of the output of that factory appealing.

The idea of selling and marketing sub-unit output outside the group required information on the costs and profitability of the products. The existing accounting system could not supply the information, since it mainly served inventory valuation for external reporting purposes and the determination of costs by responsibility areas. The conception of product profitability at that time was largely based on informal estimates provided by the sub-unit management. Technically, these informal product costs were estimated by applying the cost percentages shown in the profit and loss statement. Material costs accounted for approximately 52% of product costs. As the production manager explained,

'... we added other costs to material costs in the same proportion as they were shown in the profit and loss statement.'

The group management was not confident that this view was correct. To cope with the inherent uncertainty of the informal cost estimates in formulating new business strategy for the sub-unit, the group management initiated the development of a new cost accounting system.

The new cost accounting system, an ABC system, was completed by the end of 1991, 10 months after its start (for a description, see Appendix). As the new system and its results were presented to the senior management, the division manager concluded that:

'the system describes what we expected'

It turned out that the differences between the informal cost estimates and the ABC costs were at their greatest less than 30% (see Appendix). Moreover, in 10 out of the 16 main product types the difference between the informal cost estimates and the ABC costs was less than 10%⁵. In line with this, the picture of product type profitability remained largely intact despite the new ABC figures. Out of 16 main product types, the ABC analysis changed the profitability status of only one. Four product types, however, appeared to be somewhat more unprofitable than was expected.

As ABC figures did not reveal any new information, senior management did not take any action to revise the intended strategy. As no decisions ensued and no action was taken based on the new system, traditional implementation literature would regard this case as a failure. Cooper *et al.* (1992), for example, define ABC failure as a lack of actions based on the information (see also Roberts and Silvester, 1996). Similarly, the use of an information system (e.g. Lucas, 1975; Zmud, 1979) and its

⁵The similarity of the informal estimates to those calculated by ABC is partly explained by the relatively large share of total costs accounted for by direct material costs. This is because material costs were used as a basis for the mark-up in the informal estimates. In the factory, there were no significant variations in the price and quality of parts used in the various product types. So, the higher the material cost of a product, the more complex the product, on average. And, the more complex the product, the more time (machine hours, labour hours, set-up hours and waiting time) was usually required for manufacture.

impact on decisions (e.g. Dickson et al., 1977; Mason, 1978; Judd *et al.*, 1981) have been used as surrogates for success in the information system literature.⁶ The division manager, however, understood success in different terms:

'We expected the ABC system to assist in directing marketing efforts to the most profitable products. The reason why it is not used as a decision tool is that it did not reveal any significant new information. It supported our earlier conceptions. It is clear that if our current way of doing business is right, there is no need to change the track just because of good new measures and systems. ... Had our way of doing business appeared wrong, the project would have caused changes. We were extremely lucky to be on the right track, and it is not the fault of the project that our way of doing business is right.'

In sum, it is hardly surprising, given the nature of obtained information, that the senior management did not take any action based on ABC information. Nevertheless, although no consequent action was taken, ABC reduced the uncertainty inherent in the informal estimates. The senior management was more confident that they were on the right track. In other words, their prime concerns with the intended strategy were resolved. Therefore, they considered ABC a success.

Before dwelling on this case in more detail, consider the following ABC failure description, this time from the perspective of the unit management of a decentralized company.

ABC failure: resistance

'Ah, yet another project!', thought a manager of one of the profit centres of a large decentralized company. Although he admitted that accounting systems had not been changed in phase with changes in the production process, he was not very enthusiastic about the idea of the new cost accounting system the group management was aiming at. The plant had a history as a bottleneck to the whole company, and for the manager, the main concern was production control. As one of the group managers put it later:

'the most important thing at that time was not to produce products as cheaply as possible, but to produce as many as possible'

The plant manager understood, though, that the group management was concerned about cost accounting. Product costing was in poor shape in all of the group units, despite a group-wide development programme to reduce costs. As the group management regarded cost effectiveness as strategically important for the group, it was not surprising that the issue of developing cost accounting was taken up.

The group management selected the factory in question as a pilot site, 'a practise field' as one of the group managers put it, to set in motion the group-wide development of cost accounting systems. This factory was selected because advanced production technology was in use. In this new production environment the treatment of capital costs was a puzzling issue for group managers. Furthermore, the new

⁶See DeLone and McLean (1992) for a discussion of various success measures, and Lyytinen and Hirscheim (1987) for failure concepts, used in the information systems literature. Shields (1995), in his recent study on ABC implementation experiences, had considerable difficulty in defining ABC success.

technology had made the current job order-based costing system obsolete, as it could not follow the products through the production process due to dramatically increased throughput times. The reason for selecting ABC as a base for development work was explained by the group managers in terms of curiosity:⁷

'The acronym ABC came up every time accounting development was discussed.' To ensure that the ownership of the new system remained with the factory, the group management wanted the accounting project to be managed by the factory. In giving ownership to the factory the group management believed the new system would be accepted, used and maintained at the local level. A project team of six persons, headed by the production engineer from the factory, and comprising both local middle management and two accounting researchers, was appointed to build a new system. Progress was monitored by a steering group, which included both group and factory managers as well as a controller from another factory in the group, and two accounting professors. Schedules, step-by-step targets and responsibilities were clearly defined, and academic assistance in theoretical costing issues was provided. So, considerable effort was made to ensure that the new accounting system was both conceptually and theoretically sound, and that the new system would be implemented.

As noted above, the unit management was, however, mainly concerned about production control. Poor production control was regarded as one of the main factors preventing output being increased. So, the unit management decided to build a new production control system in parallel with the new cost accounting system. This decision widened the initial scope of the project considerably. In addition to finding out about product profitability, a target set by the group management, the new system was to assist in the day-to-day management of the factory. The factory management hoped the new system would support make-or-buy analysis, cost reduction, product planning and purchasing activities, and help to shorten throughput times and to reduce work-in-process inventories. So, the introduction of production planning by the unit management changed the initial focus of the project, from building a new cost accounting system, to a system attempting to facilitate both production control and cost accounting (cf. Scapens and Roberts, 1993).

However, as it turned out the unit management postponed the production control part of the project 5 months after the start. The importance of this postponement of the production control part of the project for the future of the ABC system is best understood by considering the expected benefits from the project as a whole, i.e. both the ABC and production control parts, as stated in the project plan which was produced by the factory management:

'...benefits will be obtained because of shorter throughput times which will be achieved by an increase in the reliability of production controls. Reductions in inventories and improved make-or-buy analysis will give further benefits.'

⁷It is worth remembering, that at that time ABC was at its infancy in Finland. Therefore, to make 'rational' decisions on the applicability of ABC to the factory was bound to be impossible. It appears that in this particular case change was driven by the group management's need to improve cost accounting; selecting ABC as a method to accomplish this appears to relate to institutional pressures and managerial fads and fashions (see e.g. Mayer and Rowan, 1977; DiMaggio and Powell, 1983, 1991; Abrahamson, 1991; Abrahamson and Rosenkopf, 1993; Abrahamson, 1996).

Both shorter throughput times and reductions in inventories were expected to be achieved with the aid of new production controls, not through cost accounting. So, although the new system was also to support cost reduction, product planning and purchasing activities, the local management appears not to have been fully committed to these objectives, since possible benefits from improving those operations were not considered in the project plan. Moreover, the question of whether to make or buy parts had much less relevance in the new situation of excess capacity: almost everything was done in house to keep the factory busy. As a result, the new ABC system, without production control support, seemed to offer relatively little to resolve the concerns which the local management had in their day-to-day operation of the factory. But for such a system, local support can easily become a critical issue.

The lack of project personnel time for two parallel projects was given as a reason for the postponement. But perhaps more emphasis should be given to other reasons. First, even the central importance of production control diminished remarkably during the project. In 1991 the recession reduced the demand for factory output considerably, resulting in a 60% capacity utilization rate for the factory. As the division manager asked:

‘...where do you need production control and optimizing tools in such an environment?’

Second, and perhaps more interestingly, the decision to abandon the production control part of the project occurred simultaneously with the departure of the vice-president of operations, the initiator of the cost accounting project. In the formal hierarchy, the vice-president was second only to the CEO of the whole group. His departure resulted in a major shift in the project's power base (cf. Scapens and Roberts, 1993), leaving the cost accounting part of the project without a clear group-level sponsor. Hence, the factory management's decision to ‘postpone’ the production control part of the project, and at the same time downgrade their own interest in the new system, may be seen as a sign of resistance to ABC, which was possible due to the shift in the project's power base.

The cost accounting part of the project was, however, completed in due course. Although the information, according to the factory manager may have been of some use in pricing decisions, the new system was not used in the day-to-day management of the factory. Two years after its completion, it was not maintained any more. As the intention of the senior management to establish a new cost accounting system for the factory did not materialize, and as the unit management neither made use of nor maintained it, this ABC project appears to have been a failure.

Case summary

We have presented two short cases, describing the success and failure of ABCs. In the first one, the group management used ABC to reduce strategic uncertainties. As the results from ABC confirmed expectations, no actions ensued. Nevertheless, ABC was regarded as successful by the group management as their concerns over the intended strategy were resolved.

In the second case, the factory management initiated a production control system to be built together with a centrally initiated ABC system. The production control

part of the project was, however, abandoned due to lack of project personnel time for two parallel projects, and because of the diminished need for a production control system in a situation of excess capacity, and, as it appears, due to resistance to a new cost accounting system. As the expected benefits of the project to the factory management were related to production control, the new ABC system did not meet their needs and expectations. Consequently, the unit management did not use the system. After 2 years, it was not maintained anymore. Therefore, the case appears a failure.

Why bother to tell these two stories? What do we learn from these two descriptions? The point is that they describe the same ABC project. Taken together, was this ABC project a success or a failure? Based on the traditional conception of an information system failure, i.e. no actions and no maintenance, the case appears to be an example of failure. This is contrary to the group management conception described in the first part of the story. Therefore, there seems to be a need to discuss traditional conceptions of system success and failure in more detail.

Another purpose of this somewhat unusual case presentation was to draw attention to the tensions between the headquarters and the sub-unit in a system development project. Corporate management have objectives and needs for a system which can be different to those experienced at the local level. In addition to the collision of objectives and needs described in the foregoing, the case points to resistance to ABC. We will consider below in more detail the specific organizational contingencies (cf. Scapens and Roberts, 1993), including existing ways of obtaining information and controlling activities, which may be seen to have induced local management to resist the new system.

The following figure summarizes the chronological order of the main events in the case, illustrating also the research method used to collect the data in the two main phases of the study. The following paragraphs expand further on the research method and setting.

3. Research method and setting

The study started 6 years ago when the author and a colleague were actively part of a project team in charge of developing one of the first ABC applications in Finland.⁸ The author's role in the project group was to assist with the theoretical issues of ABC. The project took 10 months and was considered complete by the end of 1991. The total time spent on the research site during that phase of the study was 155 hours including a few informal interviews, both at the group and local level. In addition, memos, reports and company history (Nygren, 1981) were read to assure triangulation in data collection.

After the participant observation phase, the study was continued with a number of follow-up visits. Between 1992 and 1995, five visits were made to the factory and one telephone interview was carried out. The aim was to study the use and organizational implications of ABC at the unit level. The visits lasted from 2 to 3 hours, involving unstructured discussions with the local managers. These discussions were not tape-

⁸This type of active participation can vary from the participant observation (Yin, 1984), which was used here to constructive involvement (Kasanen *et al.*, 1993). Developing a system refers here to building an accounting system to enable ABC-calculations to be made when necessary.

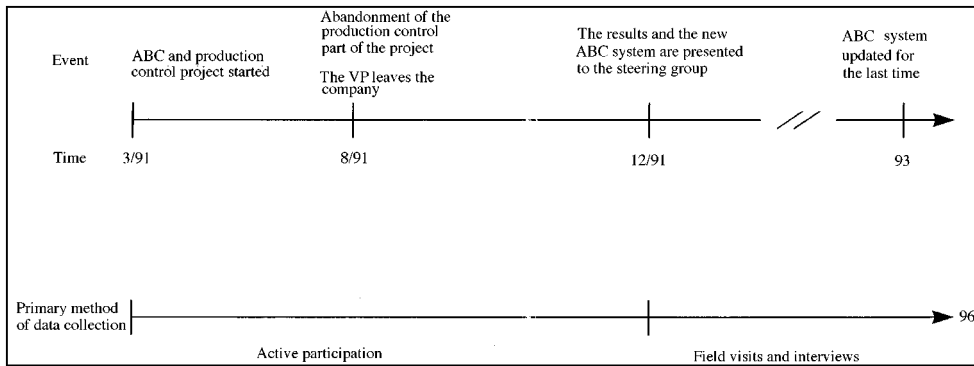


Figure 1. The case summary.

recorded. Three key group-level managers involved in the project were also interviewed at the beginning of 1995, each tape-recorded interview lasting from 1 to 1.5 hours. It should be emphasized that in this latter phase of the study the researchers did not attempt to intervene in company operations since the project was considered complete in 1991.

The participant-observation phase during 1991 was essential to this study. It helped to establish close relationships with company personnel and reduced the likelihood of misinterpreting their words and intentions. Moreover, a thorough knowledge of the research site, obtained during the participant-observation phase, focused the inquiry during the latter phase of the study.

The study was carried out at the Sisu Inc. In 1991⁹, Sisu comprised three main divisions: the truck, second-hand and post-sales service, and special vehicle divisions. The truck division manufactures heavy trucks and has about 25% of the Finnish market. The truck division, together with its new spinoff the second-hand and post-sales service division, formed the backbone of the Sisu. The special vehicle division consisted of three business units: terminal tractors, military vehicles and axles. The group had a turnover of FIM 854 million and employed 1351 persons in 1991. The turnover of the axle factory, where the ABC project took place was FIM 108 million in 1991 and it employed some 130 people. Its product range included 16 main axle types with up to 200 modifications.

4. Discussion

Questioning the concept of ABC failure

Simons (1990, 1995) has suggested that management control systems play a role in the strategy formulation process. According to Simons, the business strategy of a firm creates strategic uncertainties which top managers monitor. Top managers need interactive control systems in order to personally monitor the strategic uncertainties they believe to be critical to achieving the organization's goals (Simons, 1990, p. 137). Consider the initiative for ABC at Sisu in the light of Simons' process model.

⁹Valmet's vehicle business was merged with Sisu in 1994, increasing turnover from FIM 918 million in 1993 to more than FIM 4 billion in 1994. Sisu is today quite a different company from what it was at the time of the ABC-project in 1991.

At Sisu, the intended strategy, which was to reduce the domestic dependence of the company by selling and marketing axles to external customers, created strategic uncertainties. These uncertainties related to the costs and profitability of axles, the conception of which was largely based on informal cost estimates provided by the unit management. To reduce uncertainty, top management made cost accounting interactive by adopting ABC. The ABC initiative by the top management signalled the importance of 'reliable' assessment of axle profitability to the factory management. But, perhaps more importantly, it served a surveillance function by searching for surprises or, as in this case, assuring that there are none (Feldman and March, 1981; Simons, 1990). And, as no surprises emerged, the intended strategy remained largely intact.

Top management, according to Simons (1990) *use* selected control systems to monitor strategic uncertainties¹⁰. He argues that control systems may be used for signalling, surveillance and decision ratification (Simons, 1990, pp. 136–137). As these uses do not necessarily cause any immediate decisions or actions, the information produced by the control systems may appear worthless within a decision-making perspective.¹¹ In light of the evidence from this case study, the decision-making perspective on information value appears somewhat restricted in the ABC context (cf. Feldman and March, 1981). Information processing mechanisms can be seen as a means for uncertainty reduction (Galbraith, 1973; Den Hertog, 1978; Den Hertog and Wielinga, 1992) and information value as the degree to which uncertainty is reduced.¹² So, ABC may be seen as valuable for the senior management of Sisu by reducing the uncertainty of their intended strategy.

This wider concept of information value, if accepted, has important implications in assessing the success and failure of ABCs (Cooper *et al.*, 1992; Cobb *et al.* 1992; Argyris and Kaplan, 1994; Anderson, 1995; Shields, 1995; Swenson, 1995; Roberts and Silvester, 1996). Cooper *et al.* (1992), for example, define ABC failure as a lack of actions based on ABC information. This definition may now be too restricted assuming that senior management use control systems as Simons suggests. Changes in decision-making may be an adequate surrogate for success when diagnostic control systems are used to implement strategy. When accounting controls are used for surveillance, however, the success of the selected method may not depend on the nature of the result. An analogy in the medical field could be the physician who finds only positive or negative specimens in his random sample and happily concludes that he has invented a powerful method to detect an illness. The success of the measurement system in such situations depends on its ability to make the correct diagnosis, not whether the result is positive or negative. Similarly, a cost accounting system may be successful even when its results do not require any decisions or actions to be taken. So, this case illustrates the importance of extending the concept of ABC use beyond the boundaries of the decision-making perspective. Only then may ABC use serve as a surrogate for ABC success.

¹⁰Arguments for balanced scorecard rely on similar rhetoric (see Kaplan and Norton, 1992).

¹¹Traditionally, information is said to have value when the decision-maker's action, in the presence of information, differs from what his or her action would have been in the absence of the information (Drury, 1992; Horngren, 1982; Mace, 1980). This popular definition, however, is a simplification of decision theory (Hilton, 1981). Therefore, we refer to it here as a decision-making perspective in order to distinguish it from decision theory.

¹²According to Shannon and Weaver (1949), information reduces the uncertainty of the information receiver. In information economics initial uncertainty is regarded as one of the determinants of information value (see Hilton 1981; Hilton and Swieringa, 1981).

In the information systems (IS) literature system maintenance characterizes its acceptance (e.g. Kwon and Zmud, 1987; Cooper and Zmud, 1990), and is thus an integral part of IS implementation success. On the other hand, it is possible to conceive of successful systems which are used only once. An ABC system, used for some strategic purpose, may well be a case in point. Consequently, neither the use nor the success of ABC necessarily requires maintenance. It has been argued, however, that in such situations an activity or cost driver analysis instead of an ABC system would do the job (Nanni *et al.*, 1992). Nevertheless, there is evidence, in addition to this case, that managers prefer systems, not *ad hoc* analyses, to cope with uncertainty (Den Hertog, 1978; Den Hertog and Wielinga, 1992). At Sisu, the vice-president of operations emphasized a number of times that systems rather than one-off analyses are required to ensure that management have strategic information whenever it is needed. Hence, at Sisu the ABC system maintenance was an intention of senior management.

That this intention never materialized is partly explained by the changes in the group management. The ABC project was initiated by the vice-president of operations, but as he subsequently left, the project lacked a group level sponsor. Another reason is the limited attention (Simons, 1990; Simon, 1957; Mintzberg, 1973) which senior management was able to direct to ABC. The arrangements to merge Valmet's vehicle business with Sisu were begun in 1992 (see footnote 9). The group management concentrated on this merger issue, and had little time for the affairs of the operating units. As the group controller put it later:

'...it (the ABC-project) was not a top ten discussion topic any more.'

In terms of Simons' process model, top management directed their attention to other strategic uncertainties. In the same vein, any strategic issue is likely to attract only temporary attention; then top management focuses on something else. This indicates that systems for management accounting, which focus on strategic issues will receive only temporary interest at best, irrespective of the results they provide. If this is the case, the idea of strategic cost management (Shank and Govindarajan, 1993) may over-emphasize the role of cost accounting, given the multitude of activities which top management is engaged in (Mintzberg, 1973).

To summarize, the discussion so far has questioned the currently dominant decision-making perspective in assessing the success and failure of ABCs. As accounting may be used for various purposes and in various ways, we contend that some of the so-called failures of ABC systems may not be failures at all. Instead, these interpretations of 'failure' may merely reflect a limited appreciation of the uses to which accounting and control systems are put in practise.

The use of ABC for surveillance, however, does not refute the fact that the maintenance of the new system was an intention of the group management. In this respect the project failed. Let us next explore in more detail why the unit management decided against the new ABC system.

Exploring the origins of the resistance

Recent literature on ABC implementation has argued that most implementation problems are neither attributable to technical flaws in ABC nor to the way ABC is applied, but to organizational issues, namely resistance (Argyris and Kaplan, 1994; Shields, 1995; Roberts and Silvester, 1996). Economic rationale, political motives

and organization culture are all suggested elsewhere to explain, or to be related to, the resistance to accounting change (cf. e.g. Antle and Fellingham, 1995; Markus and Pfeffer, 1983; Scapens and Roberts, 1993). As we attempted to explain resistance to ABC in the case company, we borrowed elements from all these frames of reference in order not to miss important dimensions of the phenomenon and not to compress the reality into a mere illustration of the relevance of some selected framework (cf. Humphrey and Scapens, 1996). We assumed that by combining these diverse frames of reference to explain resistance, we would be able to provide a more credible and comprehensive account of the events at Sisu than by relying on a single frame of reference. We attempted to reveal economic and political motives, as well as cultural reasons, for the resistance by focusing on the position of the axle-factory inside the group, the existing ways of obtaining information and controlling activities, and the role of accounting in the management of the axle factory.

Economic rationale. It is widely acknowledged today that managers and other actors in organizations have a number of informal ways of keeping themselves informed (Hopwood, 1974; Mintzberg, 1975, 1979; Argyris, 1977; Preston 1986; Jönsson and Grönlund, 1988; Abernethy and Lillis, 1995; Horngren, 1995). These include interactions, observations, personal record-keeping and attending meetings, to mention a few. Informal cost estimates produced at the axle-factory serves as one obvious example of this phenomenon. But, given that the ABC system provided basically the same information as local management was able to derive from informal sources, and that the new system did not provide any better means for production control, it seems that the new system did not serve the needs of the factory management. Consequently one could assume there was little incentive to maintain such a system.

But, looking at factory management needs portrays only a partial picture. This is because it is usually only the local management which is in a position to estimate cost relations of production processes sufficiently well. Other organizational stakeholders had either to content themselves with informal estimates or to initiate a formal accounting system. The introduction of a formal accounting system, in turn, may indicate that the provision and consumption of information has become separated. It has been argued elsewhere that in such situations accounting systems often imply drastic consequences for the slack resources of the unit providing the information (Swanson, 1983; Cyert and March, 1963; Galbraith, 1973; Burgeois, 1981). At Sisu this was manifested most clearly in the resistance towards the integration of the ABC system with the existing internal accounting system. Reluctance was defended on grounds of additional budgeting work which was likely to follow as the number of activities (56) exceeded the number of responsibility centres (10) currently budgeted. So, the new cost accounting system was perceived to induce costs in terms of extra work at the unit level, while the benefits, if any, were to be reaped elsewhere in the organization.

It could be argued that the incentive problem in maintaining a new interactive system for the benefit of the group management is partly created by the use of responsibility accounting to control business unit performance. The company is decentralized and the performance of its units and their management is monitored in financial terms, with the unit management responsible for achieving the budgeted results. In Simons (1990) terms, the group management controls the activities of the sub-units at a distance with the aid of a diagnostic control system. Given such an

organization structure and lines of accountability, what are the unit manager's incentives to incur the additional costs (or to relinquish discretion over the existing resources which could be used for some other purpose) required to maintain an interactive control system when the existing diagnostic control system simultaneously presses management to meet the budgets. So, it appears that the unit management had economic reasons to resist ABC in this case.

Politics. The fact that the production control part of the project was abandoned even before any results from the ABC part of the project were obtained, and that this abandonment coincided with the departure of a vice-president of the Sisu group imply that the limited use and non-maintenance of the ABC system is also related to the issue of organizational power and politics. Markus and Pfeffer (1983) build their argument on the notion that accounting and control systems, through their organizational uses, imply a distribution of power among those who design, use and are affected by others' use of them (see Markus and Pfeffer, p. 208; see also Macintosh and Scapens, 1990; Scapens and Roberts, 1993). As a change in the accounting system potentially changes the distribution of power in an organization, it will be contested. It will be contested, as other aspects of organizational life, like resource allocation, may be affected due to the change (see also e.g. Antle and Fellingham, 1995). We will next explore in more detail how and through what mechanisms the new ABC system may have adversely affected the politics of the axle factory inside the group.

Axles were considered strategic components and were made by Sisu, whereas other strategic components, such as engines and transmission systems, were bought from external vendors. All vehicles sold by the group were equipped with Sisu axles. Therefore, other units' sales were dependent on the axle factory's ability to supply components. The ability to provide the critical resources required by other parts of the organization is argued to be an important source of power (Salanik and Pfeffer, 1974; Pfeffer and Moore, 1980). This power was further reinforced as the axle factory had a history of being a bottleneck for the whole group: capacity shortages in the axle factory affected directly the sales and profits of the rest of the units.

In such situations transfer pricing becomes a crucial issue. At Sisu transfer prices were negotiated, and as one of the group managers described the logic:

'As axles were considered strategic components, transfer prices were determined so as to make the axle factory look profitable.'

So, the transfer pricing system in use was clearly favourable to the axle factory. In fact, it was in a position where it could fairly easily pass the costs of its inefficiencies on to other units. In the division manager's words:

'... strictly speaking, if you sell almost the whole output to internal customers, what is your incentive for cost control?... you can always increase prices, you have always such a runaway, the one you never have in the marketplace.'

We might presume that the new formal system would have replaced, sooner or later, the informal estimates of full manufacturing costs as a base in negotiating transfer prices. The knowledge of the 'true' cost of axles would have increased the bargaining power of other sub-units in transfer pricing and resource allocation negotiations, implying a shift of power from the axle factory to the buying sub-units. Hence,

exporting inefficiencies to other units would have been more difficult, implying a need for better cost control in the axle factory.

But even without any impacts on transfer prices, the new system could have negatively affected the position of the axle factory inside the group by making the economics of its operations visible (see e.g. Hopwood, 1983). Such visibility creates opportunities for the group management to exert direct control over the unit operations, thus increasing unit accountability. Scapens and Roberts (1993), though not in an ABC context, have shown how the group management's attempts to increase sub-unit accountability by introducing a new accounting system can meet with resistance. Similarly, visibility and increased accountability seemed to be a concern at the axle factory, as the activities of the factory administration, and the capacity to perform those activities, were deliberately not looked at in any detail. Similarly, at the time the preliminary results of the ABC calculations were presented, the members of the project group expressed some concern that the controller of the truck division was sitting on the steering committee. Further, increased visibility may have caused other units to question the axle factory's status as a profit centre. Such fears may not be that distant given the extent division of the axle factory's internal sales and the group management rhetoric which described the axle factory as 'an artificial profit centre'.

Culture. In addition to the non-consonance of a new system with the other determinants of organizational power, Markus and Pfeffer (1983) argue that possible non-consonance of a new accounting system with the organization paradigm may explain the resistance. A paradigm encompasses the values, culture and climate that uniquely identify an organization (Markus and Pfeffer, 1983, p. 208). Without dwelling on the exact meaning of the words 'paradigm' and 'culture', and acknowledging the extensive literature on these issues (see e.g. Morgan, 1986), we suggest, at the risk of oversimplification, that with the production orientation, latest manufacturing technology and little market contact, a strong engineering culture had developed at the axle factory. All managers at the unit had an engineering background, and the unit had no accounting staff (nor, for example, marketing professionals) of its own. External accounting, including cost accounting for inventory valuation, as well as internal responsibility accounting were carried out by the divisional staff. Dialogue at the factory was accomplished in terms of production quotas, quality issues, throughput times, new products and optimizing production schedules. Accounting was not believed to be of primary importance to the factory. As the group controller commented:

'I didn't see that the local management was very enthusiastic about the cost accounting project. They considered it perhaps as an interesting question, but it was certainly not a matter of survival to them.'

As Markus and Pfeffer (1983) noted, systems stressing dimensions of operations not previously emphasized in the culture will encounter difficulties. This argument is not far from those which use firm-level institutions and routines to explain resistance and the slow pace of change in accounting methods (Scapens, 1994, Scapens *et al.*, 1996). Although these studies have started to highlight the routine nature of existing accounting systems, it seems that firm-level institutions and routines other than

accounting, as well as organization culture, also deserve attention in explaining resistance to accounting change.

In this section we have attempted to show that there were economic, political and cultural reasons why the axle factory management resisted the new ABC system. What appears important here is that an attempt to explain resistance in this case solely in terms of an economic rationale, or political considerations, or organization culture, would have portrayed an incomplete picture of actual developments. Therefore, this case serves to remind us that the selection of any single framework for explaining resistance contains the danger of missing important aspects of organizational reality.

Although resistance to a new accounting system and accounting change may come from various sources as discussed above, these sources seem to be fundamentally structural. Markus and Pfeffer (1983, p.216) refer to power distributions and organizational cultures as structural factors behind resistance. This study reinforces their argument. But, it also points to the task and information asymmetry inherent in decentralized organizations, coupled with cost/profit responsibility, as one potential structural source of resistance. Task and information asymmetry creates the need for both a diagnostic control system and various types of strategic calculus which serve the top management, but potentially have only a limited value at the local level. Cost/profit responsibility provides negative incentives at the local level to maintain accounting and information systems serving mainly the top level management. It appears that hardly any of these structural sources of resistance (i.e. originating from economic, political or cultural concerns) would be dealt with by employing implementation-based strategies, such as user involvement (cf. Ives and Olson, 1984), in this case.

This study has emphasized the divergent perspectives which managers at the top and at the local level have on ABC system success and failure. It is tempting to speculate on whether top management's ideas of failure are systematically different from local managers' perception of failure in decentralized organizations. This case study suggests that managers at both levels basically conceive success and failure with respect to their own needs and aspirations, whatever they are. As long as there are systematic differences in interests between the top and local management, resulting from the structural sources discussed above or for some other reasons, conceptions of ABC success and failure are also bound to diverge. Moreover, success in an attempt to increase control in a sub-unit simultaneously indicates that the sub-unit is under more intense control. It is hardly surprising that this more intense control is contested. Hence, differences in interests are also likely to lead to conflicts, and, as it appears, conflicts occur irrespective of the nature of the new system, be it diagnostic or interactive.

5. Summary and conclusions

The purpose of this research was to study why many ABC projects seem to fail. A longitudinal case study was conducted in order to explain one ABC failure in depth. This, of course, does not allow us to make statistical generalizations, but it is hoped that the frameworks used and the observations made will assist others in explaining and understanding ABC failures. We do not claim that we can provide an exhaustive

explanation for ABC failure, or resistance to ABC, as we acknowledge that the theories and frameworks we used, although of great assistance to us, also restricted our ability to interpret what we saw. We hope, however, to have reduced this problem by not focusing on a single frame of reference, but instead relying on multiple frames discussed earlier in the accounting literature.

This case study suggests two ways of explaining why many ABCs seem to fail. First, reflecting on Simons' (1990) concept of interactive management controls, this study showed how senior management at Sisu used ABC to direct the organization's attention to strategic uncertainties. As no surprises emerged, no actions were required. It is proposed that even without actions, ABC information can be conceived as valuable. When used to support strategic decision-making, the success of ABC cannot depend on the results of the analysis, nor the actions taken based on those results, but on its ability to provide a correct diagnosis of the situation. By reducing uncertainty, and providing a more solid basis for strategic decisions, ABC may be of great value even without consequent actions, and without a change in an intended decision. This leads us to suggest that some of the so-called ABC failures may not have been failures at all. Instead, these supposed failures may result from the fairly narrow decision making perspective adopted to assess ABC projects in firms. Consequently, discussion on ABC success and failure should acknowledge uses of accounting other than the currently dominant decision making perspective.

Second, this study focused on resistance to a new cost accounting system as a source of ABC failure. We focused on contextual issues behind the resistance as it seems that the explanation for the non-use and abandonment of ABC in this case was to be found neither in the content of the new system, as both the group and unit management believed in the results obtained, nor in the process of implementation, as the system was designed and built by the local middle-management (cf. Pettigrew, 1985). This does not mean that the content and the process of change should be ignored when seeking explanations for ABC failure, but that in this case they did not seem to play a major role in explaining the ABC failure.

This case study attempted to illustrate the diverse origins of resistance. The axle factory management had economic reasons to resist the new system because it did not help them to run the day-to-day operations of the factory, and because they were able to derive basically the same information from other sources. Furthermore, the diagnostic control system already in use provided incentives, not for maintaining the new system for the benefit of the group management, but for abandoning it. The axle factory management seemed also to have political concerns. The new system might have changed the way transfer pricing was conducted in the company, possibly leading to a shift of power from the axle factory to the buying sub-units. By creating new visibility, the ABC system would also have increased the axle factory management's accountability, providing group management with new possibilities to exert direct control over the axle factory resources. Finally, the dominant culture at the axle factory was argued to be that of the engineers, with accounting playing only a minor role in the unit management. Therefore, the new ABC system was not in consonance with the local culture. Routines and firm-level institutions, and organization culture, were suggested to be worthy of consideration in explaining resistance to ABC, and ABC failure. The practical implication of this study hinges on the notion that although the resistance may originate from various sources, where sources appear fundamentally structural, they are unlikely to be dealt with through implementation-based strategies.

We started this paper by arguing that the current implementation literature (i.e. factors studies) should pay more attention to organizational stakeholders, and to the competing and complementing ways of obtaining information, and to controlling activities in organizations. The issue of the diverse interests of organizational stakeholders was highlighted by presenting this single case in two parts. We showed that the conception of a single ABC project's success may depend on stakeholders, even without allowing for political sentiments. The group management used ABC successfully for their strategic purpose, whereas the local management was comfortable with the informal estimates and did not regard the new system as valuable for their day-to-day management of the factory. Consequently, for the local management, the ABC system was a failure. The need to appreciate the role of various organizational stakeholders in ABC implementation was further elaborated as we looked into the political motives of the axle factory management in resisting the new system. Hence, we hope this case study has illustrated the importance of explicitly considering the organizational stakeholders in explaining ABC failure.

The study also portrayed the central role of existing, both competing and complementing, ways of obtaining information and controlling operations in understanding resistance to a new cost accounting system. The new cost accounting system was not regarded as valuable by the unit management because there were competing ways of obtaining the same information, namely the informal cost estimates. On the other hand, the new ABC system at Sisu could be seen to complement the existing diagnostic system used to control sub-unit operations. Understanding the incentives which the existing systems create, and the threats which the new system poses to the current distribution of power through, for example, changes in transfer pricing (which is a part of the existing control arrangements) may help to clarify some of the motives for resisting new accounting systems and accounting change. Markus and Pfeffer (1983) emphasized that the reason for the resistance and abandonment of a new accounting system may lie in its non-consonance with dimensions of organizational power and the organization paradigm. The evidence from this case seems to support their arguments. But, as a number of ABC projects have complemented existing systems, not replaced them, we contend that a better understanding of resistance to ABC implementation may require specific attention to the consonance of the new system to the existing formal and informal accounting and control systems.

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References

- Abernethy, M. A. and Lillis, A. M., 1995. The impact of manufacturing flexibility on management control system design, *Accounting, Organizations and Society*, **20**(4), 241–258.
- Abrahamson, E., 1991. Managerial fads and fashions: the diffusion and rejection of innovations, *Academy of Management Review*, **16**3, 586–612.
- Abrahamson, E., 1996. Management Fashion, *Academy of Management Review*, **21**(1), 254–285.
- Abrahamson, E. and Rosenkopf, L., 1993. Institutional and competitive bandwagons: using mathematical modelling as a tool to explore innovation diffusion, *Academy of Management Review*, **18**(3), 487–517.

- Anderson, S. W., 1995. A framework for assessing cost management system changes: the case of activity based costing implementation at General Motors, 1986–1993, *Journal of Management Accounting Research*, **7**, Fall, 1–51.
- Antle, R. and Fellingham, J., 1995. Information rents and preferences among information systems in a model of resource allocation, *Journal of Accounting Research*, **33** (Supplement), 41–58.
- Argyris, C., 1977. Organizational learning and management information systems, *Accounting, Organizations and Society*, **2**, 113–123.
- Argyris, C., 1985. *Strategy Change, and Defensive Routines*, New York, Harper and Row.
- Argyris, C., 1990. *Overcoming Organizational Defenses: Facilitating Organizational Learning*. Needham, MA, Allyn and Bacon.
- Argyris, C. and Kaplan, R. S., 1994. Implementing new knowledge: the case of activity based costing, *Accounting Horizons*, **8**(3), September, 83–105.
- Bromwich, M. and Bhimani, A., 1994. *Management Accounting: Pathways to Progress*, London, CIMA.
- Burchell, S., Clubb, C., Hopwood, A. G., Hughes, J. and Nahapiet, J., 1980. The role of accounting in organizations and society, *Accounting, Organizations and Society*, **5**(1), 5–27.
- Burgeois, L. J., 1981. On the measurement of organizational slack, *Academy of Management Review* **6**(1), 29–39.
- Cobb, I., Innes, J. and Mitchell, F., 1992. *Activity-Based Costing: Problems in Practice*, London, CIMA.
- Cobb, I., Helliard, C. and Innes, I., 1995. Management accounting change in a bank, *Management Accounting Research*, **5**, 155–175.
- Cooper, R., Kaplan, R. S., Maisel, L. S., Morrissey, E. and Oehm, R. M., 1992. *Implementing Activity-Based Cost Management: Moving from Analysis to Action*, Montvale, NJ: Institute of Management Accountants.
- Cooper, R. and Zmud, R. W., 1990. Information technology implementation research: A Technological diffusion approach. *Management Science* **36**(2), 123–139.
- Cyert, R. M. and March, J. G., 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ:Prentice-Hall.
- DeLone, W. H. and McLean, E. R., 1992. Information systems success: the quest for the dependent variable, *Information Systems Research*, **3**(1), 60–95.
- Den Hertog, J. F. 1978. The role of information and control systems in the process of organizational renewal: roadblock or road bridge? *Accounting, Organizations and Society*, **3**(1), 29–45.
- Den Hertog, J. F. and Wielinga, C., 1992. Control systems in dissonance: the computer as an ink blot, *Accounting, Organizations and Society*, **17**(2), 103–127.
- Dickson, G., Chervany, N. and Senn, J., 1977. Research in MIS: the Minnesota experiments, *Management Science*, **23**(9), 913–923.
- DiMaggio, P. J. and Powell, W. W., 1983. The iron cage revisited: institutional isomorphism and collective rationality in organizational fields, *American Sociological Review*, April, 147–160.
- Drury, C., 1992. *Management and Cost Accounting*, 3rd Edition, Van Nostrand Reinhold, London.
- Feldman, M. S. and March, J. G., 1981. Information in organizations as signal and symbol, *Administrative Science Quarterly*, **26**, 171–186.
- Galbraith, J., 1973. *Designing Complex Organizations*, Reading, MA: Addison-Wesley.
- Hilton, R. W., 1981. The determinants of information value: synthesizing some general results, *Management Science*, **27**(1), 57–64.
- Hilton, R. W. and Swieringa, R. J., 1981. Perception of initial uncertainty as a determinant of information value, *Journal of Accounting Research*, **19**(1), 109–119.
- Hopwood, A. G., 1974. *Accounting and Human Behavior*, London: Haymarket.
- Hopwood, A. G., 1983. On trying to study accounting in the context in which it operates, *Accounting, Organizations and Society*, **8**(2/3), 287–305.
- Horngren, C. T., 1982. Management Accounting: Where Are We?, in Rappaport (ed.), *Information for Decision Making*, 3rd edition, Englewood Cliffs, NJ: Prentice-Hall.
- Horngren, C. T., 1995. Management accounting: this century and beyond, *Management Accounting Research*, **6**, 281–286.

- Humphrey, C. and Scapens, R., 1996. Theories and case studies of organizational accounting practices: limitation or liberation, *Accounting, Auditing and Accountability Journal*, **9**(4), 86–106.
- Ives, B. and Olson, M., 1984. User involvement and MIS success: a review of research, *Management Science* **30**(5), 586–603.
- Judd, P., Paddock, C. and Wetherbe, J., Decision impelling differences: an investigation of management by exception reporting, *Information and Management*, **4**(5), 259–267.
- Jönsson, S. and Grönlund, A., 1988. Life with a sub-contractor: new technology and management accounting, *Accounting, Organizations and Society*, **13**(5), 512–532.
- Kaplan, R. S. and Norton, D. P., 1992. The balanced scorecard — measures that drive performance, *Harvard Business Review*, January–February, 71–79.
- Kasanen, E., Lukka, K. and Sintonen, A., 1993. The constructive approach in management accounting research, *Journal of Management Accounting Research*, **5**, Fall, 243–264.
- Keating, P. J., 1995. A framework for classifying and evaluating the theoretical contributions of case research in management accounting, *Journal of Management Accounting Research*, **7**, Fall, 66–86.
- Kivijärvi, H., 1987. Implementing model-oriented decision support systems, Doctoral Dissertation, Helsinki School of Economics and Business Administration, Series A:53.
- Kwon, T. H. and Zmud, R. W., 1987. Unifying and fragmented models of information systems implementation, in R. J. Boland and R. Hirschheim (eds), *Critical Issues in Information Systems Research*, New York, NY, John Wiley.
- Lucas, H. C. Jr., Performance and the use of information systems, *Management Science*, **21**(8), 908–919.
- Lyytinen, K. and Hirschheim, R., 1987. Information systems failures — a survey and classification of the empirical literature *Oxford Surveys in Information Technology*, **4**, 257–309.
- Mace, J. R., 1980. Value of information, in Arnold, J., Carsberg, B. and Scapens, R. (eds.), *Topics in Management Accounting*, Oxford, Philip Allan.
- Macintosh, N. B. and Scapens, R. W., 1990. Structuration theory in management accounting, *Accounting, Organizations and Society*, **15**(5), 455–477.
- Markus, M. L., 1983. Power, politics and MIS implementation, *Communication of A.C.M.*, June, 430–444.
- Markus, M. L. and Pfeffer, J., 1983. Power and the design and implementation of accounting and control systems, *Accounting, Organizations and Society*, **8**(2/3), 205–218.
- Mason, R. O., 1978. Measuring information output: a communication systems approach, *Information and Management*, **1**(5), 219–234.
- Meyer, J. W. and Rowan, B., 1977. Institutionalized organizations: formal structure as myth and ceremony, *American Journal of Sociology*, September, 340–363.
- Mintzberg, H., 1973. *The Nature of Managerial Work*, New York, Harper and Row.
- Mintzberg, H., 1975. *Impediments to the Use of Management Information*, New York, National Association of Accountants.
- Mintzberg, H., 1979. *The Structuring of Organizations: a Synthesis of the Research*, Englewood Cliffs, NJ, Prentice-Hall.
- Nanni, A. J., Dixon, J. R. and Vollmann, T. E., 1992. Integrated performance measurement: management accounting to support the new manufacturing realities, *Journal of Management Accounting Research*, **4**, Fall, 1–19.
- Nygren, H., 1981. *Sisu Suomen ja maailman maanteillä (Sisu at the roads of Finland and the world)*, Art-Print Oy.
- Otley, D. T. and Berry, A. J., 1994. Case study research in management accounting and control, *Management Accounting Research* **5**, 45–65.
- Pettigrew, A., 1985. *The Awakening Giant: Continuity and Change in ICI*, London, Blackwell.
- Pfeffer, J. and Moore, W. L., 1980. Power in university budgeting: a replication and extension, *Administrative Science Quarterly*, **25**, 637–653.
- Powell, W. W. and DiMaggio, P. J., 1991. *The New Institutionalism in Organizational Analysis*, Chicago, IL, U.S.A., The University of Chicago Press.
- Preston, A., 1986. Interactions and arrangements in the process of informing, *Accounting, Organizations and Society*, **11**(6), 521–540.
- Roberts, M. W. and Silvester, K. J., 1996. Why ABC failed and how it may yet succeed, *The Journal of Cost Management*, Winter, 23–35.

- Ryan, B., Scapens, R. W and Theobald, M., 1992. *Research Method and Methodology in Finance and Accounting*, London, Academic Press.
- Salancik, G. R. and Pfeffer, J., 1974. The bases and use of power in organizational decision making: the case of a university, *Administrative Science Quarterly*, **19**, 453–473.
- Scapens, R. W., 1990. Researching management accounting practice: the role of case study methods, *British Accounting Review*, **22**, 259–281.
- Scapens, R. W., 1994. Never mind the gap: towards an institutional perspective on management accounting practise, *Management Accounting Research*, **5**, 301–321.
- Scapens, R. W. and Roberts, J., 1993. Accounting and control: a case study of resistance to accounting change, *Management Accounting Research*, **4**, 1–32.
- Scapens, R. W., Burns, J. and Ezzamel, M., 1996. Towards A Framework For Studying Accounting Change, Paper presented at the European Accounting Association Annual Congress in Bergen.
- Schank, J.K. and Govindarajan, V., 1993. *Strategic Cost Management — The New Tool for Competitive Advantage*, New York, The Free Press.
- Shannon, C. and Weaver, W., 1949. *The Mathematical Theory of Communication*, Urbana, IL, University of Illinois Press.
- Shields, M. D., 1995. An empirical analysis of firms' implementation experiences with activity-based costing *Journal of Management Accounting Research*, **7**, Fall, 148–166.
- Simon, H., 1957. *Models of Man*, New York, John Wiley.
- Simons, R., 1990. The role of management control systems in creating competitive advantage: new perspectives *Accounting, Organizations and Society*, **15**(1/2), 127–143.
- Simons, R., 1995. *Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal*, Boston, Massachusetts, Harvard Business School Press.
- Swanson, E. B., 1983. Rationality and politics in information system design and implementation: a juxtaposition of two views *Accounting, Organizations and Society*, **8**(2/3), 219–221.
- Swenson, D., 1995. The benefits of activity-based cost management to the manufacturing industry, *Journal of Management Accounting Research*, **7**, Fall, 167–180.
- Yin, R. K., 1984. *Case Study Research: Design and Methods*, Newbury Park, CA, Sage.
- Zmud, R. W., 1979. Individual differences and mis success: a review of the empirical literature, *Management Science*, **25**(10), 966–979.

Appendix

Figure 2 illustrates the basic features of the ABC system in the factory.

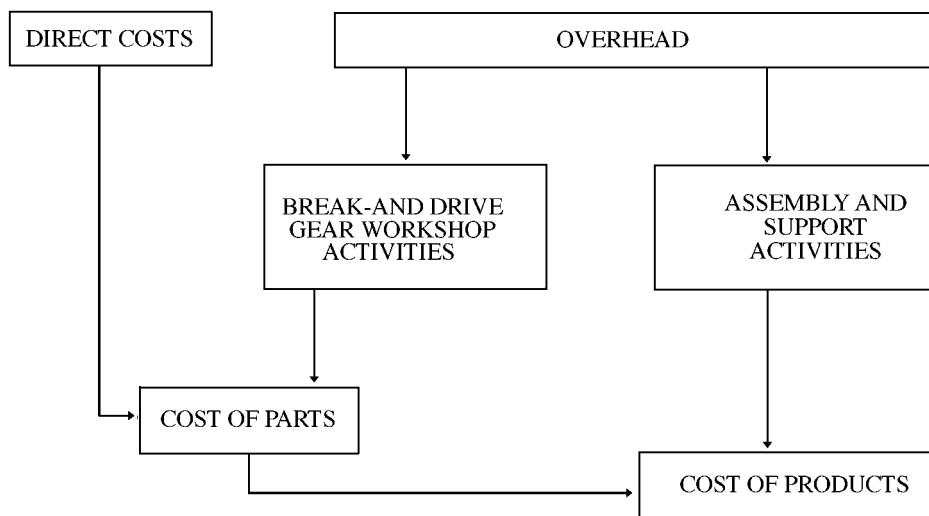


Figure 2. ABC system in the factor.

Direct costs include material costs and subcontracting costs. All other costs are regarded as overhead. In the brake and drive gear shops, each of the 38 production cells is one activity. Cell costs are assigned to parts based on machine hours. The rest of the activities and corresponding second-stage cost drivers are listed below.

Activity	Cost driver
Assembly	Labour hours
Delivery	Production volume
General management	Production volume
Internal transfer	Annual volume of parts
Invoice control	Annual volume of parts
Manufacturing technology	Number of own parts
Marketing	Number of product types
Material reception	Annual volume of parts
Painting	Labour hours
Product planning	Number of product types
Production planning	Production volume
Purchasing ¹	Annual volume of parts
Quality	Annual volume of own parts
Supervision ^{1,2}	Number of employees
Warehousing	Estimate based on average storage time

¹Purchasing and supervision activities were identified for each workshop.

²Costs of supervision activities are assigned to other activities, not directly to parts and products.

Table 1 reports the percentage differences between the informal cost estimates and the new ABC costs for all 16 main product types

Table 1
The percentage of difference between the informal cost estimates and the new ABC costs

Axil type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Differences %	14.9	4.0	5.2	1.4	3.7	3.5	1.4	14.5	6.2	-9.0	11.1	-2.7	2.6	17.3	6.5	28.8