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A Management Control Model Based on the Customer Service Process

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The Challenge to Traditional Management Control Systems *The Foundations of Traditional Management Control Systems*

During the nineteenth and the beginning of the twentieth century, management control systems were developed to monitor the largest and most complex activities of industrial firms (Johnson and Kaplan, 1987). Traditional management control was considered vital for effective operations, mainly because it generated aggregate and comparable measures. The activities of an entire firm could be summarized in a single performance measure such as return on investment, which in turn could be broken down in detail to specify profit, labour costs and cost for materials for different departments and products. This has been summarized: "management control is primarily a process for motivating and inspiring people to perform organization activities that will further the organization's goal" (Anthony *et al.*, 1984, p. 11).

The essence of traditional management control has been to monitor performance against predetermined standards. The management control loop may be described by the following steps:

- (1) Goals are utilized as performance measures.
- (2) Standards are defined.
- (3) Outcome is compared with standard.
- (4) Deviations are analysed.
- (5) The manager takes corrective action.
- (6) Step three is repeated.

Thus, resources used and output achieved in carrying out the business operations are defined. Management control systems monitor operations by comparing with standards which are normally derived from the company's operating goals and strategies. Standards may comprise such measures as: unit cost of material, time spent for each unit produced and monthly labour costs for a department. Standards are then used in different parts of the control system, such as budgeting and costing, to monitor performance. Often, management control is focused on departments in a company, each with a responsible manager. Consequently, the operations are controlled by directing the actions of the manager.

A well-functioning control system presupposes the accessibility and the usefulness of control (Samuelson, 1992). The organization is presumed to be accessible to control; that is, operations must be partitioned into clearly-defined parts or functions for which a competent manager may be given responsibility and authority. Control may then be implemented by using relevant measures. On the other hand, the usefulness of control refers to the relevance of the measures used to direct the manager's actions.

Traditional management control has many advantages. Above all, it tends to decentralize decision making under the assumption that competent managers will be able to handle their own operations in an effective way. Management control of staff is focused on generating and following-up relevant reports. In essence, we may term this control of the performance of managers as mechanicals.

Problems with Traditional Management Control

A fundamental problem with the traditional control approach is that the accessibility and usefulness criteria mentioned are difficult to come by. Most organizations are difficult to partition into watertight departments or units of control. Indeed, dependencies between departments exist because of the interrelatedness of their operations. These consist of a chain of activities which presume co-operation and co-ordination to be performed. In other words, a process perspective on operations is fundamental for modern approaches to quality management such as total quality management (TQM) and just in time (JIT). This process perspective contrasts sharply with that of traditional management control (Burchell *et al.*, 1980; Drucker, 1990). The importance of the process perspective derives from the fact that "management information ... must come from customers and from processes and it must be gathered and used primarily by people in the work force who face the customers and who run the processes" (Johnson, 1992, pp. ix-x).

Another problem inherent in the traditional approach is that overhead costs, such as costs for procurement and management control, are difficult to measure and to monitor (Cooper, 1988). One reason for this is that standards for such activities are difficult to define as they are not related to the volume or the capacity of the operations. Instead, these types of cost may be dependent on the complexity of the operations. Therefore, in order to be able to control these overhead costs, a model that relates these costs to the forces behind them must be developed (Cooper and Kaplan, 1988; Dolinsky and Vollmann, 1991; Johnson, 1990; Miller and Vollmann, 1985).

A third type of problem with traditional control is that it often tends to focus narrowly on financial measures to the detriment of other relevant measures, such as customer satisfaction and operational flexibility (Lynch and Cross, 1991). This may bias those in charge of economic control with a risk of reducing their global understanding of the actual operations. In such a case, management control may be viewed as a game of numbers without any real link to actuality.

Recently, scholars have begun to pay attention to these problems of using traditional management control systems (Johnson and Kaplan, 1987). Generally, it is becoming more and more evident that the information generated by the systems is biased and in some ways gives a distorted picture of the economic state of an organization. For example, a US survey found that 60 per cent of sampled financial officers and chief executives were not satisfied with their performance measurement system (Howell *et al.*, 1987).

Lynch and Cross (1991), for instance, find the following major problems with traditional performance measures:

- They yield irrelevant or misleading information.
- They measure each dimension of performance in isolation.
- They do not take into account the perspectives of internal and external customers.
- They overlook non-financial performance indicators.
- They are used for corrective action rather than to promote learning.
- They are inflexible and limited in what they can do.

To summarize, traditional management control systems often do not generate sufficient information concerning products and processes. Information needs have been geared to those of the department, and managers therefore lack data on real outputs and the processes that produce them. The systems do not contribute to a better understanding of day-to-day operations of the information users. Moreover, management systems rarely change in tune with the business environment.

Management Control in Services: A Need for Change of Perspective

The service sector has become increasingly important in Western economies and often accounts for considerably more than half their size. However, very few cases of service operations or organizations are found in the management control literature (Lowry, 1993). One of the few empirical studies found the activity-based costing principles potentially useful for services and that a smaller proportion of total costs were traced as the number of customers processed by a typical unit per day increased (Brignall *et al.*, 1991). Thus, cost traceability to products appears to be high in professional services and low in mass services (such as telecommunications).

The growing share of the service sector in developed economies, the worldwide deregulation of hitherto regulated sectors and the integration of national economies and markets have led to the rebirth of the marketplace. Business transactions are performed more and more on markets. Manual labour is replaced by knowledge labour. Therefore, the internally-oriented traditional control has become less important (Johnson, 1992). Instead, the prime task of management control becomes that of gauging the ambiguity emanating from intensive customer interactions (Larsson and Bowen, 1989).

We now argue that management control in services must be based on operations as a process in order to make visible the activities aimed at customer satisfaction. Very little has been written about management control adapted to services. To fill this apparent gap in the service and management control literatures, we have carried out action research in a Swedish company in the mobile telephony industry. The explicit purpose was to develop an economic model based on the customer's interaction with the service. The underlying thrust of the research effort was to reorient management control from the focus on efficiency to make visible the processes, activities and customers.

We have structured the article as follows. First, we outline the action research taken as to method and models. Second, we describe the economic model based on a service map. Finally, we draw some conclusions from the use of the model.

Action Research: Method and Models

The case study company develops and markets mobile telephony services and is a major player on the Swedish market. Currently, the company is facing swift deregulation on major markets. The study was carried out as action research (Argyris *et al.*, 1985; Gummesson, 1988). In principle, this approach assigns two roles to the researcher, one as an advocate for and a participant in the change process and the other as a detached recorder of events. Special procedures are then necessary to distinguish the dual roles.

Data Collection

The project was initiated by the company's financial director. Initially, a number of guidelines and accounting principles were formulated to account for all types of costs and revenues. A project group was formed, including the accounting manager, a business controller, a few managers from the operating department and a researcher.

The action research project may be partitioned into the following phases: data collection, generation of categories and patterns, development of basic model, system specification and system implementation (see Table I). In some cases, phases overlap.

Before each interview, the respondent (manager) received an information folder about the purpose of the interview and the procedure to be followed during the data collection phase. Basic economic terms to be used were defined. Also, it was emphasized that each respondent would be able to read and revise the recorded findings.

The interviews began as open-ended discussions about the functions of management control and the general need for costing models. Subsequently, the respondent was asked to define the different functions of his department. The following key questions were asked:

- (1) What kinds of activity were carried out?
- (2) What factors caused these activities?

Table I.
Outline of the Action
Research Project

Phase	Responsibility	Time frame (months)
Data collection ^a	Project group	3
Generation of categories and patterns	Researchers	5
Development of basic model	Project group	4
Data collection	Controllers	2
System specification	Project group	12
System implementation	External consultant	3 (planned)

^aA total of 760 employees were involved in the research project and 58 managers were interviewed

- (3) What was the relative share (in per cent) of employees engaged in each particular activity and each individual type of service?

Each interview was summarized in a memo that was returned to each respondent who was then able to make adjustments or add comments. The interview data and findings were also discussed in the project group. Additional revisions were made. Finally, the interview findings were documented in a report of 160 pages.

Certain basic criteria for a costing model gradually evolved. First, the model should be able to account for each and every one of the costs and revenues by their original name (term) and without the use of standards for cost allocation. A second criterion was that the model should be accessible to simulation by transferring data to the software package, Microsoft Excel. Manual input of economic data should be avoided.

Generation of Categories and Patterns

The next phase of the action research process was to analyse patterns in the interview data (Glaser and Strauss, 1967). The analysis phase lasted five months, from the latter part of 1991 to the beginning of 1992. As a first step in the analysis, each function, activity and causal factor (now labelled "cost driver") was inserted into an Excel-file. A number of sorting operations were carried out to get a feel for the structure of the data. Similar types of activity and cost drivers were compared. It became evident that certain types of activity could be categorized under the same term and other types of activity could be removed from the list. A few types of activity had to be added. The same procedure of substantiating the categories was used to find out the relevant cost drivers to be included in the model.

Let us give a concrete example of how categories were substantiated. In interviews, a number of different activities mentioned seemed to be similar, e.g. "contacting customers" and "seeking customers". These activities were

collapsed into the category “customer contact work”. As the corresponding cost driver, “the number of existing customers” was chosen. During interviews, respondents mentioned three different cost drivers, namely: “number of customers”, “number of distributors” and “number of customer visits”. When categorizing a cost driver, the driver most commonly mentioned by those employees involved with the activity concerned was chosen. It was also necessary to take into account the availability of data recorded for that particular cost driver. In some cases, it proved difficult to reach a consensus on the most appropriate term for the cost driver. The activity was then split into two, each having its separate cost driver. These kinds of discussion were carried out in the project group, the members of which had to agree on the most appropriate terms.

Developing the Basic Model

Different versions of the basic model were then developed. The basic structure was decided on early in the data collection phase. However, the actual model was finalized in early-1992 and was based on the service map and the activity-based costing principles.

In mid-1992, a new round of interviews was carried out by local business controllers to validate the model. During these interviews, all employees concerned selected the activities they normally performed from a list of activities; they also specified the relative time (in per cent) spent on different activities and services. Respondents were also asked to comment on the appropriateness of the terms for activities and cost-drivers and their relevance for describing their actual work. A few minor changes were made and the model was documented in a costing manual of 60 pages. Finally, specification work for a future software application was started up.

Results

A Service Map as a Model

A service process may be viewed as a series of activities which can be defined from the customer’s point of view, i.e. by the way the customer makes use of and interacts with the service operations. Activities are normally carried out through interaction between a customer and employees. To model this interaction, different mapping procedures may be used. A traditional approach maps actual and physical activities as they unfold over time (Armistead and Clark, 1993; Kingman-Brundage, 1988; Shostack, 1987). A different procedure, recently developed by one of the authors, elicits quality elements (aspects) from the verbal material of actors involved (Mattsson, 1993). In this study, a traditional approach is taken to the service process as a series of interrelated activities. The service map shown in Figure 1 is the structural base for the economic model.

The customer service process has been defined in a stepwise manner by the main service of the company: mobile telephony. It is also applicable to other services such as: paging, police radio communications, ship radio

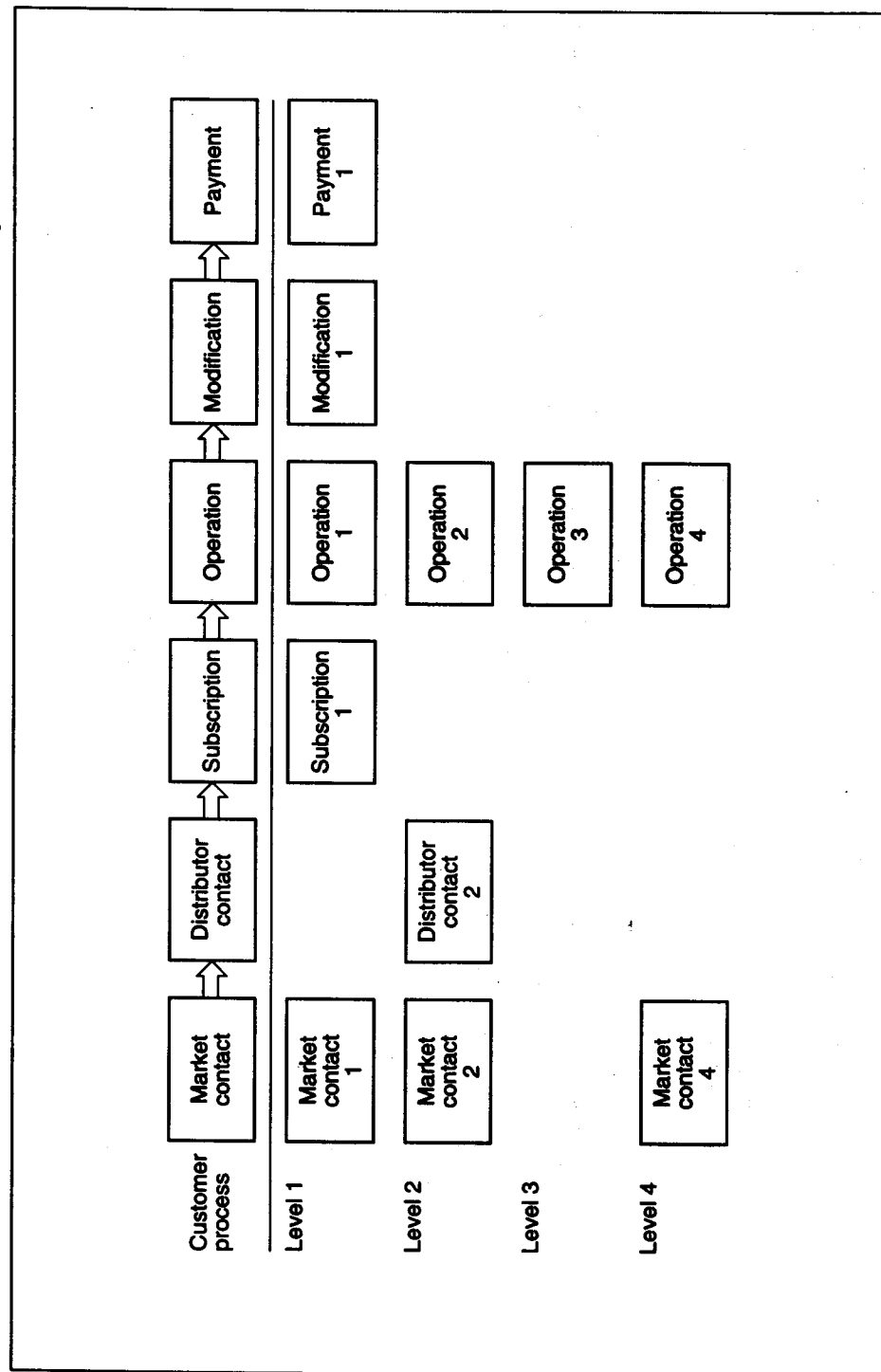


Figure 1.
A Service Process Map
as an Economic Model

communications and mobile computers. The first step, termed “market contact”, incorporates marketing and sales activities to get a customer interested in using the mobile telephony services. As a second step, this results in a customer-initiated contact with a “distributor” to purchase a telephone. A “subscription” contract is signed, after which “operations” may be initiated. After some time, the customer may wish to “modify” his subscription to include additional services such as the mobile answering service. As a final step, the customer “pays” the bill for his or her subscription.

The activities of the service process were categorized on four different levels depending on their degree of interaction with the customer. Consequently, activities at Level 1 are carried out in direct interaction with the customer and the service (for example, customer support). Level 2 activities are performed without direct contact with the customer but pertain to a specific service (for example, measuring transmitting capacity of radio stations). Level 3 refers to the operations of the telecommunication network (for example, the operations of ground stations and charges for using network capacity). Level 4, finally, includes other supporting activities within the division, such as management and economic control.

The activity-based costing approach (Cooper and Kaplan, 1988; Johnson and Kaplan, 1987; Raffish and Turney, 1991; Rotch, 1990) was used for the analysis of revenues and costs. In the ABC-model, all activities carried out by employees are taken into account. For each activity, a driver is defined, i.e. that factor causing the related costs and revenues for a particular activity. All costs and revenues are seen as variable, given a certain decision (or driver), and are assigned to products in relation to the value of that driver.

The total number of defined activities amounted to around 60. For each of these, a cost driver was determined. Six types of cost driver have been defined: number of customers, duration of call, number of services, number of distributors, number of equipment suppliers and number of employees.

As discussed above, every employee has subsequently been asked about the kinds of activity they perform in their work and the relative time spent on each of the activities in relation to the different services. If the employee has been unable to estimate the proportion of time spent on each service, their work has been assigned proportionally to the driver of the activity (for example, per customer for each service). By this procedure all types of cost have been allocated to the service process model based on employee activities, except those directly entered into the books (depreciation on ground stations, charges for network capacity and the like). Revenues are assigned per duration of call or per subscription, depending on which is generating the income stream. Direct costs are allocated in accordance with the way they are entered into the books. These costs are assigned to the driver, “duration of calls”, for further analysis purposes.

Entering Data into the Model

How economic data are inserted into the model is shown in Figure 2. All revenues and costs are taken from the accounting system. If costs or

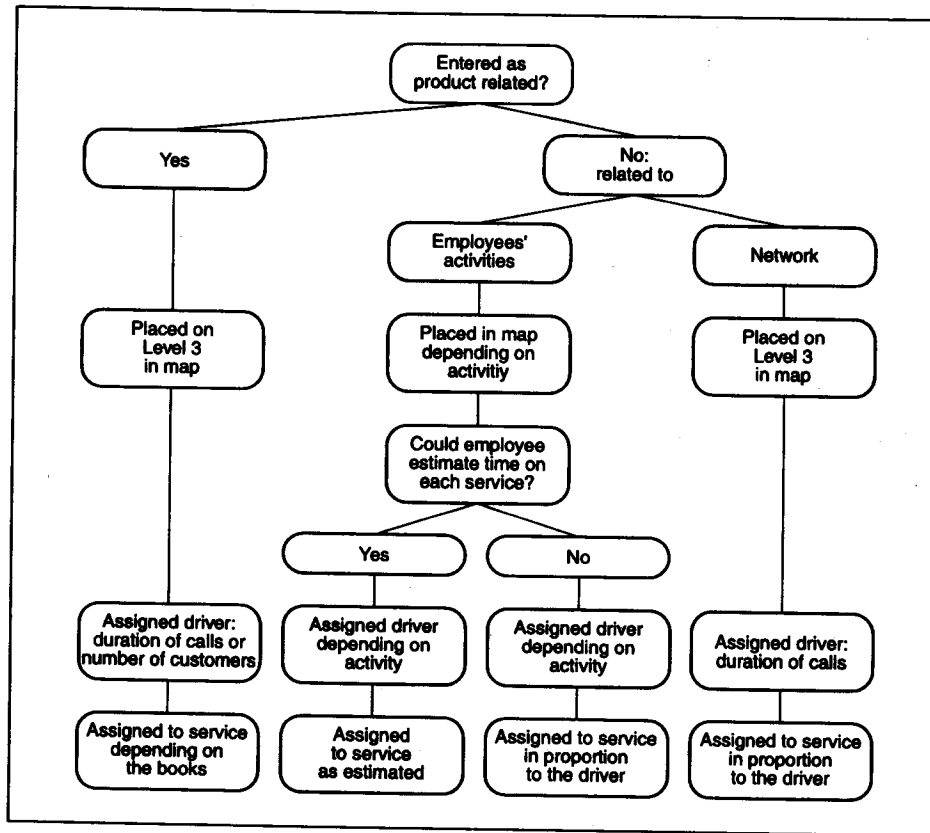


Figure 2.
How Costs and Revenues Are Assigned in the Economic Model

revenues are entered as product related (e.g. revenues registered for a certain service), the value is placed on Level 3 and assigned to the service depending on the books. The cost driver is then defined as duration of calls or number of customers, depending on which is most relevant. If the revenues or costs are not entered as product related, two alternatives emerge: the amount is contingent on either employee's activities, or on the network. If the value depends on activity (e.g. labour costs in the accounting department), there are two additional alternatives: either the employee has been able to estimate the time spent on each service, or not. Irrespectively, the value is placed in the map depending on the activity. If the employee has been able to estimate time spent on each service, the value is assigned to the services as estimated; i.e. each service is allocated an amount corresponding to the relative share of the time spent on it.

If the employee could not estimate time spent on each service, however, the value is assigned to the services in proportion to the cost driver. All activities which are employee related have their individual cost driver. If the amount is not entered as product related, and also is not considered to be related to employee activities, it is defined as being related to network (e.g. charges for using network capacity). The amount is then placed on Level 3 in the map and

assigned to the service in proportion to the driver. The cost driver is then defined as the duration of calls.

The economic model may now be used to simulate profitability for an individual service, a group of services, the entire company or a relevant department. Simulation procedures may answer the following types of question:

- What is the profitability of the paging service?
- How is the profitability affected if ten more customers are taken on?
- How are total revenues affected if subscription rates are lowered by 10 per cent?

By linking every activity to relevant drivers, the model's simulations may realistically portray actual decision situations in an approximate way. Using hypertext, each box in the model can be given more and more details. For instance, magnifying the box "market contact" gives information about the activities in that box. Furthermore, magnifying one of these activity boxes provides information about the employees performing that activity.

Management Control Based on the Customer Service Process: Some Conclusions

The economic model developed in the action research project described has now made it possible for the company to operate in a more business- and market-oriented way. The customer perspective has been given paramount importance in the new economic model. This model may now be used to simulate realistic decision situations concerning the operations of key processes. Consequently, we believe that the decision makers will be in a better position to understand fully the complexities of the complete range of services provided. The information generated should now be easily accessible and comprehended, as economic variables have been deduced from the tasks of the relevant users. The system has been designed with the long-term view of focusing on customer process satisfaction.

We also argue that the model overcomes the problems raised in the introduction to this article. For instance, the model may serve the purpose of evaluating the service processes as such, in the sense of finding the most efficient use of available resources. During the course of the action research, several advantages of our approach have become evident. The model seems to be intuitively appealing and easy to understand. Therefore, it is evident that the activity-based costing procedure has been useful for this kind of service.

We have also found it important that employees in a service organization understand the complete process. By mapping the processes, a common view of operations can be constructed. Employees need to be aware of the importance of focusing on customer satisfaction and process quality. In other words, quality should be customer driven and not employee driven. Only long-term customer satisfaction will yield sustainable profitability. Therefore, the service process,

from the customer's point of view, must serve as the benchmark for developing quality and economic measures of control. A detailed analysis of certain activities may be carried out by using recently developed computer software, for example, the so-called Hypertext (Peper *et al.*, 1990; Smit, 1991).

The development of common standards and norms is crucial in building organizational consensus. Norms are generally established by an ongoing social dialogue. A management control system may thus be seen as a form of language (Mellemvik *et al.*, 1988) *best defined by its users*. Action research may be considered an appropriate approach to find precise economic standards. By focusing on the nitty gritty of the activities carried out by individuals, important clues are given as to suitable and easy-to-comprehend measures.

The action research reported here is still an ongoing project. The next phase will test and implement the management control model. The same approach to map and model other types of service is now in the pipeline.

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