

# Integrating decision making and regulation in the management control process

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## Abstract

The significance of control in business is undeniable, and this work revisits management control and the management control process. An interpretation of existing approaches leads to a new way of integrating the managing processes of decision making and regulating. This promises to provide the means of a more explicit behavioural control of operational business processes. Such control is made possible where the controlled work activities (and the work activities of the manager) take place in an IT environment which possesses knowledge of such processes. The control action influences operational behaviour by manipulating the definition of these processes at run time. This will enable control structures to be more formalised where appropriate, improve coordination between control and operations, and improve coordination between control processes. Two implementable models of control processes are proposed together with an indication of how they might be integrated into business processes to provide holistic support for business activity.

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## 1. Introduction

Aligning information technology (IT) with business strategy, introducing new ways for conducting business, downsizing systems, gaining competitive advantage, managing projects and meeting deadlines are just a few of the problems that a manager has to face today. In order to address the above issues, new control mechanisms need to be developed. ‘Controlling’ is recognised as an essential managerial function that encompasses core activities such as organising and leading [1]. It coordinates the activities of different organisational components so that activities occur as intended, or some performance criteria are met.

Organisational controls can be preventive, attempting to reduce errors and eliminate the need for taking corrective action, or corrective, aiming at minimising undesirable behaviour so that organisational performance conforms to standards and regulations [2]. When unforeseen events occur, control activities can help a system or organisation change to meet the new conditions and adjust to the new situation [3]. The goals that drive controlling are either external (e.g. improve services or products provided, increase customer satisfaction) or internal (e.g. reduce costs, increase productivity). Control is applied to monitor and influence organisational structures using four approaches: budget, operating procedures, statistical reports and reward systems [4].

Developments in technology in areas such as workflow management systems have allowed us to better model certain kinds of processes [5], and to explicitly use these models in IT in order to support real-world activity. This is important because much of organisational behaviour follows patterns. These patterns can be either formal or informal, and this

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behaviour largely results in the outputs of the organisation (e.g. products, facilities, and services), be they physical or behavioural.

To date, the kinds of processes supported by process support technologies have been rather basic clerical processes. They tend to be well-structured, time-invariant, primarily single-dimension workflows. As modelling methods and technologies improve, however, this kind of support will pervade more knowledge-intensive processes such as planning or design where multiple workflows can co-exist, and structure is both elusive and in a state of evolution. One particular kind of process that has rarely been modelled in any detail is the management control process. Process modelling facilitates the description, explanation, prediction and alteration of behaviour [6]. It provides guidelines for designing more efficient processes [7,8]. Therefore, modelling the management control process could help us to better understand, analyse and improve on its effectiveness.

The enaction of process models in workflow management systems, or in process support systems, ensures to some extent that the defined process model is being followed in the real world. It also allows the development of a new way of implementing control actions. It is possible for control action to take the form of a new version of a process model, and for it to be implemented in the IT system. Thus future behaviour will follow the new definition.

There are of course many issues to be addressed in order for this to take place, but the focus of this article is on the opportunity that such technologies present. This will provide managers with another means of control in certain kinds of organisation, and, in turn, a way of controlling, or guiding, the actions of managers themselves.

An intrinsic (though rarely modelled) feature of management control processes is the making of decisions in contexts that are less than well structured. Decision making is an acknowledged aspect of the management process. The pattern of behaviour between the identification of a problematic deviation and the implementation of a solution almost always involves a number of decisions. Decision making is therefore an integral part of controlling. Decision support technologies have been in development for many years; however, the substantial advances made in these technologies have taken place in isolation from considerations of the management control process itself. Only rarely have decision-making aspects been taken into account when modelling control processes [9,10] and the need to address decision-making aspects in the process modelling itself has recently been highlighted [11,12].

This work is predicated on the desire to define a generic model of the management control process. The following section provides an overview of the area of concern, mainly from the management science perspective but including a brief reference to workflow management systems. In Section 3, two models are described: one for supporting control in the form of regulating or problem-solving, and the other for supporting the decision process. In addition, a brief intro-

duction is provided to an experimental IT system in which these models have been implemented. This system provides technological support for the definable aspects of the management control process by supporting directly the coordination among users. Such a system could interact directly with operational processes, so implementing closely bound control and evolution. In Section 4, the conceptual basis for an integrated approach is proposed, viewing the purpose of control to be less one of 'regulation' and more one of 'minimising difference'. The article is concluded in Section 5.

## 2. Management control

There are many and divergent meanings of the word 'control'. According to Vickers [13] it is '... one of the most confused words in the English language and in business it has collected so many emotional overtones that in some quarters it is hardly usable'. Flamholtz et al. [14] identify various interpretations of the meaning of the term, and in the context of this work, to control an operational system is to 'manipulate properties of the system in order to achieve desired results from that system'. The properties typically manipulated are inputs such as the rate of delivery of raw materials, the number or quality of human resources, or the money available to carry out the operation.

If we take the Otley and Berry [15] conclusion that the purpose of management control is 'to balance the differing requirements of the various parties associated with the well-being of the enterprise to ensure continued satisfaction of these requirements', then the control system itself is 'a formalised procedure that uses information to maintain or alter patterns in organisational behaviour' [16].

The 'maintenance or alteration' of patterns implies change. Maintenance implies changes to system properties that ensure that the patterns of behaviour have the desired results, and alteration implies change to the patterns themselves. Thus, we are interested in the various inputs to a system that can be manipulated, and also the behavioural aspect of system itself.

The patterns of particular interest in this work are those referred to as processes. Process can exist in different forms. Models of processes are descriptions of a pattern of behaviour. They can be fairly rigorously defined, as in a published and possibly contractually binding project plan, or loose notions held by individuals of how things are done.

Thus, this work is focused on the process aspect of management control, those aspects that involve coordination among individuals or teams, which lend themselves to definition in process terms, and which in turn are capable of being supported using process-knowledgeable technologies.

As well as models of processes, there are examples, or instances, of processes. Instances are what can be observed in the daily activity of business. If that activity is supported by IT, the IT system must contain a model, of some kind, of that process. The process instance is dynamic in that it is of course being executed in real time, but also in that the future

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