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Ariela Caglio
SDA Bocconi - Milan

Michael Newman
Free University of Amsterdam

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IMPLEMENTING ENTERPRISE RESOURCE PLANNING SYSTEMS: IMPLICATIONS FOR MANAGEMENT ACCOUNTANTS

Ariela Caglio
SDA Bocconi – Milan
Italy

Michael Newman
Free University of Amsterdam
The Netherlands

Abstract

New, integrated information systems, particularly enterprise resource planning systems (ERPS), have begun to challenge the traditional roles played by management accountants. The aim of our research project is to examine how the implementation of a new ERPS impacts on the roles played by management accountants within modern organizations. By drawing on structuration theory, we argue that such change can be profitably interpreted at three different levels of the structuration process—signification, legitimation, and domination—while proposing that information technologies, as instanced by ERPS, represent modalities of structuration. A dynamic conceptual framework is provided that links the adoption of an ERPS to the shift from a functional view of organizational activities to a process view. This shows how the reopening of the taken-for-granted assumptions about the activities and the relationships appropriate for the different classes of organizational actors can lead to a change in the roles played by management accountants. Finally, we propose to use the framework as a basis for interpretive case studies aimed at providing an understanding of the change in the roles of management accountants within the wider socio-economic context of the organization in which a new ERPS is introduced.

1. INTRODUCTION: QUESTIONS ADDRESSED AND RESEARCH OBJECTIVES

To say that information technologies (IT) are transforming business organization is trite: it is evident that the "Information Revolution" is changing our economy. But to understand what this transformation will require of professional groups such as management accountants is less obvious.

The fundamental question addressed in our research project is this: what are the implications of the implementation of a large integrated IT system—more specifically an enterprise resource planning system (ERPS)[1]—for management accountants?

Our proposal is to investigate changes in the role[2] of management accountants triggered by the introduction of the ERPS such as SAP/R3, PeopleSoft, Oracle, and Baan IV. Three main aims are central to this research project: first, to provide detailed empirical

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[1]ERPS, or integrated information systems, are hardware/software packages that use relational database technology to integrate the elements of organizations' information systems. They provide a number of separate but integrated modules, which can be used by any organization to manage processes (Scapens, Jazayeri, and Scapens 1998).

[2] For a definition of the notion of role adopted here, see footnote 8.

evidence of the aforementioned changes, which will offer advice and guidance to management accountants; second, to produce a theoretical understanding to illuminate this transformation; third, and based on the previous two, to provide insights into the more general question of how such information systems impact the issues of control and visibility in organizations.

Although ERPS are becoming increasing prevalent—over half of the Fortune 500 companies have or are in the process of implementing these systems (Edmunds, Baker and Cortese 1997)—there is a dearth of serious research in this area, especially with respect to their impact on the roles of management accountants.

2. THE RESEARCH PROJECT: PRELIMINARY FINDINGS AND EXPECTED CONTRIBUTIONS

Our research focus arises from insights gained in recent preliminary fieldwork on the evolution of the profession of management accounting.[3] Some trends could be identified: the management accounting departments of firms, especially of large multinational companies, are undergoing a massive process of rightsizing, often accompanied by the creation of shared accounting services, the implementation of integrated information systems, and the outsourcing of some management accounting activities. Following such organizational changes, companies are now facing the fact that the structure, the roles, and the critical skills characteristic of the management accounting department also need to be redefined. This is due to the fact that the creation of shared accounting services and the processes of outsourcing have reduced the need for people who perform the most standardized management accounting activities. More importantly, the diffusion of ERPS is leading to a shift from a functional view of organizations to a process view,[4] which recognizes the importance of the cross-functional dimension of managers and management accountants' activities and roles.

Another recent preliminary research project on the relationship between management information systems and management accounting[5] has highlighted two important trends. In companies that were part of UK conglomerates, management accountants retained control over the techniques of management accounting being used in the firm and over the computerized means used to implement management accounting. In contrast, companies, part of multinational conglomerates, were implementing ERPS. In these companies, UK- based management accountants had no control over the global design of the system, but some control over the implementation of the system and so far unknown control over the subsequent use of the system. Accompanying a loss of control of the means of delivering management accounting, the nature of the management accounting departments changed. What happens is not easy to generalize, nor is it entirely clear, but it appears once again that management accounting is being redefined in process terms rather than as a function. The effects vary at different sites but, for example, we have found in one site the complete decentralization of management accounting into process-based teams. Interestingly, these changes are taking place in contexts where enterprise resource planning systems are predominantly seen as management accounting systems. These findings raise important questions as to how the role of management accounting and management accountants is being redefined in such cases. Certainly, the project has highlighted that the traditional professional figure of the qualified management accountant is

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[3]The project, sponsored by a large Italian oil company, was undertaken in 1998 within CESAD, the Centre for Research in Management Accounting of L. Bocconi University. It consisted of four in-depth case studies and a survey on the firms affiliated with CESAD. The aim of the project was both to depict and to interpret the evolution that is characterizing the structure, the roles, and the skill-sets of management accounting departments. More particularly, regarding the changing roles of management accountants, the research has confirmed that there is a widespread recognition of the need for management accountants to develop from being score-keepers to business partners, with a higher involvement in strategic decision-making, business management, and information technology initiatives. The implementation of ERPS is one of the most important enablers of such development.

[4]The expression "process view," in this context, indicates an ordering conceptual framework for the activities accomplished by organizational actors. In this respect, a process can be defined as a structure for action, that is, as a specific logical order, which is given to work activities in time and space, with a beginning, an end, and with clearly identified input and output. We, therefore, give this term an extended meaning, designating a particular "way of working," of structuring organizational activities, which can be contrasted with the traditional "functional view."

[5]The project, entitled "The Implementation of Manufacturing Control and Accounting Systems: Case Studies of the Interface Between Accounting Systems and Systems of Manufacturing Control," was sponsored by the Faculty of Economics and Social Studies (University of Manchester) and by CIMA (Chartered Institute of Management Accountants). It began in March 1997 and was completed in February 1998.

disappearing and that there will presumably be an increase in "hybrid" accountants (Burns and Baldvinsdottir 1999), whose duties lay primarily within the business.

The relevance of these issues is also testified by a broad literature (among others, Cooper 1996; Matthews 1998; Smith and Briggs 1999) witnessing the fact that there is an increasing diffusion of the "bean-counter-no-more" image of management accountants, who are, nowadays, in charge of less data gathering and more data interpretation and consultation types of work, as the performance of organizational activities is more and more supported by new IT systems.

However, as far as we know, no research has explored in any depth the issues for management accountants arising from the wide-scale deployment of ERPS. Our major expected contributions will, therefore, focus on some issues that we think to be critical for the future roles of management accountants. Will these systems change the practice of management accounting from a business function to a specialism within a process-based team? What is defined as management accounting in companies that have implemented these systems? Has cost management supported by enterprise planning systems become part of general management, leaving a reduced role for the management accountant? What influence do management accountants have over the process of configuration of these systems at these specific sites? Do management accountants consider that they are equipped to manage the process of change precipitated by the introduction of these systems? Once these systems are implemented, what do they think of their new roles?

3. THE IMPACT OF ERPS ON MANAGEMENT ACCOUNTANTS' ROLES: THEORETICAL FOUNDATIONS

In addressing the topic of change in management accountants' roles, we argue that IT, and ERPS in particular, are a fundamental catalyst for such phenomenon. Informing this research project are our assumptions about IT, which draw on Giddens's theory of structuration. In particular, structuration theory helps researchers viewing IT neither as "pure structure," nor as "pure action," but rather as modalities of structuration. We then propose to apply structuration theory as a starting point to build a framework explaining how a new IT system disturbs the processes of routinization at the level of action, possibly leading to a changed organizational structure, which, in turn, has consequences for the role of management accountants.

Having acknowledged that despite a long tradition of research—grounded either on structural approaches or on action-oriented approaches—the evidence for IT's influence on organizational structures is still inconclusive and sometimes contradictory, we are convinced that a full account of how IT might occasion organizational change by altering institutionalized roles and patterns of interaction would require a complementary analysis of both structure and action.

This can be achieved by recognizing the intrinsic "duality of structure," that is, by acknowledging that "the structural properties of social systems do not exist outside of action but are chronically implicated in its production and reproduction" (Giddens 1984, p. 373). The structuring of social relations across time and space, in virtue of the duality of structure, is then defined as structuration [Giddens, 1984: 376]. Starting from these considerations, Giddens identifies three modalities of structuration, that is, three dimensions of the rules and resources that actors draw upon in their social interaction: interpretive schemes—"the core of mutual knowledge whereby an accountable universe is sustained" (Giddens 1979, p. 83), norms—"the actualization of rights and enactment of obligations" (Giddens 1976, p. 86), and facilities—"reproduced relations of autonomy and dependence in social interaction" (Giddens 1979, p. 93). Viewed as institutionalized practices, interpretive schemes originate actors' modes of signification, norms give rise to their modes of legitimation and facilities produce to their modes of domination.

We can then conclude that Giddens's notions of structuration[6] is insightful when studying organizational change brought about by ERPS. More specifically, we would like to interpret the change in management accountants' roles as a structuration process. Within such process IT, as instanced by ERPS, can be seen as modalities of structuration, which, mediating between action and structure, influence the structuring of the social setting, thus of organizational structures, roles, and interactions. In this sense,

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[6]It is important to clarify that even if structuration theory is considered a meta-theory and is posed mainly at the level of society, the concept of "structuration process," describing the reciprocal interactions of social actors and institutional properties of organizations, is relevant at multiple levels of analysis. More specifically, in the context of our research project, structuration theory will be used to examine the interactions of IT and organization at group and individual levels of analysis. On this subject, see Orlikowski (1991, 1992).

ERPS can be considered to provide new interpretive schemes, norms, and facilities, which are drawn upon in the day-to-day operations of organizations by all organizational members in order to make sense of and cope with organizational activity (Walsham 1993, p. 64). Therefore, ERPS can act as a "disembedding medium," lifting out social relations from their habitual contexts and recombining them across time and space (Giddens 1991).

However, if the insights offered by structuration theory are to be at all profitably used for our empirical study to give a full explanation of change (as well as stability) of management accountants' roles, we need to integrate them within a temporal framework of the structuration process, that is, within a framework that considers the change in management accountants' roles as a process that manifests itself over time.
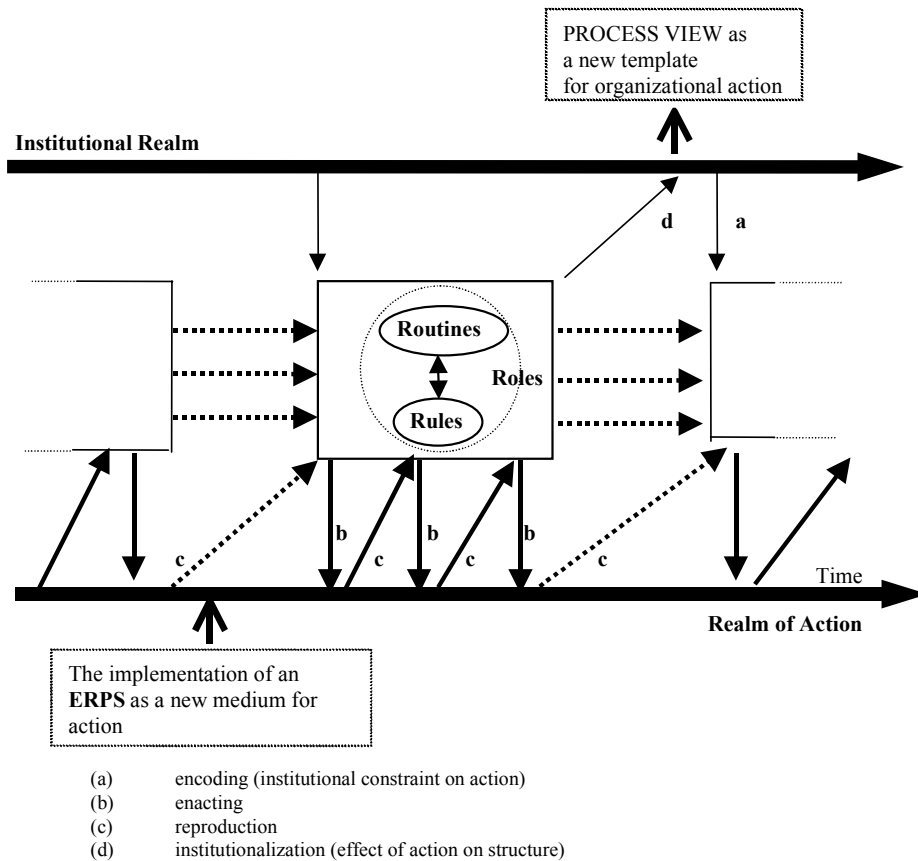
We thus propose to harmonize the insights offered by structuration theory within a model that visualizes the links between structure and action as a chain of successive encodings and enactments that are mediated by the new modalities embedded into ERPS (Barley 1986; Barley and Tolbert 1997; Burns and Scapens 1999). This model is based on the conviction that change is a continuous process that can be observed only through time, as institutions constrain action synchronously while social behavior constitutes institutions diachronously (Figure 1). After a change in exogenous circumstances recognized as significant by organizational members, the first moment considered in the model, (a), involves the encoding of institutional principles and constraints into modalities of structuration, starting from the existing taken-for-granted assumptions. The second moment, (b), represents the enactment of such modalities of structuration by organizational actors. It is important to notice that when human agents enact—either consciously or unconsciously—rules and routines that encode new potential institutional principles, resistance may arise. The third moment, (c), outlines the reproduction of the rules and routines, involving behaviors of human agents that either revise or replicate the rules and routines that have shaped action. The final moment, (d), entails the institutionalization of the new rules and routines, which then become objectified and detached from the contextualities of action.

(a)   encoding (institutional constraint on action)
(b)   enacting
(c)   reproduction
(d)   institutionalization (effect of action on structure)

Figure 1. The Dynamic Nature of the Process of Change
(Adapted from Burns and Scapens forthcoming)

In particular, ERPS implementation, in the context of this model, is considered as *action*, providing organizational agents with new rules and routines, i.e., new modalities of structuration. Implementing an ERPS involves *enacting*, which draws on existing rules and routines (that is, on already established modalities of signification, legitimation, and domination embedding certain structures of meanings, power, and norms). These, therefore, shape the implementation process of the ERPS and of its embedded rules and routines, which, through continuous *reproduction*, may then become *institutionalized*. On this interplay, between the existing rules and routines and the ones contained in the ERPS, depends the change in *structure* and the *encoding* of new rules

and routines in institutional principles, which will then shape the future action of organizational agents, and of management accountants in particular. The extent to which established roles actually are modified by the introduction of an ERPS will depend on the scope and the duration of variation from existing rules and routines of conduct. Significant and persistent modifications to modalities of interaction that are widely adopted result in the emergence of modified roles. Eventually, these changes may be so extensive and persistent that they may even lead to institutionalization of new roles (either parallel with existing roles or replacing them).

4. THE RESEARCH DESIGN AND SOME CONCLUDING REMARKS

At the conference, we would like to present the framework proposed to interpret change in the roles of management accountants brought about by the introduction of an ERPS as well as some preliminary findings of our research project.[7] It is important to notice that our framework does not only consider change at the microlevel, i.e., the causes and effects of change related to the institutional context within organizations, but would like to emphasize the links with a broader context, i.e. the causes and effects of change related to the institutional context outside organizations.[8]

Of key importance in this research project is the detailed study of implementation of ERPS at specific sites. We are conducting five in-depth case studies, selecting sites at various stages along the implementation path, thus the importance of the dynamic framework.[9]

The research methodology we are adopting is a contextualized, interpretive one. Data are collected via unstructured and semi-structured interviews; on-site observation of participants in their interaction with each other; documentation review; and informal social contacts. At each site, we are collecting as much information and documentation as possible on the initial expectations for these systems prior to their implementation, the process of implementation, and the situation after these systems are operational. Central to our case studies are in-depth interviews with senior managers, management accountants, IS managers, selected operational managers, and some of the workforce using ERPS. The research project would aim at the triangulation of the documentation and initial interviews to refine the analysis and direct subsequent interviews at each site. Particular attention will be given to issues of comparison between different sites.

Detailed case study material from the sites will furnish comprehensive and well grounded evidence on the details of the implementation of these systems and the effects on the roles of management accountants with particular reference to the influence of the multileveled context, i.e., the influence of universities, professional bodies, consultancy firms.

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[7]Support for our research was partly provided by the Chartered Institute of Management Accountants, UK.

[8]The consideration of a multileveled context would represent a major element of coherence with structuration theory, according to which it is not relevant to analyze human agents in their roles as traditionally intended but rather it is necessary to "position" actors in a broader context. The notion of positioning is more multifaceted than the traditional concept of role, which tends to emphasize a given and crystalized character of action. If we want to analyze change in a social setting, then we should refer to positions rather than to roles.

[9]It will be interesting to analyze at which point(s) of the proposed framework the change in management accountants' roles takes place. In fact, the framework recognises that processes of change are not either deterministic or voluntaristic, but they are shaped by a combination of random, systematic, and inertial forces which together create the context out of which new roles emerge (Burns and Scapens 1999).

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