Summary PhD study: setting out for modern bureaucracies with ERP systems?

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This study deals with and evaluates informatization and organization from a de-bureaucratization perspective. Its premise is the following question: *'can ERP informatization and de-bureaucratization reinforce each other?'*. This question embodies a potential field of tension, for informatization requires a measure of formalization and standardization and, therefore, a possible degree of bureaucratization.

Informatization is understood to mean the supply of information with information systems, including its set-up in an organization. ERP can be defined as an information system consisting of a standard software package with strongly integrated functionality in many areas, capable of supporting the full administrative management of organizations in an integrated fashion. The study focused on those ERP systems mainly implemented in medium sized to large organizations, systems such as SAP, Baan, or Oracle. De-bureaucratization is defined in the study as an organizational development process that is based on the socio-technical theory. It attempts to replace bureaucratization, with maximum division of labour and the centralistic control structure and culture inherent in it, by less division of labour and a structure and culture based on self-management. Its aim is to maintain an organization's decisiveness in rapidly changing circumstances. Chapter 2 discusses the main concepts mentioned above.

The study was carried out on the basis of a practice-oriented research model (Chapter 3). This means that practice is the study's point of departure and a source of reflection in order to establish new knowledge of business administration. People from business administration practice, organizations, and ERP practice may be able to use this knowledge in dealing with concrete future situations involving de-bureaucratization and informatization.

The results of the study comprise, firstly, new insights derived from the study, analysis, and evaluation of a practical case history and, secondly, an impetus to new or alternative solution scenarios for de-bureaucratization and informatization. The results make clear that in medium sized and large organizations ERP informatization and de-bureaucratization have difficulty to reinforce one another, despite claims made in ERP practice. The longitudinal case study, the analysis, and the reflections show that bureaucratization is a likely effect of ERP informatization. Consequently, ERP informatization is a fitting scenario for medium sized and large organizations that need or would benefit from bureaucratization.

The evaluation of the longitudinal case study (Chapter 4) demonstrated, on the one hand, that ERP informatization raises obstacles that thwart the de-bureaucratization process. The organization did not fit into the ERP concept properly. In the company, this created a tension that was resolved in a compromise between standard and tailored implementation. In order to implement and operationalize the ERP system, the de-bureaucratization strategy had to be frozen. On the other hand, the evaluation showed that ERP informatization provided the company with tools that consolidated bureaucratization. After ERP implementation, bureaucratic characteristics like centralization, formalization, and standardization increased in subtle ways.

The analysis (Chapter 5) tried to find an explanation for the practical problem that had been observed by means of a literature review and a logical derivation. This clarifies the

following. In theory, ICT can offer information systems that fit either a bureaucratic or a de-bureaucratic configuration. Nevertheless, ERP informatization in a bureaucratic context presents the organization with the danger of bureaucratization; disciplining and dehumanization are actual consequences for human beings. Bureaucratization arises when functional rationalization, that is, the ordering and systematizing of social reality so as to render it predictable and manageable, is a dominant value. This is expressed in a socio-political and a socio-cultural perspective.

The socio-political perspective entails that informatization impacts the established balance of power. In a bureaucracy, this may cause the leadership, i.e., management and staff, to employ informatization to consolidate or expand the status quo. Informatization, therefore, is just a new tool for the bureaucracy to modernize its identity of functional rationality. ERP informatization is no exception to this rule. This is mainly due to the fact that the modular, functional basic structure of ERP does not require fundamental changes to be made to the bureaucratic control structure; ERP even supports this bureaucratic control structure.

The socio-cultural perspective entails that informatization is itself a cultural phenomenon. ICT embodies the ambition and the pretence of functional rationalization. Features like 'more, faster, and more accurately' are foregrounded mainly to improve the efficiency of processes. The content or quality of processes is backgrounded; substantial rationalization, or the process of giving meaning to, is repressed by it. In a bureaucracy, this means that informatization allows the organization to be modernized in a functional-rational sense, which improves the decisiveness of processes while preserving the bureaucratic context, or so it is assumed. This pretence is also inherent in the ERP concept.

The result of the analysis raises the question to what extent ERP practice is also driven by the mechanism of functional rationalization, which fosters bureaucratization. We reflected upon ERP practice by means of the following three hypotheses (Chapter 6):

- ERP consultants are driven by functional rationalization in organization and informatization;
- ERP project management is founded on functional rationalization;
- ERP developments give rise to the further functional rationalization of ERP practice.

The reflections show that ERP practice deprives organizations of their liberty to organize themselves the way they want to: the outlines of organizational formats are determined by ERP formats and functions. These formats and functions manifest themselves as a technical imperative. Its underlying functional-rational philosophy, viz., that the social reality that is pursued by organizations can be ordered and systematized with the aid of one system, is clearly motivated by normative acts that aim to create predictability and manageability. In essence, this insight is based on the following train of thought. ERP and ERP practice approach the informatization and implementation process through functional differentiation. To make sure that functional integration remains feasible upon completion, a technical imperative is issued. In terms of project management, this imperative means that the way the system is to be implemented is actually fixed in the course of the implementation. In other words, the social dynamics in organizations is held to be predictable and, especially, manageable through ERP project management. In terms of informatization, this imperative means that, in the ERP system, it is actually fixed how processes in organizations are linked: processes are statically modelled with respect to

one another. The structure of intersections between processes cannot be altered, unless one wishes to alter the very core of the system through tailored implementation, which clients are strongly discouraged from doing by ERP practice due to the risks this involves. The technical imperative, therefore, means that ERP consultants can and must approach both informatization and organization in terms of functional differentiation and, in effect, only require knowledge of functional modules, even just one module in many cases. In other words, both the thing itself (the ERP system that is being implemented) and its configuration (the way ERP is set up in an organization) are deployed in a functionally differentiated and static way.

In spite of all this, modifications of ERP formats and functions are offered by ERP suppliers in order to expand established markets or explore new ones in the future. These developments impact the functional differentiation of ERP practice, consultants, and project management because they entail an increase of complexity as the knowledge and skills of ERP consultants are more and more functionally differentiated. In other words, it is becoming increasingly difficult to survey things in their entirety and, consequently, to bring up ERP content for discussion. ERP practice, on the other hand, claims this is not necessary because the increasingly complex technical imperative that is inherent to ERP will allow the total integration of information flows. Functionality, therefore, can be implemented in a controlled and integrated fashion, and ERP consultants will, thus, be able to realize their objective: to help clients to improve themselves. This is commonly accepted in ERP practice. However, in reality, the technical imperative does not entirely cover all needs clients have. Supply is not always fitting or adequate. This feeds the cycle of further modifications, which trails increasing ERP complexity in its wake.

Insights from the evaluation, the analysis, and the reflections provide input for the development of new, alternative solution scenarios (Chapter 7). These scenarios will have to be tested in concrete future situations involving de-bureaucratization and informatization. In doing so, it is vital to make a clear distinction between complexity and dynamics. An ERP system is eminently suitable for handling complexity, but it has great difficulty coping with dynamics: neither ERP nor ERP practice recognize the distinction between complexity and dynamics. Organizations, however, increasingly need to have the organizational flexibility to handle dynamics in a controlled manner, and this is the characteristic the de-bureaucratic perspective attempts to mobilize in organizations. In the de-bureaucratic perspective, therefore, organization and informatization must complement rather than obstruct each other. Supporting improvement and innovation is one of its main goals. This has been laid down in basic assumptions and concepts. To deal with the complexity and dynamics facing an organization, more advanced informatization is needed. If the reduction of complexity brought about by de-bureaucratization is adequate in the long-term, the organization needs ICT that helps to control this dynamics at process level. Such a scenario is called ‘simple and effective’. If the complexity and dynamics are such that reduction of complexity over time is not an adequate solution, the organization needs ICT that also helps to control this dynamics at the level of the organization. This means that, depending on the dynamics of the day, ICT must facilitate rapid and effective re-organization and re-informatization. This scenario is called ‘changeable and effective’.

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