The Relevance of Organization Theory to the Field of Business and Information Systems Engineering

As information and communication systems impact their organizational environment in significant ways, technical and organizational aspects must be considered jointly in order to devise and implement effective solutions. In this paper, we argue that the field of business and information systems engineering would thus benefit from paying more attention to organization theory.

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1 Business and information systems engineering and organization theory

By applying information and communication technology to a broad range of organizational contexts, the field of business and information systems engineering (BISE) is centrally positioned at the interface of business and technology (Mertens and Heinrich 2002; Wigand et al. 2003; Mertens et al. 2005). The foundations of the field, however, appear to be less balanced. Due to its "hands-on" nature, the discipline is primarily technology- or practice-oriented and concerned with the construction and validation of prototypes (Wilde and Hess 2007) and in doing so, often refers to general frameworks or to various technology and management fashions (Mertens 1995).[1] In contrast, much less attention has been paid to theoretical insight from the "business side," i. e., to the underpinnings and drivers of fundamental organizational phenomena and relationships.[2] Yet as information and communication systems (ICS) impact their organizational environment in significant ways, the design, implementation, and use of ICS are linked to fundamental issues of organizational design and behavior. And although these issues are at the center of various theoretical approaches, they have not been adequately addressed in BISE research.

This paper is concerned with these links between "organization theory" (broadly speaking) and ICS as well as with the fruitful relations that – we believe – should be nurtured between the two. Echoing the Section of Business Information Systems of the German Academic Association for Business Research (WKWI 1994) and Picot (1989), we conceive information and communication systems as socio-technical systems that encompass not only technical components (hardware and software), but also human components (users with a certain qualification and motivation) and the system's organizational context (in terms of structure and procedural rules). As these elements are highly interdependent, they need to fit and function together to allow for a high overall performance. It thus becomes necessary to strengthen the role of organization theory in BISE research in order to better understand and anticipate the organizational impact of ICS.

While we acknowledge the success of the BISE field given its current focus[3], it would be advantageous to pay more attention to theoretical insights about fundamental organizational issues and to strengthen the ties to BISE research which would provide valuable guidance and support for both research and practice. Thus, this paper expands on previously published work that has called for strengthening the theoretical and epistemological foundations of the BISE field (Picot

[1] We focus on the field of business and information systems engineering in the German-speaking community ("Wirtschaftsinformatik") and do not discuss differences with the Anglo-American information systems field. The differences have been described elsewhere (Schlögl and Resch 2004; Becker and Pfeiffer 2006; Frank et al. 2008).

[2] Early attempts to define the balance between business and technology relate to the debate on how to conduct research in the BISE field that was then known as "Betriebsinformatik" (see, e. g., Scheer 1980; Wedekind 1980; Heinrich 1982; Mertens and Wedekind 1982; Müller-Merbach 1983; Kurbel 1987), or to work by social scientists that studied the organizational role and implications of information and communication systems (Kubicek and Rolf 1986; Weltz and Ortmann 1992).

[3] This success is expressed by the institutional development of the field, e. g. by the rising number of faculty positions and students during the past decades (Schauer 2007).

1989; Rolf 1998b; Wolff 1999a; Patig 2001; Becker et al. 2002; Hess and Picot 2003; Löwer 2006; Lehner and Zelewski 2007). We refer to selected theoretical perspectives and highlight their interdependence and potential relevance for specific aspects of information and communication systems. The theoretical approaches we present are by no means comprehensive, but rather exemplary and intended as an invitation to further exploration.

2 Strengthening the theoretical foundations of business and information systems engineering

2.1 Why care about theory at all?

Given the success of the BISE field, it is legitimate to ask: Why should the field care about organization theory? In the following, we suggest three general arguments.

The first argument relates to the usefulness of frameworks in BISE research and its relationship with technological trends and fashions. The field's close ties to specific business problems and application contexts sometimes imply the risk of neglecting scientific rigor in favor of referring to simple frameworks, fashions, or trends (Mertens 1995). Although frameworks, trends, or fashions may be helpful – they can set a goal, reduce complexity, and help define a common agreement on "ways and means" – following the wrong framework may be costly. Hence, the question arises how meaningful frameworks are developed or identified, and how unnecessary frameworks are eliminated, in particular when temporal or financial constraints do not allow experimentation with numerous alternatives. Also, frameworks and fashions may create barriers for cumulative research. As "buzzword-driven" research often addresses similar topics using different nomenclature, it may ignore prior work of relevance. Mertens (2004), for instance, mentions the case of knowledge management ("Wissensmanagement"), relating it to a number of other concepts such as organizational intelligence, business intelligence, or information retrieval.

How can the BISE field avoid "reinventing the wheel" and instead increase agreement on joint concepts and engage in cumulative research? The answer might be found in referring to and using theoretical arguments. Without reference to an underlying body of theoretical knowledge, discriminating between fads and fundamental technological or organizational developments will prove difficult. Theoretical foundations are a prerequisite to critically take stock of technological developments and help carve out the fundamentals of a particular problem. Furthermore, theoretical foundations are necessary to define a set of agreed upon key terms and thus avoid the risk of blindly following a trend and the subsequent haphazard application of technology.

As a second argument, projects to design and implement new ICS, in particular large and complex projects, often do not meet the expectations of their owners, causing cost and budget overruns or failing altogether (Mertens 2008). While in some cases this may be due to unforeseen technical complexity or the use of inappropriate methods, most often the reasons are rooted in "non-technical" or social issues such as the stakeholders' resistance to change or to adopt new technologies, a lack of communication or top-management commitment, or rent-seeking and strategic behavior (Freudenberg 1999; Picot et al. 1999). While these dangers tend to lurk in the background of most ICS projects, research and practice often neglect them and focus exclusively on a system's technical aspects instead. Taking a broader approach that extends beyond the notion of a pure "technology project" to incorporate theoretical considerations about organizational behavior – "technochange management" (Markus 2004) – might in many cases anticipate or mitigate many of these issues (Küpper and Ortmann 1986; Ortmann et al. 1990; Weltz and Ortmann 1992; Markus and Keil 1994; Alter 2003). Furthermore, while pure technical solutions might just as well be devised by computer scientists, the "competitive advantage" of BISE researchers results from having competence in both areas – the technological and the organizational domain – and in understanding and exploiting their interrelatedness.

Our third argument pertains to a central characteristic and success factor of BISE research, namely its strong focus on specific applications and contexts (industries, sectors, functional areas, etc.) for which it develops individual solutions. Devising solutions for all potential contexts, however, is becoming more complex given the ever-increasing specialization and division of labor in all fields of business and technology and the pace of technological innovation. Furthermore, this development also creates difficulties for consolidating, in a "bottom-up" approach, context-specific concepts into an aggregated picture that represents the state-of-the-art in BISE research, i. e., for moving from the individual case to the level of general best practice.

Given these challenges, how can the BISE field generate useful knowledge about the "big picture," the interdependent nature of social and technological systems (Krause et al. 2006)? Or how can it pursue one of its central objectives, the development of integrated systems that span multiple functional domains (Mertens 2004)? We speculate that to address this dilemma, "top-down" procedures, devising and affirming reference models that can be adapted to specific contexts, might become increasingly relevant. In this context, reference models like those that are used to guide the configuration of ERP systems such as SAP ERP (Keller and Meinhardt 1994) and that are also included in the ARIS framework (Scheer 1997, 1999) might be an example. Yet again, a theoretical analysis rather than a "best practice" approach might be better suited to abstract from individual cases in a meaningful way, to devise and validate aggregate models, and to define their boundary conditions and relevant contingency factors (Rolf 1998b). Research needs to accept that business processes may be framed from a variety of directions (Picot et al. 2007), and that to account for their full complexity one may have to refer to multiple theoretical perspectives.

2.2 Potential starting points

Given the more abstract value of organization theory for the BISE field as discussed above, the following question should be posed: If the fields of BISE and organization theory were to more intensely consider their close ties, what are the specific issues that research needs to address? Without making a claim to present an exhaustive set of possibilities, we suggest two broad starting points:

1. What insight can be derived from a theoretically-guided analysis of a particular application context that might enter the design of an ICS that is supposed to support this context in the best possible

way? How could, for example, an analysis of the specific information asymmetries between individuals of an organization (e. g., between a sales manager and his field agents) feed back into the design of a new information system?

2. How can theory help to anticipate, understand, and mitigate the organizational impact of a new information or communication system? For example, consider a firm that intends to introduce a unified communications system. How could the firm, using an upfront theoretical analysis of the implications of the planned system (in terms of its impact on power relations, the availability and flow of information, or with respect to the potential misuse of the system and related issues of data security), anticipate potential resistance and design the system in such a way as to minimize these risks?

3 What theory might offer: implications of three potential perspectives

In the following, we focus on three broad strands of organization theory ("theoretical perspectives") and try to sketch out, in an exemplary manner, what additional insight they might offer for the BISE field. We selected and defined the three perspectives as each of them highlights a number of characteristic issues that are of relevance for BISE research.

The first perspective ("coordination and motivation") is concerned with economic approaches – transaction cost theory and agency theory – to describing, analyzing, and addressing two fundamental organizational challenges. These challenges are the need to coordinate across interdependent tasks in the presence of division of labor, and the need to motivate, to induce a desired behavior of the organization's members given asymmetric information. The subsequent "information-processing" perspective has a different focus. It is concerned with the links between issues of organizational design and system design with respect to their impact on information processing and decision making. The final perspective, "project and change," points to explanations and solutions for the practical management challenges involved in many BISE projects such as the resistance to change by the project's stakeholders.

3.1 A coordination and motivation perspective

3.1.1 Characterization

Reaping the benefits of specialization by means of division of labor is a characteristic objective of organizations (Picot 2007). Yet as any division of labor creates (inter-)dependence between the tasks and actors involved, conflicts can arise when actors have different levels of information or differing interests. Hence, *coordination* becomes necessary (Milgrom and Roberts 1992). The specific coordination costs for establishing, executing, or controlling any exchange between agents reduce the productivity gains achieved by the division of labor. These costs, known as transaction costs, denote the core of transaction cost theory (Williamson 1975, 1985; Picot 1982). Transaction cost theory conceives organizations as economizing on transaction costs in order to maximize their gains. As a number of factors influence transaction costs (for instance, the specificity of a transaction, its frequency, and the uncertainty about the contingencies that might occur during the course of the transaction), the aim of organizing from a transaction cost perspective pertains to designing organizational systems and, if necessary, supporting information and communication systems in a way that reduces the transaction costs involved in the execution of a particular (set of) task(s). In this context, BISE has a prominent role. Since information and communication are central to coordination, any technical means to generate, process, store, or distribute information has a direct effect on transaction costs and on the applicable organizational solutions. Most importantly, information and communication technology can lower transaction costs by increasing transparency, standardization, and automation (Picot et al. 2008b).

Likewise, another main organizational challenge pertains to *motivation*. Organizational structure restricts the scope of action of the individual organizational members who are expected to comply with the organization's rules and routines. There is, however, always some degree of uncertainty whether individuals really adhere to organizational rules or whether they exploit their situation for their own purposes. Furthermore, controlling the behavior of an employee may be difficult and/or expensive. As these problems frequently arise in employer/employee-relationships, they have come to be known as the principal-agent-problem, and the question is how the agent can still be motivated to perform "adequately" (Eisenhardt 1989).[4] Here, it is a central notion of agency theory that designing incentives in a way that organizational and personal interests are aligned can close this gap. The more an agent – by performing the organizational task – can fulfill his own goals, the more willing he will be to perform according to the rules of the organization. This then leads to higher employee motivation. Alignment may be achieved by various problem- and context-specific mechanisms such as commissions or profit sharing (Picot et al. 2008a), or by increasing the principal's ability to control the agent, thereby reducing the agent's ability to exploit his information advantage.

3.1.2 Exemplary applications

Recent years have seen the disintegration of value chains in numerous industries. This "move to the market" phenomenon – the decreasing importance of hierarchical governance in favor of market- or network-based organizational forms – has in large part been driven by information and communication technology (Picot et al. 2008b). Furthermore, these technologies have also had an "enabling function": They have not only reduced the costs of a particular governance structure by reducing transaction costs, but also allowed for new organizational solutions that were not previously conceivable (Picot et al. 1996). These new organizational structures (for instance, electronic markets or new modes of sourcing or virtual global collaboration) have in turn allowed for a higher degree of specialization and division of labor (Dibbern 2004).

The result of this development from a coordination perspective is that interfirm integration efforts to coordinate a set of specialized suppliers or partners by means of information and communication technology have become much more important (Hess 2002; Hirnle and Hess 2007). In some cases, transaction costs

[4] Following Picot et al. (2008a), we denote this organizational challenge of achieving alignment as the "motivation problem". Principal-agent theory, to be clear, does not pertain to aspects of individual motivation. Applying psychological theories of motivation (Rosenstiel von 2007) might help to extend the analysis accordingly.

have even increased due to the coordination demands of a chosen organizational solution. However, the intriguing insight in this context is that when increases in specialization allow for significantly lower costs of production, overall costs may still be lower despite the additional coordination efforts. The upshot of these considerations for the design of ICS is the following: In choosing an organizational solution for a particular task and the ICS that supports that task, decision makers should not focus exclusively on lowering production *or* transaction costs, but consider both aspects simultaneously to devise a cost-efficient solution. With modern design software, for instance, firms can outsource even specific product design tasks (e. g., an automotive OEM that outsources the design of the break system to a 1st tier supplier) and/or conduct the design in a cooperative manner (D'Adderio 2001). Although transaction costs may still rise as compared to a purely in-house solution, they are offset by the gains of integrating a specialized supplier.

For an exemplary application of the motivation perspective, consider a management information system that is used for monitoring and controlling purposes. Imagine, for instance, a shipping company that uses handheld PDAs, cell phone data links, and GPS technology to track its drivers' movements and behavior in real time. By simplifying monitoring activities, such a system may lower agency costs as it reduces the information asymmetries between drivers and management, and, hence, the drivers' potential to exploit this difference. If, in contrast, management wanted to control a firm's "knowledge workers" (a product engineer for example) rather than less-qualified operative personnel, the situation is different: As knowledge-intensive activities often pertain to creative problem-solving work, they are much harder to monitor, and additional monitoring activities might even have a negative impact on the motivation of the knowledge workers. Rather than installing a monitoring system, management should try to increase the incentives of its employees which could also subsequently increase employee motivation. This might be achieved by endowing knowledge workers with ICS which allow them to solve problems autonomously and creatively, thus increasing their intrinsic motivation, and by supplementing this approach by agreements on objectives as well as financial incentives.

In summary, system design that is guided by a motivation perspective would first analyze a situation with respect to potential agency costs: Can the results of a task be influenced by the agent and can the agent's efforts be observed by the principal? In a second step, the answers to these questions would feed back into the design of an information and communication system that supports the respective context (Picot 1989).

3.2 An information-processing perspective

3.2.1 Characterization

The starting point of the information-processing perspective is the notion that organizations are faced with uncertainty (in the sense of an incomplete description of the world) and that they use information to coordinate and control their activities (Arrow 1974). By processing information, an organization studies its environment, identifies choice alternatives, makes decisions, takes action, learns, and communicates with others (Burton et al. 2004). It is a central notion in the literature that for an organization to process information efficiently and effectively, its capacity for information processing must meet its demand for information processing, and that the basic organizational design problem refers to matching these two forces (Galbraith 1973; Burton et al. 2004). What makes organizational design one of the most difficult managerial challenges, though, is that individuals possess only bounded rationality (Simon 1955, 1956), that organizational work is usually highly partitioned and performed by a multitude of interdependent "information processors" (March and Simon 1958), and that information can be costly to gather, transmit, store, and analyze (Arrow 1974).

Furthermore, information-processing activities can pertain to both humans and information systems, or as Simon remarked: "[D]ecision making is shared between the human and mechanized components of man-machine systems, the machines being those devices we call computers" (Simon 1973, p. 270). What unites humans and computer systems is that their capacity for information processing is not unlimited. What distinguishes them is the kind of information-processing work at which they excel. From this perspective, the design of organizational systems is tightly linked to the design of information and communication systems. Both design activities should go hand-in-hand and distribute information-processing tasks in a meaningful way on humans and machines, taking their idiosyncratic strengths and weaknesses into account such that both systems complement each other effectively in addressing the organization's information-processing demand.

3.2.2 Exemplary applications

A first potential application of the above perspective relates to the broad domain of software or system ergonomics and the information-processing demands and opportunities that a system puts on its users. First, consider the demand side. It is common knowledge that humans differ in their problem-solving abilities depending on whether they are novices or experts in a certain problem domain. When an expert is confronted with a vast amount of information, his expertise may help him identify the right cues and thereby solve the problem. When, in contrast, a novice is put in the same situation, he will use simplifying heuristics in order to cope with this situation which comes at the risk of making the wrong decision. ICS that are designed according to this view might present the same kind of information differently, depending on whether the current user is identified as an expert or a novice. Consider a financial information system that presents the same market or firm data in different ways, depending on whether the user is a stock market specialist or the "average" bank employee.

A similar situation occurs on the "information supply side": When a certain task is highly uncertain, a decision maker needs to access and process a large amount of information to complete the task, whereas little information is needed to tackle a routine, predictable task (Galbraith 1973). Again, systems could be designed to present the "appropriate" amount of information to a decision maker in the most "appropriate" way, depending on the "nature" of the task (as measured by its frequency, complexity, or other criteria). For an example, think of a credit application process that is supported by such an ICS: Depending on whether an application is "straightforward" or not, the system might present the

final decision maker with only the smallest possible amount of information or supplement this information with additional data that may help him reach a decision.

The latter argument is closely related to the fact that while ICS have generally increased the information-processing capacity of organizations, they have often implied a downside in terms of producing information overload. The case of management information and business intelligence systems (MIS, BIS) that provide executives with a plethora of internal and external information is interesting to consider. Since we often want to know everything about everything that is going on in our firm and in the market, the resulting amount of data is often too large to be processed in a meaningful way and executives will either not use the system at all or spend too much time sorting through the information – time that might be spent more effectively on other activities such as the actual decision process. Hence, as Simon argued, management attention, not information, has become the scarce resource in many cases (Simon 1973). If the BISE field were to consider this line of reasoning, it would focus on designing MIS and BIS to filter information intelligently, for instance by incorporating features such as role-orientation, situation-orientation, or individualization in general (Meier et al. 2007). In other words, systems or system components should be designed to conserve attention rather than create additional demands for attention (Simon 1973).

Our last exemplary application pertains to the division of information-processing labor that results from the limited capacity of humans and machines to process large and complex sets of information. In order to allow for a division of labor and the resulting gains of specialization and new opportunities such as forming network relationships between specialist firms, a system must be decomposed into relatively independent subsystems in order to avoid the externalities that the division of labor always entails (Simon 1996). Only a good decomposition allows for the information-processing activities on the subsystem level to proceed independently or with minimal concern for interactions with other subsystems. This notion emphasizes the role of electronic markets or supply chain systems in supporting certain decompositions and the independent information processing at the different subsystems by automating the exchange processes that externalities between the subsystems entail. On the other hand, knowledge about "appropriate" decompositions of value chains or business processes and how the remaining interdependencies are best addressed should enter the design of such systems.

3.3 A project and change perspective

3.3.1 Characterization

ICS projects offer another fruitful avenue for combining theoretical and practical insights. As mentioned in Section 2, they frequently fail or experience serious schedule and budget overruns, the reason being that social and organizational factors are not adequately considered. More precisely, any new ICS denotes a change for the current organizational system and once in place may evoke further change that is often profound. For example, a new ICS might affect the type and availability of information and may thus change an organization's communication structure. It may substitute or complement existing systems and change work roles, business processes, and power structures. In many cases, the introduction of new information and communication technology is accompanied by re-organization activities of some form or the other.

To shed some light on these issues, we refer to the literature on organizational change and its management implications which has presented a broad variety of factors that may drive the success or failure of change-related efforts, ICS projects included (Weltz and Ortmann 1992; Kotter 1995, 2007; Picot et al. 1999; Wolff 1999b).

The first factor relates to the context of a new information and communication system. Many projects fail due to a lack of sufficient analysis before the project is initiated and because generic change strategies are applied without customizing them to the specific organizational context. Too little attention is paid to contextual factors that may be crucial for the success or failure of a new information or communication system. Yet just like organizational theorists have sought to define a mapping between an organization's design and its environment by identifying the relevant contingency factors and designing the organization to achieve fit between the two (Thompson 1967; Galbraith 1973; Khandwalla 1977), a contingency analysis might also be helpful at the beginning of an ICS project (Picot et al. 1999). Context factors that may affect the appropriate change strategy may include but are not limited to the question of whether the change will be incremental or radical, how organizational routines that have developed in a path-dependent manner over time will be affected, what the organization's formal and informal communication structure looks like and how it will be affected, how connections between the elements of organizational structure will be reinforced or destroyed, and how power and incentive structures will shift.

The second set of factors relates to the human dimension, i. e., to the relevant stakeholders that will be positively or negatively affected by the changes that a new information or communication system brings about. Securing the involvement or at least tolerance of these people denotes the most important challenge of all. Having a clear vision, communicating the objectives and measures of the project extensively, and exerting strong leadership skills during the change process will raise transparency and contribute to building trust among the stakeholders. If these activities are neglected, resistance to change will be the consequence. Furthermore, the "human dimension" also pertains to the competencies of the project leader and the project team, who need to be sensitized for change-related issues and well-trained in the according methods of managing projects and change processes.

3.3.2 Exemplary applications

The main implication of our "context dimension" and "human dimension" for the practice of designing and implementing ICS is obvious: to increase the amount and quality of knowledge about change-related aspects that enters the planning and execution of ICS projects. This objective may be approached from two directions: system design incorporating the findings of the analysis phase, adapting the system in a way to mitigate the critical obstacles that have been identified, or, if certain aspects of the system design cannot or should not be changed, then measures need to be derived to ensure the fit between the system and the organizational context and attention must be paid to the human aspects during the change process.

In the following, we want to point to another aspect of the project and change perspective that might become relevant for the BISE field, namely the development of software tools that support the implementation process. Current project management software is largely focused on the "technical" aspects of project work such as scheduling methods, work breakdown structures, cost calculations, but is not being used much in "everyday" projects despite the initial enthusiasm for this particular kind of software. We speculate that this may be the case because the "real" issues in ICS projects are related to change, a perspective that is not yet sufficiently represented by the project management applications that are currently available. Hence, there is a pressing need for project management software to integrate the social aspects of the project and change process in a profound way. This might relate to software that facilitates and helps guarantee participation, helps clarify responsibilities, roles, and tasks during the process, supports the communication needs of the change project, or helps monitor the personnel attitudes toward the project over time. While some initial attempts have been made (Gerkhardt and Frey 2006, for instance, mention the use of a monitoring tool at BMW), much more work remains to be done along these lines.

4 Conclusion

In this paper, we have been concerned with the relevance of organization theory to the field of business and information systems engineering. After arguing for a stronger role of organization theory in general, we have referred to selected theoretical perspectives and tried to identify their core concepts and some of their fruitful implications. Will BISE researchers in consequence have to become specialists in organization theory? And will organization and management specialists on the other hand need to deal with information and communication technologies? In reference to both questions, we do not think so. Specialization and division of labor are necessary and helpful. However, both sides must be sensitized to the issues posed by the other, they must be able to communicate with each other, and ICS projects should at best be staffed with specialists as well as with intermediators from both fields.

Our proposal is not to play down the success of the BISE field and we do not argue for the field to de-emphasize its role as a "design science" in favor of becoming more of a "behavioral science" (Hevner et al. 2004), nor to give up relevance in favor of increasing rigor (Benbasat and Zmud 2003). We do propose to pay more attention to organization theory as it may very well contribute valuable insight into BISE research. Indeed, the current development of the German business research community may help move the BISE field into this direction, although for reasons other than the ones we argued for above. As publishing articles in international rather than national journals is becoming increasingly important for German academics, BISE research may consequently start paying more attention to organization theory, a prominent topic of many international information systems (IS) journals.

There are, of course, limitations to the arguments that we have raised. Firstly, the field of organization theory and the BISE field progress at different rates and with different dynamics. Hence, BISE research may sometimes address an issue for which the theoretical underpinnings are yet to be established. This is, however, not meant to be an argument against the use of organization theory in BISE research. Experiments with different approaches toward new technologies are both helpful and necessary. The theoretical analysis, however, eventually needs to catch up to critically reflect the status quo und help sort out the helpful from the less helpful solutions.

A second limitation concerns our selection of theories that certainly reflects our own bias regarding important issues in BISE research and theories that, we believe, highlight and address these issues. Of course other theoretical approaches such as insights from cognitive psychology, game theory, political science, or market design theory, address similarly important issues that future BISE research might fruitfully exploit.

A final limitation concerns the fact that our theoretical analyses have been concerned with single issues. The "big picture," however, often pertains to integrated ICS which pose a large number of issues at the same time, all of which may interact in non-simple ways and may be accessible by various theoretical approaches. While the need for a thorough theoretical analysis is even more important in such complex situations, the question how to conduct this kind of analysis is still more an art than a science.

The interdisciplinary nature of the BISE field requires research and practice to consider technological and organizational aspects simultaneously in order to devise and implement effective solutions. While the technological aspects currently appear to be well represented in the BISE field, attributing a more prominent role to organizational theory denotes a necessary and fruitful perspective for two major reasons. The first reason results from the problem domain itself; from the need to properly account for the dense links between ICS and organizational systems. System design *is* organizational design, and, likewise, system implementation and system use are inseparably linked to organizational behavior and the social forces that determine it. The second reason is strategic and relates to the frequently debated issue of positioning the BISE field with respect to its mother disciplines, the business domain and computer science (Heinzl et al. 2001). In light of our discussion, it appears reasonable that stronger theoretical foundations may prove beneficial to further strengthen the field's distinguishing features as well as its foundation and thereby to sustain its competitive advantage at the interface of business and technology.

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Abstract

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The Relevance of Organization Theory to the Field of Business and Information Systems Engineering

Information and communication systems (ICS) impact their organizational environment in significant ways; hence, the design, implementation, and use of ICS are inseparably linked to fundamental issues of organizational design and behavior. Current research in the field of business and information systems engineering (BISE), however, is primarily technology- or practice-oriented and concerned with the construction and validation of prototypes, whereas little attention is paid to theoretical insights into organizational phenomena and relationships. In this paper, we argue that paying more attention to organization theory would provide valuable guidance in addressing the close links between ICS on the one hand, and organizational systems on the other. To support our argument, we refer to selected theoretical perspectives and highlight their potential relevance to the BISE field.

Keywords: Information and communication systems, Organization theory, Organizational design, Organizational behavior, System design and implementation

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