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INFORMATION SYSTEMS AND RATIONALISATION OF ORGANISATIONS: AN EXPLORATORY STUDY

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ABSTRACT

In this paper we aim to situate social implications of information systems (IS) within a broader context of progressive rationalisation in modern organisations. More specifically, we examine what roles IS play in increasing rationalisation of organisational processes and what are the implications. Our objective in the paper is twofold: i) to propose a rationality framework that synthesises different approaches to reason and rationality, and ii) to demonstrate how it can be used as a conceptual model for critical analysis of social and organisational consequences of rationalisation in organisations enabled and supported by IS. By drawing on a field study in a retail company, we interpret three IS cases to demonstrate how the rationality framework helps explain different IS-organisation relationships in the light of increasing rationality that entails both substantial benefits and risks.

1.   INTRODUCTION

Rational and *rationality* are used both in theoretical writings and in everyday life to denote a multiplicity of meanings. The idea of reason has been connected with the disposition of actors to give rational grounds for or logical explanations of their beliefs and actions. Similarly, actions by which actors achieve desired ends are regarded as rational. Furthermore, organisational processes that embody rational actions are considered rational. More generally, the increase in rationality that characterises modern organisations and society is called *rationalisation*. It is this broad context within which we will explore the relationship between information systems (IS) and organisational processes.

This paper focuses on the relationship between IS and organisational processes from the perspective of *rationality* of actors, processes and organisations. That actors in organisational processes are rational in the selection of the best (optimal) action to achieve their goals has long been a belief underlying transaction based IS with operation research models often embedded in these systems. For example, inventory control systems are implemented to minimise costs or stockouts; optimal production scheduling systems are used to maximise throughput or minimise waiting times. Given a particular criterion (e.g. minimise cost, maximise throughput), these systems automate generation of alternative actions and the selection of the best (optimal) action, thereby achieving optimal control and ultimate rationalisation of these processes. In order to make sense of empirical data about organisational use of IS and to improve understanding of IS's role and impacts, researchers have adopted a variety of

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theories ranging from organisation theory, organisation behaviour and management, to sociology, anthropology and philosophy[1].

Rationality and rationalisation in the context of IS have been considered highly problematic (Nurminen, 1986; Van Tocht, 1994). For example, Nurminen (1986) elucidates the implications of alternative views of rationality by considering IS and the human beings it should serve. In particular he mentions how rationality without countervailing emotion leads to a weakening of the role of the individual. The authors just mentioned investigated rationality from a mechanistic perspective.

In this paper we present an investigation of the relationship between IS and rationalisation processes in modern organisations from a critical theory perspective. In particular we focus on a rationality potential of IS in organisational processes and related social and organisational consequence, beyond the narrow view of instrumental rationality. In order to make sense of rationality potential of IS we had to deal with different concepts of rationality that often seem ambiguous and contradictory. We therefore investigated the origins and commonality of different rationality concepts that lead us to propose a rationality framework. This framework systematises concepts of rationality initially defined by Weber (1958, 1964, 1978) and later by critical theorists (Adorno and Harkheimer, 1944; Habermas, 1984, 1987; White, 1988; Koningsveld and Mertens, 1992, Klein and Hirschheim, 1991). The purpose of the proposed rationality framework is to provide a conceptual model to examine different roles IS may play in rationalisation of organisational processes and to identify risks and benefits implied. Moreover, the framework is aimed to assist both researchers and practitioners to assess rationality potential of an IS and its consequences in a broader social and organisational context. To illustrate how the rationality framework may be applied and what can be gain from it, we analyse three cases of IS drawn from a field study in a retail company.

In the following section we first present different views of rationality and rationalisation in modern organisations and briefly describe the proposed rationality framework. We then explain our research methodology and how we used this framework to study IS in the retail company (section 3). How this framework helped us identify different IS's roles and explain their specific social consequences, including both substantial benefits and risks, is discussed in section 4. In the concluding section we discuss potential contributions this approach may have to the understanding of social and organisational consequences of IS.

2.   THE RATIONALISATION OF ORGANISATIONS – A THEORETICAL FRAMEWORK

In order to explore the nature and types of rationalisation of organisations we begin with two basic conceptualisations of organisation distinguished by different ontological assumptions. One is organisation as a system, that conceives organisations substantively as concrete facticities such as aggregations of actors, physical artefacts (machinery, products, buildings, technology), process and structures integrated to achieve some goals. Within such a conception, management is defined as activities of intervening into a state of these aggregations by actors with formal status and legitimate authority (Gephart, et al, 1996). Systems, such as production system, administrative system, decision-making process, financial system, and the like are defined in terms of objects, processes, states and events about which we claim that they exist, had happened or are likely to happen. In other words, organisation is defined as part of the *objective world*[2].

Alternatively organisations are conceived as both a system and lifeworld of its members based on the assumptions that besides the world of facticities (within which we define systems), there is the *social*

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[1] See eg. Attewell and Rule, 1984; Lyytinen and Klein, 1985; Orlikovski, 1991; Klain and Hirschheim, 1991; Lyytinen, 1992; Coombs et al., 1992; DeSanctis and Poole, 1994; Ang and Pavry, 1994; Avison and Myers, 1995; Hirschheim et al., 1996; Myers and Young, 1997; Myers, 1997; Galliers and Baets, 1998; Robey and Bourdeau, 1999.

[2] We adopt here Habermas's definition of the *objective world* as "the totality of states of affairs that either obtain or could arise or could be brought about by purposeful intervention" (Habermas, 1984, p.87).

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world of values and norms, and *subjective worlds* of individual experiences, desires and feelings [3]. The lifeworld is the symbolically created, taken-for-granted universe of daily social activities of organisational members, that involves knowledge related to all three worlds. Whatever happens in an organisation or whatever organisational members may raise and talk about belongs to the three worlds (objective, social and subjective). The lifeworld is permanently (re)created by its members in contextually embedded social discourse.

Two conceptualisations of organisation, based on different ontological assumptions, determine what is considered to be subject of rationalisation: systems in the first, and both systems and lifeworld in the second conception. We use the ontological assumptions (and two concepts of organisation) as one classification dimension to formulate basic types of rationality and rationalisation of organisations. The other dimension is determined by different approaches to reason and rationality.

There are two fundamentally different and mutually opposing approaches to reason and rationality. One is *subject-centered reason* concerned with self-assertive individual interests, that determine the goodness of goals and means to achieve them. Subject-centered reason is behind the <u>individual perspective of rationality</u>. The other is *reason situated in social interaction* exemplified by intersubjectivity of mutual understanding of the participants that denotes the <u>collective perspective of rationality</u>. The individual and the collective perspective of rationality coupled with two views of organisation (as a system or as both a system and lifeworld) form a framework for exploration of different types of rationality of actors and their actions (Table 1).

From an individual perspective, assuming the view of organisation as a system, rational actors pursue their interests and make decisions so as to intervene in a system and achieve pre-defined, given ends. This type of rationality, following Weber (1978), will be called **formal rationality.** Formal rationality is 'a matter of fact' and refers to efficacy of means to intervene in the objective world and achieve a given state of affairs (eg in production or administrative systems). It is further differentiated as **instrumental rationality** and **strategic rationality.** Instrumentally rational actors calculate means based on technical knowledge to achieve given ends disregarding other human beings involved. Strategically rational actors follow rules of rational choice and achieve given ends by influencing other actors, perceived as rational opponents. The more accurate an actor's knowledge of the target system, the more effective his/her intervention in the system, and hence the more instrumentally rational the actor. Similarly, the better an actor's knowledge of other actors (opponents) and their likely counter-actions, the more effective his/her influence on these actors and hence the more strategically rational the actor.

When we change the ontological assumptions and include all three world, while still looking from an individual perspective, the nature of rationality changes as actors are oriented to achieving ends not only related to systems (in the objective world) but also those referring to norms and values, justice and fairness, political or ideological affiliations, etc. (related to their shared social world and their inner subjective worlds). Such rationality, that Weber calls **substantive**, is 'a matter of value' and refers to substantive ends, beliefs and values. The issue here is that different actors pursuing their (different) interest, driven by their (different) substantive ends and values, will usually disagree in their judgement of rational action. As irreconcilable conflict of interests and values is endemic in modern organisations, Weber maintains, substantive rationality is inherently limited (1964, 1978).

An alternative and quite distinct, collective perspective of rationality, which by definition is coupled with organisation viewed as both systems and lifeworld, is **communicative rationality,** the third type in our framework. In contrast to the subject-centered reason, Habermas proposed reason situated in

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[3] Habermas defines the *social world* as a "normative context that lays down which interactions belong to legitimate interpersonal relations." (Habermas, 1984, p.88). The social world embodies moral practical knowledge in the form of norms, rules, and values. Complementary to the objective and social worlds, which are external to an actor, Habermas defines and internal or *subjective world*, which is defined "as the totality of subjective experiences to which the actor has privileged access." (Habermas, 1984, p.100).

social interaction and intersubjectivity of mutual understanding of actors (1984, 1987). Instead of rationality defined in relation to a self-interested individual, Habermas defined communicative rationality in relation to individuals as social actors that interact to coordinate their activities. Communicatively rational individuals use language to develop intersubjective understanding of a situation, as a basis for a rationally motivated agreement and coordination of their actions (aimed at achieving their, in principle different ends).

Communicative rationality connotes argumentative speech free from any force or constrains. The key assumption here is that participants in communication understand the internal relationship between the raising of intersubjective *validity claims* and the commitment to give and be receptive to arguments. Communicative rationality in essence "signifies a mode of *dealing with* (raising and accepting) validity claims" (Wellmer, 1994, p. 53). Communicative rationality could thus be said to express a reflexive conception of human speech, which means that all validity claims can only be redeemed in human discourse and can only be justified through argumentation. This also implies that the validity claims are not limited to the objective world of facts (like in instrumental and strategic rationality) but can also refer to the social world of values and norms, as well as to the subjective world of individual experiences, desires and feelings.

Table 1 presents a taxonomy of rationality along two dimensions: **i) organisation's ontology** dimension (different assumptions about the world), and **ii) the concept of reasons** – the individual perspective based on subject-centered reason vs collective perspective, based on reason situated in intersubjectivity.

TABLE 1   The Rationality Framework

	Organisation understood as SYSTEM (assuming the objective world)	Organisation understood as both SYSTEM and LIFEWORLD (assuming the objective, social and subjective worlds)
Individual perspective *(subject-centered reason)*	**FORMAL RATIONALITY** • **Instrumental rationality** • **Strategic rationality**	**SUBSTANTIVE RATIONALITY**
Collective perspective *(reason situated in intersubjectivity)*		**COMMUNICATIVE RATIONALITY**

This rationality framework may serve as a conceptual model to analyse specific organisational processes and the role an IS plays or is likely to play to increase rationality. For instance, it may help individual social actors understand the meaning of rationalisation (to be) achieved by an IS and assess the resulting benefits and risks within a wider framework. Especially those affected by an IS need to be aware of the potential risks and make an informed decision about it. Furthermore, such a framework may guide an empirical investigation of different IS in practice and assist in comparison and systematisation of evidence regarding the consequences of increased rationalisation in organisations. By building knowledge about rationality potential of IS and implied benefits and risks, such studies will contribute to better understanding of the role and social consequences of IS in organisations

3.   RESEARCH METHODOLOGY

In this paper we draw from the field study conducted in a discount food chain Colruyt, a Belgium's third largest food retail company. The Colruyt Company evolved from a one-store enterprise in 1960s to a highly profitable food retail chain, currently comprising 120 stores located throughout Belgium. The Company's success is attributed, among other things, to its innovative use of Information Technology (IT) and its integration with Company's management philosophy regarding workers

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empowerment and their participation in decision making. Namely, as late Colruyt, the founder and the Company Board Chairman, explained in his interview (1993), from its very beginning the Company used IT to explore new innovative organisation structures and to enable and support open and inclusive management practices that stimulated employees' initiative, responsibility and risk taking.

The field study started in 1992 and continues to this day. Initially it was an interpretive field study conducted by non-participant observers (one of the authors was among them) (Janson et al., 1997a, 1997b). Gradually, as we became concerned with assumptions behind the application of IT and with the ways in which IS are used to achieve improvements in work processes and decision-making, we added a critical dimension to our study. Namely, on one hand we experienced the Company's attempts to build genuine participative decision-making and empower employees in which the use IS played an important role. On the other hand, we saw union's accusations that Company management had hidden agendas and used IS to mask their pure commercial objectives. As a result, we adopted critical orientation with aim not only to interpret and explain but also to inform and change practice (Cecez-Kecmanovic and Janson, 1999; Cecez-Kecmanovic, 2001). Consequently, informed by critical social theory, our interpretation and analysis turned the study into a critical field inquiry (Lyytinen, and Klein, 1985; Lyytinen, 1992; Klein, 1999). In this paper we report how we adopted the rationality framework to explore the underlying assumptions behind several Colruyt's IS failures and successes.

In our empirical study we used document analysis, in-dept interviews and non-participant observation research techniques developed for interpretive field studies (Walsham, 1993, 1995). However, by setting a particular research agenda (rationalisation of organisational processes), focusing on specific explanatory substantive problems (such as assumed rationality of actors; intended and achieved rationalisation due to IS use; manipulation and control of employees vs emancipation and participation), and adopting a historic perspective, our study became a critical inquiry (Cecez-Kecmanovic, 2001).

We collected and analysed 30+ Company and Union documents (both hard copy and electronic ones). We conducted and analysed 18 in-depth semi-structured interviews (5 with the company's founder and high level managers, and 13 with shop managers and clerks) (e.g., Colruyt, 1993; Lengeler, 1993, 2000) and observed different meetings. From these sources we reconstructed stories about Company information systems, including the purpose and history of their development, assumptions about the context in which they were developed and implemented, types of rationality addressed and rationalisation aimed and achieved, as well as other intended and experienced effects, risks and dangers. For the purpose of this paper we select three cases of IS to illustrate how the rationality framework assisted us in understanding the roles and social effects these systems had and what contributed to their failure or success.

4.   INTERPRETATION OF *IS* INFORMED BY THE RATIONALITY FRAMEWORK

In this section we briefly present three selected IS. In order to make presentation more compact and economical, we including both some relevant empirical evidence collected about an IS and then our interpretation of issues informed by the rationality framework in each subsection.

4.1.   IS for Product Distribution

In the early 1960s the Colruyt Company was a food wholesale distributor that supplied small supermarkets and neighbourhood stores. Colruyt salesmen would periodically visit a store, collect inventory replenishment data, and instruct warehouse personnel to send a food shipment for the store in question. This process was time consuming, unreliable, and resource-intensive. The Colruyt Company conceived of an IS that would automate this replenishment process. The goals of the IS were to reduce the time spent by the salesman collecting reordering data, to increase data accuracy, and to make the ordering process more reliable. The IS department developed a keypunch-based IS for this purpose. For each reordering cycle store owners were asked to fill out keypunch cards indicating the quantities needed on an item-by-item basis. Next, the Colruyt salesman would collect these cards,

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submit them to the IS department for processing. The result of this operation was a warehouse picking list for each store. Based on this picking list a food shipment would be organised. This IS became a resounding failure.

During our interview Mr. Lederer, former Colruyt salesman, explained that after the IS was introduced Colruyt salesmen found the keypunch cards not filled out when they visited stores during subsequent reorder cycle. This left Colruyt salesmen no other choice but to continue collecting data manually. As Mr. Lengeler explained, IS designers had never sufficiently taken the role of storeowners into consideration. In Mr. Lengeler's own words "After a long day in the store, owners have something else on their mind than filling out keypunch cards." This meant that they postponed this task to the next day but, in fact, it was never completed.

On reflection, it seems that the key problem was the inadequate assumptions concerning rationality of actors involved in the process. The IS designers saw storeowners as inanimate elements of the 'objective world' and consequently modelled them as 'objects-origins of data'. The IS design reflected the Colruyt Company's view (at a time) that the reordering process was inherently instrumental and that the IS should achieve optimal distribution (ultimate rationality), based on criteria such as cost minimization and shortening of cycle times.

Designers did not recognize storeowners as people and essential actors in the process with their own interests. This meant that the designers failed to understand that the reordering process was not governed by instrumental rationality but, instead, by strategic rationality. They failed to understand that storeowners are rational actors as well, with their own strategic intents. As rational actors, storeowners also undertake actions based on information concerning other players, including the Colruyt Company, in order to achieve their objectives. Consequently, the IS designed to optimise the distribution process and therefore increase its instrumental rationality, failed. Disregard for strategic rationality of storeowners in the distribution process was a fatal failure.

4.2. IS assisting the decrease of customer waiting times

In early 1980s an IS for customer waiting times was introduced in the stores. After completing serving a customer, the checkout clerk enters the number of waiting customers into the IS. This enables the calculation of customer waiting times. At the end of the shift the clerk receives the waiting times of those three customers who experienced the longest waiting times. According to the Company policy this information is provided to no one but the clerk. Summarized figures are made available to the store and district managers, and to members of upper management. Our interview with a store manager confirmed that confidentiality of customer waiting time data is indeed a fact. The manager further indicated that while it is technically possible for him to access individual clerk data, it would violate Company policy.

Checkout clerks receive regular training that provides them with the necessary skills and motivation for this important task. It is the company's philosophy that employees should be supplied with information that makes self-evaluation possible. According to Mr. Colruyt (April 1984, p.54):

> "Enabling the employee to measure his own performance furthers self-appreciation [for a job well done] and being able to monitor his own performance makes the employee more independent in relation to his surroundings."

The system has a threefold purpose: to support Company's management increase efficiency and improve customer service, to assist selection of checkout clerks for additional training, and to help clerks' self-evaluation and improvement. Because these goals were collaboratively established between top management, store manager and clerks, founded on shared values and norms, the IS, as we understand it, serves substantive rationality. However, it was envisaged that IS could be misused to spy on individual clerks. Union members also raised their doubts that the actual objective of this IS was not disclosed.

We note that many retail organizations use point-of-sale systems for employee control purposes by collecting data on worker productivity, worker accurateness, and worker honesty. Such systems have the potential to be seriously abused. This in fact is the concern of Colruyt's Union members who are critical of the stated system goals and declared contribution to substantive rationality. The Union perceives the IS supporting management's covert strategic action by direct monitoring and constant surveillance. In fact, a Union document stated "We do not dare think of the working conditions [of the checkout clerks] when customers are promised to be checked out within some pre-specified time period."

After extensive discussions and negotiations, the clerks, the Company management, and the Union achieved the same value position, all three maintaining that clerks are independent self-directing individuals and not 'parts of the customer-serving system'. It was decided that the IS 's role is to achieve goals mutually agreed upon by all involved actors, thus increasing their substantive rationality (Table 2). As a result a more detailed and clear policy regarding the use of the IS, including protection of clerks from misuse, was introduced. In case of violation of their agreement any actor may initiate an action, including the revision of the policy.

4.3.   Groupware: ISID

In keeping with the idea that information should be available to anyone, the Colruyt Company developed an <u>interactive system for information dissemination</u> (ISID). The system was designed to meet the company's objectives for open, public and efficient communication. Company policy ensured that information about decisions, actions, and events as well as inter-office correspondence, outbound and inbound communication, and minutes of meetings were captured by ISID. An important system feature was its wide accessibility (80% of information is accessible to all company members and union stewards, 20% is confidential with access limited to authorized individuals).

Table 2 Impacts of Colruyt's IS on rationality

	Intended IS effects	**Observed IS use and its effects**	**Risks and challenges**
IS for product distribution	Increase in instrumental rationality—optimisation of the reordering process	IS failed due to focus on instrumental rationality of the reordering process and neglect of strategic rationality of actors	Disregard for strategic rationality of actors affected by the IS prevented planned functioning of the IS; storeowners' actions prevented increased rationalisation of reordering process
IS for decreasing customer waiting times	Increase in substantive rationality—achievement of collaboratively established goals related to customer service	Increased efficiency and improved customer service Selection of checkout clerks for additional training Clerks' self-evaluation and improvement	There is a risk that managers and supervisors misuse the IS and obtain detailed customer waiting times and use this data against individual clerks Introduction of clear policies to prevent IS misuse and nurturing shared values and norms regarding employees' rights (through training) was considered key to achieving intended goals
ISID (Interactive System for Information Dissemination)	Increase in communicative rationality—increase in mutual understanding of issues, enabling cooperative interpretation of problems, assisting members in reaching agreement and consensus	Generally improved communication: open, public and efficient Company-wide communication Raised awareness of Company problems and increased workers' participation in problem-solving and decision-making	Individuals can deceive others by pretending to act communicatively while in fact acting strategically The challenge is to train Company members to be communicatively competent and capable of detecting misuse of ISID and potential deception. A further challenge is to ensure access to as wide a range of information as possible.

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The key role of ISID is to assist all employees to engage in problem identification and problem resolution and to become genuine actors in the decision making process. Any employee can raise a problem via ISID and initiate its resolution. Other employees may respond (via ISID) with relevant information or, perhaps, a ready-made solution. If no immediate solution exists a team of self-nominated individuals is created to explore the problem further and to propose possible courses of action. The team chooses a moderator, based on self-nominations or nominations by others. Next, team members establish a common understanding of the problem situation and develop one or more potential solutions to the problem at hand. This is then communicated via ISID so that other company employees with an interest in the problem or its solution, get promptly informed and participate in the problem solving. Once publicly announced on ISID, the problem definition and its potential solutions are open to questioning, criticism and counter proposals. New inputs to the problem definition and its solution may trigger reassessment by team members and this process continuous until, ideally, an agreement is reached. However, this is not always feasible due to time limitations (usually a three-week period) or deep-seated personal differences. In this case, the team moderator weighs all arguments, comments, and counter proposals, and makes a final decision and communicates it to all employees via ISID. The decision, for which moderator carries ultimate responsibility, is then implemented. While the whole decision making process is lengthy, the democratically assigned rights of the moderator ensure that the process stays within time limits that are tolerable for the retail industry.

ISID is an example of IS designed to increase communicative rationality of all Company members. Evidence from its two decade long history, indicate that its stated objectives – wide access; open, public and efficient communication across Company, participation in problem identification and solving by all relevant employees; democratisation of the work place – have been achieved. ISID is therefore considered a great success. The IS success however has to be situated in a larger social context. Namely, the Colruyt Company has for years built a participative democracy culture (Janson, et al. 1997a; 1997b). As part of it, the company has an extensive range of in-house courses that focus on employee self-knowledge, emancipation, assertiveness, company values, company policies, job skills, inter-personal skills, and communication skills. Employees attend these courses at their own discretion and during company time. Employees so trained share a common perspective and participate in company affairs significantly less constrained than would normally be the case. ISID is an integral part of the Company's cooperative culture and participative decision-making. ISID provides a technologically-assisted environment that enables communicative rationality and makes communicative actions possible. By providing easy access to knowledge, an ability to ask questions and test validity claims, and thereby construct shared understanding, ISID assists in creating the basis for rationally motivated agreement.

However, ISID carries with it the danger of being misused. Several incidents were discovered and publicly discussed. For instance, a manager misused information from ISID against an employee. Given certain conditions, actors can disguise strategic actions by appearing to act communicatively. Members of top management can systematically distort communication by restricting lower level employees access to certain pieces of information (Table 2). As a result, norms and rules regarding the use of and working with ISID are permanently revisited and re-negotiated.

5. CONCLUSION

The proposed rationality framework provides a categorical apparatus to explore the wide-ranging impacts of IS on rationalisation of organisations, beyond the narrow view of instrumental rationality. The proposed taxonomy of rationality in organisational context is based on a) organisation ontology ('organisation as system' vs 'organisation as both system and lifeworld'), as one dimension, and b) generic perspectives and location of reason ('individual' vs 'collective') as another dimension. In such a way the framework systematises concepts of rationality from social theory relevant for examination of the role and impact of IS on organisations. The major claim of the paper is that resulting basic types of rationality—formal (instrumental and strategic), substantive and communicative—with their well

established theoretical foundations (presented here only briefly) are useful constructs that can contribute to better understanding of both risks and benefits of IS in organisations. The presented examples of IS from the retail Company illustrate how the rationality framework may be used to examine and explain a failure or success of systems based on their contribution to rationality (assumed vs actual rationality of actors, IS objectives in increasing rationality). By analysing IS from the rationality point of view we were able to understand designers' assumptions about the actors and processes and the role of IS within them, and thus classify IS within the framework; such a classification then helps us focus on specific benefits and risks. Moreover, the explicit analysis of rationality potential and likely implications (including risks) of IS is informative for both designers and users. This may lead them to consider another type of rationality to be supported/enabled by an IS and potentially agree on its changes. This means that the rationality framework may also be used to assist users to define requirements and express them together with expected rationality benefits, while being aware of the risks.

Based on the empirical evidence from our own and other published field studies, we suggest that the presented rationality framework provides a starting point for further exploration of the rationality in organisations enabled and supported by IS. Further explorations are needed to address other less obvious and hidden consequences of IS on rationalisation of organisations. For instance, the rationality framework may be applied to investigate IS impact on increasing formal rationality, bureaucratisation and subordination in companies, increased depersonalisation of working relationships, increased control, alienation etc.; it may also assist researchers and practitioners to be attentive to and expose (disregard for) substantive ends and values in the IS design and implementation. The major contribution of the rationality framework is seen as raising awareness and building knowledge about social and organisational consequences of rationalisation enabled and supported by IS relevant for both research and practice of IS. We have to note here that it is not intended to replace but rather to complement other theoretical perspectives to inform our understanding of inherently contradictory rationalisation processes resulting from IS-organisation interaction in contemporary society.

We envisage further development of the rationality framework in at least three directions. Firstly, to continue knowledge building through empirical studies of IS, in which concepts of rationality and the rationality framework are used for analysis and interpretation. Such analysis may in turn contribute to further development of the framework itself. Secondly, the rationality framework might be used to analyse results from published studies of IS and their organisational implications (in IS literature), thus potentially leading to new learning and further theory building. Finally, the rationality framework of IS and organisations should be challenged from other theoretical developments, in particular postmodernist thinking in organisation theory.

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