International Journal of
Information Systems and Project Management
ISSN (print):2182-7796, ISSN (online):2182-7788, ISSN (cd-rom):2182-780X
Available online at www.sciencesphere.org/ijispm

Information system conflicts: causes and types

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Abstract:
Conflicts are an inherent part of organizational life and managers deal with confrontations and conflicts on an almost daily basis. Information Systems (IS) implementations are a type of change that often leads to open or hidden conflicts. Managers and others involved can only deal with such conflicts effectively if they understand the nature and causes of information system conflicts (IS conflicts). To contribute to such an understanding, this study focuses on the analysis of IS conflicts. In so doing, it aims to identify various types of IS conflicts and to develop a framework that can be helpful in assessing these conflicts. To this end, we have conducted a meta-ethnographic study – that is, we synthesized earlier case studies in which IS conflicts are described. We purposefully selected 11 descriptions of IS conflicts and we analyzed the topics, contexts, and processes of these conflicts. Based on this analysis, we propose a two-dimensional framework of IS conflicts that leads to a categorization involving four IS conflict types: task; implementation process; structure; and value conflicts. Based on the conflicts that were studied, this paper also reveals that, in reality, many IS conflicts have a hybrid form and develop from one type to another over time.

Keywords:
IS implementation; conflict; conflict types; resistance; meta-ethnography.

DOI: 10.12821/ijispm030401

Manuscript received: 21 January 2015
Manuscript accepted: 26 February 2015

1. Introduction

Empirical research [20, 23, 27], theoretical arguments [41], and anecdotal evidence, all support the view that conflicts are a pervasive phenomenon during the design and implementation of information systems (IS). During IS projects, multiple participants with different goals interact under uncertain conditions which can easily lead to confrontations, maybe about the inclusion or exclusion of certain stakeholders during the project, the introduction of new and unfamiliar working processes, or unwelcome structural, political, or cultural changes.

Despite this, in many situations, IS project managers demonstrate a low degree of 'conflict awareness'. IS project proposals are frequently presented from an implicit 'unitarist view' of organizations [38]. Within this view, organizations are perceived to be essentially harmonious, with conflicts both unlikely and undesirable. Moreover, recent studies in the IS field indicate that IS implementation plans are often based on rational and technical considerations. As such, the new IS is often heralded as innovative and beneficial for the company, and therefore as progress for all involved. For this reason, design and implementation plans often follow a logical and linear approach [44] and reflect a lack of awareness of conflicting characteristics of the IS. One possible explanation for this lack of awareness is that in both the IS literature and IS curricula relatively little attention is explicitly paid to IS conflicts, leading to a situation where implementers are not trained in the identification and management of IS conflicts [4].

Although conflicts are an inherent part of organizational life, and research on conflicts in organizations is acknowledged and studied in many fields including psychology, sociology, organizational behavior, and marketing [4], the IS literature on conflicts is fairly limited. The work of Liu et al. [27], Meissonier and Houzé [30], and a few others are the exceptions. The IS literature on power [18, 40] and resistance [23] associated with IS projects has produced a considerable understanding of the politics surrounding IS but, to our knowledge, there is no systematic perspective on conflicts related to IS projects. This paper aims to take a first step in addressing that challenge by examining and categorizing such conflicts. In doing so we seek to promote a theoretical understanding while also helping practitioners to recognize IS conflict types in the belief that such an understanding will contribute to more competent conflict management. Consequently, this paper addresses two research questions: (1) what are the topics, processes, and contexts of IS conflicts; and (2) how can IS conflict types be categorized in an IS conflict framework. Insights into the answers to these two questions will be derived by following a meta-ethnographic approach [34] in examining eleven descriptions of IS conflicts.

IS conflicts are different from many other organizational conflicts for several reasons. First, IS implementation often involves drastic changes in work processes of the employees involved. This implies that employees are challenged to move away from what they know, and start doing their jobs in a completely different way. As we know from the literature, changing the status quo leads to conflicts, because the people involved are risk aversive [31]. Secondly, IS are developed by specialists in the IS field, often not specialists in the profession were they are consequently used. People in the profession view this as a breach into the profession were some IT-specialist is trying to tell them how to do their work [23]. These two reasons explain why IS conflicts are both different from other types of conflict. It also hints at the fact that there may be a very different evolvement of the conflict, and thus a different way of managing is necessary.

To establish a basis for the proposed framework, the theoretical backgrounds to our study are first outlined. Based on these backgrounds, an initial perspective on IS conflicts is presented. Following this, the research methods are explained, followed by an analysis of the IS conflicts in our sample. Based on this analysis, an IS conflict framework is proposed and applied in a single IS conflict case. This application demonstrates how the framework can be used by implementers to understand and diagnose IS conflicts and then develop a conflict management approach that fits with the conflict in its context. The paper concludes by acknowledging the limitations of the study, assessing the usefulness of the framework, and suggesting avenues for future research.

2. Background

In this paper, we follow Thomas's definition of conflict as: '*a process which begins when one party perceives that another has frustrated, or is about to frustrate, some concern of his'* [41, p 265]. During this conflict process, some form of interaction between parties takes place, and so conflict can be seen as a relational construct that arises when parties feel that they are motivated and able to take action. A conflict assumes interfering goals or a disagreement in terms of interests, values, or power. In other words, conflicts involve a perception of incompatibility among concerns, and this often creates negative emotions. As such, conflicts involve contextual (interdependence), cognitive (disagreement), behavioral (interference), and affective (negative emotion) elements [4, 197-198].

An IS conflict is one that is related to the introduction or use of an information system that is perceived as inappropriate and as a threat to tasks, competencies, processes, values, and power relationships of individuals, groups, or organizations. IS conflicts are associated with resisting behaviors which express reservations in the face of pressure from change supporters seeking to alter the status quo by implementing an information system and related organizational changes [46, 11, 24, 30].

The idea of IS conflicts is consistent with a political perspective on information systems [29] and inconsistent with a rational view. Within a rational view, participants harmoniously cooperate to achieve the enterprise information systems' objectives that parties have agreed upon [38]. Rationalists articulate information systems in relation to efficiency and rationality concepts. They perceive the development of information systems as a natural sequence of events through initiation, design, implementation, and use. Within the political view, participants all have their own goals, and use the organization as a means to achieve those goals. Starting with this idea, proponents of a political view argue that information systems are in various ways related to the social and political processes that exist within organizations [15]. They believe that information systems can affect the balance of power between actors, and may lead to competition among stakeholders surrounding the implementation [18]. Consequently, attention to process and contextual aspects of an IS implementation is often promoted. Proponents of a political persuasion consider IS conflicts to be a natural consequence of introducing information systems [14].

In line with the rational versus political perspectives on organizations, researchers disagree about the functionality, or not, of IS conflicts and the optimal styles of conflict management. Among others, Barki and Hartwick [4] and Liu et al., [27] argue that IS conflicts are a negative phenomenon and that managers should be active preventers and resolvers of conflict. Contrary to this view, Tjosvold [42] argues that conflicts are healthy signals of growth, development, diversity, and unity. Meissonier and Houzé [30] concur and argue that latent conflicts present during IS development should be made explicit. Their view is that a passive management style stimulates team members to more effectively cope with conflict situations. Others take a more neutral stance [2, 31]. Clearly, IS conflicts can be a natural part of almost any change process in organizations that result in threats and disagreements about the change involved. As such, IS conflicts can be functional when they contribute to signaling problems or unintended effects. Such a signal can lead to a better system. However, IS conflicts can also be dysfunctional when they lead to disruption, stagnation, and lengthy disputes during the design and implementation process. In this study, we take a neutral stance towards IS conflicts and assume that the functionality depends on the type of IS conflict and on how it is managed [24].

Conflicts are often divided into cognitive and affective types [20, 35, 30]. With a cognitive IS conflict, the disagreement focuses on the 'hard' part such as the system, its goals, related tasks and processes, and its effects on structural issues. Affective IS conflicts on the other hand have a more psychological basis and are relational in nature. They are related to system threats perceived by some actors. These threats can be feelings of exclusion and loss during the implementation process or the perception that the system conflicts with the status quo, cultural principles, social relations, or values [31]. Some IS conflicts will be primarily cognitive or affective, while others simultaneously have both cognitive and affective elements.

Only a few studies have examined IS conflicts and their management. Barki and Hartwick [4] focus only on *interpersonal* conflicts during IS development and do not consider groups or organizations. Further, they follow a static and retrospective variance approach while it would be more appropriate to view conflicts as a process [41, 36]. Further,

they do not consider how a conflict evolved or how implementers could address conflicts. Liu et al. [27] examine the relationship between conflict and outcomes in terms of process, product, and project using the expressions 'good' and 'bad'. They also follow a quantitative variance approach. Meissonier and Houzé [30] focus in their 'IT Conflict-Resistance Theory' on how resistance and conflicts emerge and evolve during the previous stages of an IS project, the so-called pre-implementation phase. In their action research paper, they conclude that conflicts are productive and that an avoidance style of management is appropriate.

Starting from the ideas addressed above, there is an apparent need for further explanation and understanding of the different types of IS conflict. Such an understanding can be helpful in addressing potential actions that constructively deal with IS conflicts. It is quite possible that the effectiveness of an IS conflict intervention depends on the type of conflict. Based on our review of the literature, we believe that IS conflicts can best be understood by viewing them as a process in a particular context. On this basis, a tentative framework was developed in order to study IS conflicts in greater depth. Here, we focus on the topic and causes of a conflict against a background of the conflict process and its context.

The topic of the IS conflict addresses the reason for the interference. The conflict topic can be related to the impact of the system on work, business processes, organizational structure, or strategy. The conflict topic can also be related to the implementation process, such as when actors feel frustrated about their exclusion or their limited influence. Finally, the conflict topic could be related to a perceived negative impact on organizational norms and values. In this study we will identify the primary cause of a conflict, and treat the main concerns of the actors involved and their perceptions of possible negative consequences as the main attributes of the IS conflict topic.

The process of the IS conflict reflects how the conflict emerges and evolves, and how it is managed. Conflicts evolve over time, justifying the choice of a process analysis over a static analysis [14, 20]. Wall and Callister [47] view a conflict as a cycle with causes and topics, a core conflict process and effects that feed back to the causes. Throughout the conflict process, the topic of the conflict may change, perhaps from a task conflict to a relational conflict. Part of the conflict process may involve conflict management [4]. Most authors seem to agree that managers and implementers should anticipate potential conflicts that could affect a project. Thomas's model [41] has attracted considerable attention. Thomas identifies five conflict management styles: collaboration, competition, accommodation, avoidance, and compromise. He argues that conflict managers can optimize the welfare of one party (a partisan choice), both parties (a joint welfare choice), or the larger system of which the parties are members (a systemic choice). With regard to IS implementation, Lapointe and Rivard [24] consider four possible conflict-handling modes: 1) inaction; 2) acknowledgment; 3) dissuasion; and 4) rectification through negotiation or mediation. Rectification can involve system adaptation (topic), organizational adaptation (context), or process adaptation (implementation process). In this study, an IS conflict process is described in terms of its duration, intensity, behaviors, conflict management activities, and conflict outcomes.

The context of an IS *conflict* describes the social, political, and institutional context in which an IS conflict arises. This context can be on the interpersonal, intergroup, and inter-organizational levels. An interpersonal IS conflict for instance occurs when two individuals within a department confront each other over the functionality of a contract system [22], 1992). Ahn and Skudlark [1] describe an intergroup IS conflict when they address a situation in which two business units strongly disagree over a telecommunications services system. An example of an inter-organizational IS conflict is where two hospitals disagree over the system being introduced to share patients' medical data [6]. In this research, we use this contextual dimension to characterize the organization and its environment and the key actors surrounding the conflict.

3. Research design and method

Since this study's objective is to identify the causes of and responses to IS conflicts in order to identify IS conflict types, an in-depth perspective, as is offered by the case-study approach, is appropriate. To meet the objectives, a multiple-case study design is needed in order to be able to compare the various IS conflicts, to identify common

patterns, and to categorize them in groups. It is difficult however to identify and study fresh conflict cases although there are many well-documented cases that describe IS conflicts. Given this situation, we adopted a meta-ethnography research strategy [34]. This approach is relatively new in the field of IS although meta-ethnography is widely applied in other fields including education studies [16] and healthcare [8, 9]. A meta-ethnographic study follows three stages consisting of systematic selection, analysis, and synthesis of recorded case studies [34, 16].

1) Selection - In this study, the unit of analysis is an IS conflict, which is considered to start when a conflict is identified and end when some sort of closure or solution is achieved. Here, the cases selected come from scholarly articles in peer-reviewed journals. We also consulted with other IS scholars to see if they knew of published case descriptions we might have missed. This selection process led to an inventory of potential case studies from which eleven were purposively selected. The selection process was organized based on specific inclusion and exclusion criteria. Cases were possible contenders provided they reported: 1) an instance of an IS conflict; 2) evidence of the nature of the IS conflict; and 3) a rich description of events and the perceptions of key stakeholders. Cases which met these inclusion criteria were however discarded when: 1) it was impossible to identify the causes and backgrounds of the conflict; 2) the conflict did not take place in an inter-organizational context; and 3) the methods used for data collection and analysis were not rigorous or explicitly described. The selected cases (see Table 1) vary in terms of industrial sector, country, conflict origin, and conflict type. Noblit and Hare [34] encourage meta-ethnographers not to avoid differences but rather to view these as valuable in terms of maximizing variation sampling.

Table 1. Overview of included cases

Study	Country/region	Organization	System
Case 1) Van Akkeren & Rowlands [43]	Australia	Large geographically dispersed radiology practice	Enterprise wide IS
Case 2) Jensen & Aanestad [21]	Denmark	Medium-sized hospital	Electronic patient record
Case 3) Markus [28]	USA	Large geographically dispersed radiology practice	Financial information system
Case 4) Knights & Murray [22]	UK	Medium-sized mutual life office	Core contract system
Case 5) Ahn & Skudlark [1]	USA	Telecommunication services provider	Telecommunication services IS
Case 6) Boonstra [5]	Europe	Dairy products multinational	Enterprise resource planning system
Case 7) Chu & Smithon [10]	Europe	Major automotive manufacturer	e-business applications
Case 8) Doolin [15]	New Zealand	Major hospital	Performance measurement system
Case 9) Lapointe & Rivard [23]	Canada	Acute care hospital	Electronic medical record
Case 10) Levine & Rossmoore [26]	USA	Large financial transactions	Process management system
Case 11) Meyer & Young [33]	New Zealand	Mental health enterprise	IS for cost and output information

The regions and countries vary, with cases from North America, Europe, and Australia/Pacific. Different types of stakeholders were involved in the conflicts of the selected cases, such as doctors, accountants, executive managers, division managers, IS departments, and consultants.

2) Analysis - The second stage of a meta-ethnography process is the analysis. Each of the selected studies was independently reviewed by two experienced business researchers and their level of agreement determined. They approached the selected cases with the following descriptive and analytical questions that were derived from the initial perspective on IS implementation process conflicts:

IS conflict topic: What was the system's aim? What was the initial cause of the IS conflict? What were the related structural, cultural, or political issues? What were the concerns, interests, and positions of the key actors?

IS conflict process: How did the IS implementation process conflict evolve? How was the IS implementation process conflict managed and what was the outcome?

IS conflict context: What were the organizational and external contexts of the IS conflict? Who were the key actors involved in the IS conflict?

Answers to these questions were derived from the case descriptions. Each case analysis can thus be seen as a new interpretation through the lens of the tentative IS conflict framework.

3) Synthesis – The final stage of the meta-ethnographic process is synthesis. This is the interpretation of the collection of studies as this relates to the meta-ethnographical research question. The key difference between analysis and synthesis is the change in perspective from viewing the cases as parts of a collection to viewing the collection as a whole. In this process we synthesized the IS conflicts in terms of the four main themes that emerged from the analysis of the eleven IS conflicts.

4. IS conflicts: topics, processes and contexts

4.1 IS conflict topics

Most of the analyzed conflict-causing enterprise information systems that commonly contribute to IS conflicts share one or more of the following four characteristics:

1) IS conflicts arise from mandatory systems [7]. This is not surprising since mandatory systems force users into new prescribed behaviors. Such systems create dependency and may negatively affect autonomy. In comparison, when systems are voluntary, they tend to support users and enable discretion. Therefore, IS conflicts are less likely with voluntary systems.

2) IS conflicts arise from systems that transcend units, departments, or organizations and establish horizontal or vertical links. Systems that cross borders force actors to provide, collect, share, interpret, and use information. The likelihood that this causes functional, cultural, or political conflicts is greater than with local, internal, systems.

3) IS conflicts arise from systems that aim to standardize, enforce discipline, and monitor. Systems that facilitate managers in controlling their organizations or units can cause conflicts because this may threaten appreciated autonomy and self-control by workers and others.

4) IS conflicts arise from systems that are initiated because of pressure from external or distant bodies, for instance from government agencies or headquarters.

However, the analyzed cases also demonstrate that the conflict topics that emanate from the identified enterprise information systems can be diverse and multidimensional. We identified a main concern plus various topics that are often inter-related. For example, when users are dissatisfied with the tasks and functions of a system, they also tend to disagree with the implementation practices. Once we had identified conflict topics, we categorized them under four categories of IS conflicts: 1) IS implementation process conflicts; 2) IS task conflicts; 3) IS structural conflicts; and 4) IS value conflicts.

EIS implementation process conflicts amount to disagreements about the process of system design and implementation. Examples found included a lack of training (case 1), lack of consultation (case 4), little attention to relationship building (case 7), and the perception that the system was 'pushed down the throat' (case 9). IS task conflicts are disagreements about the immediate consequences of the system on work and related business processes. Examples found were 'technical problems' (case 1), 'difficult to use' (case 1), 'unequal division of economic advantages' (case 5), and 'detrimental effects on internal processes' (case 6). Disagreements about the effects of the system on the organizational structure, including control mechanisms and power redistribution, are viewed as IS structural conflicts. Instances included 'greater control of work practices' (case 2), 'losing control, a shift in power' (case 5), and 'domination of one business unit's working processes at the expense of those of the other business units' (case 6). IS value conflicts are seen as disagreements about the effects of the system on shared beliefs, values, and the culture of stakeholders. Examples found were 'new system conflicted with the customer-focused culture of two business units' (case 6), 'threat to the status of health professionals' (case 9), and 'system caused culture of distrust, suspicion, and secrecy among functional groups' (case 10).

4.2 Conflict processes

In terms of the processes, we identified duration of the conflict, conflict intensity, conflict behaviors, conflict management, and the outcome of the conflict. The duration of the studied IS implementation process conflicts varied from relatively short periods (case 2) to several years (case 3). IS conflicts also vary in intensity and can remain as latent conflicts (as in case 2) or develop to severe crises and even 'war-like' situations, such as in case 9. The conflict intensity is reflected in the so-called conflict behaviors, which can develop from complaining (case 3), through criticism (case 8), rejection of use (case 5), resignation (case 9), to sabotage (case 11). In many instances, managers take action during IS conflicts. Our analysis revealed various conflict management behaviors including job rotation (case 3), compromise (case 4 and 6), system abandonment (case 7), and downplaying (case 11).

4.3 Contexts of IS conflicts

Table 1 gives an indication of how the nature of the selected enterprise information system s varied. The systems included financial enterprise information systems, electronic patient records, CRM, ERP, and various types of performance measurement systems. IS conflicts in the implementation process took place on various organizational levels. Many IS conflicts occurred between two units, such as the vertical inter-unit conflicts between senior management and business units (cases 3 and 5). IS conflicts were also found between organizations (inter-organizational conflicts, case 7) and between individuals (inter-personal IS conflicts, as in case 11). Many IS conflicts have multilevel characteristics: they may start at the inter-personal level, maybe between the head of IS and a business unit manager, but can develop into an inter-organizational conflict (as in case 4).

5. IS conflict framework

We have categorized the various IS conflicts by developing an IS conflict framework. This framework uses two dimensions to categorize IS conflict topics and is based on theoretical concepts as well on the case studies outlined above. The first dimension, the impact of the conflict, has already been discussed in the background section and distinguishes between cognitive and affective IS conflicts. The second dimension, the reach of the IS conflict, categorizes IS conflicts in terms of direct *versus* wider organizational consequences. Direct consequences of an IS conflict are ones that relate to immediate effects of the system and its implementation. Wider organizational consequences refer to wider and deeper consequences, such as conflicts over structure, control, autonomy, and culture. Establishing these two dimensions results in four archetypical IS conflict topics: 1) IS implementation process conflicts; 2) IS task conflicts; 3) IS structure conflicts; and 4) IS value conflicts (Fig. 1). Table 2 summarizes conflict topics according the identified categories.

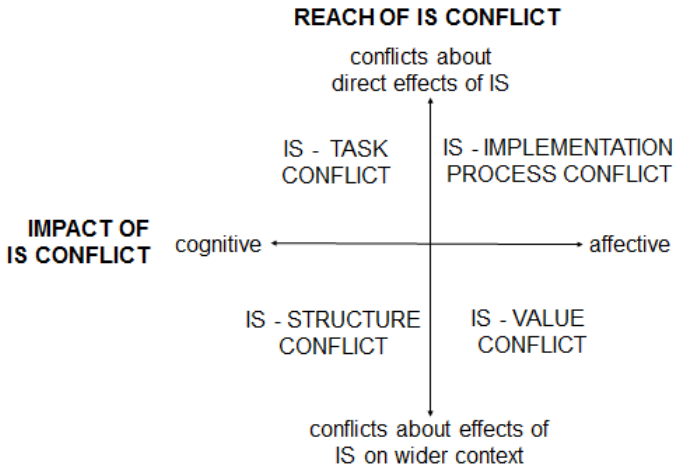

Fig. 1. Information system conflict framework

Table 2. Examples of IS-conflict topics

Conflict topic	**Implementation conflict**	**Task conflict**	**Structure conflict**	**Value conflict**
Definition	Disagreement about the process of system design and implementation	Disagreement about the technical qualities, use, functions, financial benefits and business processes	Disagreement about how the system changes structure, control and redistributes power division	Disagreement about the effects of the system on shared beliefs, values and culture
Examples from cases	Lack of training (case #1) No consultation case (#4) Little attention to relationship building (case #7) 'Pushed down the throat'(case #9) Fighting process (case #8) No attention for deeper processes (case #12)	Technical problems (case #1) Uneasy to use (case #1) New and undesired tasks (case #2) Unequal division of economic advantages (case #5) Detrimental effects on internal processes (case #6)	More control of the work practices (case #2) Losing control, shift of power (case #5) Domination of the working processes of one BU at the expense of those of the other BUs (case #6)	New system conflicted with the customer focused culture of two BUs (case #6) Threat to status of health professionals (case #10) System caused culture of distrust, suspicion and secrecy among functional groups (case #11)

We first discuss these four archetypes and related management interventions before moving on to discuss how in practice IS conflicts are often combinations of these archetypes and how IS conflict topics may develop and change over time.

5.1 Four archetypical IS conflicts

1) IS implementation process conflicts - During an IS implementation process conflict, at least one party is frustrated about the design and implementation process of an enterprise information system. Parties can especially experience such frustrations when top-down approaches, without consultation or participation (case 1), are adopted. The likelihood of such IS conflicts can increase when other parties, for example those who are part of a pilot scheme, have more

opportunities to influence system design than others (case 6). IS implementation process conflicts can also arise when participants feel that they are not being taken seriously by implementers. Since participation can be a time-consuming activity, parties can feel frustrated if their participation does not lead to real influence and acceptable outcomes (case 10). The literature on user participation, user involvement, and stakeholder management [29, 6] suggests that parties experience ownership and responsibility for a certain outcome if they have participated actively in the problem definition, and the development and implementation of a solution. If this is not the case, feelings of exclusion, passivity, alienation, and anxiety can arise, and these are expressions of IS process conflicts. A typical strategy in managing IS implementation process conflicts is to adapt the implementation process. Implementers can rectify the implementation process and invite parties to participate in the system and also train prospective users [23]. Ownership and shared responsibility for the proposed solution can reduce frustration among parties.

2) IS task conflicts - During an IS task conflict, parties become frustrated about the immediate consequences of an enterprise information system on their tasks, work processes, work design, or finances. This frustration can be related to technical problems, such as a slow response time or the unavailability of the system (cases 1 and 3). The system can also be difficult to use or reflect unfamiliar working practices, such as in case 6. Certain IS task conflicts are related to a perceived negative effect on the performance of work or as a distraction from 'the real work' (case 2). This is in line with the technology acceptance literature [13] that highlights the criticality of the system's perceived usefulness and perceived ease of use. Venkatesh et al. [45] complemented this model with other task-related variables in their UTAUT model, such as performance expectancy and effort expectancy. We have opted to categorize conflicts about the financial consequences of enterprise information system s as task conflicts because they are directly related to the tasks, roles, and responsibilities of people. In case 5, parties disagreed over the unequal division of the economic value of an enterprise information system. In a number of the IS conflicts investigated (cases 1, 2, 3, 8, 9, 10, and 11) the immediate motivation for introducing IS was to control costs or to generate new business, and the users felt that they did not receive a reasonable share of these benefits. In the event of an IS task conflict, typical behaviors are non-use (cases 3, 5, 8, and 11), using shadow systems (cases 1, 3, 6, and 7), and non-cooperation (cases 5 and 8). IS task conflicts may also arise when IS users feel that the system negatively impacts on their work motivation. This amounts to a perceived negative influence on skill variety, task identity, task significance, autonomy, or feedback [32], as was seen in cases 7 and 9. Typical strategies adopted to manage IS task conflicts include adapting the system to the work processes of its users, resolving the technical problems, and re-allocating the costs and benefits of the system.

3) IS structure conflicts - In an IS structure conflict, actors feel frustrated about the effects of an enterprise information system on structures, including on control structures, incentive systems, and power structures. In a number of our cases, we could observe greater domination and control by executive management as an IS outcome, at the expense of divisions, business units, and operational staff. Markus [29, case 3] provides a not uncommon example of accountants working at headquarters gaining power through a centralized financial enterprise information system at the cost of division-level organizational members. In the situation described by Jensen and Aanestad [21, case 2], the work practices of surgeons became more tightly controlled by top management. Case 8 [15] is another example of an attempt to scrutinize the work of medical specialists and to make their work visible and susceptible to intervention by management. These examples illustrate that IS structure conflicts may arise when a system interferes with established organizational practices or institutional logics [12]. This finding is in line with the IS literature on resistance. Antecedents of resistance to enterprise information systems are often related to wider contextual issues than the new system's technical and functional features. For example, Lapointe and Rivard [23, case 9] demonstrate how re-division of power and reorganization can lead to resistance whereas, in another situation, the withdrawal of a module and a relatively relaxed implementation scheme eventually led to supportive use of essentially the same system. Typical behaviors in the event of IS structure conflicts are the expression of negative attitudes and complaints (as in cases 2 and 4), threats of sabotage (case 11), and a lack of cooperation (e.g. case 5). Possible management strategies in response to IS structure conflicts are to renegotiate system specifications, allow other systems to be maintained for different units, restructure the organization before the actual system introduction, and offer incentives.

4) IS value conflicts - During an IS value conflict, actors feel frustrated over the effects of a system on shared beliefs, values, and culture of stakeholders. There is increasing evidence that enterprise information system s have the potential to affect organizational culture or subcultures. Robey and Boudreau [37] argue that culture can explain the contradictory consequences of implementing similar IS within different organizations. This IS in line with the findings of Leidner and Kayworth [25]. They conducted a review of the research on the culture – IS relationship, including the influence of IS on culture and found that similar systems can lead to different responses in different organizational cultures. Case 1 illustrates how an enterprise information system affected provincial practices, social networks, and a range of cultural attitudes leading to conflict in the context of a geographically dispersed radiology practice. Case 3 is an illustration of a system that challenged a culture of local autonomy and decentralization in a multidivisional organization. Similarly, case 6 shows how an ERP system was perceived as reflecting a bureaucratic and centralistic culture that conflicted with the flexible, fast, and market-oriented values of two business units. Doolin's study [15, case 8] describes how doctors, trained in a culture of scientific and positivist thinking, came into conflict with a managerial way of thinking that was more open-ended and 'trial and error' based. Typical expressions of IS value conflict are anger and aggressiveness (case 1, where 'radiologists, at least figuratively, kicked holes in walls', and case 9), cynicism (case 2), and illness and departure of key staff (cases 4 and 9). Conflict management styles seen in the event of IS value conflicts are the promotion of mutual understanding and job rotation.

IS conflict combinations - Our analysis shows that none of the studied conflicts can be categorized as of one single type. IS conflicts typically arise when external pressures (such as new government regulations) or strategic motives (such as to become an integrated firm) are translated into new enterprise information systems that are mandatory for its prospective users. These systems are often implemented in a top-down style, which can easily lead to an IS implementation process conflict. At the same time, these type of systems may be incompatible with people's tasks and work processes, which leads to an IS task conflict. After some time, parties may notice that the system increases the monitoring and control capabilities of management, at the expense of local-level discretion, which can lead to an IS structure conflict. Finally, the system may conflict with users' values, such as when management rationality collides with medical professionalism.

In such situations, IS conflicts are multidimensional and multilayered. The successful management of multidimensional conflicts requires the unraveling of the various dimensions of the conflict. An intervention may include a contingent combination of the IS conflict management approaches discussed above. In some situations, such a mix of interventions can be effective and may lead to an effective solution, as demonstrated in cases 5, 6, 8, and in two cases by Lapointe and Rivard [23 – case 9]. If such multilayered conflicts are not adequately addressed, they may lead to continuous tensions and problems (case 3) or to the abandonment of the system (case 7).

IS conflicts evolve and change over time - Typically, IS conflicts begin as an IS implementation conflict. If key actors are excluded during the implementation phase, they may become frustrated and criticize this process. The conflict may become more intense when the system is actually implemented, and when parties feel frustrated about a perceived lack of usefulness, incompatibility with work processes, or unequal division of financial benefits. If this situation develops, the IS implementation process conflict is likely to be followed by a more intensive IS task conflict. If this IS task conflict is ignored, more 'indirect' IS structure conflicts or IS value conflicts may arise. As such, IS conflicts can evolve and worsen over time if not addressed in a timely and acceptable manner.

5.2 Single IS-conflict case from the framework's perspective

We will now show how one IS-conflict develops within the dimensions of the model. This example demonstrates that the framework can be used as a tool to describe conflict topic, conflict process and intensity. Doolin [15] analyses the implementation of a large information system in a New Zealand hospital. The national health context was concerned with improving operational efficiency and the allocation of limited resources. Hospitals were forced by regional health authorities to become more commercial and to link funding with production. Hospital managers felt that they were lacking appropriate information to control costs and to use resources in efficient ways. It was this context where the hospital decided to develop a computerized resource management system capable of linking costs to clinical activities.

The system was intended to monitor and scrutinize activity of hospital doctors. Management hoped to influence clinical behavior through the increased visibility afforded by the system. The system provides a view on clinical practice and highlights variances between the performance of individual doctors and other specialists.

IS Implementation conflict - During the implementation of this system the conflict started in a latent mode expressed by cynicism of some hospital staff members. They perceived the system as another management tool without clinical benefit. Staff was invited to participate during the development and implementation but the response to these requests was low. Many staff members expressed a lack of interest and others felt that this was 'pushed down the throat'. In Fig. 2 this is expressed by 't1' light grey color in the 'IS 'implementation process' box. At this stage there was disagreement about the involvement: management expected more understanding, participation and enthusiasm from hospital staff.

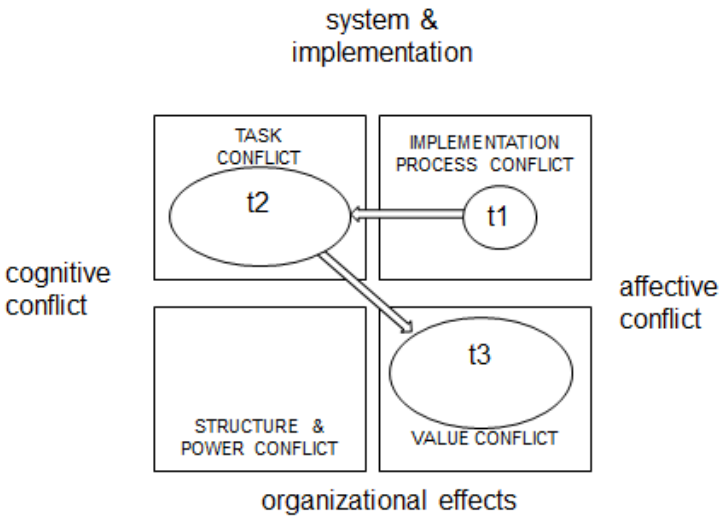

Fig. 2. IS-conflict development (t→ t1→ t2) of case # 8

IS Task conflict - After the implementation the conflict became more manifest. Doctors were expected to use the system but there was little cooperation in the data collection. Time spent on data collection was seen as a distraction from the primary clinical focus of patient care. Many staff members expressed their concern about the usefulness of the system. The system gave little benefit and was seen as a duplication of what they already did. Management made little incentives available to cooperate in the data collection and expected compliance. In Fig. 2 this is expressed by 't+1' in the 'IS task conflict' box. Conflict became more manifest, involved more actors and was focused on the task dimension. Data entry was time consuming and resulted in little clinical or financial benefit.

IS Value conflict - Later on the conflict developed towards a value conflict. The hospital management aimed to strengthen control of doctors and accountability of doctors. A corporate manager said: 'there are difficulties with managing doctors. I believe the only way of managing doctors is to get information through IS that provide them with the sort of reports in which peer pressure will bring some conformance to expenditure'. Information from the system offered a way to divide the hospital into visible and manageable parts built around the revenue streams related to clinical specialties. The system was also needed to coordinate the movement of patients between the clinical units and to match the resource utilization with the relevant purchase provider contacts. A hospital manager said 'I guess it's just their culture, their professional culture, that they're clinicians and managers shouldn't be telling them how to treat their patients. There was reluctance to use a tool provided by the management. It was seen as an intrusion on the professional

autonomy and clinical freedom of doctors. This conflict is placed in the IS value conflict box by 't+1'. During this stage the conflict was most intense.

The implementation of this system did not develop into a 'IS structure and power conflict' since the formative context of the organization such as structure, management style and background conditions remained unchanged. Management hoped for a cultural change by the distribution of relevant performance information but without changing structure, incentives, powers and responsibilities. The conflict finally resulted low use rates. Department heads of clinical units only used the information if they could claim more resources. Widespread use by doctors was never effectuated.

6. Conclusions

Conflict is an important organizational phenomenon and one that is clearly prevalent but under-researched in the IS discipline. Therefore, the main question addressed in this paper has been: what are the topics, processes, and contexts of IS conflicts, and how can IS conflicts be categorized in an IS conflict framework? We have answered this question by analyzing eleven published cases that included rich descriptions of conflicts that arose during the introduction of an IS system. We have analyzed the context, process, and topics of these conflicts. In characterizing these conflict types in a framework, we proposed four archetypical conflict types that are classified using two underlying dimensions: cognitive *versus* affective, and direct *versus* indirect consequences. The resulting archetypical conflicts are: 1) IS implementation process conflicts; 2) IS task conflicts; 3) IS structure conflicts; and 4) IS value conflicts. This study highlights that the types of IS conflicts that arise are not based solely on the technical and functional characteristics of the system, but also on the perceptions gained from actual interaction with the new technology in the specific organizational setting. Systems often impose control mechanisms and new roles that are not always welcomed by the intended users. Our analysis demonstrates that IS topics of conflict in real life can be characterized as combinations of the framework's archetypes, and that the topic may change over time. The path that is followed during the conflict process depends on how the conflict is managed and, for that reason, we propose the development of a contingency model for IS conflict management.

Existing conflict theories are general in nature and ignore the various types of confrontations that are characteristic during the introduction of enterprise information systems. The same is true of approaches to conflict management. The dominant model seen today, that of Thomas [41], is descriptive in nature and does not take account of the conflict type. Lapointe and Rivard's [24] introduction of conflict handling modes partially fills that gap, but this views system rectification as the only appropriate IS conflict management style. Here, our study has a number of theoretical implications and suggests that a contingent approach to the management of IS conflicts is required. IS conflict management may need to involve adapting and revising system functionalities as well as implementation practices. This study's framework can be used as a starting point for the development of such a contingent approach to conflict management. This research has also demonstrated both the feasibility and the value of conducting meta-ethnographic research based on published IS cases.

The value of these findings for IS project managers and others responsible for the implementation of enterprise information systems is that the IS conflict framework proposed in this study could contribute to recognizing and understanding conflicts that arise during IS implementations. Such an understanding may help implementers to apply conflict management approaches that suit their particular conflict. We would stress that no conflict management approach is universally applicable, and the nature of a specific conflict may point toward a particular intervention. For example, a conflict in an IS implementation process may lead to adaptations being made in the degree of participation and involvement during the introduction of the system. In comparison, in the event of an IS structure conflict, negotiations among the powerful parties and adaptations to the system might be needed to resolve the conflict.

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