FIGHT RISK WITH RISK: REFLEXIVITY OF RISK AND GLOBALIZATION IN IS

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Abstract

In this paper, we address the following research question: "How can we understand the nature of risk in IS projects in the context of globalization?" Based on a case study conducted over a period of two years in a Norwegian hospital on the development and implementation of a Electronic Patient Record (EPR), the paper contributes to the current discussion on the conceptualization of risk in IS projects. Drawing upon the concept of reflexive modernization (Beck 1999) the paper makes two key contributions: firstly, it shows the limits of current risk management approaches in understanding the nature of new risks in IS generated by globalization processes; secondly, it suggest a possible theoretical framework for analyzing such nature. The research question is addressed by providing a historical and contingent analysis of the risk management dynamics emerging from the case.

Keywords: Risk, Globalization, Information Systems, Electronic Patient Record, Reflexive Modernization.

1 INTRODUCTION

As the process of globalization of our society intensifies, local IS projects face new opportunities of expansion in new geographical dimensions. The engagement in these new dimensions considerably changes the nature and scope of risks involved in the development of IS applications. In this new scenario, risk management approaches need to be reshaped and readapted to meet the new challenges.

Traditional risk management studies have provided useful analytical and management tools to address the challenge of an IS project and possibly of its change (see Lyytinen *et al.* (1998) for an extensive overview). Yet they may come short in describing how and why local projects (and their risks) may escalate from a local to a global scope. It is the aim of this paper to address this theoretical gap and provide empirical evidence of the need of extending traditional studies.

Based on a case study conducted at a major Norwegian hospital (referred to as Norhospital) regarding the development of an Electronic Patient Record system (EPR) the paper analyses the dynamics of escalation of the project from a local to a global scope. Adopting the concept of *reflexive modernization* as theorized by Beck (Beck 1999; Beck *et al.* 1994), the paper then discusses the nature of the process of globalization of the risks of the EPR project.

We are not engaging in the debate on globalization as such; rather we focus on the concept of risk and its recent theorization. Our aim is to contribute to the IS field by looking at how the nature of risk has changed in the context of globalization. We believe IS research needs to question traditional risk management approaches. Specifically the paper addresses the following research question: *How should we understand the nature of risk in IS projects in the context of globalization?*

The paper is structured as follows: first, we look at the main limits of the traditional approach to risk management and introduce an alternative perspective. Secondly, we describe the methodology adopted in the research. Thirdly, we introduce the case and provide the empirical evidence. Then, we engage in the analysis and discussion of the collected data, providing possible insights in to the relation between risk and globalization in IS. Finally we will conclude the paper by summarizing the main points.

2 THEORETICAL FRAMEWORK

Overall in the IS literature, we can identify two main theoretical approaches dealing with the concept of risk and its management. The aim of this section is to introduce such approaches, and discuss their characteristics. The first can be considered a more traditional approach to interpreting and managing risk, and it has been accurately summarized by Lyytinen *et al.* (1998). The second approach is more recent, and adopts a perspective on risk inspired by the sociological contribution of Beck (1999) and Giddens (1990) to the debate on globalization.

By means of the analysis of the main limits of the traditional approach, we suggest that ideas developed by Beck and Giddens give new insights into the conceptualization of risk and its interpretation in relation to IS development projects. Specifically, we will focus on reflexive modernization and the reflexive nature of risk.

2.1 The Traditional Risk Management Literature and its limitations

Risk management approaches have traditionally focused their attention on identifying specific sources of risk and developing appropriate management techniques to control it (Alter & Ginzberg 1978; Davis 1982; McFarlan 1982; Boehm 1991; Lyytinen *et al.* 1998). In this literature risk is defined and analyzed within the particular context of the project, organization, and artifact to be developed. Accordingly, various management techniques and heuristics are developed in order to manage, control, or reduce risk (see Lyytinen *et al.* 1998 for a comprehensive overview). While striving to

provide rich analyses and detailed prescriptions on how to deal with risk involved in IS development, these approaches seem to come short in providing a larger perspective on the source of the risks we are dealing with and why it is increasingly difficult to manage them.

In risk management approaches the nature of risk is considered as being connected to peculiarities of particular projects or organizational contexts. Consequently, traditional approaches tend to provide analytical tools and solutions which apply and are limited to a micro level dimension of risk management. Acknowledging their value in providing rich and detailed cases, we believe it is critical for IS development projects to further dig into the complexities of the risk phenomena. Our motivation is twofold: first, as the case study will empirically illustrate, in large IS development projects, managers are not in control of the sources of risk, which are also not predictable; second, the very nature of risk and its propagation mode has changed with the intensification of global dynamics in terms of integration, interconnectivity and interdependency, and this has in turn heavily challenged traditional risk management. Instances of such change are well illustrated by the work of Hanseth *et al.* on the development of an ERP solution (Hanseth *et al.* 2001), and by the work of Rolland on the side-effects of globalization in the development and use of a survey management system (Rolland, 2003).

2.2 An alternative approach: Reflexivity of Risk in our Modern Society

In this paragraph, we suggest an alternative theoretical framework to understand risk dynamics. In particular, we suggest that local risk management is intermingled with macro realities of our modern society. With such aim, we will first introduce the concept of Risk Society and Reflexive Modernization as theorized by Beck (1999).

"Risk society" is the metaphor Beck uses to indicate the direction that the industrial society is taking. Precisely, he argues, contemporary western societies are living in a transitional period, in which industrial society is becoming a "risk society", marked by a shifting of old relationships, rise of new uncertainties, individualism, and basic changes in major social institutions. Risk is not an invention of modernity, but in modernity it assumes a new nature: it no longer has a personal dimension, but its nature and magnitude has changed and tends to escape institutional monitoring for quantification, prevention and protection.

In particular, Beck argues, our society is characterized by a process of *reflexive modernization* (Beck 1999; Beck *et al.* 1994). According to Beck, reflexive modernization means that modernity feeds back to itself, exacerbating and possibly undermining its own foundations. More clearly, as our modern society deploys its weapons of control, rationalization and integration, the society itself becomes increasingly interconnected and interdependent. In this scenario, actions taken in a local setting may have effects that propagate in an unexpected way. Thus, unintended consequences and side-effects challenge the initial aims of increased control and rationalization. From this perspective, risk does not originate within a specific confined setting, but is the very result of the modern ongoing process of rationalization and control undermined by reflexivity.

The process of globalization just intensifies these dynamics, by increasing the number of interdependencies and relations. As Giddens puts it, globalization is "[…] the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa[…]" (Giddens 1990: 64). Hence, local events (like the IS project presented in this paper) when put in contact with processes of globalization (like the one pursued by the multinational vendor's marketing strategy) suddenly become linked and interdependent with a variety of new actors around the globe, drastically reshaping the nature and distribution of risk involved in the project.

2.3 Risk and Reflexivity in IS

Beck is a sociologist, and technology is not explicitly considered in his work. However, it is evident that technological development plays a crucial role in the process of transformation of society. In fact, this theoretical framework to understand "modern" society has been interestingly applied to the analysis of studies of IT implementation and use in different organizations and work situations. In particular, specific aspects of the reflexive modernization theory have been applied to the analysis of how IT supports and enables the very process of modernization, and which consequences this creates in organizational realities. The use of this framework is quite a recent topic in IS literature. Scott (2000) builds on risk society and reflexive modernization to look at how IT and new related forms of organizational rationalization are transforming the standard spatial and temporal traditional assumptions about work and work life. As to our interests, she does not analyze issues of risk and reflexivity related to the management of the IT implementation process, but focuses the analysis on the very use of the technology.

In the IS literature, few studies deal explicitly with issues of risk, reflexivity and side effects. Such concern is an explicit aim of a theoretical chapter by Hanseth and Braa (2000). The authors report issues from the reflexive modernization theory, and explore the role that IT may play. They suggest that the role of IT can be explained by the way it supports and enables, for instance, time and space distantiation, intensifying one of the dynamics of modernity. Specifically, they frame the understanding of technological development as development of control technologies which enable organizations to be distributed globally, and at the same time enable control of global logistics. Such large technologies or infrastructures emerge as interconnected systems, thus increasing the risks of transferring side effects faster and wider. This framework is applied in a later paper to the analysis of SAP implementation in a Norwegian company (Hanseth, Ciborra, Braa, 2001). Here it is discussed how events, deviations and breakdowns in the implementation process are apparitions embedded in the dynamics of modernity and globalization with its side effects. Dynamics of reflexivity and the propagation of side effects is also the topic of a study on the implementation of a new infrastructure in a global maritime classification company (Rolland, 2003). Rolland focuses on the role of disembedding mechanisms and new definitions of trust, to explore how information infrastructures are not just configured to adjust to local practices, but initiate a process of reinvention that takes place in situated practices of use.

In using the reflexive modernization theory, we are interested in unfolding the dynamics shaping the socio-technical process of the implementation of the EPR. Aspects of such complex processes will be addressed at different levels of granularity.

3 METHODOLOGY

The research reported in this paper is grounded in the interpretive approach to case studies (Klein and Myers, 1999; Walsham, 1993, 1995). For data collection, we employed ethnographically inspired methods conducting 32 interviews, 8 instances of observations of daily work and user training sessions, documents analysis, and participation in several discussions and meetings. The head of research of the IT department of the hospital has regularly joined these meeting to provide updates regarding the implementation project, and to suggest interesting areas for further research.

Our fieldwork is part of a long term research cooperation between our Department of Informatics at the University of Oslo and the IT department of the hospital. Between 1996 and 1999, the implementation of the EPR has been the topic for a project in an Advanced Systems Development course. Each year around 5 groups of 5-7 Master students studied and reported on some aspects of the design and implementation process in the hospital.

The process of writing this paper from the perspective of complexity and risk has helped us to look both at micro and macro level phenomena, and at the intertwining of the two. Beck's theory on

reflexive modernization has guided us to the understanding of the mechanisms of appropriation and reproduction of risks. The reflexive modernization theory has directed our attention to the central role of side effects, and their mechanisms of production, in creating a situation perceived as risky and out of control.

4 CASE DESCRIPTION

In the following sections, we will introduce the case study of the development of an Electronic Patient Record (EPR) system at Norhospital. The EPR is a clinical system used for storing clinical information related to the treatment of the patient. It may be specific to a particular clinical department (e.g. cardiology) or, as in our case, regard the clinical information of all clinical departments in the hospital.

We will first provide some background information about the hospital and the EPR project. We will then describe the process of globalization of the EPR project. Finally we will conduct a preliminary analysis of the globalization process along several analytical dimensions.

4.1 Background

Today Norhospital is the second largest hospital in Norway, with approximately 600 beds, 4000 employees and an annual budget of 2.5 billion NOK (around 360 million US Dollars). In 2002 more than 193'000 patients were treated. The IT department of Norhospital currently has a staff of over 80 people and an annual budget of ca. 80 MNOK, while just ten years ago only 7 people were on the staff. The role of the department has considerably changed from providing technical support and maintenance for mainframes and networks, to developing hospital-wide clinical information systems.

At the time the EPR project started (1996), the information infrastructure of the hospital consisted mainly of a centralized paper-based patient record, numerous local clinical systems including local EPR solutions, central administrative systems (e.g. PAS: patient administrative system), and a LAN with PCs for office automation. Besides local EPR implementations in particular clinical departments, no hospital wide EPR implementation was ongoing in Norway. One exception was the Medina project: a bottom-up development project of an EPR solution partly funded by the Norwegian Research Fund (see Ellingsen & Monteiro 2002, for details). In 1996, Norhospital and other four regional hospitals became interested in developing a hospital wide EPR solution. In order to share costs and reduce risk of failure, they decided to join into a common project merging requirements and splitting costs; the project was called Medakis. In the particular case of Norhospital, the system had to reach 3500 potential users (mainly doctors, nurses and secretaries) substituting the centralized paper record and either integrating or replacing local clinical systems.

4.2 From Local to Global

For the development of the EPR, the Medakis consortium of hospitals needed to chose a vendor. In mid 1990s, the main provider of EPR solutions in Norway was a company we will here call MedInfo (a European high-tech diversified multinational company), which had also acquired the local project Medina (Ellingsen and Monteiro, 2002). At that point of time, it was the opinion of the IT managers at Norhospital that a large international company with the appropriate financial resources was needed for the development of such a complex product. MedInfo seemed to have the right credentials. Nevertheless, at that time, the involvement of MedInfo was limited to its local Norwegian subsidiary, and both the development and the target market were Norwegian. The timeframe of the project was set between 1996 and 1999. The vendor was supposed to implement a preliminary version of the EPR (which we will name NorEPR) in 1996 with the aim to substitute it with a final version at the end of the project. The target of both the vendor and the hospital was to obtain a paperless hospital with automated support for workflow and statistics.

A first critical step in the evolution of the project occurred when the IT managers of Norhospital discovered, while attending a presentation at a conference on IT and Healthcare in the UK, that MedInfo UK was also engaged in a project of EPR development. Asking MedInfo Norway for more clarification, they discovered that within MedInfo there was more than one EPR development project: at least five of them were ongoing in Sweden, UK, Germany, India, and Norway. The IT managers realized that Norway was representing the smallest market, and had the risk of being overrun by another internal project driven by a more profitable market.

As a consequence, the Medakis consortium together with MedInfo Norway agreed to take the first step and internationalize the project first to a Scandinavian dimension, and later to a European one. Accordingly, requirements from other EPR projects inside MedInfo had to be merged, and a new architecture had to be designed. Furthermore, since the original deadline for the final delivery (1999) was approaching, Medakis agreed with MedInfo to extend it in favor of the new internationalized EPR solution (which we will call IntEPR).

A second major step in the project occurred when MedInfo acquired a large "IT & Healthcare" organization in the US, and consequently changed the scope, resources, and balance of its Medical division. As a result, the division's headquarters were moved from Europe to the US, and running projects gained the opportunity and resources to reach a global scope. In this scenario, Medakis supported MedInfo in widening development and marketing range of IntEPR. As a consequence, the new IntEPR architecture was dropped in favor of a new one (GlobEPR), and Medakis obtained the basic requirements already defined for the Norwegian customer to be partly inscribed in the new architecture.

4.3 On Development, Requirements, and Control

The historical evolution of the project from the local to the global context has three interesting dimensions: the organization of the software development, the scope and complexity of the requirements, and the influence of Norhospital on the trajectory of the project.

As to the first dimension, previous to Medakis the development of local EPR solutions was carried out by amateur doctors-programmers in single clinical departments. With Medakis and NorEPR, the development was carried out in Norway by the Norwegian subsidiary of MedInfo. IntEPR internationalized the development as other MedInfo Scandinavian sites were involved. Finally, the development of GlobEPR became truly global, with development sites in the US, Norway, Sweden, Germany, and India. Thus, the number of sites grew with the process of internationalization, making coordination and cooperation dynamics increasingly difficult and complex.

As to the second dimension, in the development of local EPR solutions, the definition of requirements was done for each single clinical department. Accordingly, requirements were confined and easily controllable. The creation of Medakis made requirements the result of negotiations and agreements among several Norwegian hospitals. With IntEPR, and even more with GlobEPR, Norwegian requirements were marginalized, as the new product had to satisfy a larger customer base. In particular with GlobEPR, Norhospital initiated a struggle with MedInfo to make sure that Norwegian requirements were not marginalized or even abandoned in favor of the ones of the more profitable US customer base.

As to the third dimension, in the progressive project internationalization, the control of Norhospital over the trajectory of development decreased drastically. The senior managers at the IT department were aware of this side-effect of "going global", nevertheless they assumed they would get greater benefits that would compensate for the loss of control.

The main points related to the three dimensions are summarized in the following table:

	Departmental EPR	NorEPR	IntEPR	GlobEPR
Organization of SW development	Amateur, confined in the clinical department	Norwegian: development by Norwegian subsidiary of MedInfo	European: involving subsidiaries in Norway, Sweden, and Germany	Global: development sites in US, Norway, Sweden, Germany, and India
Customer and requirements base	Single clinical department	5 regional hospitals (requirements for the whole hospital)	First Scandinavia, then European customer	Potentially customers all over the world
Control of Norhospital over the project	Norhospital is initially not interested in controlling local developments	20%: Norhospital is one of five customers	Still consistent: the design of IntEPR has the Norwegian Requirements inscribed in its architecture	Marginal: Norway is seen as a marginal market; larger emphasis is given to US customers (the largest potential customer base)

Table 1 Development, requirements, and control on the project

5 DISCUSSION

The aim of this section is to analyze and discuss the empirical material, emphasizing the dynamics of risk generation; once more, we would like to remind that we do not aim to engage in a discussion on risk management techniques, rather we will focus on how risk management decisions generate new risks. Our discussion unfolds in three analytical steps: (1) we analyze the mechanism of risk management, and identify a pattern in the decision making process of the project; (2) we identify the logic behind the pattern, and describe it as a process of risk *escalation* in terms of range and scope; (3) finally, we interpret escalation as the risk management process generating new risks.

We will underline how analysis and understanding of risks involved in complex IS projects should not be limited to the confined spatial and temporal boundaries of a particular stage in the project management. Rather, the mechanism of new risk generation by means of risk management decisions should also be considered. This latter aspect, we will submit, is increasingly relevant as complexity and globalization of IS projects intensifies.

Finally, we will provide a theoretical interpretation of the observed risk dynamics by using the framework of *reflexive modernization* as proposed by Beck (*et al.* 1994).

5.1 The Recurring Pattern of Risk Management Decisions

In this section, we will highlight a recurring pattern of how decisions to increase size, scope, customer base, and budget of the project were made. The starting point of the project was the decision of a single hospital to develop a hospital-wide EPR. In this context, the EPR was clearly a technology aimed at *rationalizing* the production and consumption of information in the organization, by *integrating* sources and use practices of information. By rationalizing and integrating through the EPR, the hospital (specifically the IT department and the management) could gain *control* over the information in the organization. In this sense, the implementation of an EPR could help avoid the risk of a too fragmented and uncoordinated, thus potentially inefficient and ineffective, information system.

The decision to develop a hospital-wide EPR, in turn, raised questions of feasibility and sustainability. The five hospitals in Medakis estimated that the task was too complex and risky to be achieved independently. On the other hand, alongside complexity, the IT managers of the five hospitals considered that the design of an EPR could be standardized; that is, the requirements could be merged

and aligned and the EPR easily adapted to local contexts of each hospital. This latter reasoning was triggered by the belief that *economies of scale* could be achieved through standardization. To assure the feasibility and sustainability of the development and to achieve the needed economies of scale, Medakis intentionally looked for a vendor with abundant resources and an international background. At this stage, the decision to address the risk of fragmentation and inefficiencies in the information system inside the hospital produced the need to evaluate another risk management decision. Accordingly, pushed by the same principles of rationalization, integration, and control through standardization, the EPR project gained a national scope.

The decision to involve an international partner opened up the horizon of NorEPR. The Medakis consortium immediately realized that NorEPR was just a tiny project in the international arena. It was soon assessed that Norway was representing a too small market and risked being crushed by lager projects. In this scenario, there were two alternatives: (1) either passively becoming sooner or later part of an international project with little or no decision-making power; (2) or take the first step by anticipating this likely scenario, and by actively inscribing the needed requirements in the new architecture. Interestingly, the joint decision of Medakis and MedInfo to internationalize the project followed the same logic of *rationalization*, *integration*, and *control*. From the point of view of Norhospital as part of Medakis, the new project (IntEPR) was a mean to *rationalize* the international distributed development of similar products. This was achieved by *integrating* requirements from the various countries. By doing so, Norhospital could gain *control* over the future trajectory of EPR developments in MedInfo by inscribing its requirements in the design. In other terms, the influence that Norhospital or the whole of Medakis had on the new project decreased, as the new product had to satisfy a larger customer base. Yet, in this new integrated scenario, Norway could have an international influence which was lacking before.

The next step, from IntEPR to GlobEPR, basically followed the same pattern. With MedInfo expanding in the global market through acquisitions, the horizon of IntEPR widened once again. Norhospital saw the growth and globalization of the medical division inside MedInfo as a positive sign, despite the decrease of influence on the project. Even more resources in fact could be allocated to the EPR project, in a way reassuring the Norwegian customers that the complexity of the development could be overcome. At the same time, MedInfo aimed for a global customer base, on the one side potentially increasing economies of scale, on the other side increasing the complexity of management and coordination of development processes and requirements handling.

Throughout the trajectory of the project, the actors involved in the decision-making process seemed to have followed a recurring pattern. At each stage of the project, the decision to go to the next stage by increasing its scope and range seems to follow the same quest for increased rationalization, integration, and control. At the first stage, these principles apply to the information generated and used in the hospital. At the second stage (creation of Medakis), the principles are applied to the gathering of requirements, the organization of the development process, and the control over costs. The same pattern applied with the internationalization of NorEPR to IntEPR, and subsequently to GlobEPR.

Certainly, many other factors have influenced the decision analyzed in this case. Moreover, the pattern we have identified is also a rather obvious rationale behind most IT projects; in this respect it is nothing new. What we aim to underline is that under certain conditions the quest for rationalization and greater control can produce opposite effects: increased complexity and loss of control. It is therefore relevant to investigate further in this dynamic in order to understand how the perception and redistribution of risk is affected.

5.2 The Logic of Escalation

So far, we have described the trajectory of the project along particular dimensions (requirements, development, and control). Moreover, we have highlighted a recurring pattern in each step of the trajectory of how decisions were met. We can now observe how iterative attempts to address the "problem" of developing an EPR brought about an unplanned creation of a larger "problem" which

contained the initial one. More specifically, the initial quest for rationalization and integration through the EPR created a problem of a certain complexity. In order to address this problem, the five Norwegian hospitals teamed together and transformed a local problem to a national problem. If, on the one hand, more resource were guaranteed for the initial problem (one hospital), the increased complexity of the new problem (standardization of five hospitals in NorEPR) required the search for more resources. MedInfo provided the new resources, but also reshaped the problem once again. Being an international player, the contextualization of NorEPR in the international arena redefined the original problem by increasing the scope of the development and marketing at European level. The same logic then applied for the transition from IntEPR to GlobEPR.

If we put the trajectory of the project in perspective, we see how the recurring decisions followed a logic of *escalation*. Consequently, the escalation of the problem setting generated an escalation of the risks involved as well, as the number of actors involved and size and complexity of the project grew exponentially.

We can identify two sources of this logic of escalation: (1) a mechanism of re-appropriation of the complexity of the problem; (2) the role of MedInfo as a global amplifier of the setting of the project. Regarding the first source, iteratively a more complex situation is created at each decision making step in the process. The increased complexity then triggers the need of the redefinition of the project at a new level.

Regarding the second source, the escalation from a Norwegian to a global level could not be possible if the chosen vendor was not as global as MedInfo. Being a multinational with globalized networks of innovation, production, and marketing, MedInfo simply *enabled* the *amplification* of the project on a global scale with its existing infrastructure.

Finally, we can observe how the two sources drive escalation in different ways. At each iteration, the increased complexity of the development *constrains* the project to search for greater resources; while the global infrastructure of MedInfo *enables* the escalation to happen. In this sense, the escalation is pushed by the increasing complexity of the project, and pulled by the opportunity of standardization and economies of scale. Alongside with the project, its risks were also enhanced with the complexity, and amplified on a global scale. Thus, the risk management of the project at one level, required the creation and involvement of new risks at a next level, with greater scope.

5.3 On Globalization, Reflexivity and Risk

The case presented in this paper is an example of how local IS projects can be reinterpreted in a global context. As we have discussed, by being marginally connected to a global network, a local project like NorEPR is reshaped and deeply redefined: the locality of Norhospital becomes one of the elements of a wide global network. Moreover, interests and requirements are disembedded and reembedded in the global environment (Giddens 1990). In this global scenario, the IT department of Norhospital saw its interests less and less represented, and the risk of having delivered an unsatisfactory product increased. Paradoxically, the decisions taken by the IT department in the project have actively contributed to the creation of such risky situation. This reflexive mechanism has lead to a scenario that, from the perspective of Norhospital, is out of control.

The concept of reflexivity provides a theoretical interpretation to the micro-dynamics of the escalation process. Applied to our case, it explains how the production of greater complexity and less control, has its source in the attempt to rationalize and control a less complex problem. Moreover, the reflexive mechanism in our case regards a process of *modernization*, as, in fact, the aim behind the development of the EPR is rationalization and control. In terms of risk, the reflexive logic of risk management in the EPR project is paradoxically the following: in order to fight risk involved in the project, a more complex project involving greater risk is created. While it is true that for each new iteration of the project, risks are distributed in a different way, it is also true that the overall risk involved in the

project in greater, as greater numbers of actors can be affected to a greater extent. Moreover, those actors have less and less control over the project.

The concept of *reflexive modernization*, applied to the analysis of risk, provides a framework to understand how new risks can be generated in the process of globalization of the EPR project. The new risks are related to possible side-effects and unintended consequences which can occur in a so tightly integrated global network.

6 CONCLUSIONS

In this paper, we have investigated the relation between generation of risk in IS projects and the process of globalization. Based on a case of globalization of an IS development project, we analyze and discuss how new risks are generated and distributed at each step of the globalization process. In particular, we have highlighted how decisions which increased the size and scope of the project were guided by the same pattern of principles: rationalization, integration, and control. Furthermore, we have shown how the project moved along a trajectory of escalation. The escalation, we submit, was due to the need to address an increased complexity of the original problem, and due to the opportunity of globalization, enabled by actors in the project, such as the vendor. Finally, we observed how the nature and distribution of risk changed at each iteration of the escalation process. The case and the analysis put an emphasis on the need to extend current studies on risk in IS project to include an understanding of the role of globalization. Indeed, traditional studies tend to focus the analysis of risk to confined temporal and spatial boundaries. We have shown that, in order to understand the escalation of risk in the case at study, a new framework is needed, which can relate to processes of globalization. With this purpose, we have proposed and applied the concept of reflexive modernization (Beck, 1999). We claim that this concept provides new insights to the study of risk dynamics in IS development in contexts of globalization.

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