The Translated Strategic Alignment Model: A Practice-Based Perspective

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ABSTRACT

In this article, we propose to revisit the concept of strategic alignment in a practice-based perspective. We propose new insights on this concept which has mostly been studied in the literature through Henderson and Venkatraman's strategic alignment model (1993). In a grounded approach, we study practitioners' daily practices through the in-depth investigation of three corporate cases and interviews with six consultants specialized in the management of information systems (IS). We use actor-network theory as a theoretical framework to help us make sense of and interpret our data. We propose a new, conceptual, non-functionalist model, which integrates several streams of literature: the translated strategic alignment model (TSAM). This model may serve as a help to drive toward a critical level of alignment that appears as necessary to clear the path toward competitive advantage.

Keywords: Actor-Network Theory, IT needs, Users' needs, Strategic alignment, Strategy-as-Practice.

RÉSUMÉ

Dans cet article nous proposons de revisiter le concept d'alignement stratégique dans une approche par les pratiques. Nous proposons de nouvelles idées sur ce concept qui a été majoritairement étudié dans la littérature au travers du modèle d'alignement stratégique proposé par Henderson et Venkatraman (1993). Dans une approche enracinée, nous étudions les pratiques quotidiennes de praticiens au travers de l'étude en profondeur de trois cas d'entreprises et d'entretiens avec six consultants spécialisés en gestion des systèmes d'information (SI). Nous utilisons la théorie de l'acteur-réseau comme cadre théorique afin de nous aider à faire sens de nos données et à les interpréter. Nous proposons un nouveau modèle conceptuel, non-fonctionnaliste et qui intègre plusieurs courants de la littérature : le modèle d'alignement stratégique traduit (TSAM). Ce modèle peut aider à atteindre un niveau critique d'alignement qui apparaît comme nécessaire pour ouvrir le chemin menant à l'avantage compétitif.

Mots-clés : Alignement stratégique, Besoins technologiques, Besoins utilisateurs, Stratégie par les pratiques, Théorie de l'acteur-réseau.

INTRODUCTION

The alignment between business and IS strategy has long been considered essential in organizations to help drive toward competitive advantage. It has given rise over the last three decades to a very rich corpus of works. Within this corpus, Henderson and Venkatraman's seminal model (1989, 1991, and 1993) has remained to this day the model most often applied in corporations and most used in the literature (Avison, Jones, Powell and Wilson, 2004). This strategic alignment model (SAM) is anchored in the strategic perspective developed in the 80's; it is based on assumptions which perhaps could be questioned and challenged in order to propose possible alternatives. This model, grounded in a managerial vision that is thought out and planned, implies that a "fit" between its four main components (business strategy, business infrastructure, IS strategy and IS infrastructure) should lead to better performance (Croteau, Raymond and Bergeron, 2001; Jaziri and Kalika, 2006). It takes into account the impact on firm performance of objective elements e.g., cost-related issues (Wonseok and Pinsonneault, 2007). However, it does on the whole neglect the social aspects, the users' interpretations of the information technologies (IT) that they use and their impacts on performance (Ciborra, 1997).

In the last couple of decades the Strategy-as-Practice (SasP) school of thought has emerged; it views strategy as a social practice and proposes to reconsider strategic management models through a practice perspective (Jarzabakowski and Paul Spee, 2006). In this school of thought, IT are enacted (Orlikowski, 2000) through their actual use, which results from drifts, improvisations and 'bricolage' (Ciborra, 1997; 1999). The alignment between business strategy and IT strategy does not always result in the expected levels of performance, as this depends greatly on the users, their interpretations, their appraisal of IT events and resulting adaptations (Elie-dit-Cosaque and Straub, 2010), their IT acculturation and the way their IT needs are taken into account and fulfilled (Bragge and Merisalo-Rantanen, 2009; Gallivan and Keill, 2003; Walsh, Kefi and Baskerville, 2010). Even when all known parameters are taken into account, improvisations often lead to unexpected events that make performance unpredictable, through processes that are complex and far from linear. Therefore research should keep aiming for a conceptual understanding of the day-to-day complex reality of practitioners in organizations.

Many terms are used in the literature to describe an alignment (Avison et al., 2004; Chan, Huff, Barclay and Copeland, 1997) e.g., "*fit*" or "*consistence*", "*integration*", "*coherence*" or "*linkage*", or "*harmony*". One also finds diverse definitions of the concept of alignment itself. It has been defined as a "*process*" (Burn, 1997) or as an "*outcome*" (Broadbent and Weill, 1991; Chan and Reich, 2007; Reich and Benbasat, 2000). In our work, we need to go beyond this dichotomy since we understand strategic alignment as including both the process that aims at IT supporting business and being supported by it, and the outcome of this process. This approach allows us to inves-

tigate this phenomenon in its complexity, without distinguishing between the practices which might eventually lead to alignment from alignment itself. Adopting a grounded approach to day-to-day organizational practices, we aim to answer the following research question: *How do some organizations achieve strategic alignment in practice?*

Hence, the research issue investigated in the present article is the manner in which strategic alignment emerges (or not) in practice. We propose a critical reading of SAM's premises and assumptions. We integrate several streams of literature in order to better understand, explain and extend the concept of strategic alignment 'in action'. We show that, within the context of an IT project, IS strategic alignment in today's firms may be conceptualized as a set of dynamic alignments revolving around the project actors' needs. Some of these needs appear to be neglected in the traditional strategic alignment literature grounded in SAM; however, they appear to be essential in processes that aim to improve performance. As a result of our work, we propose an alternative, dynamic model of IS strategic alignment: the TSAM. This model is not a functionalist model and does not pretend to guarantee competitive advantage. It aims to explain how strategic alignment appears to be achieved in practice within firms and how managers could optimize its complex processes to help improve performance.

The present research was conducted iteratively, alternating and combining data collection, data analysis and comparison, and extant literature. It is, however, presented sequentially in order to make it easier to read (Suddaby, 2006). We first present the traditional literature on strategic alignment grounded in a rational, top-down strategizing vision. We introduce the Strategy-as-Practice alternative perspective. This leads us to introduce Actor-Network theory (ANT) as a framework that helps us make sense of and interpret our empirical data. We then detail our methodology and summarize our results that we discuss. We conclude this paper by looking into the contributions and limitations of our research, as well as the possibilities for future investigations.

I. THEORETICAL ANCHORING AND ANALYTICAL FRAMEWORK

In this section, we briefly investigate the traditional literature on strategic alignment and how some of its shortcomings may be addressed through a SasP perspective. We then present some key concepts of ANT (Callon, 1986; Latour, 1987) as the theoretical bases that helped us interpret our data.

I.1. A critical reading of SAM's premises and assumptions

In the 1980s, IS research met with strategy research which had developed the concept of strategic alignment in the legacy of contingency approaches. With the intensification of IT in organizations, IS became viewed as a strategic dimension of the organization that managers had to take into account in order to optimize efficiency and obtain a competitive advantage in their market (Porter and Millar, 1985). IS and IT were then considered as strategic *per se*. The

literature then proposed this new perspective and offered guidance to help managers manage IS in their new strategic role. This perspective materialized in research programs within which the concept of IS strategic alignment was first used (Henderson and Venkatraman, 1989; Scott-Morton, 1991; Henderson and Venkatraman, 1991; McDonald, 1991). These works laid the foundation of the Strategic Alignment Model (SAM) which was published in 1993 by Henderson and Venkatraman in the IBM Systems Journal. This model (cf. Appendix A) is the one most used and applied in the literature (Avison, Jones, Powell and Wilson, 2004) and the concept of IS strategic alignment has been commonly accepted by researchers and practitioners alike, whether on the business side (Luftman, Papp and Brier, 1999) or the IS side (Trainor, 2003).

Four main organizational domains are involved in SAM: business strategy (the choices made by an organization according to its positioning in its market: Henderson and Venkatraman 1989, 1993), business infrastructure (the set of internal arrangements that designs the management structure and work processes to achieve the organizational objectives: ibid.), IT strategy ("positioning of the business in the information technology marketplace": Henderson and Venkatraman, 1989 p. 6) and IS infrastructure ("the set of internal arrangements that operationalizes the IS strategy": ibid. p.9). These domains are linked by two concepts: functional integration and strategic alignment. SAM having been extensively described and discussed in the literature, we choose in the present work to rather concentrate on the premises and assumptions that serve as its anchors.

SAM offers a prescriptive and normative perspective which supports the idea that the four identified domains should be mutually aligned and that this global alignment enhances organizational performance. An ideal decisional behavior based on the rationality of the model is thus highlighted: IS and business managers have to be aware of each other's domains and react to any evolution, any change, of either or both of them. The accumulation since 1993 of scientific publications built upon this model reinforces its normative stance in order to achieve organizational performance.

In this perspective IS strategy is thought out and planned just like business strategy (Chan and Reich, 2007). Indeed, if one considers Jonhson, Scholes and Whittington's four strategic lenses (2008), SAM is anchored in only two of them: the design lens (strategizing is a logical process that uses a rather mechanistic and rational organizing vision) and the discourse lens (strategizing is mostly a managerial language used as a means of legitimation to obtain power and influence). These two lenses are characterized by a rational approach to decision making in which managers evaluate the objective external environment (Wonseok and Pinsonneault, 2007), make strategic propositions and then implement them with their teams.

SAM is thus anchored in a planned, rational, 'top-down', managerial and technical vision of strategy which excludes the possibility of a 'bottom-up', social emergence of strategy from orga-

nizational members and their day-to-day activities.

Subsequently some authors deepened and complexified the initial model by investigating the antecedents of alignment, that is all factors that enhance the achievement of IS strategic alignment (e.g., Maes, 2000; Maes, Rijsenbrij, Truijens, Goedvolk, 2000; Avison, Jones, Powell and Wilson, 2004). However, these works do not question the fundamental premises of SAM and do not pay sufficient attention to organizational daily practices. Even though some authors study the so called 'social' dimensions of alignment, their research is based in most cases on questionnaires administered to, or interviews with, business/IS managers, top managers and chief executive officers (CEO) (see for instance Lee, Kim, Paulson and Park, 2008 or Preston, Karahanna; and Rowe, 2006; for a complete literature review, see Renaud, 2012). These authors do not take into consideration other actors' perspectives. Therefore, even when one considers the social dimension proposed in the literature, results and recommendations are exclusively obtained from a managerial top-down perspective. Furthermore, and even if SAM is extremely detailed, it remains remote from practitioners' daily "tinkering" (Ciborra, 1997).

In 2000, Hendry showed that the rational strategic perspective in which SAM is anchored is limited, and pleaded for an alternative school of thought: Strategy as Practice (SasP). The SasP school (Jarzabkowski, 2004; Jarzabkowski and Whittington, 2008; Johnson, Langley, Melin, Whittington, 2007; Whittington, 1996, 2003 and 2006) has been emerging in the last two decades or so and is a direct consequence of the "practice turn" (Schatzki, 2001) in the social sciences since the late 1970s. In this perspective, strategy is a social practice, an ongoing activity, something people do on a day-to-day basis. This view emphasizes the ongoing interrelationships between the firm, the individuals and groups of individuals (Whittington, 2006); it leads to a dynamic perspective on strategy (Regnér, 2008). Strategy is not a plan of action elaborated from a rational decision (Hambrick, 2004; Jarzabkowski, 2004), but a localized and socially constructed activity. Researchers should pay attention to what people do so that theoretical models relate to effective practices (Jarzabkowski and Spee, 2006). Practices related to an alignment (or non-alignment) situation in the context of an IT project should therefore be investigated and analyzed, and resulting observations compared to the prescriptions of the literature.

We therefore propose in the present work to go beyond the original premises and assumptions of SAM and to adopt an approach anchored in firms' daily practices. This is done for the purpose of understanding how alignment is performed and enacted in practice instead of only assessing an end result. We consider that the sole managerial and technical stance implicitly validated in the SAM based strategic alignment literature is not sufficient to fathom the complexity of IS projects and organizations in general. Thus, one should adopt an alternative perspective that respects both social and technical aspects of IS and takes into account all actors involved in an IS project in order to adopt a truly comprehensive and dy-

namic perspective of IS strategic alignment. To do so, we call upon Translation Theory, also known as ANT.

I.2. Actor network theory

ANT was developed during the practice turn in social sciences in the 1970s (Schatzki, 2001). This intellectual movement tries to overcome dualisms that impregnate traditional thought. Resulting works are heterogeneous but are rooted in three main principles (Feldman and Orlikowski, 2011):

- Social life is anchored in daily practices. This leads to the acceptance of a specific ontology which considers that social life and daily practices are incarnated by, and embedded within, each other (Schatzki, 2001). Then every social phenomenon has to be approached and understood through the study of related practices. Post-humanists authors (Callon, 1986; Latour, 1987; etc.) consider that the social world is the consequence of a combination of human and non-human actions. Non-humans are more than just mediators of human action since they contribute to the creation and diffusion of practices (Schatzki, 2001). Thus, all (humans and non-humans) are considered as actors.
- All dualisms are rejected and traditional dichotomies are overcome by the simultaneous analysis of elements that were traditionally and previously treated separately. For instance, Callon and Latour (1981) refute macro versus micro and society versus nature dichotomies.
- The social world is complex and this complexity should be recognized through the principle of the relationality of mutual constitution (Feldman and Orlikowski, 2011).This means that no phenomenon should be considered as independent from others since all are part of their mutual makings.

ANT is part of this intellectual movement. It has been built around the simultaneous works of Michel Callon, Bruno Latour… We chose this theoretical framework after several iterations between theory and practice because it best fitted our empirical data: it allowed us to approach the concept of strategic alignment with a dynamic and sociotechnical stance by taking into account the heterogeneity of actors involved in an IS project.

ANT assumes that controversies are solved through the building of *networks* of actors around a common solution that emerges from the actors' interactions and negotiations. In this perspective, both humans and non-humans are considered as actors and collectively named *actants*. The concept of *actant* is borrowed from semiotics (Greimas, 1966). An actant is "any element that tries curving the space around itself, making other elements dependent, and translating other wills into the language of its own will" (Callon and Latour, 1991) i.e., anything or anybody able to act and have a positive or negative influence on other entities' action.

Translation is one of the key concepts of ANT. Callon uses the concept of translation to explain the emergence of the actor networks that weave the fabric of the world (the social and the

natural world should not be dissociated). In networks, actants are heterogeneous and therefore do not judge controversies from the same vantage point. The convergence of the resulting different perspectives is a critical stake for the emergence of such a network which has the potential to solve a controversy. A network develops as the result of translations managed by a translator. In everyday language, translating implies changing an intelligible statement into another intelligible statement to allow a third party to understand the initial statement; the translation is thus successful if, essentially, it does not change the meaning of the original statement (Amblard, Bernoux, Herreros and Livian, 1996). In ANT, a translation has another meaning. Just as we understand strategic alignment to be both an outcome and a process, in ANT a translation is the outcome of a negotiation between different actants. It is also the process leading to this outcome. It is neither sequential nor linear and involves all heterogeneous actants who express different perspectives on the same problem, topic, or project through their *intermediaries* and *delegates/spokespersons*. The translation acts as a link between heterogeneous activities, statements, and stakes (Callon and Latour, 1991); the translator supports and nurtures this link (Amblard et al., 1996). It leads to the constitution of a network that constrains its members, if they agree to take part in it.

In ANT, translation therefore implies actants adopting and adapting some of their respective perspectives in order to support a change and build the network. A successful translation allows the drive toward the convergence, albeit provisional and volatile, of actants' positions/perspectives i.e., an "*isotropic situation*" (Callon, 1991, p. 144-145). Conversely, if the translation fails, positions are incompatible, and the convergence process cannot be initiated i.e., a "*polyphonic situation*" (ibid.). The network is constituted when the different actants' perspectives have converged, but this network has to be constantly nurtured. To Callon, a strong translation means that at each node of the network, the translation allows the actants to share a negotiated vision, acceptable by all, of the controversy under investigation. Callon (1991) uses the terms of 'alignment' and 'harmony' (pages 144-145) to describe a 'perfect' translation and the resulting convergence of actants.

For each group of actants, *spokespersons/delegates* are designated, elected, defined or imposed. They are responsible for speaking to the others in the name of the group, with the translator's help. The *intermediaries* are the entities that circulate between actants (Callon, 1992). They are the medium through which actants and their delegates express themselves. They can be texts, technical artifacts, human beings, their competencies or knowledge, material or immaterial entities (Callon, 1991) e.g., actants' needs (Walsh and Renaud, 2010).

In our work, we use ANT's theoretical grounding in a change management perspective (Amblard et al., 1996; Pichault, 2009; Walsh and Renaud, 2010) to help us relate, make sense of and understand our empirical data, and to theorize from these data in a grounded theory approach. ANT allows us to understand and study "organizational

practice as a multi-centered, non-linear, and intersubjective activity" (Belova, King and Sliwa 2008, p.494). We focus on corporate controversies resulting from managerial change decisions related to IS and involving heterogeneous actants. Humans and non-humans involved in the projected change should be identified through the definition of their identities, individual problems, objectives and interests. The envisaged change must be negotiated, adapted, translated so that all actants can support it. If translation succeeds, it builds the foundations of the actants' convergence, hence alignment, around the projected change; conversely, its failure could compromise the actants' involvement.

In our work, strategic alignment does not result from some rational reasoning and technical adjustment as in the traditional SAM literature; it is the result of multiparty negotiations that, through translations, lead toward the shared vision of an IS change. The more the actants share this vision, the more the resulting network is robust. We thus use past works which have interpreted ANT in a change management perspective, as sensitizing devices to interpret our data, and revisit and extend the concept of strategic alignment.

II. METHODOLOGY

We chose a grounded theory methodological approach for the present research as it is particularly helpful in developing new perspectives on well-established theoretical research areas and it links well to practice (Sousa and Hendriks, 2006). Our research settings and the way our sampling, data collection, coding, and analysis were conducted are detailed in this section.

II.1. Research settings and sampling

The research was carried out over a period of approximately two years. It was first conducted in three different corporations (a multinational corporation, A; a medium-sized corporation that is part of a multinational corporation, B; and a small European-based corporation, C). Details concerning these corporations are provided in Appendix B. These corporations were selected because of their differences in terms of size, industry, and turnover. The differences between the three selected organizations served to diversify the participants and investigated groups. This was done to widen the spectrum of observations we could make from the vantage points we chose and, thus, widen the scope and reach of our research. All three organizations, however, had one commonality which was of specific interest in our research: actors had reported organizational difficulties that were linked to IS.

The first interviews were conducted with the IS project managers in corporations A and B and with the CEO (who was also managing the IS project) in corporation C. Once IS projects had been described and relevant issues highlighted in each firm, interviews were conducted with key users of the implemented systems i.e., business intelligence managers in corporation A; buyers and commercial staff in corporation B; and operators in corporation C (i.e., theoretical sampling guided by the

emerging theory: Glaser and Strauss, 1967). Details about these interviews may be found in Appendix C1.

The conceptual model that had started emerging from the restricted field of these three corporations was then extended to other corporations through interviews with six IS consultants who had never been involved with corporations A, B or C. These consultants had multiple experiences related to IS projects in diverse corporations. To collect as wide a spectrum of data as possible, the experts themselves were selected in relation to their different experiences and included junior and senior consultants (see Appendix C2). They were employed by various consultancy firms, which had different specificities (see Appendix C2) and whose customers were either very big, medium-sized, or small firms. These interviews with consultants were conducted to broaden the scope and reach of our research toward the development of a conceptual model "sufficiently general to be applicable to a range of situations" (Orlikowski, 1993, p. 335) i.e., to open the way from 'substantial' to 'formal' grounded theory (Glaser and Strauss, 1967) as this was the ultimate purpose of the present research.

II.2. Data collection, coding process and analysis

In all three corporations (A, B and C), data were collected through participant observation and unstructured or semi-structured interviews, depending on each specific context. We started these interviews by asking participants to describe the current IS project of their firm. To investigate these three corporations, we also used documents, including consultants' reports and technical documentation about the implemented software, and the first author attended several business meetings with CEOs, CIO[1]s, consultants and project managers. We wrote memos while we conducted our research, to record some ideas that arose during data collection and analysis.

We then extended data collection to other corporations through the interviews conducted with IS consultants. All consultants were interviewed at least twice. The first interviews were semi-structured and started with our asking the consultants to describe two IT projects in which they had taken part, one which they perceived as a 'success' and the other as a 'failure'; we purposely did not detail what we meant by these two terms in order to let their meanings open to the interviewees' interpretation. At the start of subsequent interviews, the consultants were presented with the conceptual model that had started to emerge and were asked to comment.

The various firms investigated, the diverse interviewees and the various techniques of data collection provided multiple perspectives and helped toward triangulation.

Forty interviews were conducted (See Appendix C1 and C2). Twenty-six of these interviews were recorded and later transcribed. Notes were jotted down during those interviews that

[1] Chief information officer.

could not be recorded. Twenty-five interviews were conducted in the three corporations investigated and fifteen interviews were with the consultants from the various consultancy firms. The number of interviews was not decided at the outset; neither was the number of people we interviewed. We continued conducting interviews as long as we felt we needed to obtain new perspectives to enable us to confirm the emerging model. We stopped the interviews when it was clear that no new element would emerge and when no further light was shed on the properties of our theoretical categories and sub-categories (theoretical saturation).

The conceptual model that emerged from our work evolved during the research process and was the result of the continuous interplay between the collection, analysis, and comparison of data ("constant comparative analysis": Glaser and Strauss, 1967; Glaser, 1978), as well as elements from the literature to improve our theoretical sensitivity (Glaser, 1978). This model was constantly modified and added to until we reached theoretical saturation. An intermediary model may be found in Walsh and Renaud (2010) as a witness of our "interim struggles" (Østerlie, 2012 page 5218, quoting Weick, 1995). Our data were thus coded and recoded several times with the help of NVivo 8 software, first through open coding (no preconceived codes), then theoretical (use of the ANT reading lens to help us identify and name our categories, investigation of the relationships between the emerging sub-categories and their properties) and selective coding (after identification of the emerging core category, coding in relation to this core variable) (Glaser, 1992). Through the coding process, we did not attempt to quantify but rather immersed ourselves in the diverse data and concentrated on their interpretation and meaning to enable us to conceptualize and theorize. To ensure reflexivity in our research, the first two authors discussed the interpretation of the data and the coding at length.

II.3. The different coding categories

To make our results easier to read, we detail the different coding categories that we used in this sub-section. Table 1 summarizes the categories that resulted from the ANT framework we chose to use as best fitting our empirical data toward their interpretation and the subcategories that emerged from these data.

Category I includes the four main actants that emerged in our cases: *business strategy and infrastructure*, *IS strategy and infrastructure*, *users' tasks*, and *users' IT culture*.

The actants *Business strategy & infrastructure* and *IS strategy & infrastructure* may be found, and are extensively described, in most of the traditional strategic alignment literature grounded in SAM. However, while we were investigating IT implementation projects, *end users' tasks* also emerged as relevant actants to be taken into account. These are tasks that require computerization, reengineering, upgrading or integrating technological systems in order to improve users' efficiency. Finally users' diverse *IT cultures* also emerged as an essential group of actants mostly

Categories	I-Main actants	II-Intermediaries (Core category)	III-Delegates
Sub-categories	Business strategy and infrastructure	Managerial IT needs	Top managers
	IS strategy and infrastructure	Hardware needs	IT technicians
		Software needs	Software developers/ analysts
	Users' tasks	Tasks' IT needs	Job experts
	Users' IT culture	User perceived IT needs	IT utilization

Table 1: Coding categories.

neglected in SAM literature. IT culture is the set of IT values espoused by individuals and groups (Leidner and Kayworth, 2006) that may come into play and interfere with IS management and governance (Kaarst-Brown and Robey, 1999; Walsh et al., 2010).

Category II includes five groups of intermediaries: *managerial IT needs*, *hardware needs*, *software needs*, *tasks' IT needs*, and *users' IT needs*.

Managerial IT needs are the organizational IT needs as perceived by managers. *Hardware and software needs* are the inter-related technical needs that must be met in order for an IS to technically perform adequately. For instance, the sub-category 'hardware needs' would include the memory capacity necessary for a system to operate smoothly, without breakdown, and the sub-category 'software needs' would include the language used for the development of given applications which has to be recognized by/be compatible with the legacy systems retained within the firm. *Tasks' IT needs* represent the need for software relevant to the optimization of these tasks. Finally *user perceived IT needs* are context related (contextual IT needs: needs for IT perceived by users in a given context) and task related (situational IT needs: needs for some specific IT to perform some given tasks) (Walsh et al., 2010).

Category III includes five groups of delegates: *top managers*, *IT technicians*, *software developers/analysts*, *job experts*, and *IT utilization*. These sub-categories are self-explanatory.

The delegates category was the first category to emerge through the data, then the main actants category, and lastly the core category, the intermediaries, at the source of acute organizational problems and ill functions that we studied more specifically. The delegates transmit the actants' perspectives, which are expressed through the intermediation of their respective needs.

This coding scheme led us to the conceptualization of seven dynamic and constantly evolving alignments of needs, which are described in the next section.

III. RESULTS

In this section, we first describe the situation in corporations A, B and C as it gradually unfolded through the period during which we conducted these

interviews. We then highlight and illustrate the seven alignments that emerged from our data.

III.1. The emerging landscape in the three firms investigated in depth

In corporation A, top management decided to run the IS project to allow centralized monitoring of marketing efforts. It aimed to extend the use of CRM[2]-related dashboards, originally developed for the United Kingdom subsidiary, to other subsidiaries located in several other European countries. These dashboards involved data analysis, data mining and business intelligence. Corporation A belongs to the highly competitive industry of telecommunications and these dashboards were custom designed to help head office centralize data and verify the results of local teams' marketing efforts in each country. Although initiated by a worthy concern to slow down 'customer churn' i.e., the loss of local customers to competitors, these dashboards paid little attention to, and allowed no adjustment for, each subsidiary's local specificities and resulting needs. This has led to the implemented instrument being little used, or not used at all in some countries, despite the high costs of implementation. In those countries where the dashboards are used, they are implemented alongside other software that fulfill users' needs more thoroughly, in a complementary fashion.

In corporation B, after a merger following the acquisition of several SME[3]s, the parent company imposed the implementation of a standardized ERP[4]. All databases resulting from the IS of the various recently-acquired firms were then merged into one common database. After two years, the operators are using a number of non-integrated spreadsheet programs alongside the mainframe application without the validation or knowledge of their head office. The implemented ERP and the subsequent merger of databases has also resulted in a 30,000-product database, with the same product often coded differently (up to four different codes for some products!), thus making it difficult for the various entities in the resulting merged firm to identify the products: stocks have reached an unprecedented level. The coding of articles needs to be standardized so the inventory can be centrally managed and to allow head offices to account for yearly goods inventory in an accurate manner.

In corporation C, the CEO and end-users had mostly been very satisfied with the ten year-old ERP which had been custom-developed. It was no longer maintained, as the company that had originally developed it had gone out of business. It therefore had had to be replaced. The CEO had commissioned, with limited financial back-up, a small software provider to develop a customized ERP that would reproduce the same functionalities and provide maintenance. Users' current IT needs

[2] Customer relationship management.

[3] Small or medium sized enterprise.

[4] Enterprise resource planning.

were not investigated. Progress made in the IS field in the previous decade was not taken into consideration. Using standardized ERP software sold to many other companies in the same industry was not even envisaged. The end result was the rejection of the new ERP at all levels of the corporation. Corporation C is going back to the original mainframe application and continues to use it despite the lack of maintenance. It is also adopting other 'pay-as-you-use' software through the 'cloud' alongside the mainframe application.

III.2. Seven dynamic needs alignments

Inspired by Reich and Benbasat's definition of the linkage between IT and business (1996), we define the alignment between two elements as the process that aims at one element supporting the other and being supported by it. This alignment also includes an outcome that illustrates a 'fit' or 'misfit'. These two terms should not be taken at face value but as simple heuristic devices that allow us to describe the general drive of a constantly evolving situation. A 'fit' between two elements illustrates a situation where the degree of support appears sufficient to allow organizational processes to run smoothly. A 'misfit' then illustrates a situation where this degree of support appears insufficient to do so. *S*even needs alignments (see figure 1) that emerged through our data are described hereafter. Some examples of fits and misfits for each alignment are illustrated with quotes from interviews. Coder's comments are added between square brackets. Details of interviewees and attributed codes are synthesized in Appendix C.

Alignment 1: The alignment between managerial IT needs and hardware/software needs.

This alignment is between the actants *Business strategy & infrastructure* and *IS strategy & infrastructure*. It is the alignment mostly studied in the SAM literature. Once business strategy has been designed and planned, top managers act as delegates that transmit the resulting organizational IT needs as perceived in a managerial top-down perspective. Sometimes, the top managers analyze and understand these needs wrongly, leading to a state of misfit.

- Cons2-2: [His consultancy firm had proposed to subsidize a non-governmental organization (NGO) and to implement a heavy and costly ERP in the pre-existing IS infrastructure without any immediate expense for the NGO. The CEO of the NGO had wisely objected that if subsidies subsequently stopped, they would not be able to maintain the proposed ERP.] *This project could have started on a bad design. A proper study of the business needs* [from a managerial perspective] *beforehand allowed us to avoid this. We finally implemented a one hundred percent outsourced product with simple screens that was sufficient, met the needs and worked well.* [Fit]
- B7: *Between one day and the next, the corporations X and Y were merged. We were not independent corporations any more, we were*

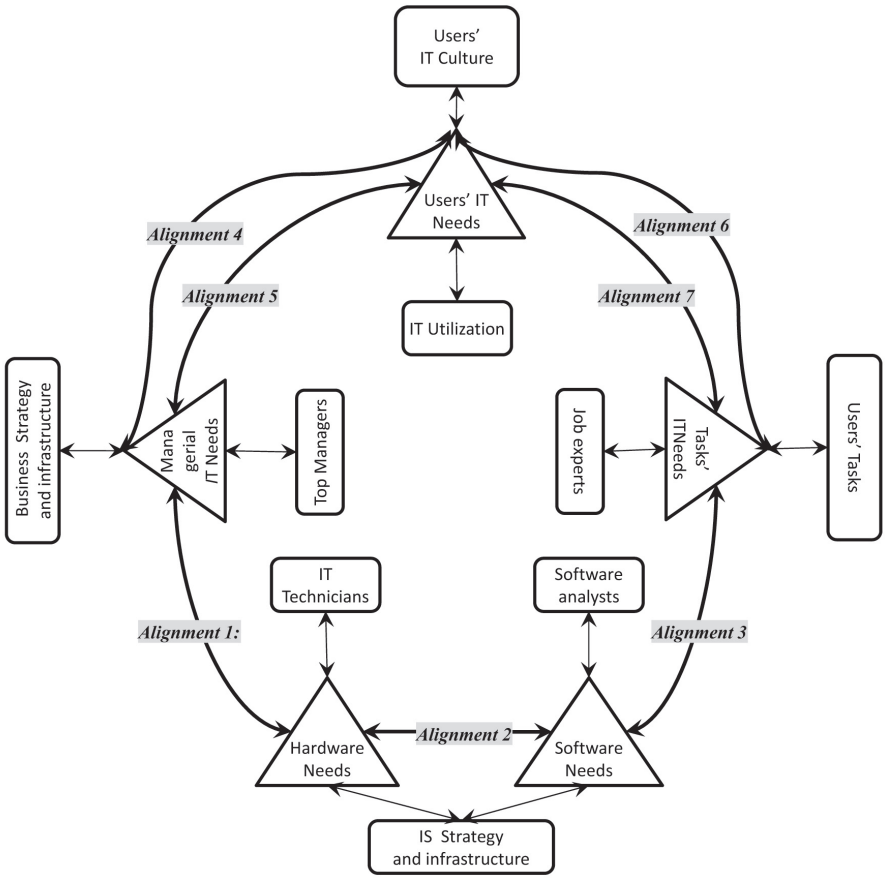

Figure 1. The seven needs alignments that emerged from our data.

one corporation… But we had pending orders for goods from X to Y. These orders were delivered and manually invoiced, but are still in the system four years later because we cannot invoice within the company. The system does not allow us to process them because business IT needs were not properly assessed before the actual merger. [Misfit]

Alignment 2: The hardware-software alignment.

At first, this alignment between the actants hardware and software appeared to be self-evident. However, we found through our data that it was often neglected *ex ante* and had to be solved *ex post* when new software had already been bought and implemented. This

alignment is acutely felt, particularly when new software is integrated into an existing and stabilized IS infrastructure. For instance ill-assessed memory capacity needs might be revealed after new software has been bought and implemented when it fails to perform adequately.

- Cons2-1: *We used to have recurring technical problems* [when they implemented new software in an existing and stabilized IS infrastructure] *but we don't any more. Our consultancy firm has developed a specific tool, the 'quick sizer', and created a specific measure unit, 'X'*[5]*. Now, when we arrive at a client, we use this instrument and, for example, it tells us that the system will need 2000X. Then, the client has to contact some hardware suppliers who know about our measure unit 'X' and will offer suitable hardware to complement existing equipment.* [Fit]
- A1: [The dashboards were already implemented in another country; all technical needs and resulting requirements should already have been specified and written down] *We had to find relevant information wherever we could, after the implementation had taken place…* [We had to] *look for and obtain/gather all documents that appeared relevant for technical requirements, and summarize them… [so that] what appeared useful or essential was eventually written down in order to subsequently try and avoid memory saturation and/or system breakdown.* [Misfit]
- C1-2: *We constantly had to re-boot the server… all the time… just to be able to keep working.* [Misfit]

Alignment 3: The task-technology alignment.

This alignment has been studied in the literature (Goodhue and Thompson, 1995; Zigurs and Buckland, 1998) as the extent to which technology supports a specific task. However, the questionnaires used in these studies mix perceptual and objective measures. Here we define this alignment as the extent to which some specific software objectively support a given *task's IT needs*. The main actants here are the tasks that are to be computerized and the implemented software, which is part of the IS infrastructure. The *task's IT needs* have to be interpreted and assessed by *job experts* who act as delegates. Specifically developed algorithms or existing standardized software proposed by analysts as suitable to satisfy these needs have to be tested and verified.

- C1-2: *Before we implemented the first ERP, we spent a lot of time analyzing all our needs in relation to the tasks that we wanted to computerize… I would say that this is what guaranteed the one hundred percent success of this first computerization.* [Fit]
- B7: *Normally when you registered an order in the old system, you could link the items ordered to the*

[5] Details have been deleted for anonymity.

order itself and to available stocks. Now, in the new system, you cannot; it does not work. [Misfit]

- C1-2: [When they implemented the new ERP] *They* [the analysts] *had not even understood that delivery dockets needed to be printed so that goods could actually be delivered and dockets signed by clients upon delivery*! [Misfit]

Alignment 4: The IT contextual needs alignment.

This is the alignment between managerial IT needs and users' context-specific IT needs. These last needs are the IT needs perceived by users in a specific organizational context in order to fulfill their appointed obligations. For example, if business strategy is expressed through managerial IT needs to implement some CRM software, and if commercial staffs do not perceive the need for this specific software in their work context, the CRM implementation outcome would probably be a misfit. Conversely, if through adequate organizational communication about the new CRM software, users are able to verify the congruence of the proposed change with their contextual IT needs, a satisfactory level of fit might then be expected.

- Cons1-3: *Before the 'roll off', they did several simulations that were validated by users; the users were then psychologically prepared.* [Fit]
- Cons2-1*: They did things gradually. It's not useful to start on projects that are viewed by end users as 'huge mountains'. There was a first project that involved the financial department. Then there was the logistics project… They did not try to do a 'big bang'… Users were gradually sensitized to the new system… We showed them the product, we were at their disposal, we listened to them* [i.e., we listened to their needs]… *Management consulted with users* [before implementation]. [Fit]
- B10: *Imposing the standardized ERP on all merged firms and then later on, merging all databases… that was our boss' great idea! He tells us we don't need to do this or that. We must do things his way… But it's not feasible. It would take hours, weeks, months to do things the way he would like them to be done.* [Misfit]
- Cons2-1: *We were working in subsidiaries that were still only using Microsoft Excel. They were not accustomed at all to this new type of software* [ERP] *and felt they did not need it… When the ERP was implemented, they had a shock…, a culture shock.* [Misfit]

Alignment 5: The IT contextual training needs alignment.

This is the alignment between managerial IT needs resulting from planned or designed *business strategy and infrastructure* and the general IT training needed by users in order to help IT culture to "*creep*" (Walsh et al. 2010) within the organization. One may take as an example an organization which decides to commercially become a 'pure player', eliminate all physical commercial outlets and sell only through its web-

site, without any specific global IT training provided to the staff. If this organization has many employees who are little acculturated to IT and are uncomfortable with anything to do with IT, the result will most probably be a misfit. Conversely, if the same organization includes a high proportion of computer 'geeks' in its staff, the result will probably be a fit.

- Cons2-1: *You have to respect people. Here when we did the training, we customized it to the users' needs. Some didn't even know how to use a mouse and a keyboard… The culture shock is of course lessened if people have already used an integrated system.* [Fit]
- C2-2*: People involved with computers share a language that is their own, that is part of their own world and their own evolution… They forget that there are other people who do not master this language. We don't understand what they say because we haven't learned this language.* [Misfit]

Alignment 6: The IT situational needs alignment

This is the alignment between users' situational need to fulfill some given mandatory tasks and a specific IT. The resulting fit/unfit then measures the degree to which a proposed IT improves (or not) the users' self-perceived efficacy on given tasks. For example, if a new ERP means users must spend twice as much time as before to perform a given task without any visible advantage, the result will probably be a misfit. Conversely, if through the use of new software, users are able to give answers to customers that they were previously unable to provide easily, they will probably see it as a significant fit.

- C1-2: *We did not even try to move forward before we had actually obtained functional feedback from job experts and before the software had been satisfactorily tested by key users.* [Fit]
- B5*: It's mainly that eighty to ninety percent of the functional specificities of the system are considered redundant by users.* [Misfit]

Alignment 7: The IT situational training needs alignment

This is the alignment between situational IT training needs perceived by users to fulfill given mandatory tasks with some specific IT and the specific IT training provided. When a new IT tool is implemented in an organization, the fulfillment of users' training needs appears self-evident. However, we found among participants that the need to de-standardize and adapt IT training to align it with users' actually perceived situational training needs (which depend on users' IT culture) often appears neglected or not taken into account at all.

- Cons2-1: *You always have differences between users. Always. Then when you plan the training sessions, you have to customize these sessions, to level them out to the people you have to train. We didn't only use slideware. We also did a lot of exercises adapted to the users'* [IT culture] *level… People should be thoroughly tested beforehand for the*

training on a given tool to be effective. [Fit]

- C1-2: *After two months of useless trials, with huge costs, we realized that… we were still being trained two days a week… however we still did not know how to print a delivery slip!… So I fired everybody and lost a lot of money!* [Misfit]

All alignments described above appeared as dynamic because their "*shores*" (Ciborra, 1997) i.e., the various needs, keep evolving. These needs may be aligned, resulting in a good fit, at one given moment in time but they may become misaligned as some actants' needs evolve.

IV. DISCUSSION: THE TRANSLATED STRATEGIC ALIGNMENT MODEL (TSAM)

Our work leads us to consider strategic alignment as resulting from the dynamic alignment of heterogeneous actors' needs, anchored in a three-level network. One level includes all main actants (business infrastructure and strategy, IS infrastructure and strategy, users' tasks and users' diverse IT cultures); the second level includes intermediaries i.e., all main actants' needs; the third level includes the delegates (managers, technicians, analysts, job experts and the actual utilization of the system by users) which are first confronted by each other during an organizational controversy related to an IS change. This network is illustrated in figure 2. Figure 2 is not a functionalist diagram; the arrows do not represent causal effects but the negotiations/adaptations between the various actants in the network that emerge through translation processes. This diagram represents an attempt to graphically represent the complex processes revealed through investigating organizational practices during the implementation of new IT in various firms. These processes might (or might not) lead to competitive advantage.

In this section we discuss the model we propose (TSAM) and more specifically (1) how it may help address some of SAM's shortcomings, (2) how translation helps toward the emergence and stabilization of a network of all actants involved in an IT project and (3) the managerial implications of our work.

IV.1. Addressing SAM's shortcomings

What may be considered as the limitations of traditional approaches to strategic alignment built around SAM may be compared to those of the traditional sociology of science which originally motivated the development of ANT. Callon (1986) related these limitations to three types of issues, stylistic, theoretical and methodological; he proposed to solve them through three "principles of method", respectively agnosticism, generalized symmetry and free association.

The managerial top-down vision of strategic alignment is an incomplete and limited vision, a "stylistic issue" (Callon, 1986). Change goes beyond managerial concerns and judgments; it has social roots and impacts. Top managers are the delegates who transmit the organizational IT needs resulting from designed and planned strategy.

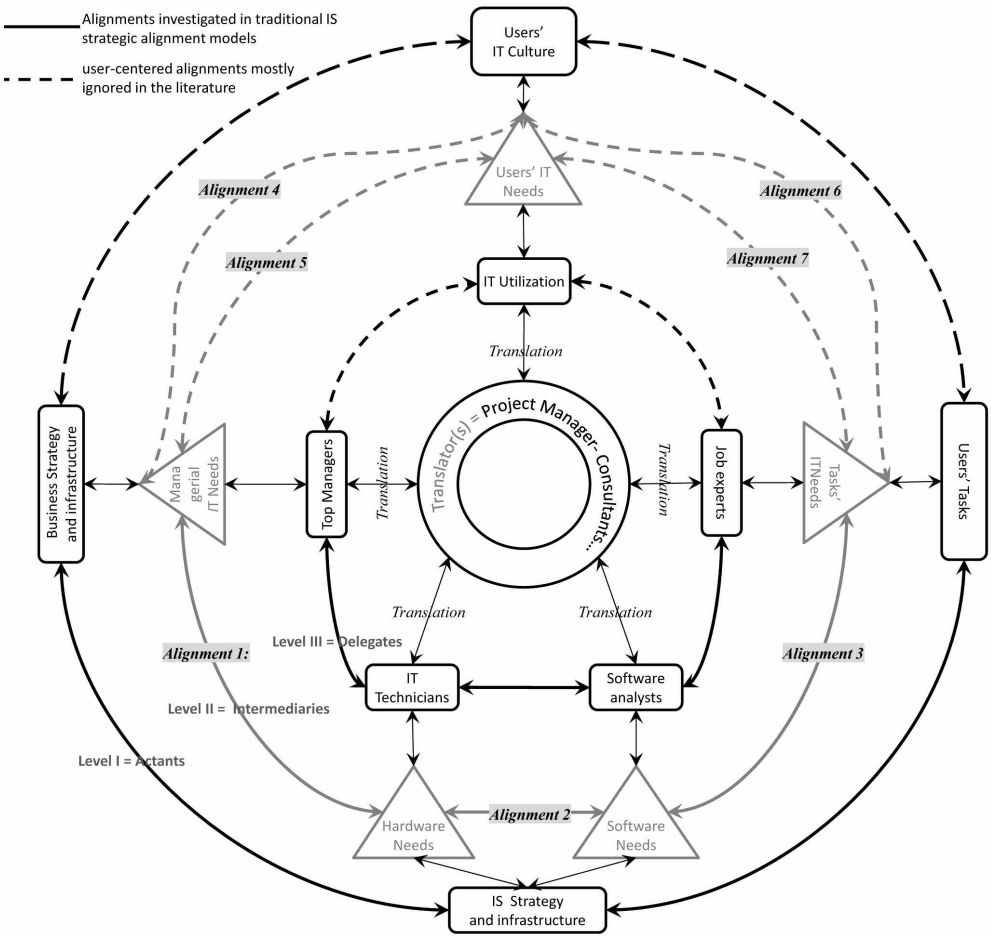

Figure 2: The Translated Strategic Alignment Model (TSAM).

Strategy should however also be allowed to emerge bottom-up from other groups of actants and their delegates. All actants and their IT needs have to be taken into account ("agnosticism": Callon, 1986).

- *B6: Things were done that way because they* [top managers] *decided it. Nobody bothered to ask our opinion or what we needed. We would have gained plenty of time if somebody had done so before now!*

In day-to-day tinkering with organizational practice, financial and technical needs often take precedence over other needs. However, change is not only technically prescribed and driven. A decision on IS change has social as well as technical impacts; it affects work content (e.g., tasks) and work context (e.g., workers IT-centered social exchanges which influence users' perceived IT needs). If one summarizes and extends what Callon (1986) names the "theoret-

ical issue", IS strategic alignment should not only be initiated or validated by a few technicians who think in terms of technical processes or design. Alignment also has to be socially constructed through the interactions of all organizational actants, and all needs have to be translated so that all actants can understand them i.e., the aim should be "generalized symmetry" (ibid.).

- *A1: They* [the technicians and the analysts] *try and boss everybody around* […] *Things don't work that way.*

The static vision of strategic alignment, illustrating what Callon (1986) names a "methodological issue", is inaccurate as change is a dynamic process. The various actants, their needs/intermediaries, and their delegates are not frozen in static roles; they evolve through the subtle interplay of power roles. As structural evolution is always possible, what appears unimportant at one given point in time may become essential subsequently. The possible variations of all actants' needs have to be considered and allowed for ("free association": ibid.).

- *C1-2: If we summarize this experience which was refined in the analysis of business needs, we regretted not to have been able to produce something in a programming language that could be used by other developers, and, therefore, which could evolve adequately. That's the mistake we made… We could not upgrade our software… But corporations evolve. What today appears to be exactly what you need might not be so tomorrow.*

The elements discussed above are summarized in Table 2.

IV.2. Translation to help the constitution of the network

The translator plays an essential role in the process of alignment of all actants' needs. In firms A and C top managers were, initially, self-appointed translators of all needs. However translation processes did not take all actants' needs into account.

In firm A, managers were only preoccupied with their own managerial IT

Table 2: How SAM's shortcomings may be addressed.

	SAM framework	TSAM framework
Stylistic issue	Managerial vision	Solved by Agnosticism: all actors' needs and discourses must be taken into consideration. Change goes beyond managerial concerns and judgments
Theoretical issue	Technical vision of strategic alignment: financial and technical needs take precedence over other needs	Solved by Generalized Symmetry: Change must be socially constructed through interactions between all actants; all perspectives should be taken into account
Methodological issue	Static vision of strategic alignment	Solved by Free Association: Change is a dynamic process, so that what first appears unimportant may later become essential

needs: they pushed for standardization at all costs in all countries for the sake of data centralization. Leaving aside users' local needs, the most striking finding in this firm was that even basic hardware and software needs were not investigated, and hence not met, until consultants were called to the rescue to effect the missing translation processes.

- A3: *They* [strategizing managers] *did not even check with technicians before implementation whether our system could support the dashboards; too many data are now 'poured' into the system from many different sources, it keeps 'bugging' and we have to reboot all servers several times a day. We have to upgrade the system and develop better interfaces in a rush as this situation is endangering our daily activities.*

In firm C, the first initial computerization was successful and the network was constituted as the CEO successfully translated all relevant actants' needs. However, he was not able to do so subsequently during the second computerization; he remained anchored into past needs as if these were static and had not evolved. Furthermore he did not even verify, before purchase, that the new software fulfilled the IT needs previously satisfied. He only considered his self-perceived managerial needs to purchase a new ERP, as similar as possible to the previous one, in order to allow for adequate management and what he considered as safe running of his firm because maintenance of the old ERP was no longer guaranteed.

- C4: *I knew about other standardized software currently used by our competitors that would have been very suitable for what we need to do… I told him… but he* [C1: the CEO/project manager/ self-appointed translator] *would not listen. He just wanted what we had before!...*

In firm B, a new member of staff was recruited to become head of the buying department (interviewee B1 in Appendix C). He emerged naturally in the constituting network as a thorough translator, and subsequently officially became the IT project manager. Through his conscientious analysis of all actants' relevant needs, most of the IS issues, previously identified in this firm, were addressed, even though he did not have much formal IT training. The data base was cleaned up and stocks were brought down to an acceptable level.

- B4: *Because of the way he* [B1: the new project manager/adequate translator of all actants' needs] *tackled the problem, things went much more smoothly. He tried to take into consideration the implemented software specificities and everybody's needs; he made sure we all understood what was going on 'up at the top'* and why things were the way they were [understanding strategic decisions taken at the managerial level]. *People then accepted 'more graciously' to work together and we solved most of the pending problems.*

Our work tends to show that strategic alignment investigated through daily practices results from multiple alignments at three different levels. If, through translation, strategic alignment is negotiated with the various main ac-

tants through their delegates as representatives and their needs as intermediaries, it leads to the development of a three level network (see figure 2). The proposed network may then lead to what we name a *translated strategic alignment* (TSA) through multiple alignments. We argue that needs are core intermediaries that should be taken into account as they are key elements in the process of alignment. In an IS change situation, all actants constitute a dynamic, evolving network of humans and non-humans. If all actants' identified needs are taken into consideration in the translation processes facilitated by the translator, then change may be driven and managed. The translation processes allow for the alignment of this network while it is being constituted. The TSAM is a dynamic model: actants' needs evolve over time and the various alignments between actants have to be constantly negotiated.

The full lines in figure 2 represent the alignments (alignments 1, 2 and 3) that we found are usually (explicitly or implicitly) investigated, sometimes only partially, in SAM and related models. They are brought about by strategic planning and design and result from technical and managerial top-down vision and rational strategizing. The dotted lines indicate the user-centered alignments (alignments 4, 5, 6 and 7) that appear to have often been ignored or at least not to have been explicitly considered in the SAM literature. They result from complex processes and might occur if bottom-up strategizing is allowed to emerge and if, when identified by managers through the translation processes, it is nurtured by them. In TSAM, all alignments result from the mutual confrontation of needs and their negotiation/ adaptation with the help of the translator(s).

IV.3. Managerial implications

Consensus from all actants is obtained through the negotiation of their needs and finding a common denominator that satisfies them all to an acceptable level, at a given moment in time. The various alignments that we identified do not therefore refer to a definite and stable state of strategic alignment that would cover all actants' needs at all times. In a managerial perspective, these alignments may rather help firms drive toward an "isotropic" situation (Callon, 1991) and what might be understood as the level of needs alignment that is critical (i.e., has to be reached) for an organization to operate

Table 3: Strategizing, translation and alignment.

	SAM framework	**TSAM framework**
Strategy may be…	Planned and designed	Planned, designed, and emergent
Strategy flows…	Top-down	Top-down and bottom-up
Perspective is…	Managerial and technical	Managerial, social, and technical
IT needs, requiring translation and alignment, are expressed by…	Managers	Managers, technicians, analysts, job experts, and IT use

smoothly and perform adequately at a given moment.

Although many firms know the solutions to achieve fit for the first three alignments, our empirical data show that managers often appear to neglect these solutions and need reminding. The collected data show that in day-to-day managerial life, business, functional and technical needs are not always sufficiently investigated and clarified at times of technological choice. Some consultants noted that, in order to justify managerial IT choices to higher levels of governance, they sometimes had to produce official documents summarizing business, functional and technical requirements *ex post* whereas these should have been produced and validated *ex ante*:

- A5: *To justify the big boss' choice to implement these dashboards in all countries, we had to write and produce the so-called 'validated' business requirements, functional requirements and technical requirements documents after* [and not before as is normally the case] *the dashboards had actually been developed and implemented* […] *As these documents are supposed to help us check that all is in order before the actual 'kick off', and to allow us to correct possible problems, you can imagine how disastrous this is.*

In order to optimize investments, users' contextual IT needs/ contextual training needs and managerial IT needs have to be brought to a critical level of alignment before actual implementation:

- Cons 2-2: *I am frequently asked to work with subsidiaries in North Africa. Our customers usually want to implement in these countries what has been deployed and works well in subsidiaries from other countries so that all systems can be harmonized and data centralized at headquarters. It is very tempting to comply and do as our customers require. It would be very lucrative for us. But we know it'll never work. Those people in these North African subsidiaries, they 'start from scratch', you cannot install three different servers, implement three different applications and hope that they will want [feel the need for] or be able to use them.… They first have to be adequately IT trained at the level that is required for the evolution of their jobs and, only then, they might be brought to see why a specific system is needed and has been chosen by their managers.*

Critical alignment between users' situational IT needs and tasks IT needs is to be verified before implementation:

- B10: *There is a big problem with the way this software was implemented. It is extremely detailed and comprehensive in terms of production data and processes but what we actually need to do our jobs as buyers is not in the system. We should have been consulted before the actual implementation, not after, as it's too late to change everything… Anyhow, at this stage, he* [the CEO] *refuses to even consider it as it would create 'bedlam' in production.*

Finally, critical alignment must be insured between users' situational train-

ing needs, which depend on their level of IT acculturation and their tasks' IT needs, before and during implementation:

- Cons 1-4*: When you train users, you always have different levels* [of IT acculturation]. *But in this project, we really adapted our training sessions to the users and what each of them actually had to do in their jobs. After that it went fairly well but we had to do further sessions once implementation had started as users had plenty of questions after using the software on a day-to-day basis* [Evolution of training needs as system is used]… *We really proposed 'made to measure' training. Even though it was more costly for the client, I think they were happy with the result.*

The last four alignments are grounded in end users' IT needs. The critical level for these might be reached if end users' needs and resulting requirements are not overlooked. Besides pointing out business, functional, and technical requirements which should all be specified and validated in writing before new IT implementation, TSAM helps managers to also take into account users' needs. These needs have to be translated through negotiations, training and adaptations, into users' requirements, which are critically aligned with business, functional, and technical requirements.

The managerial clues that may be drawn from TSAM toward reaching the critical level of alignment are summarized in Table 4. These elements do not pretend to guarantee competitive advantage but may help managers work towards achieving it through enhanced performance.

CONCLUSION

In the present work, we revisited and reinterpreted the concept of strategic alignment through practices in diverse firms. This led us to propose the translated strategic alignment model (TSAM). In this conceptual model, strategic alignment is the result of negotiations in a three-level network. For the constitution of this network to be made possible, it imperatively implies the alignments of the various main actants' needs.

The limitation of our work results from our methods which are grounded in our own interpretation of data and our results would have to be verified and tested in diversified settings. We have brought to light seven alignments which, when combined, may help managers toward improved performance and, possibly, competitive advantage. One of the needs alignments we discuss in our work (Alignment 2: hardware-software alignment) is already assessed in one international major consultancy firm through a questionnaire to be administered in firms at the pre-implementation stage. Future research might aim at verifying and assessing the six other newly defined needs alignments through specifically developed questionnaires. Researchers may then investigate and identify possible misfits in order to correct and readjust these *ex ante*. Such questionnaires, after adequate testing, would greatly help firms manage IS.

Table 4: Driving toward a critical level of alignment.

Alignments	When (should fit be aimed at?)	How (should this alignment be optimized?)
1: Organizational IT needs and implemented IT	Before implementation	Business requirements have to be fully specified and validated in writing.
2: Hardware and software needs	Before implementation	Technical requirements have to be specified and validated in writing.
3: Task and technology	Before implementation	Functional requirements have to be specified and validated in writing.
4: Users' contextual IT needs and managerial IT needs	Before implementation	Users' contextual IT needs have to be taken into consideration, nurtured, and brought at least to the level of IT needs strategically aimed at by the organization.
5: Users' contextual IT training needs and managerial IT needs	Before implementation	Global IT training has to be provided and customized depending on the level of users' IT acculturation.
6: Users' situational IT needs and tasks' IT needs	Before implementation	The user's opinion of the adequacy of the proposed IT has to be taken into consideration.
7: Users' situational IT training needs and tasks IT needs	Before and during implementation	Training on specific IT has to be customized depending on users' IT acculturation.

The conceptual model of strategic alignment that we propose provides a new reading of this phenomenon as it explicitly takes into consideration actants who are often forgotten in traditional strategic alignment models. This model adopts a "shared view of the IS role within the organization" (Chen, Mocker and Preston, 2010: 239). It does not pretend to guarantee competitive advantage; it can however be used as a help before and during IS investment and deployment to achieve what may be understood as a critical level of alignment within a three-level network. Beyond the design and discourse lenses and in a complementary fashion, it provides managers with an "experience lens" (using bargaining and negotiations toward strategizing: Johnson, Scholes and Whittington, 2008); it may also provide opportunities to use the "ideas lens" (using organizational diversity and members creativity to frame strategy in complex and organic contexts: ibid.). It thus allows strategy to emerge 'bottom-up' from any of the actants of the network and facilitates the drive toward possibly innovative behaviors and competitive advantage.

Carter, Clegg, Hogan and Kornberger (2003) suggest that "polyphony is always present in organizations even if it is often silenced by dominant voices (…) From this perspective, the challenge for the researchers is to unravel the story without forgetting their own role in the making of it, while for the managers it is to manage polyphonic processes using positive power" (p. 295). The present work has attempted to listen to the often silenced voices of users' IT needs. If strategic alignment is conducted through translation processes involving all actants relevant to an IS change situation, all previously discordant voices expressing non-aligned needs i.e., a "polyphonic situation" (Callon, 1991) will be heard and guided toward an "isotropic situation" (Callon, 1991) which will help achieve competitive advantage.

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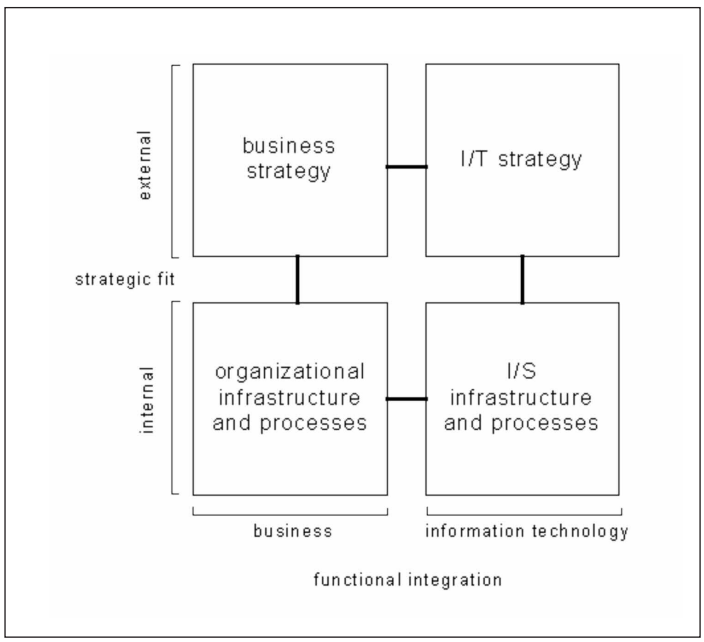
Appendix A: Henderson and Venkatraman (1994) strategic alignment model



Appendix B: Details of investigated corporations

Corporation	Industry	Staff	IS project
A (multinational)	Telecommunications	186000	CRM
B (medium sized)	Industrial process engineering	174*	ERP
C (small)	Electricity and cabling	25	ERP

*B is a division of a 5,000-employee corporation, which is itself a subsidiary of a 19,000-employee corporation.

Appendix C: Details about interviews and interviewees

Appendix C1: Interviews conducted in corporations A (year 2008), B (year 2009) and C (years 2008-2009) while people were solving or attempting to solve identified problems

Interviewee	Role in the IS project	Position	Competences relevant to the IS project
A1	Internal project manager	CIO	Global IT competences
A2	External project manager	Consultant	Business intelligence (BI) expert
A3	User	Head of BI Department (Spain)	BI
A4	Trainer	Consultant (Spain)	Global knowledge on custom-developed dashboards
A5	Analyst	Consultant (Spain)	Previous experience with dashboards in other countries
A6	User	Head of BI Department (Poland)	BI
A7	User	IT engineer (Poland)	Very good knowledge of local IT needs
B1-1	Internal project manager	Head of Purchasing Department	Good knowledge of purchasing but little knowledge of IT
B1-2	Internal project manager	Head of Purchasing Department	Good knowledge of purchasing but little knowledge of IT
B2	External project manager	Consultant	Global knowledge of IT
B3-1	Oversight	Local CEO	Good knowledge of global managerial IT needs
B3-2	CEO	Local top executive	Good knowledge of global managerial IT needs
B4	Analyst	Consultant	Change management expert
B5	User	Buyer A	Insular knowledge of merged SME (a)
B6	User	Buyer B	Insular knowledge of merged SME (b)
B7	User	Buyer C	Insular knowledge of merged SME (c)
B8	User	Buyer D	Good knowledge of global purchasing habits
B9	User	Stock controller	Little knowledge of company (newcomer)
B10	User	R&D	Newcomer but excellent knowledge of global merged company and all users' needs
C1-1	Project manager	CEO	Good knowledge of managerial and users' needs
C1-2	Project manager	CEO	Good knowledge of managerial and users' needs
C2-1	User	CFO	No formal IT knowledge
C2-2	User	CFO	No formal IT knowledge
C3	User	Technician	Some practical IT training. Mainly self-taught
C4	User	Marketing manager	Some practical IT training

Appendix C: Details about interviews and interviewees

Appendix C2: Interviews conducted with experts (IS consultants with multiple experiences of different IT projects in different contexts) (year 2009)

Interviewee	Position	Age	Consultancy firm
Cons1-1	Analyst consultant	27	Multinational
Cons1-2	Analyst consultant	27	Multinational
Cons1-3	Consultant	29	Multinational
Cons1-4	Consultant	29	Multinational
Cons2-1	Senior consultant	50	Multinational
Cons2-2	Senior consultant	50	Multinational
Cons3-1	Independent consultant	39	Self-employed
Cons3-2	Independent consultant	39	Self-employed
Cons4-1	Associate consultant	31	European
Cons4-2	Associate consultant	31	European
Cons5-1	Senior consultant	45	Local
Cons5-2	Senior consultant	45	Local
Cons6-1	Senior consultant	45	Multinational
Cons6-2	Senior consultant	45	Multinational