



RESEARCH ARTICLE

# Top management support in multiple-project environments: an in-practice view

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## Abstract

Top management support has generally been considered the most critical factor for the success of IS projects. Typically, there have developed implicit or explicit assumptions that top management support has to be constant and consistent during the entire life of an IS implementation project. However, previous research investigating this issue has been based mainly on a 'single project' perspective, although contemporary organisational settings have increasingly involved many projects taking place simultaneously. Such multiple-project environments bring into question the feasibility of the previous assumptions and invite revisiting them. This paper aims to do this by examining the materialisation of top management support in a multiple-project environment. To this end, it investigates the interactions between a project to implement an Enterprise Resource Planning system and other projects and programmes in a prominent international organisation. It applies a framework from Actor Network Theory to explore the different aspects of what is involved in being in a multiple-project environment and the nature of the materialisation of top management support. The findings unravel some of the complexity surrounding top management support in this contemporary organisational setting. Some important implications for theory and practice are highlighted and discussed.

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## Introduction

Top management support has been widely identified and highly ranked as a critical success factor (CSF) in most IS studies (Ang & Teo, 1997). Typical findings indicate that this level of support is critical for the success of IS planning (Earl, 1993), Systems Implementation – such as Enterprise Resource Planning (ERP) (Holland *et al*, 1999; Al-Mudimigh *et al*, 2001; Hong & Kim, 2002) and Executive Information Systems (Cottrell & Raply, 1991) – and for different types of IS projects, such as enterprise application integration (Lam, 2005). At the same time, many aspects of top management support are not yet fully understood (Jarvenpaa & Ives, 1991; Sharma & Yetton, 2003).

An assumption of the 'absolute' criticality of top management support has been questioned, albeit reluctantly, by a few recent studies. For example, Somers & Nelson (2004) observe that the perception of the importance of top management support among project members continues to decline over the course of the project. This observation contradicted their own expectation and hence led them to state that: 'such behaviour is not fully understood' (Somers & Nelson, 2004). Other studies found top management support not critical to the outcomes

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of a project and that efficiency and flexibility of the development process was significant in its own right, even without any effect of top management support (Marble, 2003; Nah *et al*, 2007). Such observations and doubts invite a fresh examination of top management support for IS projects in their organisational setting. One aspect requiring particular examination is the focus of this paper: top management support in the organisation context of multiple projects.

Previous research treats an IS project – the unit of analysis – as an isolated phenomenon, separate from the rest of the organisation (Kreiner, 1995; Engwall, 2003). This single-project perspective overlooks the business practice of running several projects at the same time, which has become a common practice in most organisations: around 90% of projects in organisations are carried out within a multiple-project platform (Payne, 1995). Modern IS departments are therefore likely to be involved in several projects at the same time (Masini & Pich, 2004). Despite this becoming a common practice and nearly a business norm, there have been very few published IS studies that examine the multiple-project environment (Evaristo & Fenema, 1999; Elbanna, 2010).

The single-project perspective of previous IS studies assumed the absolute importance of the existence of constant and consistent top management support for projects over their entire cycle (Al-Mudimigh *et al*, 2001; Somers & Nelson, 2004). For instance, studies found a lack of top management support to be ‘number one risk in IT project’ (Liu *et al*, 2010) and associated it with failure (Akkermans & Helden, 2002; Sarker & Lee, 2003), which suggest a straightforward causal relationship (Jarvenpaa & Ives, 1991; Newman & Robey, 1992). These assumptions are puzzling in the contemporary organisational context of multiple projects. It is not clear how constant and consistent top management support for a project could take place when other projects running at the same time also require a similar level of support.

The research reported here aims to develop a near-to-practice understanding of the materialisation of top management support in the now common context of multiple projects. It achieves this by examining an ERP implementation project in a large international organisation through a framework adopted from Actor Network Theory (ANT). This revealed how, why, and when top management support took place in practice for a project in a busy multiple-project organisational setting.

After this introductory section, the paper is organised as follows. The second section briefly reviews the literature on top management support. The third section gives an overview of theories related to IS projects and describes the adopted framework. The research methods and site for the study are in the fourth section. The subsequent section summarises the findings and is followed by a discussion of them in the sixth section. The final section presents the study’s conclusions, including the main implications for theory and practice.

## Top management support

### Top management support in IS research

IS research has consistently recognised top management support as an important ‘power-tool’ for innovation (Kanter, 1983) and one of the top critical factors behind the success of systems implementation projects and use. A rich body of literature has been developed to theorise the impact of management support on IS development, implementation, and adoption. Studies include tracing the effect of management support on firm-level adoption of IT (Jarvenpaa & Ives, 1991), the financial approval of projects that are not fully justified by return on investments calculations (Lam, 2005, p. 181), and users’ adoption and acceptance of systems (Nandhakumar, 1996; Akkermans & Helden, 2002).

Such research has identified a range of activities that characterise top management support. These include senior management commitment to finance the project (Lam, 2005), allocation of resources to the implementation effort (Holland & Light, 1999), and their active involvement in mandating and coordinating the implementation efforts (Cooper & Zmud, 1990). This is in addition to top management’s active participation in project management, for instance by: publicly identifying the project as a top priority (Wee, 2000; Nah & Lau, 2001); mandating the rewards systems and incentives to be applied (Moore & Benbasat, 1991; Purvis *et al*, 2001); using the implemented system (Nandhakumar, 1996); and directly sending messages urging its use (Leonard-Barton & Deschamps, 1988). However, the issue of whether different mechanisms of support operate under different contexts has not yet been answered (Sharma & Yetton, 2003).

The majority of studies typically hypothesise a simple main effect, where implementation success is treated as a straightforward linear function of management support (Sharma & Yetton, 2003). A few studies have acknowledged that the managerial influence could be mediated or moderated by other factors, such as the context-specific characteristics of individual employees (Leonard-Barton & Deschamps, 1988), users’ training, and the length of use (Sanders & Courtney, 1985). Some studies have suggested, but only in passing comments, that constant management support might not be as critical as research had generally portrayed and that CSFs in general vary in their strength of influence at different times (Nandhakumar, 1996).

A puzzling question remains: Does the criticality of management support mean that the lack of it would lead to implementation failure, or that this support is important to have but the lack of it will not necessarily result in failure? Rockart’s early work on CSFs commented that if the factors identified, including top management support, are satisfactory, they ‘will ensure successful competitive performance for the organisation’ (Rockart, 1979, p. 87). DeLone & McLean (1992) draw the attention that the independent factor of success in CSFs studies is

itself 'very illusive' (DeLone & McLean, 1992). In addition, Rockart did not explain what the lack of these factors might do. As with other IS research, studies that adopted the CSFs approach did not interrogate the other side of the success coin: failure. Yet the emergence of ERP systems brought failure into view, as the following section explains.

### Top management support in ERP research

In keeping with other IS research strands, ERP studies have generally viewed top management support as the most important factor for ERP implementation success (Somers & Nelson, 2001) and the most 'predictive of ERP success' (Somers & Nelson, 2004). A typical view was that the ERP implementation project 'completely hinges on the strong, sustained commitment of the top management' (Bingi *et al*, 1999). Hence, 'top management must be involved at every step of the ERP implementation' (Al-Mudimigh *et al*, 2001) and in all stages of the ERP implementation (Akkermans & Helden, 2002; Plant & Willcocks, 2007).

In the many reported failures of ERP systems, researchers have generally linked the absence of top management to the failure of the project or just a single phase of the ERP implementation. Sarker & Lee (2003), for example, observed that while the two phases of the studied ERP implementation project were successful and enjoyed top management attention and support, the third phase 'fell into a complete disarray'. The narrative of that case study shows that the organisational circumstances surrounding the third phase included: the acquisition of the company by another; the CEO leaving the company; a new CEO being appointed; and the new CEO's agenda being 'dominated by other concerns'. Nevertheless, the researchers straightforwardly linked the failure of Phase III to a lack of committed leadership while disregarding potentially significant changes in the surrounding organisational circumstances, such as the selling of the company. Their summary was therefore: 'Given that Phase I and II were successful, and Phase III was unsuccessful, we conclude that the empirical patterns match those suggested by the proposition' that 'ERP implementation can be successful only if there is a strong and committed leadership guiding the initiative'.

Akkerman & Van Helden (2002) also suggested that success factors including top management support are 'closely causally related and, hence, changes in any of them will ripple through in all the others' as 'they reinforce each other in the same direction, hence leading to either vicious or virtuous cycles of ERP implementation performance'. Failure, according to them, would then occur from the lack of a factor such as top management support, which would affect negatively other success factors and lead to a vicious circle of failure (*ibid*).

This type of perception of the crucial role of top management support has led to the questionable view that such support is something that 'has to' exist

permanently in a consistent way during the life span of a project, and that failure would follow if it is lacking in any phase. This is questionable because such a static view does not consider the dynamics of the process of IS implementation in its organisational setting, which is also a criticism that has been proposed for CSFs studies in general (Walsham, 1993). The contemporary multiple-project environment that is the focus of this paper invites consideration of the dynamics of ERP implementation projects in terms of top management and its relationship with other projects. This view of the materialisation of such a project in its multiple-project organisational setting could provide a richer picture of project dynamics than the current treatment of an IS project as a single, isolated phenomenon (Engwall, 2003).

### Network development and performance

#### IS project theorisation and top management support

IS implementation projects, and in particular ERP, have been viewed as actor networks following the ANT proposition in many studies (for this argument see: Hanseth & Braa, 1998; Scott & Wagner, 2003; Hanseth *et al*, 2004; Elbanna, 2006a,b). These studies have established the view that an ERP implementation project resembles the building of an actor network and revealed the complex negotiations actors go through in their attempts to construct a workable network to carry out the project. Taking this view seriously means that understanding the materialisation of top management support in multiple-project environments requires unravelling how project networks are formed and the role top management support plays in their formation. It requires shifting the focus from considering the local network of the project, as done in previous research, to include a view of the global network. Law & Callon (1992) explained that the global network refers 'both to the set of relations between an actor and its neighbours, and to those between its neighbours', where the local network refers to the set of relations that is 'necessary to the successful production of any working device'. Top management support is expected to be part of the global network since it is not involved in the daily operations of the project and the direct production of outputs.

An ANT-based two dimensional framework of the relationship between the local and global networks developed by Law & Callon (1992) has been found to be particularly useful in helping to focus on top management support in the analyses of the project under investigation in this study. They presented this model as 'a tool' to describe their studied project 'in a way relevant for the analysis of other projects and technological innovation' (Law & Callon, 1992, p. 21). This framework and its origins are described in the following section.

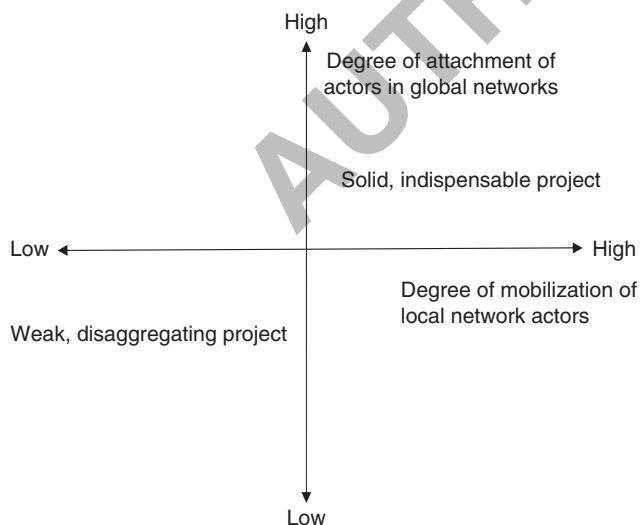
#### Mobilisation of local and global networks

ANT has passed through constant reviews, extensions, and amendments from its key authors. The theory's

developers have also continuously changed topics, field sites, styles, and concepts in their journey to establish their approach within sociology. This makes it a moving target (Latour, 1999a) and reviewing its concepts is far from a straightforward task. The theory has also changed as it moved from one domain to another and from one researcher to another, in time and place. Law, for example, admits the form taken by the early ANT studies that emerged in Paris in the 1980s is quite different than the ANT approaches of the 1990s, which have been used in a variety of studies (Law, 1997).

Although it is possible to identify certain common ANT preoccupations and concerns in the literature, 'there is no orthodoxy, no one "right way" of developing the approach. This also means that Actor Network Theory is not a single orthodoxy, a fully consistent body of writing with its holy scriptures' (Centre for Science Studies, 2001). As there is no 'unity' for the theory and both commonalities and differences coexist between ANT authors, the researcher's task becomes to decide which part of the theory to review and adopt. The methodological choice for this study is to look not only for commonalities but also, more importantly, for relevance to this particular research. This reflects Law's embracing of the flexibility of the theory as a generator of 'productive thinking' (Law, 1998).

It was for these reasons that Law & Callon's (1992) two-dimensional framework of the mobilisation of local and global network (Figure 1) was chosen to help achieve the objectives of this study. It offers an analytical lens that could bring together into view the studied project's top management support and the existence of other projects in the organisation, thereby providing a way to describe and analyse the complexity of top management support of a project in multiple-project environments.



**Figure 1** Mobilisation of local and global networks.

Source: Law & Callon (1992, p. 49).

Law & Callon (1992) explain, '... concentrating on the two networks [local and global networks], it is possible to plot any project in a two-dimensional graph, where the  $x$  axis measures the degree of mobilization of local actors (control over local network) and the  $y$  axis measures the extent to which external actors are linked (control over global network)' (ibid, p. 47). They assert that 'the extent to which it is possible for a project to control its two networks and the way in which they relate is problematic, and it is the degree and form of mobilization of the two networks and the way in which they are connected that determines both the trajectory and success of a project' (ibid). This framework suggests that the relationship between global and local networks is managed through an obligatory 'point of passage'. An obligatory passage point (OPP) is a single locus between local and global networks that controls transactions between the two networks, with 'intermediaries' exchanged through it. Intermediaries are whatever is passed between an actor and its neighbours. This is a 'deliberately general and nonspecific' (Law & Callon, 1992) terminology suggested by Law and Callon in their both 1992 and 1989 publications (Callon & Law, 1989). Law & Callon (1992) applied their framework to map the trajectory of a military aircraft project named TSR.

The ERP study reported here adopts a similar application of the framework. In their application, Law & Callon (1992) 'deploy a network vocabulary and, specifically, to make use of the concepts of global network, local network, and obligatory point of passage' (ibid, p. 46). However, they state that both global and local networks are heterogeneous. Their analysis focuses on institutional actors, geopolitical factors, and technological changes, while admitting that they might 'equally well have considered' the role of 'naturally occurring features' as well as other non-human actors (Callon, 1986; Law & Callon, 1992, p. 46–47). This demonstrates the flexibility actor network theorists have shown in their analysis by allowing that not all actors have to be considered in every network analysis in order to achieve what could be amount to 'Actor Network analysis'. An IS researcher using an ANT framework can therefore choose to focus on some actors, while acknowledging the existence of many others. That is the position taken in this study.

#### ANT in IS research

The application of ANT in IS research is sometimes criticised as being similar to social networks or stakeholders analysis, and so not offering much that is new (Cornford *et al*, 2005). In this regard, Latour (1997) assures researchers that 'social networks will of course be included in the description but they will have no privilege nor prominence' (Latour, 1997). Despite such criticism, ANT has been viewed as having much to offer IS researchers (Walsham, 1997). Different ANT concepts have been applied to conceptualise, for instance: the implementation process of certain technologies (Vidgen & McMaster, 1996; Lilley, 1998; McGrath, 2001; Elbanna,

2007); the development effort of IT (Bloomfield *et al*, 1997; Klischewski, 2000); the introduction and shaping of a certain technology (Knights *et al*, 1997; Aanestad & Hanseth, 2000; Faraj *et al*, 2004); business process change (Sarker *et al*, 2006); the emergence and development of IT infrastructure (Hanseth & Monteiro, 1997; Hanseth & Braa, 1998; Aanestad & Hanseth, 2000; Cordella & Simon, 2000); the role of external IT consultants (Bloomfield & Danieli, 1995; Bloomfield & Vurdubakis, 1997); and IT evaluation (Lehoux *et al*, 1999). Some IS researchers attempted to find a practical use of certain ANT concepts in systems design (Monteiro, 2000) and IS development methodology (Atkinson, 2000). Others were interested in the theory itself and experimented with some of its concepts to clarify their benefits (Monteiro & Hanseth, 1996), discuss how they could be applied (Pouloudi & Whitley, 2000), or shed more light on technical and social boundary-setting in the context of IS (Bloomfield & Vurdubakis, 1994).

The concepts and ideas adopted from ANT in IS research also encompass: network building (Atkinson, 2000), stabilisation, and destabilisation of the actor network (Bloomfield *et al*, 1997); 'immutable mobiles' (Klischewski, 2000); inscription and irreversibility (Monteiro & Hanseth, 1996); negotiation of the boundary between the social and the technical (Bloomfield & Vurdubakis, 1994; Aanestad & Hanseth, 2000); intermediaries (Bloomfield & Vurdubakis, 1997); and 'quasi objects', 'networks', and 'black boxes' (Vidgen & McMaster, 1996). The ANT concept of the 'sociology of translation' or 'moments of translation' (Callon, 1986) has stood as the most popular in IS research (for example: Knights *et al*, 1997; Lilley, 1998; Lehoux *et al*, 1999; Aanestad & Hanseth, 2000; McGrath, 2001). The two-dimensional framework adopted in this paper (Law & Callon, 1992) may not be as familiar to IS research as the 'moments of translation', but variations of it have been applied in a number of IS studies (Cordella & Simon, 2000; Gasson, 2006; Heeks & Stanforth, 2007; Elbanna, 2010).

## Research methodology and setting

### Research site

This paper presents a case study of a global food and beverages company, which is referred to by the pseudonym 'Drinko' to maintain anonymity. At the time of the study, it employed about 12,500 people across the world, with manufacturing facilities in around 50 countries and sales of its products in more than 150 countries.

The studied project was an organisation-wide ERP project to implement SAP R/3. It had six phases: mobilisation; analysis and conceptual design; detailed design phase; build and test; transition; and in service. The researcher was allowed formal access to this prestigious organisation in the last three phases of the project. Data collection took place according to the project phases. The organisation-wide SAP project was planned to replace 225 systems around Drinko. It identified five business

processes as being 'in scope': sales and operations planning; product supply; procurement; customer order fulfilment; and finance. The project aimed to integrate into a single ERP system three of the company's business units and the corporate headquarters. One of the business units was excluded from the project very early on due to competitive pressures in its market. The project therefore continued to integrate the two main business units, which were in two European countries anonymously referred to here as EUK and EUB, in addition to the corporate headquarters. The cost of the SAP R/3 implementation project in Drinko reached over \$80 million, around \$6 million over budget, and ran around 10 months behind schedule.

This SAP project was not the only major initiative in Drinko at the time, although it was one of the largest in terms of scale and cost. Many other change projects were also running, together with other systems implementations. This paper highlights two other initiatives that co-existed with the SAP: a local change programme in EUB business unit and an organisation-wide transformation programme.

### Methods

The data for this study are part of a larger research project aimed at investigating the implementation of integrated application packaged software, as represented by ERP systems. The data collection methodology was geared to collect rich data. It followed the ANT convention of not having *a priori* assumptions about the fieldwork, which is also in line with grounded theory (Glaser & Strauss, 1967; Charmaz, 2006).

During the course of data collection, ANT emerged as a possible way to make sense of the project. The researcher then revisited ANT and read in depth about it, which led her to start following its data collection referral preferences. This is in line with Walsham's assertion that 'the use by an individual author of a particular theoretical approach derives no doubt from his or her personal experience and insight' (Walsham, 1993).

There is no particular data collection method prescribed for ANT researchers (Latour, 2004). Early ANT researchers such as Latour, Law, and Callon used different methods of data collection depending on the studied project. Since early ANT scholars found 'methodological convenience' in studying historical projects (Law & Callon, 1992), reviews of documents and history became a common method (Law, 1986, 1992; Latour, 1988, 1999b; Law & Callon, 1992). However, some studies relied on interviews of actors of a historical project, such as Latour's study of the Aramis project (Latour, 1996); others relied on ethnography (Latour & Woolgar, 1979; Law, 1994) or the use of statistical data (Latour, 1987, pp. 162–167). The main methodological approach of ANT is to follow the actors in their network building. In early studies, this following of actors was literal, with researchers followed specific actors throughout the study (Latour, 1987; Law, 1994). After fierce criticism about the ANT

tendency to embrace 'heroism' by centring the subject to produce a heroic theory of agency (Collins & Yearley, 1992; Bloor, 1999), Callon and Law (1992) declared this method of empirical research as 'unsteady and incomplete'. Latour (1996) addressed such concerns by suggesting that this tracking of actors is a method of following a referral process in which the researcher includes any actor to which the study's actors themselves (the interviewed or investigated) refer to and choose to include.

Data collection for the reported case was carried out in the business units EUK and EUB between August 2000 and March 2001.<sup>1</sup> This encompassed 13 respondents, including the project director, project manager, module managers, change managers, and project members from all the implemented modules, as well as members from the external consultancy team involved. They were initially interviewed in-depth, then continued to be contacted by either follow-up interviews, email, or telephone throughout the data collection period and for 2 months afterwards. Two other members of the project were informally interviewed several times in 1999 and early 2000, prior to the formal commencing of fieldwork. Therefore, the overall number of interviewees was 15 individuals who were each interviewed in-depth and contacted several other times during the course of the project.

Interviews lasted between 1–3 h, following an unstructured approach. Follow-up interviews tended to be shorter, lasting 20 min to an hour. A few interviews tended towards a more semi-structured framework, depending on an interviewee's time availability and willingness to talk openly. Such an interviewing strategy is considered 'a key way of accessing the interpretations of informants in the field' (Walsham, 2006). Unstructured interviewing is considered to be an engaging method of enquiry as it 'provides opportunities for extensive exposure to the social actors' life-world' (Nandhakumar & Jones, 1997) and allow respondents to drift and speak about issues that they believe to be important (Bryman, 1989).

Techniques for collecting sensitive in-depth interview data were followed in all interviews (Lee, 1993). Interviewees were assured at the beginning of each interview that 'whatever the researcher hears in this room will be only used for research purposes and not to be transferred to any other parties within the organisation'. When any interviewee enquired about another interviewee's view, the researcher firmly reminded the interviewee that she is strictly following an ethical code of research practice that forbids her from transferring or repeating any of the interviewees' words or opinion to any other person within the organisation and that all collected data are used only for research purposes. This firm stance assured interviewees of the strict confidentiality of the research

and helped to build trust and confidence between the interviewees and the researcher. The researcher found, in agreement with Walsham (2006), that 'people are normally willing to talk about themselves, their work and their life, with reasonable openness and honesty, provided that they perceive the researcher's sincerity of interest, feel that they understand the researcher's agenda, and trust the researcher's statements on confidentiality' (Walsham, 2006). On only one occasion did a respondent refuse to comment on a delicate question raised. This had referred to the future involvement of a certain business unit in the project. That respondent subsequently ceased all contact with the researcher, despite having previously been one of the most helpful informants.

'Documents review' was another method for data collection. Respondents shared many documents with the researcher, such as organisation bulletins, internal reports (including reports marked 'strictly highly confidential'), announcements on different organisational levels, and – in a couple of instances – internal emails. Document reviews supported the interview data, and in some cases helped to validate some interviewee stories and generate queries for further clarification. Besides providing some technical information (such as organisation structure, system structure, project team structure), document reviews helped to give a holistic view of the organisation and an initial understanding of the context and the different influential individuals and groups within the organisation. This view was validated or falsified during interviews. The 'strictly highly confidential' reports and internal emails supported in-depth understanding of private issues that were confidentially exchanged between some individuals or groups away from the rest of the project stakeholders. These enriched the researcher's understanding of context and aided the process of making sense of data.

Top management support was observed through the mentioning of top management's attendance of project meetings; weekly visits to the project office; replying to emails within a day<sup>2</sup>; reading and commenting on project progress reports; meeting the project director and project management; attending project events; promoting the project in meetings and through direct mentioning by informants.

The access agreement meant interviews were not tape-recorded and all names and locations had to be disguised. The researcher took handwritten notes and observations during an interview, then extended and elaborated them directly after each interview. Quotes in this paper that express many informants' points of view are reported through presenting only one of them between parentheses, without a reference to the source.

<sup>1</sup>Data about the initial third business unit were also collected until it dropped out of the ERP project.

<sup>2</sup>It was expected in Drinko that staff would reply to emails within an hour and staff who work in different time zones would reply within a few hours because all staff had Blackberries.

After the data collection, analysis of the data was carried out at different levels according to the ANT convention. It progressed from identifying the actors within the ERP project to the organisational actors external to the project. Local and global actors were identified. Themes were identified, such as events, issues raised, and the resolution of issues. Data were organised according to these themes. Connections were drawn between these criteria and the actors involved, including a wall chart showing the interactions inside and outside the ERP project. Full interviews, field notes, and other recorded observations were read through and analysed on several occasions with the aim of developing: a clear understanding of the complexity of the situation; the whole stream of negotiation and action involved; and the closure of rising disputes within networks (Vaughan, 1996). This aided the construction of a clear overall picture of the project, its events, incidents, people, and artefacts involved (Klein *et al.*, 1999).

### Findings and analysis

The analysis undertaken for the study reported here reveals the global network of the SAP project and the existence of other competing networks. These rival networks made it challenging for the SAP project to obtain the required heterogeneous resources for the construction of its local network. The SAP project had to make efforts to maintain and reserve its attachment to the global networks in order to pull in resources for its local network. The SAP project's struggle with its rivals was not limited only to resources. It also related to capturing top management's interest, attention, and support, which shifted from one project to the other during the course of the SAP project. This fluctuation of top management support was compensated for by the way the SAP project managed to build a strong local network to take the project forward, despite the competition with other projects over resources and the struggle to keep top management attached to the project. The following sub-sections discuss these ideas further, through the application of Law & Callon's (1992) ANT-based local/global mobilisation framework that focused on the SAP project's trajectory.

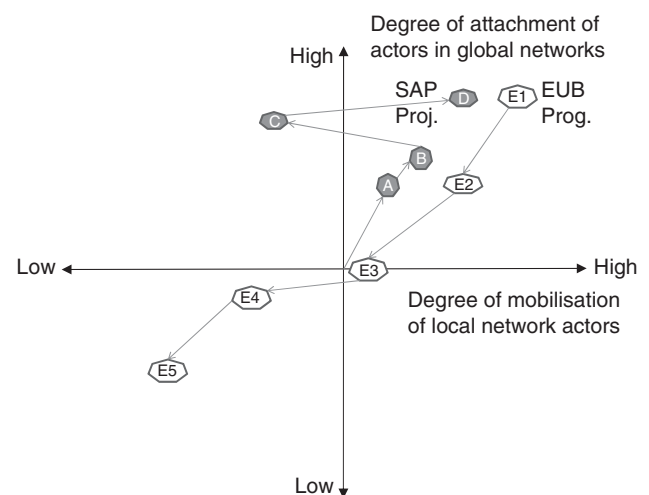
#### Top management support and competition with another actor network

The SAP project enjoyed top management support from its launch. Figure 2 illustrates the launch of the SAP project, its relationship with another project (EUB), and its attachment to top management. Top management authorised the project's budget. Top executives announced the project to the rest of the organisation, mentioned and promoted it and its management team in different organisational meetings, attended formal SAP project meetings, kept regular informal face-to-face meetings with project management and change managers, and exchanged phone calls and emails with them, as well as visiting the project room informally on a regular basis.

In return, the SAP project management exchanged with top management periodical progress reports, regular informal updates, and expressions of commitment to achieving project milestones. These exchanges took place through the obligatory passage point (OPP) of change managers and project management. These intermediaries allowed the SAP project a space to build its local operating network as indicated at position A in Figure 2.

The SAP project management went on expanding its local network and recruiting business units (B). They successfully recruited one of the large Business Units in the project scope, namely EUK. Yet when the second largest Business Unit in Drinko, EUB, found it difficult to respond positively when approached by SAP project management to join the project because EUB staff were involved in a major EUB-wide change programme that made them too busy to take on extra commitments. The EUB was undergoing a modernisation change programme that aimed to alter EUB work practices from a traditionally informal way to more structured, standardised processes. As this had captured the national interest in being seen to move EUB to 'Twenty First Century business practices', the change programme got underway well, with an approved budget, successful recruitment of 'best staff', and strong local organisational attention (E1).

Tension between the two projects emerged as EUB top management favoured its internal development programme and gave priority to achieving its objectives, thereby overlooking the global SAP project vision. SAP project managers found that their project objectives were 'subjugated to national market interests and that long term ownership is not achieved' (a highly confidential internal report). The SAP project manager described the tension as: 'we had similar profile, they targeted the [same] people we needed and of course they [EUB staff] preferred it [their local programme] in the beginning'. This difficulty hindered the progress of the SAP



**Figure 2** Local/global mobilisation and the competition with an existing actor.

project and delayed its analysis and conceptual design phase (C).

SAP project management identified the importance of pulling EUB staff away from their local programme and involving them in the SAP implementation project instead. However, they initially thought the EUB network was beyond SAP project control. Hence, the CEO was approached by SAP project management, supported by change managers, who translated top management interest in implementing an integrated solution and integrating EUB for the first time with the rest of the organisation to accept a request to terminate the EUB change programme and force EUB staff to join the SAP project (interview with SAP project change manager). SAP project management wanted to cut off all possible choice in front of EUB staff but to join SAP project. The CEO was keen not to appear to be the person who approved the 'kill[ing] of other programmes', so gave the SAP project informal permission to find ways to 'kill' the EUB programme without appearing to be involved. 'He said "OK guys do what you need to do", which was interpreted by change managers as off-the-record approval to kill the EUB change programme' (interviews with a process manager and a change manager).

The informal approval obtained from the corporate top management presents an intermediary that did not effectively mobilise any of the EUB actors and forced them to join the SAP project. It encouraged SAP project management to find ways to control the EUB network and ensure its joining of the project. The SAP project management and change managers had to do the work of extending the project's local network through translating and mobilising EUB staff. They had to interest EUB staff and, in particular, to come between members of the EUB staff involved in the change programme and the EUB change programme they were engaged in. They applied aggressive translation techniques to recruit EUB top management and EUB staff – including those who were involved in the EUB change programme – and mobilise them to join the SAP project.<sup>3</sup>

To achieve these objectives, the SAP project management first moved the location of the formal project office to EUB and asked the CEO to announce the move as evidence of EUB management competency and ability to manage big projects. As EUB management and staff were suffering from a perceived lack of corporate recognition, these efforts mobilised them to join the project by translating EUB top management's interests in gaining corporate esteem, recognition, and visibility. However, these efforts initially failed to attract members of EUB staff to drop the EUB change programme and join the SAP project, which continued to suffer from lack of staff.

In order to recruit EUB staff, SAP project management had to use part of its budget to conduct a series of 'lavish' workshops and seminars in EUB. During these events, the SAP project was problematised as a big project with a secured corporate budget that would equip the staff involved with knowledge and competency in implementing a widely recognised corporate system and as a way of gaining corporate respect for EUB's ability to deliver such a significant project. In doing so, they made the joining of the SAP project indispensable as a career development opportunity for EUB staff and as a duty to enhance the profile of EUB in Drinko. SAP project management also infused fear that the EUB change programme was to do 'mainly with redundancy' (project manager). In doing so, the SAP project management translated the interests of the staff of the rival EUB change programme and attracted them to join the SAP project, hence expanding its local network (D). The SAP project's effective extension of its local network to include EUB meant human actors (staff) were successfully withdrawn from the EUB change programme, which shrunk the latter's local network (E3). This deterioration of the EUB programme's local network significantly affected its deliverables and left it struggling for continuation. It subsequently led to its later failure to get a budget for its continuation (E4). Hence, it lost both top management support and its local network (E5).

The study's analysis therefore shows that Drinko's top management budget allocation, public announcements, and other intermediaries gave the SAP project management some heterogeneous resources to pursue the building of the project's local network. Despite this strong support, the local network of the project was getting weaker as the project was failing to recruit enough actors to join it. The informal agreement to kill EUB change programme gave the SAP project the opportunity to apply aggressive translation strategies and re-allocate part of the project budget to this cause in order to expand and strengthen its local network. It was the project management and change managers' translation efforts that facilitated the obtaining of EUB resources in order to expand the project's local network.

On the other hand, the EUB change programme's management was not active in strengthening and maintaining its local network, particularly to face the emerging rivalry of the SAP project. It was relying instead on the alignment and mobilisation that it had achieved previously. Since network building is a constant activity of mobilising and aligning actors where 'every day is a working day' (Latour, 1996, p. 86), the setting back of the management of the EUB change programme allowed it to lose the actors of its local network to the competitor: the SAP project.

### Top management support and the competition with external consultants

Change managers at Drinko traditionally act as an obligatory point of passage (OPP) between projects and

<sup>3</sup>ANT maintains the possibility for actors to belong to more than one network (Mol & Law, 1994). However, in formal organisations, the practicality dictates that the employee has to be seconded to a project if required on a full-time basis for it.



top corporate management. The consulting firm contributing to the SAP project implementation (Business Consulting) were keen to develop their business relationship with Drinko in order to secure a long-term presence and contracts in such a large corporation. Business consulting opened direct communication channels with top management away from the traditional OPP in the hope of generating further business opportunities in Drinko. Figure 3 illustrates the relationship between the SAP project, external consultants, and attachment with top management. Bypassing the change managers speeded up communications and strengthened Business Consulting relationship with top management, which moved them up from position (C1) to (C2). In addition to having private dialogues with top management, Business Consulting exchanged intermediaries directly with top management (and not through an OPP), in the form of business expertise and methodologies. This enhanced their attachment to top management (C3).

Change managers noticed that ‘the communication chain [got] faster’ for Business Consulting and that when ‘[they] say something in a meeting, [Business Consulting] would go to an MD [Managing Director] telling him this idea as if it is theirs’. They also knew that the consultants’ SAP implementation and change management methodology was communicated in full to top management while they were exposed to them only step by step. A change manager expressed it thus: ‘they did not show us the full picture and prefer to sign only for each phase’. This exchange resulted in top management being in greater communication with the consultants than with either change managers or project management (E). Change managers were proud of their Drinko’s Project Management Methodology, which had served as an intermediary with top management for many years, thereby contributing to their organisational autonomy.

This made the consultants’ enforcement of a new methodology unacceptable.

One change manager summarised this position: ‘In Drinko, we have our way of working; it worked before and is working. We know our business, what we want and what are our priorities. They came with it [the methodology] to impress. No, sorry, I am not’. To rectify this seepage and restore their OPP position, change managers aligned with project managers in an attempt to strengthen their network, and hence actorship. They problematised the slippage in the budget and the delay in the project schedule that SAP project management was facing as being a result of Business Consulting’s ‘astronomical fees’ and their low achievement. Project management readily adopted this claim as it offered a good way out of the budget and schedule problems they were struggling with at that time. In doing so, change managers strengthened the project’s network by aligning and mobilising SAP project management in opposition to the consultants (F), thereby weakening the consultants’ local network (C4). These juxtaposed actors claimed that Business Consulting was not providing ‘good value for money’, that the project management was ‘paying too much’, and the consultants had achieved very little. Together, they shifted the consultants’ role and problematised it to top management as a threat to corporate identity and culture, which affected top management’s attachment to Business Consulting (C5).

Change managers also doubted the direct exchange of intermediaries between consultants and corporate executives. They complained to top management that consultants ‘did not show [them] the full picture and prefer to sign only for each phase’. They attempted to restore their OPP by asserting their expertise as business managers who had worked for many years in Drinko, during which they had conducted many change programmes successfully. The following quotes from project managers reflect some of these attempts: ‘we have seen many changes through here, we know what works for Drinko and what doesn’t simply work’; ‘they took us to many sites to see best practices ... seeing several sites and best practices in totally different businesses is not practical ...’. This effort weakened Business Consulting’s network in Drinko. It translated top management interests in achieving successful projects, maintaining corporate identity, and the rationalisation of budgets and channelled them towards terminating the Business Consulting contract. Their contract was terminated when the consultants experienced both the loss of local network support and a decline in their attachment to top management (C6). The change managers regained their OPP position, which consolidated and strengthened the project (G).

As has been suggested by Law and Callon, the ‘seepage’ of the local/global relationship could have disintegrated the project (Callon & Law, 1989; Law & Callon, 1992). In the studied case, however, the seepage was detected and

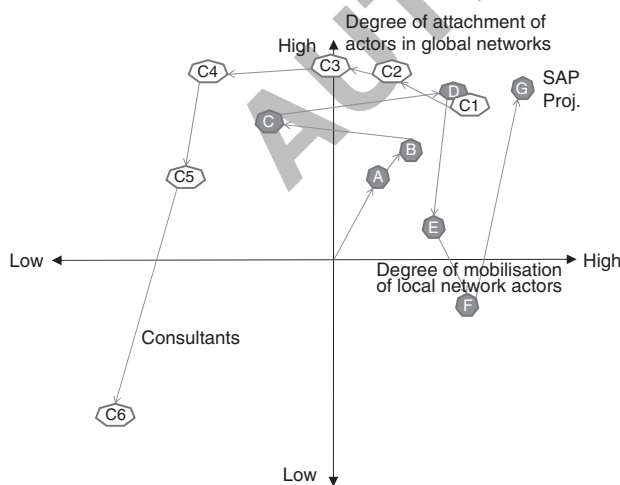


Figure 3 Local/global mobilisation and the seepage of the project’s OPP.

not tolerated by the strong actor and OPP of change managers.

### Top management and the emergence of a new global network

While the SAP project was underway, a new corporate-wide transformation initiative was developing in a highly confidential manner. Figure 4 illustrates the varying degrees of attachment between top management and the SAP project and transformation programme.

The transformation programme had started as a brainstorming initiative of top management to discuss business strategy, then evolved to become a project to review the strategic direction of the organisation and to define strategic options. This highly confidential initiative became a project with top management priority (T in Figure 4). It was isolated in a building devoted to staff contributing to it and was initially based around some vague ideas regarding its deliverables. For some time before its formal announcement, its staff were not allowed to exchange 'any sort of information with any other project' within the organisation. Nevertheless, the CEO who was sponsoring the SAP project informed the latter, through the OPP of change managers, of the intentions to change the structure of the 'supply and demand organisation'<sup>4</sup>, although there was no clear structure for the two new organisations. Following these remarks by the CEO, the SAP project management sensed the threat from the new initiative and felt the need to defend the project. They feared that not responding to the CEO's remarks might negatively impact the project's deliverables and future funding, leading to a reduction in its scope, suspension, or – at least – being put on hold (SAP project manager).

Keen to fight back and to strive to continue the project, the SAP project management swiftly mobilised the SAP configuration away from mirroring the actual organisation to projecting a future structure of the supply and demand organisation that they assumed the transformation programme was likely to produce. They actively carried on aligning business units and departments to the new configuration. They also aligned different systems (through establishing interfaces) to allow the SAP to be configured according to an assumed future organisation, and at the same time to be installed in a different existing organisation (H). The first few SAP releases (the first phase of the implementation) were problematic because the system configuration did not fit the existing organisation at that time. Therefore, the local network of the project became weaker because system configuration, organisation structure, users, and project management were not aligned (I). As a result, the SAP project team had to restore temporarily the local network and 'invent a lot of work around' to 'let [the system] work'.

<sup>4</sup>This is a business term that broadly refers to the production and sales functions.

When the transformation programme was widely announced, the SAP project management reached out to the transformation programme to seek clarifications and detailed understanding of its impact on the SAP configuration. It became clear that this configuration was based on different assumptions to the outcome of the transformation programme. A change manager explained that the organisational structure eventually announced 'changed the organisation altogether', compared to that assumed and configured in the SAP system. This meant the SAP project had 'ended up with business processes and a system that match an organisation that [did] not exist; neither [at that time] nor will in the future'. The SAP project had to accept the actual changes of the organisational structure that the transformation programme had designed, despite their differences from – and serious ramifications on – some of the configuration assumptions that the SAP project had previously made. This led to confusion and delay in the SAP project when its managers attempted to understand the nature of the changes, find workarounds, and identify ways of reconfiguring parts of the system that were nearly ready for the second phase of implementation in departments and business units (J).

The SAP project managers continued to strengthen the project's local network by aligning and mobilising business units to the actual new configuration of the organisation and arranging meetings and seminars to explain ramifications of the changes in the system configuration and project's schedule. This effort realigned and strengthened the project local network (K). During this time, top management was involved in the transformation programme and paid little attention to the SAP project (L). In the past, the project office had been regularly visited by the CEO and corporate Management Directors who had been willing to be directly involved or to help solve issues and obstacles that faced

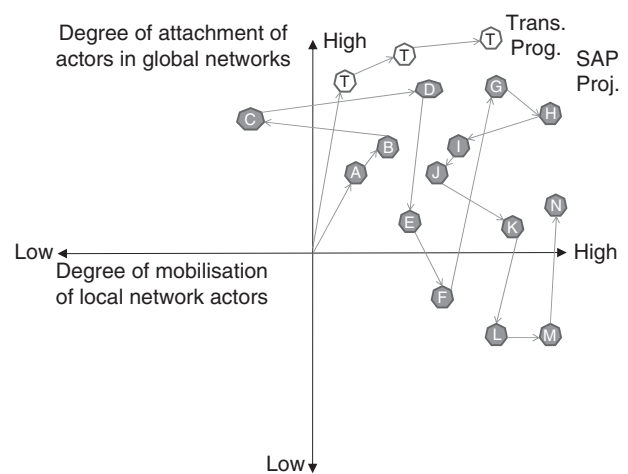


Figure 4 Local/global mobilisation and the emergence of a new global actor.

Table 1 Events and consequences

<i>Events/Decisions</i>	<i>Local consequences</i>	<i>Global consequences</i>
A Implement an integrated system	Project initiation and planning	Top management involvement includes allocating budget, attending project's meetings, making announcements, and continuous communication with project's team
B EUK to join the project	Finding local resources	Securing of funding
C Integrate EUB with EUK	Project delay	Permission to kill EUB local projects
D Kill EUB project	Mobilisation of project location; lavish meetings; high-visibility events	Local project passive and misses deadlines and milestones; EUB project terminated
E Consultants taking over (seepage of local network)	Confusion; loss of management control; loss of esteem and status	Direct contacts with consultants permitted
F Regaining of control by change managers and project managers	Strengthened relations between change managers and project management; blaming consultants for project's cost and time slippage	Consultants' contract terminated
G Rumours about transformation programme	Delay; strengthening of relationships with users' departments	Loss of management attention, strong support to transformation programme
H Decision to continue with a future system configuration	Continuing project work, convincing users' departments, reducing and modifying exchanges with top management	Transformation programme to continue its work; lukewarm relationship with SAP project

the project. As the transformation programme became a strategic priority and management attention was diverted to it, top management had little time to spend on supporting the SAP project. Thus, this project faced a drop in top management attention and support while also having to deal with local implementation problems in response to the new organisation structure that the transformation programme produced.

These challenges led the SAP project management to fear a fall in the project's staff morale and a fading of the project's energy, so they decided to change the form of intermediaries with top management in order to avoid staff disappointment (M) and obtain again some of top management's attention. They limited their regular contact with top management to a report once every fortnight and face-to-face meetings 'whenever there is an absolute need'. They also changed their reporting style to the CEO and Management Directors by reducing the amount of text significantly to no more than a page and produced new colour-coded graphs that clearly exhibited the progress of the project, bottlenecks, and delays.

### Discussion

The case study revealed the complexity of the relationship between top management support located in the global network and the local network of the SAP project. Table 1 summarises some of the main events relevant to the study and their local and global consequences.

The analysis identifies the work required from a project to maintain its local network at times when there is a decline in top management support and other networks emerging in the global network begin to compete for resources. The mobilisation of the local network was valuable in keeping the actors involved aligned and interested in pursuing the project's goals. However, the attachment to the global network was important to secure different types of resources that allow the local network to operate.

The trajectory of the project in the local/global framework in Figure 5 reveals the fluctuation of top management support over the project duration, as different networks emerge and compete for attention and support. For example, the project was returned to Quadrant 1 in Figure 5 through the active mobilisation of top management by SAP project management, highlighted at the end of the previous section, together with the strengthening of the project's local network. However, the return was to a lower point (N) because the attachment to top management was kept at a lower level.

The active pursuing of local network strengthening prevented the SAP project from fading out or losing credibility in facing other competing networks. Quadrant 1 of Figure 5 shows the moments when the project enjoyed both high global network attachment and high local network mobilisation. This quadrant represents a rather safe position for the success of a project or as Law & Callon (1992) describe it a 'solid project'. However, this

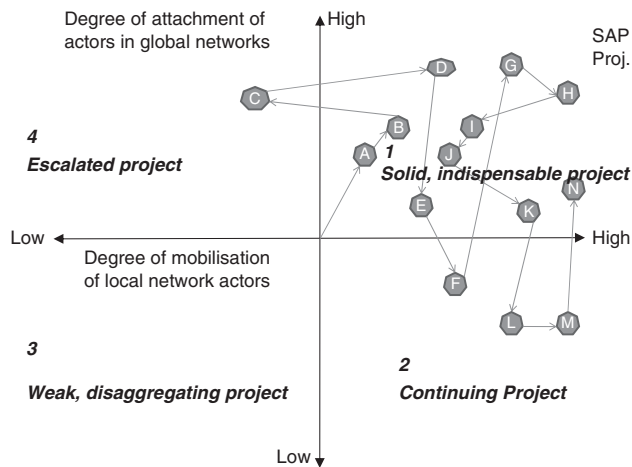


Figure 5 Top management support and project development.

case shows that in multiple-project environments this quadrant does not imply complacency in maintaining both global and local networks as ‘every day is a working day’ (Latour, 1996, p. 86). Maintaining both global and local networks is a continuous activity. The actors in the global network include not only top management but also other networks, such as other projects and entities. This indicates that a project needs to strengthen its relationship with other global actors even when it enjoys a high level of top management support. By itself, top management support does not guarantee the attachment of other actors in the global network. For instance, top management’s initial strong support for the SAP project did not enable the project to align EUB management and staff successfully to the project. It was the SAP project’s translation and recruitment strategies that aligned these actors and included them in the project’s network.

Controlling both the local and global network is problematic, particularly in multiple-project environments. As this is likely to lead to a loss of management attention at times, a project needs to keep an appropriate balance between the local and global networks by monitoring the way they relate. Quadrant 2 in Figure 5 shows the moments when a project had low global network attachment and high local network mobilisation. The studied project moved to this quadrant in two key moments when its attachment to top management was low:

*The first* was due to the seepage of the project’s OPP and the diversion of top management exchanges to a different OPP. This seepage affected not only top management’s attachment to the SAP project but also the project control of its local network. The project moved down to Quadrant 2, where it had a low attachment of the global network but improved its mobilisation of local network (F), as change managers teamed up with project

management to restore and strengthen the project’s local network while also fighting back to regain the top management attachment.

*The second* was due to the emergence of the transformation programme, which attracted top management attention and energy. The project was then unable to establish a direct relationship with the transformation programme due to the latter’s initial secrecy. Although global network attachment was low, the project management actively continued to maintain, strengthen, and expand its local network. SAP project management strived to strengthen and expand its local network through recruiting actors in departments, business units, and other systems. This strengthened the alignment of the project team, which moved it horizontally in Quadrant 2 from (L) to (M).

The case study suggests that Quadrant 2 represents a position where projects can continue as long as they actively maintain and extend their local network. This position was not discussed in Law & Callon (1992). In their studied project, a ‘complete control of the local network’ was lost and hence the project progressed to Quadrant 3. However, Drinko’s SAP project management strived to maintain, strengthen, and expand their local network. It did this in the face of its low attachment to the global network by weaving together in an aligned whole: a new organisation structure; SAP configuration; systems and business process workarounds; small gap-stopping systems; business units and departments; and project team.

Project management aimed to improve the project’s attachment to its global network in two moments. In the *first moment*, they translated top management interests in the project’s success and convinced them of the termination of the consultants’ contract. This consolidated and restored a single OPP for the project, strengthened the project’s attachment to top management and, hence, moved it up to Quadrant 1 (G). In the *second moment*, they changed the forms, pattern, and nature of the exchanged intermediaries with top management in attempts to improve and retain their attachment to the project. They were also active in building a relationship with the transformation programme, which moved to a position of being able to exchange information. They also strived to understand the details of the organisational change that was produced and their impact on business units and local departments. In doing so, they moved the SAP project back to Quadrant 1 (N), where it enjoyed high mobilisation of the local network and minimum attachment to the global network.

Quadrant 3 shows the moments when project attachment to both global network and mobilisation of local network were low. This quadrant, as Law & Callon (1992) describe it, represents a position for weak and disaggregating projects. The case study shows that this quadrant was the end position for a failing network such as the EUB programme (E5 in Figure 2) and Business Consulting (C5 in Figure 3). The case study shows that the success

of SAP in building and expanding its local network in EUB was partially due to the passive local network building pursued by the EUB programme, which did not apply any counter-translation strategies and did not strive to strengthen its associations with its local actors. If EUB had fought back and continued the building and strengthening of its local network, it might have continued its project with suitable arrangements.

Quadrant 4 represents moments where top management attachment was high while a project's local network building activity was low. Business Consulting was in this quadrant for a short time before change managers and project management juxtaposed to mobilise top management and weakened the latter's attachment to Business Consulting. The continuing positioning of projects in this quadrant could possibly present a case of project escalation (Mahring *et al*, 2004), where top management attachment is high and the mobilisation of the local network is low. As the original local/global framework did not address this quadrant, the assumption proposed here could present a contribution to further development of this framework. However, research that seeks to offer significant empirical validation of this interesting idea, which was beyond the scope of this study, is required. A summary of some of the major turning points in the trajectory of the project across this diagram is depicted as a table of choices and consequences in Table 1, following Law & Callon's (1992, p. 51) analysis.

The intermediaries between top management and the local network of the SAP project changed during the course of the project. Table 2 summarises the nature and form of intermediaries and the changes gone through during the course of the project as it moved between quadrants.

## Conclusion and implications

Three implicit and/or explicit assumptions were observed in the IS project research literature relating to the way top management support has been identified as one of the main critical factors behind the success of any IS implementation (Selvin & Pinto, 1987; Gibson *et al*, 1999; Al-Mudimigh *et al*, 2001; Umble *et al*, 2003), particularly in ERP projects (Esteves & Pastor, 2001; Somers & Nelson, 2001; Finney & Corbett, 2007). These assumptions are: top management support has to be constant; top management support has to be consistent; and if either or both of these types of support do not exist, the project is expected to fail.

This study recognised that most IS implementation research leading to these conclusions has focused on single projects, despite the increasing existence of organisations involved in managing multiple projects. The study therefore questioned how top management support materialises in multiple-project environment. Seven main insights emerging from this study and its ANT analysis represent the prime contribution of this paper to IS research as follows.

*First, top management support for a particular project in a multiple-project organisational setting is not as constant as previously assumed, but fluctuates during the course of any project from moments of direct involvement to moments of low attention and enthusiasm.* In a multiple-project environment, management support is likely to shift from one project to another under the pressure of competition, market changes, and management's constant quest for remedies. The successful recruitment of top management in one project could mean the withdrawal of support from another project. This proposition appears to contradict many of the previous studies of top management

**Table 2 Intermediaries between top management and the SAP project**

<i>Top management-SAP project intermediaries</i>	
Quadrant 1	<ul style="list-style-type: none"> <li>• Budget approval and allocation</li> <li>• Public announcements and statements of support</li> <li>• Regular communications, not only through reports but also via regular attendance at project meetings; regular face-to-face meetings; and phone calls and emails with project management</li> <li>• Regular progress reports</li> <li>• Direct open channels of communication</li> </ul>
<i>Lower level of attachment in Quadrant 1</i>	<i>Summary of progress reports (colour coded and covering longer periods of time as happened in the SAP project)</i>
Quadrant 2	<ul style="list-style-type: none"> <li>• Indirect communication through third party</li> <li>• Public engagement with other projects and no mentioning of the project or its management</li> <li>• Lack of interest in receiving or reading progress reports</li> <li>• Withdrawal of budget</li> </ul>
Quadrant 3	<ul style="list-style-type: none"> <li>• Withdrawal of budget</li> <li>• Termination of project documents</li> </ul>
Quadrant 4	Regular direct communication with top management; securing budgets; progress reports highlighting slow progress; and insufficient local resources

support for IS projects in general, and ERP in particular (Al-Mudimigh *et al.*, 2001; Akkermans & Helden, 2002; Sarker & Lee, 2003; Somers & Nelson, 2004). However, it offers a possible explanation to the puzzling empirical data found by Somers & Nelson (2004) showing that project participants' perceptions of the importance of top management support continue to decline after the initiation and adoption phases of ERP (Somers & Nelson, 2004).

*Second, top management support is not unidirectional or passively available, but mutually constructed through projects' efforts to strengthen and maintain their attachment with top management.* The study shows that top management support is not always passively readily available, as implied in the literature, but could be gained and regained through a project's active mobilisation and constant alignment efforts. The study also highlights the importance of 'intermediaries', especially non-humans such as different reporting artefacts and communication tools that can help to re-mobilise and re-align top management.<sup>5</sup>

*Third, a project's continuation and accomplishment is comprised of a balancing act between the project's attachment to top management and the project's active mobilisation of local networks.* When a project loses top management support to other projects, it could balance that loss by actively continuing the strengthening and mobilisation of its local network to prevent its deterioration. This view questions the assumption that there exists a straightforward 'main effect' relationship between top management support and project performance, as found in previous research (Sharma & Yetton, 2003; Simonsen, 2007). It explains the conflicting findings of previous research that showed top management support was not critical to the outcomes of a project and that efficiency and flexibility of the development process was significant in its own right, even without any effect from top management support (Marble, 2003; Nah *et al.*, 2007). It asserts and explains Mumford's view that the different roles played by middle management and other staff are at least as important as top management (Mumford, 1983). This finding extends and elucidates Nandhakumar's (1996) general observation regarding CSFs: 'the different factors varied in their strength of influence at different times' and 'the presence or absence of these factors alone ... does not give the complete picture of how these influences affect design and implementation outcomes' (Nandhakumar, 1996, p. 70). It also provides empirical evidence to support the view of Selvin & Pinto (1987) that projects need both strategic and tactical factors for their successful implementation and that top management support is a strategic factor that needs to be supported by the project's tactics (Selvin & Pinto, 1987).

*Fourth, top management support to projects and the actors involved change over time, as does the importance to a project*

*of maintaining and aligning its local and global networks, and monitoring the way they relate.* It is the extent and form of alignment and mobilisation of the local and global networks, and the way in which they are connected, that determine the trajectory of a project – not only the changes of actors over time.<sup>6</sup> The adoption of an ANT-inspired approach makes the revealing of this finding possible by offering an analytical lens that can include within a single analytical view: the local network of the studied project; top management support; and other projects in the organisation. This provides a way to describe and analyse the complexity of top management support of a project in a multiple-project setting.

*Fifth, this exploratory study contributes to the expansion of the still very thin body of research examining IS in multiple-project organisational environments, hopefully opening up more intensive research and debate about the multiple-project phenomenon and its effect on IS implementation projects.* The overwhelming number of projects presented in the previous IS project literature, as well as most of the practical and theoretical developments on project management, are centred around a single-project view (Evaristo & Fenema, 1999). Researchers are invited to further this research through investigations of other sites and other IS projects.

*Sixth, the study expands the ANT-based framework proposed by Law & Callon (1992) by suggesting positions for continuing and escalating projects (Quadrants 2 and 4 in Figure 5).* These positions were overlooked in the original framework but could provide important explanations of a project's dynamics in a multiple-project environment. The position of escalating projects, however, requires further research and validation, which was beyond the scope of the current study. The study also adds to ANT the view that actors could regain a lost OPP. ANT authors focused on analysing the loss and seepage of OPP (Law & Callon, 1988; Callon & Law, 1989) have reported the negative effects on projects that the loss of local/global OPP could cause, which could be partly due to their reliance on studying historical projects (Law & Callon, 1992). This study suggests that a lost OPP could be regained through actors' proactive strengthening of their local network and restoration of their relationship with their global network.

*Finally, this research encourages practitioners to build and strengthen their project's local network and to strive to continue their efforts, despite the lack of top management attention at times.* It also invites practitioners to continuously monitor and map the organisational setting during IS implementation projects and to recognise possible points of tension and competition with other projects and different networks. Such a 'working map' could help to prevent some of the surprises the reported projects faced. These efforts could help project management to develop a richer and more holistic view of the internal and external context of a project.

<sup>5</sup>Thanks goes to reviewer 2 for suggesting the idea of this sentence.

<sup>6</sup>Thanks to reviewer 2 for suggesting the addition of this point.

In conclusion, multiple-project environment poses many theoretical and practical challenges. While this paper examined the challenges of top management support in particular organisational context, scholars

are invited to examine it in other contexts. Future research should also examine other aspects of project management and systems implementation in this contemporary organisational setting.

## About the author

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