



**Management control and information systems
integration of an acquired subsidiary under
information systems diversity: a case study**

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Biographic Reference

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Resumo

O presente estudo analisa o processo de integração de uma subsidiária adquirida no exterior num grande grupo português, abordando a definição e a integração de sistemas de controlo de gestão e sistemas de informação de suporte à gestão. Em particular, este estudo trata o modo como o Grupo foi capaz de contornar o facto de os sistemas ERP de ambas as empresas serem diferentes e como a solução encontrada foi capaz de criar uma ponte entre o passado e o futuro.

A literatura relevante contém já vários estudos que se debruçam sobre a atuação dos sistemas de informação de gestão (como os sistemas ERP) como mecanismos de integração, tentando compreender de que forma estas tecnologias estabilizam ou amplificam o controlo e a integração. No entanto, a literatura relevante tem vindo a reportar soluções ditadas por uma *path dependency* criada por eventos passados. Pelo contrário, neste estudo, tanto o comportamento dos atores como a construção da *network* foram influenciados não só por decisões tomadas no passado mas também por outras ocorrências previstas para o futuro.

De modo a obter conhecimentos aprofundados e detalhados sobre este tema e com o objetivo de analisar o processo contínuo de integração da subsidiária francesa, foi elaborado um caso de estudo com a colaboração do Grupo, centrado na definição e na implementação de uma solução para a heterogeneidade dos sistemas ERP. Neste âmbito, analiso em que medida o facto de ambos os sistemas ERP serem diferentes teve impacto no processo de integração e de que forma a empresa-mãe, em conjunto com a subsidiária francesa, conseguiu alcançar uma solução para promover a conexão de ambas as realidades e mediar os interesses das duas partes através de processos de *translation*.

Para analisar e teorizar este processo, recorro à *Actor-Network Theory (ANT)*, evocando o conceito de *boundary objects* para interpretar uma base de dados intermédia criada pelo Grupo para conectar ambos os sistemas ERP e, conseqüentemente, permitir unir o espaço e o tempo, baseada numa *path dependency* ditada pelo futuro e constituindo outra etapa de uma “história sem fim”.

Palavras-chave: Controlo de gestão, integração, sistemas ERP, *boundary objects*, *actor-network*

Jel Codes: M10, M40, M16, M50, F23, L22, O33

Abstract

This study addresses the process of integration of a foreign acquired subsidiary within a major Portuguese group, focusing on the design, integration and implementation of management control systems and supporting information systems. In particular, this study focuses on the way the Group was able to go around the fact that both companies' ERP systems were different and how the solution was capable of bridging the past and the future.

The relevant literature already offers several studies on accounting technologies (such as ERP systems) as integration mechanisms, trying to understand how technology stabilizes or extends control and integration. However, the relevant literature has been focusing on solutions drawn on a path dependency created by past events. On the contrary, in this study, both actors' behavior and the network construction were not only influenced by decisions taken in the past but they were also shaped by occurrences that were believed to happen in the future.

To obtain detailed, in-depth insights on this, a case study was designed with the collaboration of the Group in order to analyze the ongoing process of the French subsidiary's integration within the Group, focusing on the design and implementation of a solution for the ERP systems' heterogeneity. I address to what extent the fact that both ERP systems were different had an impact on the integration process and how the parent company, together with the French subsidiary, was able to reach a solution to promote the connection of both worlds and mediate both sides' interests through processes of translation.

I draw on Actor-Network Theory (ANT) in order to interpret and theorize this process, using the notion of boundary objects to interpret an intermediate database created by the Group in order to connect both ERP systems and hence enable bridging space and time, based on a forward-looking path dependency and constituting another stage of a 'never-ending story'.

Key-words: Management control, integration, ERP systems, boundary objects, actor-networks

Jel Codes: M10, M40, M16, M50, F23, L22, O33

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1. Introduction

With the continued globalization of the world economies, acquisitions have become an important element of many companies' international strategies. However, particular challenges for management control integration may emerge and control issues can arise, especially when the subsidiaries are geographically dispersed and operate in environments of varying degrees of heterogeneity and complexity. In order to better control subsidiaries, internationally operating companies often develop standardized management control practices (Granlund and Lukka, 1998; Oliveira and Drury, 2006; Cruz *et al.*, 2011) based on common, even integrated, systems. However, the literature has shown integration of organizations and systems to be problematic and dependent of the particular contexts in which it may be attempted.

This was the case of the Group studied in this dissertation (CorpInc¹). This Group has increased its global reach through a strategy of acquisitions, including a French company (FranceSub¹) recently added to the Group. Jones (1985a) stated that the conditions of rapid change often associated with mergers and acquisitions bring substantial challenges to both users and designers of accounting information systems and technologies. This study draws on Actor-Network Theory (ANT) to interpret and theorize the integration of FranceSub within Group CorpInc, focusing on the role of Enterprise Resource Planning (ERP) systems, and using the notion of boundary objects to interpret the solution found to overcome the fact that their respective ERP systems were different. I explain why a new solution was required and how it was both a consequence of past choices and also driven by future events, providing a nuanced view of the concept of path dependency. I clarify the role of *human* and *non-human* actors in the construction of the network through processes of translation, supported by different boundary objects aimed to accommodate and mediate multiple actors' interests.

The relevant literature already offers several studies on accounting technologies as integration mechanisms (Booth *et al.*, 2000; Dechow and Mouritsen, 2005; Quattrone and Hopper, 2005), trying to understand to which extent technology stabilizes or extends control and integration. However, the literature adopting the notion of path

¹ The names of all companies and employees were anonymized due to a confidentiality agreement.

dependency conceives dependency as created by past events. Nevertheless, in this study, actors' behavior and the network construction were not only a consequence of decisions taken in the past but they were also shaped by occurrences that were thought to happen in the future.

The main objective of this study is to address the process of integration of a foreign acquired subsidiary (FranceSub) within a major Group (CorpInc), focusing on the implementation of management control systems (MCS) under an ERP diversity context. It tries to understand to what extent the existing control systems, rules and procedures were adapted or changed by the parent company. In particular, this study focuses on the way the Group, along with the subsidiary, was able to overcome the challenges created by the fact that the ERP systems of the two organizations were different. This was achieved through the construction of a loosely coupled network, capable of accommodating both sides' interests, through the creation of boundary objects, namely an intermediate database and a data warehouse, which served as 'binding objects', binding spaces (by linking the two systems and organizations) and times (by enabling an effective network until the potential future entrance of the envisaged global ERP system). Therefore, these boundary objects connect the past, the present and the future, making choices made in the past to work properly in the present, while anticipating the future.

I followed in detail the process of integration of the management control systems in the French subsidiary to answer the questions of "how" management control systems and its supporting information systems were implemented, "why" such decisions regarding accounting technologies were taken and "with what results". I explored the case considering both the parent company and the subsidiary's perspectives, aligning with Yin (2013) as the validity of results becomes reinforced as I explored a situation through multiple perspectives and multiple dimensions. Moreover, although the research questions are case-specific, the emerging theoretical insights may be of general relevance, within a research program of theoretical generalization well established within the management control literature. In particular, and as an outcome of the above empirical analysis, I contribute to the relevant literature by studying a real case in which path dependency was shaped not only by past events but also by events still to happen

in the future, focusing on the role of the boundary objects as binding objects, bridging organizational space (the Group and a subsidiary) and time (the past and the future).

To theoretically support this case study, I conducted a literature review on MCS, ERP systems, Actor-Network Theory (ANT) and boundary objects, and path dependency, focusing on accounting technologies studies combining ANT and boundary objects to assess and explain integration, demonstrating how it can be classified as a “never-ending story”. To collect the case study evidence, I used multiple techniques: participant observation; analysis of documents of the Group, both in the Portuguese and French companies; and interviews with the board members, the directors and staff of the Information Technology (IT) and management control departments in both companies.

This dissertation is organized as follows. This introduction explains the research context, the motivation, the pertinence and the main aims of the study. The second section encompasses the literature review on MCS and accounting technologies: the first subsection focuses on MCS in acquired subsidiaries and MCS as loosely coupled systems; the second subsection emphasizes accounting technologies, namely ERP systems, as a mechanism of management control; in the third subsection, I interpret MCS and ERP systems change as a path dependent process, adopting the lenses of ANT and using boundary objects to theorize the case study. In the third section, I clarify the methodology employed, as well as the used forms of collecting information. In the fourth section, the organizational and technological processual analysis of the case study is presented, in which the organizational integration is described under an ERP diversity context. The fifth section contains a theorization and discussion on the case study, describing the construction of actor-networks in the quest for integration through boundary objects, binding organizational space and time. The sixth and last section concludes the dissertation, going back to the initial research objective, recognizing some limitations and suggesting areas for future research.

2. Literature Review

This literature review is divided in three subsections. In the first one, a review on MCS, MCS in acquired subsidiaries and MCS as loosely coupled systems is presented. The second subsection focuses on accounting technologies and, in particular, ERP systems, as a mechanism of management control. In the third subsection, I interpret MCS and ERP systems through ANT and path dependency lenses, using the concept of boundary objects in order to theorize the ensuing case study.

2.1 Management Control Systems (MCS)

2.1.1 Fundamental concepts of MC

The definition of MCS has evolved throughout the years, from a focus on more formal, mainly financially quantifiable information to a much larger scope of information (Chenhall, 2003). Many of the studies in the topic have been based on the seminal work of Anthony (1965). In his classic view, management control is “the process by which managers ensure that resources are obtained and used effectively and efficiently in the accomplishments of the organization’s objectives” (Anthony, 1965, as cited in Langfield-Smith, 1997, p. 208). However, some authors argue that this definition encompasses formal controls without depicting them in their broader context, “falling short in capturing the richness of issues and relationships implicated in MCS design and use” (Ferreira and Otley, 2009, p. 264). Others stress the need for a review of the conventional definitions of MCS as business conditions were changing (Langfield-Smith, 1997), emphasizing the growing importance of strategy in MCS design. Therefore, several MCS definitions have been presented more recently. For Otley (1999), MCS provide information to help managers perform their jobs, as well as guiding organizations towards viable patterns of behavior, defining an organization that performs well as “the one that is successfully attaining its objectives, *i.e.*, the one that is effectively implementing an appropriate strategy” (p. 364). In accordance, Simons (2000) considers that MCS should be tailored to help managers pursue and implement their intended strategies.

Anthony and Govindarajan's (2003) management control definition as "the process by which managers influence other members of the organization to implement the organization's strategies" (p. 10) suggests that the management control process is, rather than mechanical, an interaction among individuals. Therefore, the control problem is related to the principle of *goal congruence*, i.e., the management control system should be designed in order to align the organization's individual members with the goals of the organization itself (Anthony and Govindarajan, 2003).

Geringer and Hebert (1989) referred to control as "the process by which one entity influences, to varying degrees, the behavior and output of another entity through the use of power, authority and a wide range of bureaucratic, cultural and informal mechanisms" (p. 237) and identified three dimensions of control: *mechanisms of control*, *focus of control* and *extent of control* (Geringer and Hebert, 1989). With regard to *mechanisms of control*, aligned with Ouchi's (1979) typology of control mechanisms (*market, clan and bureaucratic controls*), control can be exercised over *actions, results or personnel/culture*, depending on whether managers take steps to ensure that determined actions are taken towards the organization's best interest; whether managers focus on results and intervene only when necessary to achieve them; or whether managers instill in employees the ability to intrinsically control and/or motivate themselves (Merchant and Van der Stede, 2003). In what concerns *focus of control*, the parent company can opt by a broad or a narrow control focus, whether it exercises the control over a wide or a narrow range of subsidiary's activities. Finally, the *extent of control* parent companies can exercise over subsidiaries is determined by the centralization of decision making.

2.1.2 MCS in acquired subsidiaries

A company can follow a strategy of acquisitions with several purposes, such as to gain quick access to new markets and new resources, to increase its market share or to diversify into new business areas. However, particular challenges for MC emerge in situations of acquisitions and control issues can arise, especially when the subsidiary is located in a country other than that of the parent company or there are different cultures and/or management styles (Kamminga and Van der Meer-Kooistra, 2007).

The question of how to control foreign subsidiaries has been under attention of both researchers and multinationals' managers for a long time. Baliga and Jaeger (1984) conceptualized the problem as the selection of the suitable control systems and the extent of centralization. The need for integrating operations and, therefore, the control of an acquired firm vary as firms get involved in mergers and acquisitions for different purposes, with different strategies and parenting styles (Moilanen, 2016). However, in order to track the newly acquired subsidiary performance and conduct it in the desired path, there has to be some degree of integration of MCS (Jones, 1985a).

By focusing on the role of management accounting systems in general, Jones (1985b) is considered to be the pioneer in the study of MCS in a post-acquisition scenario. The author examined the management control relationships created between acquirer and acquired companies during the first two years of post-acquisition in 30 organizations and concluded that the acquirer company cannot reestablish order in the acquired one by simply imposing its MCS (Jones, 1985b). In fact, the implementation of a MCS in an acquired company can be a long and complicated process, although it is frequently associated with the dominance of the acquirer that ends up prevailing over the reluctance of the acquired company's employees (Jones, 1985b; Granlund, 2003). In a later study, Jones (1986) found out that, before the acquisition, the accounting control systems were closely aligned with the prevailing organizational cultures, and those systems were determined by the dominant people according to their style of managing. After the acquisition, there was a deliberate destruction of the acquired companies' pre-acquisitions accounting control systems. In line with Jones (1986), Granlund (2003) found that large acquirers are likely to replace the accounting and management systems of the smaller acquired companies, as well as to replace the accounting system if the acquirer possesses a more sophisticated one.

There are several factors that can pressure the MCS integration process. The political, cultural and institutional background of both acquirer and acquired companies can influence the post-acquisition integration (Yadzifar et al., 2008; Granlund, 2003), turning it long and complicated (Granlund, 2003). The pace and direction of change in subsidiaries may depend both on the strengths and pressure from the parent company and the specific context at the subsidiary's level as management and cultural differences

can become more recognizable across time, making operations more difficult as they turn the management of the group very problematic. Even though the usual initial approach of an acquirer is to implement the Group's MCS quickly in the subsidiary (Jones, 1985b; Jones, 1986), variations and distinctiveness may occur, and the "localization" phenomenon (Barrett *et al.*, 2005) may emerge. Yazdifar *et al.* (2008) found empirical evidence on this different strategy, in which the parent company chose to initially "understand the 'reality of the subsidiary's life', its people and their ways of thinking and doing things" (Yazdifar *et al.*, 2008, p. 414). By increasing the extent of interaction within the subsidiary, the parent company tried to attain congruence between the institutional context and the new systems and practices by gradually incorporating theirs in the subsidiary routines, therefore introducing variability and distinctiveness (Yazdifar *et al.*, 2008; Barrett *et al.*, 2005; Cruz *et al.*, 2011). Although the increasing world expansion of the parent company may lead the head office to create a standardized global MCS, denoting a tendency towards homogenization, heterogeneous management control local practices can rise from the homogenizing tendencies of global ones (Cruz *et al.*, 2011; Barrett *et al.*, 2005). In their empirical study on the enactment of a standardized MCS in a foreign subsidiary, Cruz *et al.* (2011) intended to assess "whether MCS are simply reproduced when they are enacted at the local level or, on the contrary, whether they are reshaped and, if so, how and why" (p. 413). The authors found standardization not to be contested by the locals who adopted the universalizing practices as the parent company was perceived as one with a considerable know-how and experience in the field. However, variations had occurred, mainly in features as information systems, management control reports, internal benchmarking, extended forecasting and market demand indicators, as the local managers "made it [the standardized MCS] work for them" (Barrett *et al.*, 2005, p. 20), therefore denoting the phenomenon of "localization" (Barrett *et al.*, 2005). The system was adapted and reconstituted according to the particularities of the "local reality" and the pursuit of the alignment of both the group and the subsidiary's objectives, leading to a heterogeneization of practices within the group.

2.1.3 Management Control as Loosely Coupled Systems

When practice variations within global groups exist, for example due to a “localization” phenomena, the presence of *loosely coupled systems* arise (Orton and Weick, 1990). Orton and Weick (1990) claim that any system, in any location, can encompass several elements, some of which act responsively, whereas others act independently, “acting both on technical level which is closed to outside forces (coupling produces stability), and on institutional level, which is open to outside forces (looseness produces flexibility)” (Orton and Weick, 1990, p. 205). The ‘*coupled*’ in the concept represents the linkage and determinacy of those elements, while the ‘*loosely*’ captures the fact that these elements are also subject to spontaneous changes and preserve some degree of independence and indeterminacy (Orton and Weick, 1990), resulting in a system that “is simultaneously open and closed, indeterminate and rational, spontaneous and deliberate” (p. 205). Moilanen (2012), in her study on the integration of accounting-related work between three Western firms and its subsidiaries, states that a MCS as a loosely coupled system “not only ensures the adaptation and stability of the existing ways of thinking, but actually helps in creating new ways of thinking” (p. 137), leading to the creation of generative learning due to the changes imposed by the parent company. This line of thought is supported by Lukka (2007), who states that, for any loosely coupled system to be sufficient in the long term, the company must evolve, adapt and develop new ways of thinking to face the functional requirements it comes across.

In this section discussing MCS, the underlying information systems (IS) have hardly been mentioned, although they are crucially important, in particular nowadays and when remote locations are involved, as in the case of contemporary internationally operating companies. The next section focuses on IS, and ERPs in particular, and the specific challenges regarding the integration of IS, MC and organizations themselves.

2.2 IS integration, Enterprise Resource Planning (ERP) systems and Management Control

A fundamental choice of IS architecture concerns the level of integration between the different components. These components can range from standalone systems, when there is limited or no interaction between those systems, to highly integrated systems, such as ERP systems, which have experienced an enormous expansion.

Many organizations aim to improve their competitiveness by implementing advanced information technology systems, such as Enterprise Resource Planning (ERP) systems. ERP systems are software packages that provide integration of “many, even most, of a company’s information needs” (Davenport, 2000, p. 2), controlling all personnel, monetary, material and information flows. By integrating all corporate information in one central database, ERP systems allow the extraction of real-time information from several different organizational positions and all functional areas (Dechow and Mouritsen, 2005; Booth *et al.*, 2000), enabling the attainment of true connectivity (Davenport, 2000) and “unprecedented levels of organizational integration” (Dechow and Mouritsen, 2005, p. 692).

The relevant literature has been noting that ERP systems can indeed provide significant benefits to organizations (Booth *et al.*, 2000; Davenport, 2000; Dechow and Mouritsen, 2005). It allows better reporting and decision-support systems by providing integrated transaction processing systems that deliver higher quality and more accessible information (Booth *et al.*, 2000). Nevertheless, these higher-order Information Systems (IS) require noteworthy additional value-adding efforts by managers, as well as the use of more advanced software solutions.

ERP systems are complex and challenging and require large investments of time and money (Booth *et al.*, 2000; Granlund and Malmi, 2002). Moreover, as all modules of the system are fully integrated, entering data in one part of the system can have consequences throughout the system. Therefore, it can lead to a change of ways of working and mainly the relationships between different functions, resulting in a “business process re-engineering that often accompanies the implementation of an ERP system” (Scapens and Jazayeri, 2003, p. 202; Granlund and Malmi, 2002; Davenport,

2000; Sangster *et al.*, 2009). And as “everything depends upon everything else” (Granlund and Malmi, 2002, p. 304), the configuration and implementation of ERP systems can sometimes become problematic.

In conclusion, “when ERP enables, it moves organizational processes into new and desirable directions and it will immediately or over time increase organizational performance. When ERP constrains, it hinders the organization, its processes and its actors in performing to its potential and it reduces organizational performance” (Hald and Mouritsen, 2013, p. 1076).

Researchers have been studying the possibility of integrating the organization’s activities through information systems and how this would enable management control. Therefore, we can identify three strands of the literature trying to answer those questions: a first strand of literature on ERPs claims that organizations implementing ERP systems have to go through a learning curve to benefit from their investment (Ross and Vitale, 2000, as cited in Dechow and Mouritsen, 2005). It draws on the ‘stage-maturity model’ that continues to serve as basis on ERP implementation, despite of its criticism (Holland and Light, 2001). A second strand of literature on ERPs concerns ERP performance, suggesting that it will only have positive effects if installed correctly (Davenport, 2000). However, the conclusions differ across authors. Some argue that ERPs might have effects on finance, divisional performance or even instill positive capital market reactions (O’Leary, 2002); others remain skeptical (Poston and Grabski, 2001); others suggest that the new ERP technologies have the power to encompass and govern all activities of an organization (Cooper and Kaplan, 1998, as cited in Dechow and Mouritsen, 2005). Nevertheless, this last argument has been difficult to sustain with the available empirical evidence. Granlund and Malmi (2002), in their study of the effects of ERP systems technology on management accounting practices, found that so far, “ERP systems, contrary to many expectations, seem to have had little impact on both the management accounting methods and managerial controls used” (p. 312). This “very moderate” impact can be explained by interface problems, system complexity and long project times (Granlund and Malmi, 2002). Other authors, as Hanseth *et al.* (2001), refer to ERP system implementation as powerful “juggernauts” which can escape out of the control of the organization or even retaliate. Differently from the first two strands, a

third strand of literature claims that ERP systems have significant effects on the processes of design and use of MCS (Quattrone and Hopper, 2001; Caglio, 2003; Scapens and Jazayeri, 2003), shedding light on the importance of control as a practice.

When implementing an ERP system, it is the organization who decides which functions to employ and which to leave to separate software, taking into attention its strategic and management needs (Booth *et al.*, 2000; Granlund and Malmi, 2002). This is of high importance, as ERP systems are typically difficult to change (Davenport, 2000). Therefore, “it is the organizational practices that are typically changed to fit the new technology, not vice versa” (Granlund and Malmi, 2002, p. 305). Thus, if cautiously managed, an ERP system implementation can lead to noteworthy gains of productivity, speed of reaction and access to real-time information when the organization can effectively adjust to the software (Sangster *et al.*, 2009). Even though Ribeiro and Oliveira (2008) agree with Davenport (2000) in the sense that ERP systems are difficult to change after their implementation, the authors draw attention to the fact that, nowadays, the most complete and embracing ERP systems offer so many parameterization possibilities, being so adjustable and flexible, that it is not reasonable anymore to claim that ERP systems are not able to give response to the companies’ necessities.

2.3 Interpretive lenses within MCS and IS research

MCS and IS have been researched using multiple theoretical lenses which enable to make sense and subsequently theorize upon the perceived phenomena. Reviewing the array of theoretical approaches deployed in the literature is beyond the scope of this work. However, to make sense of the empirical setting researched in this dissertation, the concept of path dependency has been found as particularly relevant. In addition, an exploratory analysis of the empirical material suggested that Actor-Network Theory, and in particular its notion of boundary objects, would be particularly useful in the conceptualization and theorization work. This section briefly describes these theoretical tools.

2.3.1 Path dependency

Present and future options are often conditioned by choices made in the past. Within the relevant literature, that concept is designated by *path dependency*. *Path dependency* has been widely used mainly in policy studies (Greener, 2005; Pierson, 2000a,b; Modell *et al.*, 2007), yet with little expression in the management accounting literature (Burns and Scapens, 2000). David (1985) proposed a notion of *path dependency* as a change process affected by remote, and sometimes chance, events, growing from the idea that “history matters” to a complex concept that has been adopted by several other scientific disciplines. *Path dependency* basic premise revolves around the fact that historical, political and institutional factors restrain and intervene in the choice and implementation of new practices (Modell *et al.*, 2007), having a continuing influence in shaping emerging change initiatives by constraining the sort of feasible alternatives (Greener, 2005). Burns and Scapens (2000) embraced the concept in their institutional framework, considering that past choices continue to shape the actions of agents by narrowing their perceptions of other viable options. To some extent, this can lead to path dependent institutional change as “existing routines and institutions will shape the selection and implementation process” (Burns and Scapens, 2000, p. 12), thus reinforcing the evolutionary nature of change. In accordance with Sewell’s (1990) definition, *path dependency* implies that “what has happened at an earlier point in time will affect the possible outcomes of a sequence of events occurring at a later point in time” (p. 16). Therefore, “past events influence future events” (Mahoney, 2000, p. 510) by shaping the present and defining the alternatives for the future, triggering “a subsequent sequence that follows a relatively deterministic pattern” (Mahoney, 2000, p. 535).

Due to its self-reinforcing property, path dependencies may bolster inefficiencies (Pierson, 2000a,b) as the choices triggered by path dependent changes may ‘lock in’ actors in suboptimal arrangements (Burns and Scapens, 2000; Greener, 2005). Once ‘locked in’, there is no break out unless exogenous shocks occur (Garud *et al.*, 2010). Regardless of such inefficiencies, path dependencies frequently reveal increasing returns, as the relative costs of alternative trajectories are higher (Pierson, 2000a).

In conclusion, accordingly to Mahoney (2000), *path dependencies* should be studied taking into account three main features: firstly, the deterministic nature of future events settled by events that take place in early stages of a historical sequence. Secondly, since early historical events are contingent occurrences that cannot be explained by prior events and are of great importance for the final outcome of the sequence, it is not possible to predict a final outcome based on prior events. Thirdly, once contingent historical events occur, path dependent sequences are marked by relatively deterministic causal patterns, i.e., “inertia”, meaning that “once processes are set into motion and begin tracking a particular outcome, these processes tend to stay in motion and continue to track this outcome” (Mahoney, 2000, p. 511). The nature of the “inertia” will vary depending on the type of the situation analyzed, involving mechanisms reproducing a particular institutional pattern over time with self-reinforcing sequences or, by contrast, involving reaction and counter reaction mechanisms within reactive sequences.

2.3.2 Actor-Network Theory (ANT)

Actor-network theory (ANT) derives essentially from the work of the sociologists Bruno Latour (1987, 1993, 1997), Michel Callon (1986) and John Law (1994), as cited in Briers and Chua (2001), providing an ontological theoretical framework for the study of how scientific ideas and technological ‘artefacts’ gain existence (Jones and Dugdale, 2002). ANT focuses on understanding how reality can be structured through the interactions of networks of *human* and *non-human* actors (Briers and Chua, 2001; Baxter and Chua, 2003), “collectively referred to as actants” (Quattrone and Hopper, 2006, p. 216), originating a “new hybrid network” (Latour, 1997)² with symmetrical treatment of both kind of actors, which means that “there is no prominence at all of human actors over non-human” (Latour, 1997)². *Human* actors comprise individual people and collective entities (such as organizations or organizational units), while *non-human* actors encompass both non-human living entities and technological devices (including physical machines and software). As a constructivist approach, ANT intends to demonstrate how construction processes are ongoing ones rather than delimited acts, and “any stability achieved is, in principle, temporary and fragile” (Justesen and

² No page numbering can be indicated due to the HTML-form of this reference.

Mouritsen, 2011, p. 165). Therefore, those established networks “are never completely fixed or stable, but rather fragile and transient and, hence, require hard work in the part of those who seek centrality in the network to develop and maintain it” (Legge, 2002, p. 78).

Within the wide range of accounting related studies drawing on ANT, Briers and Chua (2001) case study on Activity-Based Costing (ABC) implementation in a manufacturing firm considers a heterogeneous actor-network involving local and global actors mobilizing ABC to reconcile their different interests, concluding that the network ‘ties’ may only be temporary, depending on the interests of the ‘fact-builders’ during the process. In the same line, Jones and Dugdale (2002) also focus on an ABC system, but performing the reverse path as of Briers and Chua’s (2001), starting from the ABC as a ‘*black-box*’³ (Latour, 1987, as cited in Briers and Chua, 2001) and trying to ‘re-open’ it by following and tracing the *human* and *non-human* actors of the construction process. The authors conclude that the ABC system construction process cannot be attributed to an original author but is a consequence of a complex and contingent translation process where management consultants and computer systems had more impact on the formation of the ABC system than the “original inventor” (Jones and Dugdale, 2002, p. 156).

Some accounting studies employ ANT to study to what extent technology stabilizes or extends control and integration, granting accounting technologies a new and significant role as they are seen as (*non-human*) actors taking part in the formulation and construction of organizational activities. Nonetheless, ANT emphasizes that no actor operates alone, and action is distributed. Therefore, “the actor is not an atom, but receives identity and ‘actorhood’ through its relations to other (*human* and *non-human*) actors” (Justesen and Mouritsen, 2011, p. 176). Quattrone and Hopper (2005), based on the analysis of two different SAP implementation attempts, questioned if that particular management accounting technology functioned as a means of mediator between organizational and managerial relations of distance, integration and control,

³ When sciences and technologies get the aspect of certainty and solidity through the successful construction of a network of alliances (Latour, 1987).

demonstrating, in line with Latour (1987), that SAP is not a fixed entity to be implemented. In the same sense, Dechow and Mouritsen (2005) analyzed how two firms pursued integration of management and control through ERP systems, trying to depict the connections and interactions between *human* and *non-human* actors towards what the authors consider to be an unending process. In fact, integration is produced concurrently and episodically, as it is not possible to know when integration is reached, because “there can always be more integration or different integration” (Dechow and Mouritsen, p. 726). In the same line as Latour (1987) and Quattrone and Hopper (2005), Dechow and Mouritsen (2005) equally consider that ERP systems are not fixed objects; rather they are moldable, yet being able to strike back as the powerful juggernauts they can be, because “what was a solution at a certain point in time can be a problem at a later point in time” (p. 729).

Several empirical studies drawing on ANT link the dynamics of accounting change to Latour’s (1987) concept of *translation*, thus demonstrating that accounting phenomena ‘travel’ between different settings and engage in actor-networks in which they influence other actors’ interests (Briers and Chua, 2001). *Translation* is the central concept of ANT and is defined by Latour (1987) as the “interpretation given by the fact-builders of their interests and that of the people they enroll” (p. 108), i.e., the process by which a set of heterogeneous elements (*human* and *non-human*) are temporarily linked together (Justesen and Mouritsen, 2011), mediating and translating their interests (Hopper and Major, 2007). Accounting research through ANT’s lens is supported by the idea that accounting systems do not have intrinsic inherent properties; rather these are forged through *translation* in interactions occurring within networks of actors (Justesen and Mouritsen, 2011).

Therefore, *translation* considers the “‘deformation’ of accounting techniques” (Baxter and Chua, 2006, p. 61) through construction and interpretation of actors from global and generic configurations to “matters of fact” (Baxter and Chua, 2006, p. 61) within the context of particular local networks, balancing the distinct interests of the actors (Baxter and Chua, 2006). Occurring in particular network contexts, these *translation* processes influence the design of accounting technologies ‘in the making’ through experimentation, in which actors “actively try different manners of getting ‘factlike’

accounting inscriptions” (Baxter and Chua, 2006, p. 61). Nevertheless, as pointed by Latour (1987), the success, i.e., stabilization, of a technology being implemented depends on the establishment of a network of allies who support it and the capacity of the network actors to “transform ‘weak possibilities’ into ‘convincing arguments’ that surpass others’ experiments” (Baxter and Chua, 2006, p. 61). In those ‘convincing’ attempts, Callon’s (1986) four moments of the *translation* process are patent: (i) *problematization*, in which actors seek to “become indispensable” (p. 1) to other actors by “defining the nature and the problems of the latter” (p. 1), which would be solved if both sides negotiated the ‘obligatory passage points’⁴ created by the first actors; (ii) *interessement*, in which the proponents try to evoke actors’ attention to solve the problem and connect them to the solution proposed by the firsts, in order to form a network of supporting actors; (iii) *enrolment*, in which the proponents aim to interrelate the various roles they previously allocated to the other actors; (iv) *mobilization*, where all the relevant actors are mobilized and adopt the main solution.

Actors construct interfaces between theirs and other actors’ interests through boundary objects, which can act as devices of stabilization and mediation of those diverse interests (Star and Griesemer, 1989; Briers and Chua, 2001). In the next section, I will further clarify boundary objects, explaining how they can connect different ‘actor worlds’ in an implementation process in which diverse actors participate.

2.3.3 Boundary objects

Star and Griesemer (1989) defined the concept of boundary objects as “those scientific objects which both inhabit several intersecting social worlds and satisfy the informational requirements of each of them, which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual site use” (Star and Griesemer, 1989, p. 393). These objects may be “abstract or concrete” (Star and Griesemer, 1989, p. 393); material, such as an ERP system or a data warehouse, or immaterial, such as a corporate

⁴ Some actors shape the network in such a way that other actors, in order to achieve their own interests, must pass through a series of Obligatory Passage Points (OPP) created by the firsts (Callon, 1986; Oliveira and Clegg, 2015).

vision (Dechow and Mouritsen, 2005). In other words, boundary objects allow different groups of actors to reconcile different meanings and achieve coherence across intersecting social worlds, by staying open and flexible for multiple interpretation and uses (Dechow and Mouritsen, 2005; Hald and Mouritsen, 2013). As an extension to the model of *interessement* (Callon, 1986), boundary objects are considered an essential piece in the translation of ideas between viewpoints of groups of actors, since their structure is common enough to more than one social world to make them recognizable, despite having different meanings in different social worlds (Justesen and Mouritsen, 2011).

Star and Griesemer (1989) found four types of boundary objects: *repositories*, which are ‘piles of objects’ indexed and organized in a standardized way, having the property of ‘modularity’ which make them possible to use and borrow by different people without need for negotiation (Star and Griesemer, 1989); *ideal type*, capable of adapting precisely to a local site as they are abstracted from all domains and fairly vague (Star and Griesemer, 1989); *coincident boundaries*, objects with different internal contents which share a common referent (Star and Griesemer, 1989); and *standardized forms*, “methods of common communication across dispersed work groups” (Star and Griesemer, 1989, p. 411) which, therefore, allow the elimination of local uncertainties. Briers and Chua (2001) suggested a new category of boundary objects, named *visionary objects*, which are “conceptual objects that have high levels of legitimacy within a particular community” (p. 242) and whose identity cannot be precisely identified until it is tailored to specific settings.

Bowker and Star (1996) claim that boundary objects are ‘technologies’ through which local communities of practice develop durable cooperation practices with other communities, in a quest for overcoming the inconsistencies of standardization without the imposition of practices from one community to another. In fact, a boundary object may not just work as a temporary solution but rather persist as a durable agreement among communities of practice.

These notions of path dependency, construction of actor-networks and the bridging role of boundary objects will be mobilized in the next section, to make sense and interpret the process of organizational and technological integration in the case company.

In this specific study on the integration of FranceSub within Group CorpInc, I can only understand it as a network of diverse ‘technologies’ that have different objectives and, therefore, can be in tension with each other, if I consider the possibility of “‘boundary objects’ crossing-over global and local arrangements” (Dechow and Mouritsen, 2005, p. 697). Therefore, I can understand how integration occurs through several “working arrangements across the entire scale of global and local arrangements” (Dechow and Mouritsen, 2005, p. 698).

3. Methodology

In this section, I present the methodology employed in the current study to accomplish the research objective. Lastly, I describe the techniques deployed in order to collect information.

3.1 The choice of the case study method

As already stated, I intended to study the integration of a French subsidiary within Group CorpInc, aiming to discover “how” the latter overcame the fact that the ERP systems of the two organizations were different, “why” the board implemented a particular solution and “with what result”. The choice of the research strategy depends on i) the type of research question; ii) the control the investigator has over actual behavioral events; and iii) the focus on contemporary as opposed to historical phenomena (Yin, 2013). Given the research objective above, studying a real-life event over which I had no control⁵, the case study method was chosen. Yin (2013) states that the case study is the preferred strategy for the referred purpose. I aligned with the author and conducted a case study in Group CorpInc in order to reach a deeper understanding and knowledge of a specific event.

According to Bell (2005), the case study approach “can be particularly appropriate for individual researchers because it provides an opportunity for one aspect of a problem to be studied in some depth” (p. 10), even when the time is limited. In this case, I conducted a case study in order to study the process of integration of a foreign acquired subsidiary within a major Group in a short window of time available, taking advantage of the fact that I had been working in the parent company prior to the beginning of the case study, as described next.

3.2 Information collection

The information to perform the present study was generated through my position of financial controller at the parent company, CorpInc S.A., in Portugal, which started in

⁵ Although I was a financial controller at CorpInc, I was not directly involved in the integration process.

September 2016 and finished in July 2017. I used three main techniques: document analysis, semi-structured interviews and direct observation. I started by analyzing the Interim Reports of the whole Group CorpInc of the last few years, as well as the main internal documents of each department that can be accessed in the Group's intranet web and in the Group's website, in order to be familiar with the structure, the rules and the main indicators of each area, thus getting an overview of the whole Group CorpInc. Then, I analyzed in more detail the financial reports and the main documents and analyses performed by the management control department, as well as both ERP systems, in order to identify the similarities, differences, adaptations and impositions the parent company performed in the acquired subsidiary. Thus, this approach provided important background information to later explore in depth the impact of the ERP diversity on the integration process and how Group CorpInc was able to overcome the resulting difficulties, explaining the attainment of the implemented solution.

In addition, semi-structured interviews were conducted with the main participants involved in the process of integration of the French subsidiary within Group CorpInc, with particular relevance for the ones belonging to the IT and the MC departments. Interviews hold several advantages against questionnaires or narratives. Above all, they provide adaptability, in particular when the interviews are open or semi-structured, as the interviewer can follow up ideas and investigate motives and feelings and go beyond the answer given itself (Bell, 2005). Moreover, the way the interviewee answers to the interviewer's questions can provide information that written questionnaires do not allow, as the tone of voice, the facial expression, the reaction to the question or the hesitation can add value to the collection of the information. Therefore, 14 interviews were held in total between December 2016 and May 2017, both in the Portuguese headquarters and in the French subsidiary, with a duration comprised between 50 minutes and 3 hours⁶. Interviews were conducted with the following actors: the Portuguese General Director of the French subsidiary, the Management Control Director from CorpInc, the Portuguese financial controller assigned to conduct the MCS integration process, the IT directors of Group CorpInc and French subsidiary, a

⁶ No recordings of the interviews were made as it was understood as inhibitory for the interviewees. However, extensive notes were taken, which were further extended and complemented with recollections immediately after each interview. Follow-up contacts enabled, when required, to clarify any doubts.

financial department assistant from the parent company who was directly involved in the process of CorpInc's ERP system implementation, the Logistics and Commercial directors of the French subsidiary and the Accounting Manager and accounting assistant of the French subsidiary (see table below).

Code	Actor	Company	#	Duration (min)	Date
P1	IT Director	CorpInc	1	60	21/03/2017
P2	Controller	CorpInc	4	120; 50; ⁷ ; 30	28/12/2016; 31/01/2017; 20/04/2017; 23/05/2017
P3	Financial Department Assistant	CorpInc	1	70	20/03/2017
P4	MC Director	CorpInc	1	40	27/04/2017
F1	IT Director	FranceSub	2	185; ⁷	02/02/2017; 19/04/2017
F2	Logistics Director	FranceSub	1	170	01/02/2017
F3	Commercial Director	FranceSub	1	130	03/02/2017
F4	Accounting and HR Manager	FranceSub	1	40	08/02/2017
F5	Accounting Assistant	FranceSub	1	25	07/02/2017
F6	FranceSub's General Director	FranceSub	1	80	06/02/2017

Figure 1 – Interviews' codes and details

During the interviews, I first asked questions of a broader scope, so that I could understand the personal overview of each interviewee on the whole process. Then, I asked a set of specific questions to each interviewee related to the department the person was enrolled into and his/her main functions and role in the process at stake, in order to understand the changes in each area and why and how they occurred. In addition to the semi-structured interviews, information was also collected from informal talks with the involved Portuguese actors in the headquarters, during moments of pause as lunch and coffee breaks.

It was possible to interview the French employees personally in the French subsidiary, as I got to spend a month working in the subsidiary, which allowed me to strengthen the study with direct observation. It was possible to personally follow the gradual implementation of the Group-wide procedures and its acceptance and execution by the French managers and employees, therefore directly observing the unfolding of the whole process.

⁷ The interview was performed by email.

All names were disguised and no personal or confidential information from the two companies was revealed due to privacy issues. Although the fieldwork only finished in May 2017 (and the contact with the empirical setting actually extended until July 2017), the cut-off date of the empirical study was defined as February 2017, approximately a year after the acquisition was completed, to enable an in-depth study of the change process up to that date, through the multiple sources of evidence obtained during an extended period, until July 2017.

4. Case study – an organizational and technological processual analysis

This section comprises the empirical organizational and technological background of the two companies at stake, describing the process of integration of FranceSub within Group CorpInc under an ERP diversity context.

4.1 Group CorpInc and its MCS

4.1.1 Overview of the Group CorpInc

Group CorpInc, hereinafter referred to as CorpInc, operates in diversified industries, in particular, the construction, naval, car, and even cosmetic industries.

With factories, distribution and R&D centers and offices in Portugal, Spain, France and Africa, CorpInc distributes its products in the Iberian Peninsula through a network of own stores, franchises, concessionaries and authorized resellers. CorpInc also exports to several markets in Central Europe and Latin America. Since the 90's, CorpInc has been expanding its presence throughout the world through a policy of acquisitions, being FranceSub one of the last to be added to the Group.

4.1.2 MCS of Group CorpInc

CorpInc created in its headquarters a management control system based on some key features which has been enacted throughout the several companies of the Group.

With regard to CorpInc's organizational structure, the several companies of the Group are managed on a matrix structure, combining a geographical and a business unit perspective, with horizontal and vertical reporting lines:

In each country, there is a horizontal structure from a business unit perspective – as an example, the head of R&D is responsible for both R&D centers in France, but then that person will be hierarchically accountable to the person in charge of the businesses in France –, so there is always a connection to the top management (F6, FranceSub).

As an example, the most transversal department at Group CorpInc is the IT department. No IT Director in each country take significant decisions without consulting the Group's IT Director, [...] from software implementation to the purchase of licenses or hardware (P2, CorpInc).

Therefore, CorpInc's organizational structure is a complex one, with multiple *submatrixes within the big matrix* (P2, CorpInc).

In what concerns the management accounting system, it was developed out of the financial accounting system by adapting the financial chart of accounts to the management control necessities. Therefore, each account of the P&L, from the financial accounting system, is classified into natures such as sales, product costs, electricity or fuel, leading to the creation of homogeneous groups of accounts in order to facilitate the analysis, enabling the construction of a chart of costs transversal to the whole Group. As an example, the costs with four digits beginning with the number two, i.e., all costs with codes 2000-2999 are related with cost of goods sold; following the same logic, the ones starting by the number four correspond to other expenses; the ones starting with the number five are associated with wages; and so on, in a consistent way, across the whole Group. Moreover, each accounting record related with the P&L is linked to a particular cost center, depending on the associated cost and on the entity accountable for each center. These entities may represent an individual or a homogeneous group within the organizational structure – for example, particular departments within each company. The structure of the cost centers was designed based on the hierarchical and functional structure of the Group. This whole classification was equally enacted throughout all companies of Group CorpInc.

Regarding CorpInc's Performance Management System, targets are established within the commercial department for sales people, measured mainly by quantitative key performance indicators, which will then determine the fixed and variable commissions sales people will be rewarded with. Beyond the commercial department, the objectives for the different levels on the hierarchy are mainly qualitative ones, therefore based mainly upon qualitative indicators. Therefore, the reward and punishment system is based on those qualitative key performance indicators, thus subject to a subjective assessment by the evaluator. Above a certain level on the hierarchy, the reward is

formed by a fixed component (previously established) and a variable component indexed to qualitative indicators.

Despite its vast dimension and geographical dispersion, which requires a significant decentralization across multiple areas, Group CorpInc is still a family-owned company with a familiar culture, although with a significant presence of professional managers. Therefore, the most important decisions have to be discussed with the CEO (also a family member), who takes the final decision.

In what concerns the reporting system, an annual budget for the following year is built during the last months of every year and then revised around the middle of the year at stake. Each responsible of the various business areas and/or departments makes and submits the budget using the *Hyperion Planning*⁸ application that will then be ultimately approved by the board of directors. The annual budget can then be consulted by geographic area, business unit or accountable manager on the *Hyperion Planning* application. Apart from the performance and assistance on the budgeting task, the management control department periodically presents several reports, such as one containing the highlights by business area, country and company sent on the third day of the month which includes sales by area, sales by business area, EBITDA, stocks and the average collection period, or the complete report of management accounts sent on the tenth day of the month.

Regarding the costing system of industrial products, the cost of each cost center is determined in two different components. Firstly, the direct costs of manufacturing costs centers are assigned to the cost center. Secondly, each cost center is charged with a percentage of the indirect costs estimated by the responsible of the cost center. Therefore, in order to determine the standard cost per unit, CorpInc computes the cost of direct materials, direct labor, and overhead per unit. The cost of direct materials is calculated by multiplying the direct materials standard price by the direct material standard quantity used in the production of one unit. To determine the direct labor costs, the total amount of wages is divided by an estimated number of the total amount of hours worked in a year to determine the direct labor standard cost, which is then

⁸ *Hyperion Planning* is a centralized planning, budgeting, and forecasting solution that integrates financial and operational planning processes.

multiplied by the direct labor standard hours per unit, measured through “Shop Floor Control” software⁹. Therefore, to determine the standard cost per unit, the estimated overhead costs per unit are then added to the direct materials cost and direct labor costs. This standard cost per unit is then compared with the actual costs in order to perform a detailed analysis.

CorpInc heavily relies upon informal forms of communication. While there are defined hierarchies, procedures and periodical meetings with the top management (such as the steering committee meeting taking place once a month in each company), several decisions are taken based upon informal means of communication, in a way to promote proximity and interaction between the employees.

The MCS of the acquired French subsidiary, FranceSub, was largely based on the Group-wide MCS characteristics described above. However, it was subject to specificities encountered in the subsidiary, as discussed next.

4.2 FranceSub, the acquired French subsidiary

4.2.1 Overview of the French subsidiary

FranceSub’s history started in the 70s, when Mr D, the previous owner and CEO, continued the business initiated by his father, together with his wife. Mr D started to broaden the business through acquisitions, creating the Group in which FranceSub was included. Mr D started expanding to other countries and recruiting well known directors from competitors, the phase in which the interviewed directors joined the company. The business was successful during several years, *up to 2015. We reached a point where we had a lot of business but no real benefits, so we stopped* (F2, FranceSub). Indeed, the company was working hard but it was not being able to take advantage from the profit it was generating, due to poor management and lack of investment. Therefore, in 2015, Mr D sold FranceSub, the biggest company of the Group, to CorpInc.

⁹ “Shop Floor Control” is a real-time database used in the scheduling and control of production, as well as the capture of labor, materials, machines and time used in that production, providing information as work moves through the plant and operations are completed.

When CorpInc bought FranceSub, the latter was a profitable company, but it *couldn't leverage its profitability* (P2, CorpInc). In fact, the controllers realized that the company was generating profit but it was not being capable to grow and expand, leveraging from the money they were making, due to a lack of strategic vision and risk aversion. It needed to strengthen competences in R&D, as well as make investments at the industrial and work conditions levels, in order to improve its operational capacity. It lacked a vision and a real strategy for the future:

The main strategy, if one can say there was one, was to do more with less: less expenses, less tools, less people (F1, FranceSub).

FranceSub lacked expertise and dynamic people and *Mr D always said that there was no money to do anything* (F2, FranceSub). Before the acquisition, there was no investment in R&D, *and a company in this industry that does not invest in R&D is a company that cannot evolve, create new products* (F3, FranceSub). Furthermore, work conditions were not the best, as the employees in the warehouse machines used to work with negative temperature.

It was noted a very significant disinvestment at the HR and work conditions levels. The previous CEO reduced at the maximum the investment in equipment and building structure (F6, FranceSub).

4.2.2 MCS of the French subsidiary

Before the acquisition by CorpInc, FranceSub did not have what we can call a management control system. It did not have a management accounting system, so the company was managed only through financial accounting, which sometimes led to the production of inaccurate information:

[FranceSub] had some detailed accounts by person, department, but not MC as it has now. They [merely] detailed and added more accounts in the financial accounting in accordance to the needs they had (P2, CorpInc).

Thus, the previous Accounting Department added accounts to the chart of accounts whenever it was necessary to consider additional and noncurrent expenses.

With regard to the Performance Management System (PMS), in line with Mr D's profit orientation, the focus was on the Commercial Department, where commercial people had established targets and commissions. However, those targets were defined by the Commercial Director himself, as there was no orientation coming from above and, if there existed, *it was always to do more than we did in the previous year* (F3, FranceSub). There were no targets defined and coming from the top of the hierarchy, so the Management Committee, formed by the Commercial, Logistics, Manufacturing and IT Directors, had to define them to their teams. There were no meetings between the directors and employees to discuss the previous year and establish objectives for the next one, and, apart from the commissions attributed to the commercial people, there was no reward and punishment system. Overall, a PMS was inexistent, and the reason was that *Mr D knew that if there were targets [beyond the commercial area], there would have to be rewards* (F2, FranceSub).

Before the acquisition, FranceSub was governed by an autocratic regime, in which the previous CEO centralized in himself all the decisions, *communicating them or not to the management committee* (F2, FranceSub). As it was a family company, he and his wife controlled all aspects of the business, without involving the other employees in the future of the company. Moreover, Mr D was risk averse, and he did not make any investments or pursue innovation, either on the future business of the company itself (R&D) or in the work conditions for the employees in the lowest positions. *Old management was not in the best interest of the company but in the CEO's best interest* (F2, FranceSub). Previous employees felt that there was no recognition for their work or trust in their decisions, as well as no motivation to improve.

He didn't motivate the employees, create commitment from them or give responsibilities. We [Management Committee] used to motivate and define objectives by ourselves (F1, FranceSub). Therefore, with no guidance from above, *it was difficult to manage the people below us too* (F2, FranceSub).

Regarding the reporting system, as mentioned before, FranceSub focused mainly on commercial results, so an annual budget for the sales area was presented, including margins by geographic area, sales person and business sector, as well as the operational costs. Monthly, the commercial department analyzed the results and compared it to the

budget, focusing on sales and margins. Within the commercial department, every Monday, each sales person used to send a synthetic report to the Commercial Director, with all the clients they met in the previous week and their code, *so that me and my assistant could see how much time they spent with each client and how many new clients they raised* (F3, FranceSub). Monthly, the Commercial Director presented an activity report, by region, with all the statistics plus the targets for next month. The accounting department had information to report every month, *but they were not deep or detailed ones* (F4, FranceSub). More detailed reporting was done semiannually.

FranceSub's ERP system, ERP2, was functional and capable of producing the relevant information the managers needed to take their decisions, so it was well adapted to FranceSub's business. However,

The previous owners of the company did not give employees access to the information; the previous system was prepared in that way. Thus, CorpInc had difficulties in accessing to some information [formulas and manufacturing information]. The purchases and sales flows information was restricted; only the previous owners had access to it (P2, CorpInc).

In what concerns the communication system, it was based mainly on informal forms of communication. *The office of the previous boss was near the other employees' [area], so we could go there asking questions directly* (F1, FranceSub). As referred above, the CEO and the management committee used to meet once a month to discuss the general financial situation of the company. However,

The CEO used to take all the decisions by himself and then let the management committee know. Even close to the acquisition by CorpInc, the management committee was not informed (F2, FranceSub).

Culturally speaking, FranceSub was a typical small French, family-owned company, in which *everybody knew everybody* (F5, FranceSub). All decisions were centralized and taken by the couple, driven mainly by financial results and the seek for profit. *Managers 'were stuck' between Mr and Mrs D, as we did not have autonomy or authority to sign [authorize] anything* (F2, FranceSub). Therefore, FranceSub had a culture in which all

decisions should pass by the CEO, who *always had his office door open*, and *always had the last word* (F5, FranceSub). Employees just obeyed and respected.

It was comfortable. There were challenges at the beginning but then it became comfortable (F2, FranceSub).

In fact, FranceSub got ‘crystallized’. The lack of innovation led to the establishment of routinized behavior that was not being challenged anymore, increasing the lack of enthusiasm among employees.

4.3 The process of MCS integration – an overview

4.3.1 Organizational integration and cultural issues

When CorpInc started the integration of FranceSub within its Group, controllers came across with some difficulties in accessing the information due to the fact the previous owners prepared the system in a closed way, so that they were the only ones with access to relevant data, as already mentioned.

That, in fact, was not unusual among French people, as the controller from CorpInc in charge of the process had to first spend time in working on building trust with FranceSub’s employees, as they needed a “dating talk”, in order to obtain the necessary information and instill CorpInc’s practices. In early stages, before responding to a request from the controller or CorpInc’s employees, FranceSub’s employees asked a lot of questions in a constant quest for justification and *sometimes they said yes and ended up not doing it or doing it in their own way* (P2, CorpInc). The controller from CorpInc initially found some resistance in the field, *especially regarding the meeting of deadlines* (P2, CorpInc). The controller had to repeat requests and the explanations multiples times, because employees *did everything “drop by drop”* (P2, CorpInc). This opposition was interpreted by the controllers as a way of the previous employees to protect themselves, as they knew that, *within integration processes, they could lose their job* (P2, CorpInc). Controllers explained the dimension and role of CorpInc within the business, in order to instill them respect for the Group they were working for, involving them in the creation and dissemination of the procedures, so that they would feel part of

it as active contributors to the process. As the time went by and FranceSub's employees started to know CorpInc and its employees, they gradually came to recognize CorpInc as a well-known and respectable company and gradually came to accept and adapt its rules and procedures.

The organizations' cultures were different: CorpInc has a decentralized culture, which contrasts with the familiar culture of the French subsidiary, in which all decisions were centralized in the CEO. Despite that, the integration was considered reasonably smooth by both parts, as CorpInc's employees spoke in French when arrived to FranceSub, listened to the employees and tried to understand how they worked before starting to implement processes according to the practices of Group CorpInc.

It was a smooth transition; it was not a shock (F1, FranceSub).

4.3.2 An evaluation of the first year: from enthusiasm to disillusion

Despite the initial reluctance towards CorpInc's employees and its way of working, FranceSub's employees' reaction to CorpInc's acquisition was, in fact, positive as they were actually not satisfied with the previous situation of the company:

We knew we couldn't continue like that. [FranceSub] had procedures and habits which were not making the company competitive from an R&D point of view, and there was a lack of strategic decisions from Mr D, so we were just waiting for the wind to come. It was positive that CorpInc bought FranceSub because it was a sign that FranceSub was interesting and CorpInc could bring more power, turn it more competitive, with best practices and with a strategic direction (F2, FranceSub).

After initial reluctance among employees, they gradually became receptive, collaborative, and active. *They understood it as an opportunity for FranceSub to develop itself because, until that point, it was too "paralyzed", as the previous owner stopped investing in it for a long time (F6, FranceSub).* Therefore, previous employees knew they would be the *real beneficiaries of that change of culture (F6, FranceSub).* Therefore, when CorpInc bought FranceSub, *it was like a new birth for the company (F2, FranceSub).*

However, that initial enthusiasm faded throughout the first year. Despite the big expectation and confidence in such a big Group as CorpInc, the overall process did not correspond to the previous employees' expectations, as they were expecting to see more changes during the first year after the acquisition:

Nothing has changed. The commercial people still continue with the same range of products to sell. With CorpInc, with its big numbers and big structure, we thought we would get better but nothing has changed yet (F3, FranceSub).

The old employees thought that CorpInc would be more prepared and would know more about FranceSub when it bought the company and, hence, there would be a precise plan of information, communication and implementation:

CorpInc gives the impression that didn't "open the box" of FranceSub and didn't know what was in the box before buying it (F2, FranceSub).

In fact, previous employees were expecting a clearer definition of the roles, more and new responsibilities, a new strategy and future for the French subsidiary, as well as a clear organizational structure, so that they could understand the dimension of the Group and whom to answer and ask questions to:

CorpInc still lacks clear projects with clear aims and goals. They lack formalization, procedures and clear definition of roles. It seems that there is kind of a 'jet lag' in the corporate communication (F2, FranceSub).

Therefore, there was still a big uncertainty and several questions without answers:

The global idea of CorpInc is very good, to reinforce the position in the French market, but then the approach was not very well done. People from CorpInc are very good professionals but the integration process is not clear even for them (F2, FranceSub).

As a result, the integration was going *too slow* and lacked dynamism in decision making. As an example:

The Exports manager left in July. For 6 months, no one replaced him and exports are 26% of FranceSub's sales! I don't even know if CorpInc has too many managers or not enough (F2, FranceSub).

Due to all these doubts and difficulties, some employees left FranceSub after the acquisition, as *some of them were expecting new things, new responsibilities and nothing happened; so they left* (F3, FranceSub). To a certain point, FranceSub's managers understood the situation because they were aware that it was a big transition from a familiar company to a big group, so it was a 'collision' of two very different worlds. Nevertheless, at the same time, one year had passed, and:

Nothing has changed. It was not difficult to deal with the acquisition because the main functions are the same as before but the amount of work is way too much. It was good on one hand because we didn't lose anything but, on the other hand, we didn't win (F2, FranceSub).

4.3.3 January 2017: Back on track

Nevertheless, at the start of 2017, changes seemed to be finally taking place:

Since January [2017], we are having a lot of work but at least we know we are in the right direction. I would like to have seen that since July of last year, after 6 months of observation (F3, FranceSub).

The management committee started to observe more dynamic, clearer actions and specific targets, so *the delay is recoverable* (F1, FranceSub). As described by F6, CorpInc's representative at FranceSub, the process was considered positive so far:

Taking into account the fact that CorpInc could have done a faster integration, [my evaluation] is moderately positive. It is accelerating more now [February 2017] to recover this delay. The strategic plan was more or less clear but its execution and the action to perform it were not elaborated and clear. It was not by sloppiness; it was because the right conditions to the good execution of that plan were still not created.

Those conditions started to arise now. CorpInc needed a year to ensure the conditions to make that integration possible (F6, FranceSub).

CorpInc recognized that the work was, indeed, flowing faster but there was still a lot to do:

With regard to management accounting, it is implemented, being however subject to improvements arising from daily work situations that can be incorrect or not adjusted to CorpInc's rules. In what concerns the planning and report system, we have had difficulties in ensuring meeting deadlines, mainly because of the difficulty in obtaining the final monthly closing accounting information. Changes are being implemented in order to optimize processes and make them uniform across Group CorpInc's companies and to obtain economies of scale arising from the renegotiation with suppliers from the Group. With regard to the organizational structure and other structural changes, they are gradually being made. The principles and values of the Group were transmitted to all areas and the procedures are being implemented in accordance to the priorities and necessities identified. Finally, the implementation of the performance measurement system is the area that is lagging behind, being still in the data collection phase (P2, CorpInc).

There was not a script for the implementation of FranceSub within Group CorpInc, which would turn the integration faster. However, CorpInc's approach was slightly different, as it is customized to every acquired company. As a consequence, CorpInc had to adapt to several issues and deal with unexpected situations, which made the compliance of the previously defined timeline for the integration not possible.

4.4 Restructuring ('CorpIncizing') FranceSub

As a consequence of its international expansion, CorpInc developed a standardized global MCS, based on the MCS of the parent company, enacted throughout the Group's subsidiaries in order to better coordinate and scrutinize their performance. Therefore, when CorpInc bought FranceSub, a team was sent to the newly acquired subsidiary with the mission of implementing those same procedures, authorizations, reporting and

processes of management control as they existed in the parent company. However, CorpInc did not impose anything. In fact, its approach was different.

CorpInc's controllers contacted FranceSub's employees to learn about their way of working and their organizational culture so that the team could decide which procedures and norms to instill based on the headquarters' MCS. Instead of strictly imposing the Group-wide procedures, the controllers got to know how 'things were done' at FranceSub so that they could adapt the Group's standardized procedures to the reality found in the French subsidiary.

CorpInc does not have a script for integrations. We are very careful because there is a very important component when buying a company, the psychological one, so imposing can mean the loss of suggestions that could be needed, so we are 'conquering' people. There's no recipe, so we build the path as we are going along (P3, CorpInc).

Therefore, CorpInc did not have a checklist to fulfill when it started the integration. Instead, the plan was to follow the Group-wide MCS and, in particular, the procedures and processes already implemented in the other French subsidiary of the Group which already existed for many years, in order to obtain synergies and bring both French subsidiaries together.

Consequently, there was not a global restructuring of FranceSub. CorpInc kept all FranceSub's employees and the image of the company; it maintained the basic structure of the organization but adjusted it, bringing it closer to the global norms of the Group. Thus, *CorpInc took advantage of the best of FranceSub, improving what needed improvement (P2, CorpInc)*, employing a progressive change approach instead of a disruptive one, bringing it into Group CorpInc step by step.

Despite CorpInc's lack of a script when it arrived to FranceSub, some issues were previously defined as priorities by the management control team. The main concern relied on the possibility of all companies to close the accounting year at the same time and prepare the budget according to the same patterns as those of the Group. Therefore, priority was given to the enactment of accounting rules, namely the implementation of a

single chart of accounts similar to the one existing in the Group – which implied the creation of new accounts and the elimination of others –, and the report of monthly results with the same deadlines of the Group. At the operational level, priority was given to the implementation of CorpInc’s procedures regarding the counting and valuation of inventories, as well as the regularizations of stocks along the year. In order to explore synergies between companies in the Group, CorpInc started to centralize the purchases and insurance expenses at the headquarters in order to achieve better conditions, as well as instill the same approval levels and expenses. Finally, synergies were sought with the other French subsidiary in the Group, geographically close to FranceSub, namely at suppliers’ level, IT system expenses and wage processing, done by a common external company. Moreover, the R&D laboratory became common to both subsidiaries, as FranceSub did not possess a center of research.

4.5 Network integration under ERP system diversity

4.5.1 ERP diversity within the Group

When CorpInc bought FranceSub, the latter had an ERP system different from the Group-wide one. Therefore, the whole process of FranceSub’s integration was conducted taking into account both systems’ specificities and technical features.

CorpInc’s ERP system, here identified as ‘ERP1’, has been managing the flow of information of the Group – excluding the subsidiaries in Africa – for thirteen years. ERP1 is considered to be aligned and well adapted to CorpInc’s businesses and very customized to the Group’s specific needs. Nevertheless, it is nowadays regarded as technologically obsolete and inadequate, and it did not have many updates along the years. Therefore, the ERP is not keeping pace with evolving needs:

The Group is different nowadays and the needs are different now, so the realities are different too. Processes got somehow ‘crystallized’ (P3, CorpInc).

By the time of this research, ERP1 was present in every company in the Group except for the African subsidiaries (which run ‘ERP3’) and FranceSub (with ‘ERP2’). This rather extended prevalence of ERP1 within CorpInc promoted many functions

becoming corporate and transversal to the Group, since the communication and flow of information was facilitated.

With regard to CorpInc's ERP system, ERP1, sometimes data is not extracted in the same way by all users, which may result in incoherent information. As users have access and freedom to the 'big raw data', i.e., the platform containing all the companies' 'raw' information, users can retrieve the information in their own way. Indeed, *some measures of control have to be created because the ERP [if wrongly used] can turn against the company* (P3, CorpInc). Therefore, according to this interviewee, the proper way should be to have all data retrieving procedures previously defined and constructed by the IT department, so that the users would only have access to that consolidated and predefined information. Centralizing, therefore, the processes in the IT department could turn the search slower but it would made it much more controlled too, so the best way would be to find an equilibrium between users autonomy and predefined procedures.

This example illustrates that, although ERP1 is a consistent and stable ERP system, i.e., with no change processes underway, it is always subject to micro-level phenomena – of the actors controlling the network – that can threaten and destabilize the system. Those micro-level threats – such as those resulting from the 'freedom' of information retrieval – are not being solved, and there are no perspectives of being solved in the short term. Therefore, suboptimal situations can persist in the future – although, admittedly, without having a huge detrimental impact on the overall functioning of the system.

On the other hand, FranceSub's ERP system, here called 'ERP2', was implemented at the beginning of 2004, as a result of a project started in March 2003. From an organizational point of view, ERP2 is adapted to FranceSub's multi-site, multi-company¹⁰ context, being able to manage all the important aspects of FranceSub's business areas, including sales, production, inventory and logistics, and accounting:

ERP2 was able to evolve and adapt to the new arising issues, therefore developing in accordance with FranceSub's evolving needs (F1, FranceSub).

¹⁰ As mentioned in section 4.2.1, FranceSub belonged to a French Group, whose companies all shared the same ERP system, ERP2. However, Group CorpInc only bought FranceSub, the biggest company of the Group.

At the time of ERP2's implementation, the main priorities were to integrate, centralize and make reliable information management, structuring the processes and enabling the continued usage of the tool for an extended horizon. During the initial ERP2 implementation project in 2003, the commercial management, inventory management and logistics areas were better developed due to a more structured project, with complete specifications and the use of pilots and key-users. As a consequence, accounting and production management were much less developed, with little or no specifications, without initial pilots or key-users. Nevertheless, accounting has been greatly improved over time, contrary to production management, that stagnated at a rather low level.

ERP2 is a rather poorly functioning and fairly permissive ERP system in the access to information and flow execution, which is compensated by its great adaptability (F1, FranceSub). ERP2 is, therefore, very well adapted to the particularities of FranceSub's businesses and management rules, where processes are clearly established.

In what concerns management control, ERP2 enables control to the extent that it contains the raw material that constitutes the information, meaning that all FranceSub's flows are managed in a systematic way to promote consistency. Integration is complete between the different business lines within FranceSub, allowing a transversal vision. Nonetheless, FranceSub's IT department initially considered that the main weakness of ERP2 was the production of synthetic information in the form of dashboards and measuring tools, a weakness that was circumvented by the development of auxiliary tools and extraction processes, and ensuing data analysis, allowing daily management.

In order to enable management control through ERP2, CorpInc's first step was to standardize the reporting system to ensure the simplification of the access to data and the improvement of its quality, cleaning the data, as ERP2 contained several fields without rules about data entry. The priority was to create tables to access the data as close as possible to CorpInc's pre-defined queries, in order to allow the export of data from ERP2 (as further discussed below). A system was idealized as enabling CorpInc's management control department to be autonomous on the extraction of information in accordance to its needs, without being so dependent on FranceSub's IT department.

Another important procedure to enable management control by CorpInc's controllers was to standardize information fields of the basic information tables with respect to FranceSub's and to the other French subsidiary's information, regarding data on products, clients, stock movements, and other key variables.

4.5.2 Impact of ERP diversity on organizational integration

The integration of a company within a Group often implies the unification on IS, in order to facilitate the production of standardized information and its flow between companies. CorpInc, as an international Group, had already experience in integrating acquired companies in its Group. With exception for its subsidiaries in Africa, CorpInc had always followed the rule of implementing in the acquired company the ERP system of the Group, standardizing the procedures, reporting and access to information in both companies. However, the integration of FranceSub was performed taking into account both companies' ERP systems:

The first thing CorpInc did on its arrival to FranceSub was to see if the ERP system worked well or not. The big challenge for CorpInc was to understand 'how' to retrieve reliable information from the company they were acquiring, in order to make good decisions (F1, FranceSub).

CorpInc's management control department considered that one of the biggest and transversal barriers for the integration of FranceSub within Group CorpInc was the ERP diversity, particularly in areas which required much intervention or interaction between both companies. As an example:

I was assisting CorpInc's purchasing department – that has access and knowledge on ERP2 – on the extraction of data on the consumption of raw materials in order for them to perform a forecast of the purchases to prepare the suppliers' negotiation. Since I don't have full confidence on the information and reports that come out of ERP2, I chose to explain them how the queries created by FranceSub's IT Director worked and perform the analysis from this information instead (P2, CorpInc).

For CorpInc's management control department, the biggest primary difficulty was to identify 'where to obtain the correct data', since ERP2 at FranceSub was considered to

be a very limited ERP system regarding the export of information, due to information access constraints imposed by the previous owners:

Since the data obtained through the ERP system is the ‘raw material’ for the work developed by the management control department, the lack or difficulty in accessing correct, complete and reliable information is the main obstacle to the implementation of a management control system (P2, CorpInc).

Moreover, some FranceSub’s basic concepts of information analysis were not the same as CorpInc’s, which raised some constraints for the ERP2 system:

Take the example of the sales margins of the products. In CorpInc, the most basic concept for the margins analysis is the “gross” margin, whereas in FranceSub it was the “industrial” margin¹¹; thus FranceSub’s ERP system was not parameterized to calculate the “gross” margin. Therefore, we had to guarantee that ERP2 could indeed calculate the “gross” margin as it is calculated in CorpInc, requiring a change in the margins’ calculation algorithm in ERP2, and only from that moment it was possible to collect accurate information based on the “gross” margin. Moreover, as ERP2 does not rebuild the historical information, the management control department does not possess data comparable to previous periods in this area (P2, CorpInc).

Summing up, the fact that CorpInc’s management control department encountered a different ERP system at FranceSub was by itself a barrier as it required, in an initial phase, the planning and implementation of a different data extraction process. However, according to CorpInc’s controllers, the major hindrance was indeed the unavailability of information, its reliability, and the guarantee that the algorithms and the concepts used by FranceSub were the same as CorpInc’s.

However, this was not the overall judgment on the impact of the ERP diversity on FranceSub’s integration. Despite the fact that, indeed, the ERP diversity made the process of standardization and implementation of CorpInc’s procedures at FranceSub more difficult, both companies’ IT departments considered that *it was not a critical aspect* (F6, FranceSub). Actually, at that time, ERP2 worked well, it was clear and

¹¹ FranceSub considers “industrial” margin to include raw material, packaging and production costs. CorpInc’s concept of “gross” margin incorporates raw material and packaging cost.

functional, and in some aspects it was considered to be more ‘user friendly’ than ERP1. It had data extraction capabilities to, at least potentially, respond to CorpInc’s requirements. Further, ERP2 had a high capacity to evolve according to CorpInc’s requests, namely in the implementation of a management accounting system and adoption of CorpInc’s key performance indicators. Therefore, the consistency of ERP2 contributed to reassure CorpInc about FranceSub’s ability to provide the necessary information to steer integration, thus ruling out the urgent need for the integration of the new subsidiary in the Group-wide ERP system.

The interest was in the end and not in the means, and the main principle was to respond to CorpInc’s requests, so having the same system was not necessarily the most important priority (F1, FranceSub).

However, this potential of ERP2 to fulfill CorpInc’s information requirements was not sufficient and required further organizational and technical efforts, as described next.

5. Case study: additional empirical insights, theorization and discussion

This section presents additional empirical insights on integration challenges and solutions, and theorizes and discusses the overall empirical observations. In particular, it describes the construction of actor-networks in the quest for integration through the mobilization of boundary objects which bind space and time, bridging therefore the past and the future.

5.1 A loosely coupled network

Like other companies wishing to develop and diffuse standard systems to their dispersed subsidiaries to better coordinate and control their activities (Cruz *et al.*, 2011), as described in the previous section, CorpInc also designed a single chart of accounts and established accounting rules and key performance indicators at the headquarters, to be enacted throughout the Group. This was the case regarding the shift at FranceSub from the usage of an “industrial” margin (includes raw material, packaging and production costs) to the usage of CorpInc’s “gross” margin (raw material and packaging cost), as it was norm of the Group. The intention of this enactment was to improve the consolidation of all Group-wide accounts, enhancing the visibility and comparability of the performance of the dispersed subsidiaries.

However, standardization and uniformity were not imposed in all areas, and relevant variations remained in several domains, resulting in a loosely coupled system. The following examples are illustrative. The first set of examples concerns non-integrated reports production; the final example is a more significant and structural arrangement regarding the IT architecture, based on a loosely coupled system.

Local management control reports regarding FranceSub are produced to meet CorpInc’s information requirements and are made available through the provision to CorpInc of direct access to the ERP2 database (through Microsoft SQL server¹²). Therefore, management control reports travel across the Group based on granting access of local

¹² Microsoft SQL Server is a database server that stores and retrieves data as requested by other software applications, which may run on the same computer or across a network.

systems to actors across the Group, even though the systems of the two organizations remain different and, in what concern these reports, with no need to further coupling.

Pre-defined Group reports must be filled with particular information by every company in the Group, and are sent to FranceSub's managers for them to fill in and resend in defined timelines. Usually, FranceSub's managers fill those reports in with previously prepared information. In situations in which the required information is new or different, FranceSub's managers develop local management report maps based on CorpInc's MC department requirements. As an example,

The monthly highlights map, that has to be sent by the third business day of the following month by each company in the Group, includes sales data, gross margin data, expenses forecasts and other operational income and costs, stocks, salaries, number of employees, etc. This report did not exist in FranceSub and even some indicators were not used there; therefore, each person in charge of the preparation and report of the information had to review his/her reports and ways of working in order to include the calculation of those indicators required by Group CorpInc (P2, CorpInc).

In cases where CorpInc's controllers verify that the information prepared by FranceSub is in compliance with the headquarters' requirements, reporting data in FranceSub's usual formats was accepted, at least during an initial period:

For a first analysis of the evolution of the different businesses, we use the maps previously prepared by the commercial direction. With regard to the budget, for 2016, we did it based on the information maps that FranceSub had previously used. However, in 2017, we implemented the existing budget procedures at CorpInc in FranceSub and requested the budget to be built in accordance to those Group rules (P2, CorpInc).

Furthermore, FranceSub provided a cube of sales data, whose tables are fed automatically every night and are directly accessed by CorpInc:

This tool allowed analyses on measurements and on axes and perimeters, although limited and pre-established, but which the user can, within the defined framework, easily adapt to his needs (F1, FranceSub).

Therefore, the above examples illustrated how organizational integration (flow of information across organizational units) was achieved, at least in certain periods, in spite of continuing lack of tight coupling between the information systems.

A more significant example is related to a structural feature of the IT architecture, which supported a loosely coupled system within the overall Group. When initially implementing ERP1, CorpInc's IT department created at the headquarters a data warehouse which functions as a repository of data that gathers information from the subsidiaries and then presents it, in an uniform way, in the Business Intelligence portal. This data warehouse represents an intermediate step in the treatment of information, guaranteeing the consistency and direct comparison of all subsidiaries' information accordingly to the parent company's requirements. The data in the warehouse is subject to 'data manipulation', i.e., processes of 'data cleaning', in order to remove unnecessary elements so that the extracted information is simplified. The non relevant information is then transferred to a 'default' feature that will then be analyzed by the IT department.

The 'data warehouse' joins info from several areas such as sales, products and others, so there is another tool (the Business Intelligence portal) that has several applications which will extract information from the 'data warehouse'. Even regarding the sales summary for the administration, 'Hyperion Planning' also extracts information from that 'data warehouse'. So the source [data warehouse] is unique in terms of reporting but it has several applications organized in a coherent manner for all the systems (P1, CorpInc).

Another FranceSub's initiative to respond to CorpInc's requirements was the creation of an intermediate database for accounting and management control purposes (DW_[CORPINC]_CONTROLLING):

[This intermediate database] was intended to provide 'raw material' for management analysis, with basically three types of data (distributed according to different angles in a dozen of tables): article entries (movements of inventory), general accounting entries (including analytical breakdowns), and customer account balances (F1, FranceSub).

This intermediate database emerged because, as already mentioned, the integration of FranceSub within Group CorpInc was performed in an ERP heterogeneity context, in which the acquired subsidiary was not integrated in the Group’s ERP system, ERP1. Therefore, despite the substantial enactment of the Group-wide procedures, values and rules, the integration was not complete.

Instead, the overall IS architecture (see figure 2) was constituted by the three ERP systems and three additional elements – a data warehouse, a Business Intelligence portal, and the *intermediate* database (IDB). This IS architecture resulted in a loosely coupled system, in which the different ERP systems are only coupled, i.e., linked, through these additional objects. The intermediate database allows the connection of ERP2 to the Group-wide data warehouse, which otherwise could not be directly linked. This data warehouse, central to the whole Group, functions as a repository of all companies’ information, making the connection between ERP1 and ERP2 by first extracting information from ERP2 and then presenting it in the Business Intelligence portal. As a result, the standardized information of all companies can be accessed at the headquarters, providing, therefore, direct comparison between companies and an overall overview on the whole business.

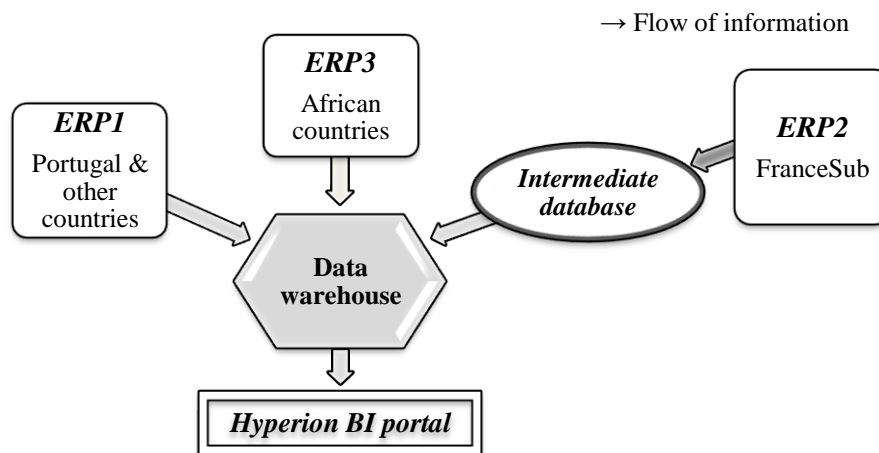


Figure 2 - Group CorpInc’s IS architecture

The intermediate database, developed to connect and mediate both sides, is an open system which undergoes changes whenever necessary, providing CorpInc with flexibility to alter and adjust the two loosely coupled ERP systems when required. In addition,

from a theoretical perspective, this intermediate database can be conceptualized as a boundary object – a key insight that will be explored later in this section.

However, it should be clarified that CorpInc’s ultimate goal concerning ERP systems is the implementation of a global ERP system for the whole Group which, if successfully executed, will promote productivity and efficiency benefits. Consequently, in this envisaged architecture, all companies will be connected directly, with no need for supplementary features. Therefore, instead of a loosely coupled system, the envisaged global ERP system will constitute a tightly coupled system, with additional systems limited to the data warehouse and BI portal.

5.2 The role of boundary objects

As already mentioned, Group CorpInc integrates a large number of different companies, reason why it soon found a way to standardize and organize the flow of information coming from all its subsidiaries.

As mentioned before, CorpInc created a data warehouse to function as a repository of information coming from all the subsidiaries, presenting it then uniformly in the Business Intelligence portal. Therefore, the data warehouse works as a boundary object already existing prior to FranceSub’s acquisition in so far as it allows the connection of the subsidiaries’ and the headquarters’ worlds by moderating their linkage, with the purpose of overcoming the inconsistency of information extraction processes and satisfying the information requirements of the parent company. This pre-existing boundary object is classified as a *material* boundary object as it takes the form of a data warehouse, allowing the achievement of coherence of information through the *translation* of both parts’ interests and requirements. From Star and Griesemer’s (1989) boundary objects classification, I positioned the data warehouse as a *repository* boundary object, in the sense that it organizes the information extracted from all subsidiaries in a standardized way which central users can then access without need for negotiation.

At the time of its creation, the data warehouse was thought to be a durable agreement and perpetuate the path of the Group in terms of production and flow of intra-group

information. Therefore, even after the envisaged implementation of a new global ERP system, the data warehouse will still be an important tool to gather and store the information of the whole Group. Hence, the ERP2 – data warehouse connection was not a solution created specifically to solve the ERP diversity at stake but indeed a ‘repetition’ (albeit with the mediation of the intermediate database) of the process CorpInc normally performs when acquiring a new subsidiary. By the time of the integration of the new French subsidiary within the Group, a new liaison was created between both ERP systems through the pre-existing data warehouse, guaranteeing the reporting and flow of standardized and comparable information in the Business Intelligence portal.

Focusing now on the specific case of the integration of FranceSub within Group CorpInc, there was the need to add another boundary object to the pre-existing one due to the difficulty in integrating a company in an ERP diversity context. This new boundary object was particularly created to link both systems and mediate the ERP heterogeneity until the future implementation of the new global ERP system.

FranceSub developed the previously referred intermediate database for sales statistics upon request and according to CorpInc’s headquarters’ requirements. In fact, this intermediate database is an important piece for the connection of both ERP systems, as it was *built from ERP2 in order to resemble ERP1* (F1, FranceSub). The updating of the data warehouse with FranceSub’s sales statistics is done through the intermediate database rather than directly from ERP2, so that FranceSub’s information in the Business Intelligence portal can be reported in the same way as of the other companies of the Group, in accordance to the parent company’s requirements.

Therefore, CorpInc’s IT department created the intermediate database based on the ERP1 system, replicating the same base structure and the same format *for the integration to be more straightforward* (P1, CorpInc). In the first phase, CorpInc’s IT department did not develop the intermediate database in great detail, reinforcing its components as it was required. After constructing its base structure, CorpInc’s IT department transferred it to FranceSub’s IT Director for him to develop and ‘feed’ it with FranceSub’s information, although without ever losing access to it. Therefore, this

arrangement involved the provision of data exclusively in the FranceSub – CorpInc direction, being directly exploitable by CorpInc.

The gains that we may have in organizational terms will be the standardization of the processes in the same way as it is done at CorpInc (P1, CorpInc).

Technically, the intermediate database intends to feed CorpInc’s Business Intelligence portal with FranceSub’s statistics. It was built into FranceSub’s infrastructure through the SQL Server hosting the ERP2 database and includes basically two tables containing the invoicing data and the customer/client data, which are attached to specific FranceSub’s tables. Those tables are updated automatically every night, allowing CorpInc to autonomously access to reliable and formatted information.

The preparation for the construction of the intermediate database followed a very classic process: it began with the definition of needs, analysis of the options and development of the selected ones, going then for the testing and validation of the most suitable ones in order to finally execute the first rated option. Traditional criteria were taken into account, namely the use of existing resources, information reliability, technical accessibility, and automation, considering the access to information as a critical point of the integration process. As mentioned before, CorpInc’s role in the conception of the intermediate database relied on the creation of the base structure in accordance to ERP1 configuration. With regard to FranceSub, its responsibilities concerned the analysis of the needs and requirements of the parent company, the subsequent development of the tool from the base given by CorpInc after previous validation, and the execution of the database, which implied both functional and technical knowledge of FranceSub’s management tools.

Similarly to the data warehouse, the intermediate database works as a *repository* boundary object by (indirectly) connecting both ERP systems, allowing therefore the communication and flow of standardized information from FranceSub to CorpInc’s central data warehouse. Summarizing the description above, the intermediate database was built with the intention of overcoming the information extraction obstacle and serve as a mediator between both parts, as it was not possible for CorpInc’s data warehouse to extract information directly from ERP2 to meet its goal of having all subsidiaries’

information presented in the Business Intelligence portal. Therefore, through the intermediate database, it is possible for the data warehouse to collect and present information already produced in the Group-wide standardized way for all subsidiaries. In fact, if this intermediate database did not exist, the two ERP systems could not be directly linked. This impossibility would force FranceSub to go back to the previous procedures, i.e., extracting data manually directly from ERP2 and then sending it to CorpInc, which would mean the loss of time and efficiency, the increase of the risk of human error and the execution of repetitive tasks with low value added.

5.3 The creation of actor-networks in the quest for integration

5.3.1 Definition of the actors

The collected empirical evidence allowed the identification of organizational actors who connected and influenced each other, leading to the construction of actor-networks, towards a particular form of integration of FranceSub within Group CorpInc, and the consequent successful operation of a diversified network including heterogeneous technological components.

Actors are here classified as *central* or *local* actors (Oliveira and Clegg, 2015), depending on the acting field of the actor and on the perspective endorsed by the researcher. I here followed Quattrone and Hopper's (2005) description of the existence of a 'centre' and 'peripheries' in one of the organizations they studied, along with Hyvönen *et al.*'s (2008) ANT study on the influence of the 'centre' (headquarters) over 'local' actors and sites. I, thus, also consider those categories in this case study.

Following the ANT perspective, *human* and *non-human* actors can be therefore classified as *central* or *local* actors, depending on if they are working on the headquarters or in the subsidiary. However, this classification may not be straightforward, as there are *non-human* actors transversally used by *central* and *local* actors. As an example, the intermediate database is a *local non-human* actor as it was developed in the subsidiary but it is serving the headquarters' interests to obtain reliable information from FranceSub. This *central/local* classification applies to both *human* and *non-human* actors, as well as to both *collective* and *individual* actors. Summing up,

collective and *individual* actors can be each categorized as *human* and *non-human* actors, both of which can, in turn, be subdivided into *central* and *local* actors.

In this case, I identified and categorized below the actors at stake in order to, subsequently, explain how they interact with each other towards the creation of actor-networks.

Starting from the main distinguishing concept (individual vs. collective actors), within the *individual* actors, I considered CorpInc's IT Director as a *central human* actor, as his field of action is the Group's headquarters. On the other side, I considered FranceSub's IT Director, FranceSub's General Director and CorpInc's controller in charge of the integration of FranceSub as *local human* actors. Although the General Director of FranceSub and the controller in charge for the integration have the Group's headquarters as their permanent position, both were assigned to be physically located and work at the French subsidiary for one year to serve as connection bridges between both companies and facilitate a faster integration; therefore, both were classified as *local* actors instead of *central* ones. In what concerns *non-human* actors, as mentioned before, some classifications may not be straightforward. CorpInc's ERP system, ERP1, and the data warehouse studied above were classified as *central non-human* actors as only the headquarters' employees have access to both. Despite FranceSub's ERP system, ERP2, and the intermediate database having been developed at the subsidiary level, both are differently accessed and used by both *central* and *local* actors. Nevertheless, both were classified as *local non-human* actors as they are essentially under structural control of *local* actors (namely FranceSub's IT Director).

Regarding the *collective* actors, constituted by a network of multiple interrelated *individual* actors, I classified both CorpInc's Finance and IT teams as *central human* actors, as they are involved in the integration of the subsidiary working from the headquarters. On the other hand, I considered as *local human* actors the team of managers of FranceSub who supported CorpInc towards the integration of FranceSub. Lastly, particular IT solutions such as the tables and spreadsheets locally produced and used by (local) managers were classified as *local non-human* actors.

5.3.2 The creation of actor-networks

The present sub-section focuses on the observation of *human* and *non-human* actors in socio-technical interactions towards a system-building (Latour, 1997) to promote FranceSub's integration within Group CorpInc and, consequently, address the ERP heterogeneity issue, enrolling and controlling allies in the spread of ideas and machines (Jones and Dugdale, 2002). When the system-builders are able to construct extensive network of alliances with *human* and *non-human* actors, their ideas become facts and machines (Jones and Dugdale, 2002).

After the acquisition of FranceSub by CorpInc, CorpInc's finance and management control teams visited the subsidiary in order to set its integration within the Group. As previously mentioned, CorpInc's objective was to instill the Group-wide procedures and processes in FranceSub. Therefore, a General Director from CorpInc was assigned to manage FranceSub, and a member of CorpInc's management control department was assigned to integrate FranceSub for a year and serve as a connection between the subsidiary and the headquarters in the integration process. Hence, with the objective of integrating FranceSub within Group CorpInc, the Group's finance and management control teams (the initial 'network-builders') started to build an actor-network, enrolling *central* and *local collective* and *individual human* actors. Local managers were the first whose enrollment was attempted, as they were seen as a crucial piece in the integration of FranceSub through the implementation of the Group's standardized procedures at every business level. After an initial reluctance, FranceSub's managers gradually came to consider CorpInc as a consistent and knowledgeable company, and gradually started supporting and welcoming the change, connecting themselves to the integration network. At a practical, operational level, this implied developing local tables, spreadsheets and reports to respond to the parent company's requirements. *Central* and *local* managers met, discussed and negotiated local managers' roles within the actor-network, as it would be up to them to introduce and diffuse the Group's procedures to their subordinates.

As mentioned above, the integration of FranceSub within Group CorpInc was performed in an ERP diversity context. However, this fact had a significant impact on

the controller's functions regarding the standardization of the Group's procedures, as it required the planning and implementation of a different data extraction process. Therefore, in order to solve the ERP heterogeneity, CorpInc's finance and management control teams expanded the initial actor-network by mobilizing a *collective central human* actor, CorpInc's IT department.

With the objective of enhancing communication and the flow of information between FranceSub and CorpInc, CorpInc's IT department initiated a "signification" process (Pipan and Czarniawska, 2010), by interpreting and labeling other actors' roles, in order to make sense of the ERP diversity solution. Therefore, this IT department repeated the usual process when integrating recently acquired companies: enrolling the *individual local non-human* actor FranceSub's ERP system was essential for the integration of the subsidiary. However, this enrollment was initially compromised by the difficulty to establish its connection to the existing *central non-human actor* CorpInc's ERP system. Therefore, an additional *non-human actor* was brought into the actor-network, closely related with the mobilization of the already existing Group-level data warehouse boundary object. This boundary object, already a part of the Group-wide actor-network was, therefore, an essential step to enable the connection between the two systems. This data warehouse was already established as an obligatory passage point in the existing system architecture, and its centrality was maintained and even reinforced.

However, the creation of this linkage was not sufficient to solve the disconnection between the two ERP systems, as their connection could not be done directly through the data warehouse, because the information to be presented in the Business Intelligence portal could not be extracted directly from the ERP2 system. Therefore, the process of translation continued, requiring steps related to the *interessement* (Callon, 1986) phase. CorpInc's IT Director mobilized FranceSub's IT Director, turning the latter *local actor* into an ally, 'materializing' the ultimate objective of solving the ERP systems diversity through a second boundary object, the intermediate database, which became an additional obligatory passage point to solve the remaining connectivity problem within the network. The overall actor-network of *human* and *non-human* actors was thus further expanded. In fact, CorpInc's IT Director enrolled FranceSub's IT Director by making the latter an essential piece towards the attainment of the solution by giving him

the responsibility of the construction and maintenance of the intermediate database from a basis previously created by CorpInc's IT Director. Meetings were arranged between both departments, and, after initial suspicion and resistance, FranceSub's IT Director ended up by playing a supportive role in establishing CorpInc's requirements, welcoming and promoting the role change despite the associated changes to FranceSub's own working practices. In this sense, CorpInc's IT Director was able to stabilize the extended network and the idea of a global effective and efficient solution became a fact and a machine (Jones and Dugdale, 2002).

The actor-network continued to expand through the central and local contexts around, and leveraged by, the intermediate database. Actors involved in the translation continued to recruit new allies, negotiating with reluctant actors and trying to stabilize desired identities (the affiliation to CorpInc) and final targets towards the mediation of the ERP solution and consequent integration of the acquired subsidiary within Group CorpInc. CorpInc's controller in charge of the integration process, along with the designated General Director of FranceSub, played a highly relevant role as *translation* elements. Both embraced the main function of 'translating' CorpInc's values, rules and procedures into local circumstances, assisting local managers in the execution of new tasks and the implementation of new processes. Both were *CorpInc's eyes on FranceSub* (P4, CorpInc), connecting central and local actors, mediating the introduction of the solution for the ERP systems heterogeneity and, consequently, the management control system.

In a global analysis, this case demonstrates how the integration of Information Systems and, more broadly, the integration of an acquired subsidiary were achieved by the creation and orchestration of a network of *human* and *non-human* actors (Oliveira and Clegg, 2015). When the outcomes at given points in time were not corresponding to the plan or where particular actors failed to provide the adequate solutions, other actors would intervene, constructing and deconstructing the actor-network as suitable in the quest for integration. In fact, FranceSub's integration was punctuated by advances and retreats, as it was subject to the behavior of the actors involved. The development of the intermediate database was dependent on FranceSub's IT Director's availability and actions, which led CorpInc to delay several steps on the ERP diversity resolution.

Therefore, far from being achieved in a putative definitive way, this quest for integration is, indeed, an endless story, as analyzed at the end of this section.

5.4 Bridging space and time – a forward-looking path dependency

The process of integration of FranceSub within Group CorpInc was shaped by both past and future events, leading CorpInc to implement certain solutions in order to overcome issues created by those path dependencies.

In fact, decisions taken in the past related with ERP1 initial implementation led CorpInc to construct the present IS architecture (see figure 2). As referred before, by the time of its implementation, ERP1 configuration was kept simple and heavily customized to CorpInc's businesses, which disabled the system to develop according to evolving needs of the Group. No Business Intelligence tools were taken in consideration, which turned out to be very important in the consolidation of the Group-wide information. Therefore, CorpInc had to later implement ERP supplements such as a data warehouse and Business Intelligence tools in order to be able to access, standardize and compare Group-wide information.

On the other hand, a future event, but anticipated in the present, 'forced' CorpInc to integrate its newly acquired French subsidiary on an ERP diversity setting. In fact, as already mentioned, there is a project at CorpInc to implement a single global ERP system for the whole Group, integrating all companies in the same ERP system, starting by the subsidiaries in Europe and then in Africa. By the time of this research, the project was already being studied, with forecasts to 'take off' within 1 or 2 years. The envisaged ERP system is planned to be different from the one existing in the headquarters which, as mentioned before, is considered to be obsolete, so the existing auxiliary application – the intermediate database – will be dismissed. The need for this intermediate database will therefore have a relatively limited time horizon. However, the alternative solution of integrating FranceSub in ERP1 system at the time of the acquisition would entail disproportionately higher costs and time, for this same reason – a new global ERP system for the whole Group was already being planned.

Therefore, the past, the present and the envisaged future led CorpInc to seek for a solution to only homogenize the outputs of the two ERP systems, instead of imposing its ERP system at FranceSub – i.e., instead of homogenizing the systems themselves. Therefore, it assembled an IS architecture constituted by three ERP systems, two boundary objects – a data warehouse and an intermediate database – and a Business Intelligence tool, as seen in figure 2.

By connecting the two ERP systems and, therefore, allowing the flow of information within the Group, those boundary objects are solving present discrepancies dictated by past events and decisions, while anticipating future demands and events, thus bridging the past and the future. Those boundary objects are serving as ‘binding objects’, binding spaces – by linking the two systems and organizations – and times – by enabling an effective network until the potential future entrance of the envisaged global ERP system –, therefore connecting the past, the present and the future, making choices made in the past to work properly in the present, while anticipating the future.

Therefore, contrarily to the path dependency studies of the relevant literature which have been considering the course of an event as only shaped by occurrences of the past (Modell *et al.*, 2007; Pierson, 2000a,b; Greener, 2005), in this study, CorpInc followed the referred path due to consequences of choices made in the past but also due to the future potential fact, anticipated in the present, that a new global ERP system will be implemented, integrating all companies in the Group. As a consequence, CorpInc had to ‘find a solution’ for the ERP systems heterogeneity to mediate the situation until the time of the implementation of the new global ERP system, as it was not worth the costs and time spent in integrating FranceSub in ERP1 after the acquisition, to incur again additional costs in a future implementation of the global system:

As the new global ERP system will be implemented in a relatively short time window, we decided that it was more appropriate to wait as the added value would be bigger. The objective is not to create entropy through systems but the opposite (P1, CorpInc).

Therefore, the actor-network, described in the 5.3.2 subsection, was capable of constructing a consistent IS architecture that could assure the production and flow of

coherent standardized information, connecting both sides' demands and interests, and reconciling the past, the present and the future.

5.5 A “never-ending story”

The initial deadline for the integration of FranceSub within Group CorpInc was of one year. However, the integration proved to be a long and complicated process, not allowing the attainment of that deadline.

Along with Dechow and Mouritsen's (2005) ERP system implementation study, this case illustrates that integration is a process, constructed concurrently and episodically, rather than a final target. Translations are never final, continuing in time, always changing. In fact, even when particular actors failed to perform their role in the network, other actors would intervene and create and introduce supplements, making the network subject to constant challenges, contestation, negotiation and compromise (Pipan and Czarniawska, 2010). In fact, it was – and still is – possible to observe empirical evidence of the dynamics of the network: the intermediate database represents an example of the constant negotiation the network was subject to. As an example, CorpInc needed to connect to FranceSub's ERP system in order to access and collect information, so it created a basis for a database that could serve as a link between both systems. However, CorpInc needed FranceSub's IT Director to develop and “feed it” with FranceSub's information, so the headquarters had to negotiate with FranceSub's IT Director in order to attain its objective without jeopardizing the relation between both companies.

For several times, FranceSub needed to make compromises in order for the integration objectives to be attained. As an example, FranceSub started to follow more stringent accounting closures, in accordance to the rules, principles and timelines defined by the Group. Moreover, FranceSub compromised on the power of negotiation with raw materials suppliers, as FranceSub no longer has its own purchasing department, as the purchases are effectuated by the central CorpInc's purchasing department located at the headquarters. Even though CorpInc did not impose the Group-wide procedures and processes in FranceSub (instead, it chose to first understand its way of working and then negotiate the best way to implement those same procedures), FranceSub's managers had

to give way of their daily routines to adopt CorpInc's policies, therefore accepting and making compromises. However, during the integration process, CorpInc had to make compromises as well. As an example, wage processing at CorpInc is done on the basis of cost centers, i.e., each employee has a cost center associated to him/her (and a cost center can enclose several employees). After the wage processing of each month, a file with the wages information is generated in order for that data to be integrated in the company's management accounting. When CorpInc tried to implement that procedure at the French subsidiary, FranceSub pressed CorpInc for the integration not to be done by cost center justifying that, as FranceSub's accountants have access to the balances and entries of all accounts, they would have access to the wage amounts of all the employees of the company who had individual cost centers. CorpInc accepted that request, abdicating of the utilization of the usual norms of the Group, allowing the wage processing to be done in one single cost center. Whenever CorpInc's controllers want to access the information by cost center, they export the data from the wage processing software and treat it using Excel software.

Even when some translations became facts and machines (Jones and Dugdale, 2002), there were still new interactions recreating the network and continuing change processes. Although a network was already in place, connecting both companies' IT Directors and ERP systems through the data warehouse, that boundary object proved to be insufficient to link directly both ERP systems. Therefore, a new interaction between both IT Directors and the controllers gave rise to the necessity of a second boundary object, the intermediate database, to allow the extraction of information according to the requirements of CorpInc's management control department. Therefore, the network was challenged as it required reconfiguration and the extraction and reporting of information was then performed through this second boundary object, the intermediate database. Indeed, "what was a solution at a certain point in time can be a problem at a later point in time" (Dechow and Mouritsen, 2005, p. 729). When ERP1 system was implemented, CorpInc chose to simplify its software – customizing it to its business – and not associate Business Intelligence (BI) tools to the program. However, later, those BI tools came up to be extremely important in the connection of all companies of the Group, through the collection and reporting of directly comparable information of all subsidiaries. Therefore, a data warehouse had to be created to fulfill this gap.

There is always work to do, be it here or there, because we always think it can get even closer to what we have at CorpInc (P3, CorpInc).

The outcomes of change processes were largely unpredictable in advance. *Central human actors* mobilized the *local actors* into the network in order to achieve their main target of integrating FranceSub within Group CorpInc through the implementation of the Group-wide procedures and processes. After initial reluctance, *local actors* gradually accepted the incoming procedures, gradually transforming CorpInc's objective into theirs. However, the strategy for the attainment of the main goal could guide to success or failure, depending on how each stage of the processes actually unfolded. As the translation process involved so many interconnected actors and events, each of them could disrupt or enhance the integration process.

As an example, CorpInc sought for integration mainly via the ERP system, which could have taken many directions from many different positions. As already noted, in fact, ERP systems must be managed very carefully, because, if wrongly used, they *can turn against the company* (P3, CorpInc). Therefore, some measures of control must be created to tackle the micro-level threats – such as those resulting from the 'freedom' of information retrieval – that can threaten and destabilize the system. Those threats, if not addressed, can turn into suboptimal situations that can persist in the future – although, admittedly, without having a huge detrimental impact on the overall functioning of the system. In that sense, ERP systems require a lot of different supplements, often created outside the ERP system to ease limitations and respond to integration crises. In CorpInc's case, those limitations were related with the impact that the initial configuration of the ERP system had in its lifetime. ERP1 was heavily customized to fit CorpInc's business and it was not flexible in terms of reporting, which did not allow the system to keep pace of the evolution and growth of the company.

Different ERP systems hindered the integration, requiring the creation of supplements outside the ERP systems, which led the integration to happen in episodes. Firstly, a connection of ERP2 to the existing global data warehouse was attempted to extract and enter FranceSub's information in the Business Intelligence portal. However, that connection was not sufficient to link the IS of the two organizations as the information could not be retrieved directly from ERP2. Therefore, a new strategy was designed by

CorpInc's IT department who boosted the integration and mobilized and created new actors, giving birth to a new episode of FranceSub's integration based on the intermediate database.

The next, predictable episode towards the integration of FranceSub within Group CorpInc is related with the implementation of a global ERP system which will serve all companies of the Group. Nevertheless, integration is not merely technological, but a process associated with organizational objectives, vision and constraints, combining technology – the IT features that suit CorpInc's businesses and shape the local practices – and processes coordination – the enactment of practices which organize various parties in relation to each other (Dechow and Mouritsen, 2005). This case has amply shown this. CorpInc's IT department created the basis for the intermediate database required to perform the integration (its ultimate goal), which was then further developed and maintained by FranceSub's IT department with FranceSub internal information. So, both actors depend on each other. Therefore, even when, in the future, a global ERP system is potentially in place, integration cannot be considered completed, as *there can always be more integration or different integration* (Dechow and Mouritsen, 2005, p. 726), and integration at CorpInc will therefore continue to be a “never ending story”.

6. Conclusion

The main objective of this study was to address the process of integration of a foreign acquired subsidiary, FranceSub, within a major group, CorpInc, focusing on the implementation of MCS under an ERP diversity context. Indeed, the case study mirrored the difficulty, complexity and time consumption frequently associated with such integration processes.

CorpInc developed in its headquarters a standardized global MCS based on the parent company's MCS, which was then enacted throughout its subsidiaries in order to allow a better coordination of their activities. In line with this approach, CorpInc had the intention to implement those same standardized MC procedures at FranceSub. However, CorpInc was confronted with a problem of ERP diversity, a situation that needed to be solved in order for CorpInc to follow the usual integration practices.

CorpInc's current ERP system, ERP1, contained some limitations, which prevented the system from evolving along with the company. In order to overcome some of those evolution needs, CorpInc created and added supplements to its ERP system. However, by the time of FranceSub's acquisition, CorpInc had already reflected on the overall situation and concluded that, instead of trying to remedy ERP1, it was time to change it entirely. For that reason, when it bought FranceSub, CorpInc opted by not implementing ERP1 on FranceSub as, in a near future, a new global ERP system would be implemented. Therefore, CorpInc had to orchestrate FranceSub's integration under an ERP diversity scenario.

CorpInc was able to find a transitory solution which did not involve many costs or resources and was capable of solving the integration problem until the entrance of the new global ERP system. This solution promoted the adoption of the headquarters' standardized MC practices by FranceSub. The solution relied on the creation of an intermediate database, who joined the Group's IS architecture, based on a loosely coupled system, constituted by three ERP system, two boundary objects and a Business Intelligence tool. The intermediate database and the data warehouse served as boundary objects, connecting both ERP systems – as these could not be linked directly –, allowing CorpInc to access to FranceSub's information which would then be standardized

according to the Group-wide practices. Beyond serving as essential pieces on the integration puzzle, those boundary objects were functioning as binding objects, as they were binding space – by connecting both ERP systems and their organizations – and time – by conciliating the situation until the entrance of the global ERP system –, therefore being able to bridge the past and the future.

This successful operation of a diversified arrangement of heterogeneous technological components was a consequence of the construction and orchestration of an actor-network, formed by *human* and *non-human* actors. During this integration process, I was able to observe that, when the initial plan was not being fulfilled or actors were not being able to provide satisfactory answers, other actors would intervene, enrolling new allies on the creation and introduction of supplements, making the network subject to constant challenges, contestation, negotiation and compromise.

Therefore, rather than a final objective, integration proved to be a long and complex process. From the initial attempt to connect ERP2 to the data warehouse towards the desired final target of implementing a new global ERP system, this integration process can be interpreted as a story written in several episodes, with ups and downs, advances and setbacks, with no conclusion chapter. Because there was, and is, always an aspect that could, and can, be improved or better integrated, the integration of FranceSub within Group CorpInc is, in fact, a “never-ending” story.

Beyond focusing on path dependencies shaped by the past, this dissertation contributes to the literature on MCS integration with a case study performed on a major international Portuguese group which provides empirical evidence on how the two organizations were able to construct and mediate an actor-network in order to overcome the ERP diversity, in a process grounded not only by past events, in a path dependent way, but mainly by future events anticipated in the present.

Regarding the limitations inherent to this dissertation, it is not possible to make a theoretical generalization from its conclusions, as it was based on a particular organizational context. In addition, although the conducted interviews included all key actors, it would have been interesting to gather the perspective of other employees of both companies that did not hold managerial positions before and after the acquisition.

Moreover, having some of my daily functions associated, although not directly, with the integration process could have brought problems of inside research. Therefore, I maintained my daily work detached from the integration process itself, to eliminate or at least minimize biasing this research with my positions about the integration process, by relying on extensive empirical evidence obtained from documentation and interviews – an effort which I believe was successful.

The first suggestion for future research results directly from the first mentioned limitation. The development of similar studies in other companies providing empirical evidence on MCS integration and ERP diversity management would strengthen the theoretical contributions. Moreover, it would be interesting to observe if the process of integration being made within Group CorpInc, based on an architecture of uniformity of the costing systems rather than an integration of those systems, would withstand the time. Furthermore, although I opted by interpreting this integration process through ANT lenses, it would be interesting to interpret it under the lenses of power theories, studying the role of the relations of power established between the parent company and its acquired subsidiary, and between the multiple actors involved in the integration process.

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