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Succeeding in process standardization

Explaining the fit with international management strategy

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Abstract

Purpose – The purpose of this paper is to explore the fit between process standardization and international management strategy of multinational corporations (MNCs) by assessing the compatibility between process standardization and corporate structural characteristics in terms of asset configuration and headquarters-subsidiary relationships.

Design/methodology/approach – First, after a literature review on MNCs' strategy and process standardization, the study suggests two propositions on the fit between corporate international management strategy and process standardization. Second, to empirically examine the propositions, the study investigates the outcome of process standardization in three cases with different strategic and structural contexts. Third, using the propositions and empirical findings, the study proposes a framework for aligning process standardization with MNCs' structural characteristics.

Findings – Process standardization has a higher degree of fit in MNCs pursuing global integration where process standardization parallels the need for coordinating interdependencies in the functional structure, and is consistent with the headquarters' operational control over the subsidiaries. Process standardization has a lower degree of fit in MNCs seeking local responsiveness as process standardization disturbs the financial control relationship between the headquarters and subsidiaries and is less crucial for coordination as the subsidiaries contain the necessary coordination mechanisms.

Originality/value – The study provides in-depth understanding of how the international management strategy and consequent structural characteristics of MNCs affects process standardization in the course of a global enterprise resource planning implementation. The study proposes conditions of fit for aligning process standardization with asset configuration and headquarters-subsidiary relationships of an MNC.

Keywords Case study, Structure, Multinational corporations, Global ERP, International management strategy, Process standardization

Paper type Research paper

1. Introduction

The need for optimal information technology (IT) architecture has received substantial attention in the post-mainframe era and advent of client-server systems (Davidenkoff and Werner, 2008). Although technological advancements led to the drift of IT toward decentralization in the 1980s, the trend toward IT recentralization was back a decade

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later (Peterson, 2001). In line with the centralization trend, the popularity of corporate-spanning global enterprise resource planning (ERP) systems has also grown among multinational corporations (MNCs) (Phelan and Hardcastle, 2011). The motivation for global ERP systems derives from rapid changes in communications technology; the maturity of ERP hardware, software, and databases; and the advances in ERP systems supporting multiple currencies, multiple languages, and country-specific import, export, taxation, and legal requirements (Bingi *et al.*, 1999; Phelan and Hardcastle, 2011). A global ERP system brings cost savings by scaling back hardware infrastructure, reducing the number of interfaces, and decreasing support costs (Hufgard and Gerhardt, 2011). More importantly, MNCs implement global ERP systems to streamline business processes and improve the flow of information across corporate subsidiaries (Carton and Adam, 2003; Gattiker and Goodhue, 2004; Hanseth *et al.*, 2001). However, while MNCs worldwide have made substantial investments in global ERP systems, implementation has proven to be unexpectedly difficult. Many ERP implementation failures have been associated with inadequate focus on business processes (Jarrar *et al.*, 2000).

Although integration of business processes and data serves as an important motive for the implementation of global ERP systems in MNCs, global ERP implementations do not automatically lead to integration. Common business processes and data standards are prerequisites for seamless transactions and information exchange across an MNC (Sethi *et al.*, 2008). However, conflicts often arise between local and enterprise-wide requirements during process standardization. Many MNCs are still struggling to streamline the flow of business processes and data across their subsidiaries. A recent study by American Productivity and Quality Center (APQC) (2014) indicates unacceptable disparities among processes and data models in more than 50 percent of surveyed MNCs, including those with a single-instance global ERP system.

Global ERP implementation and process standardization efforts have a strong political component and are often hindered by universality-individuality and efficiency-flexibility dilemmas (Huber *et al.*, 2000; Markus *et al.*, 2000). To address these dilemmas, several studies highlight the necessity of fit between ERP architecture – i.e., ERP system(s) distribution – and corporate strategy for global integration and local responsiveness (e.g. Clemmons and Simon, 2001; Ives and Jarvenpaa, 1991; Karimi and Konsynski, 1991; Madapusi and D'Souza, 2005). However, as these studies' focus is primarily on ERP architecture, they only implicitly discuss process standardization by assuming that a single-instance global ERP system is inevitably configured based on common process and data standards. This assumption is also despite the fact that advances in ERP systems have made it possible to support differentiated requirements within a single system (Bingi *et al.*, 1999). Furthermore, these studies only partially discuss the issue of causality, i.e. why a certain international management strategy necessitates a particular ERP architecture. Their emphasis is predominantly on aligning the ERP architecture with the headquarters' role and its control over subsidiaries. While the headquarters' role may specify the feasibility of deploying a global standardized ERP system as a control and coordination mechanism, it is not sufficient to address whether such integrative mechanisms are needed. The international management strategy of an MNC is not only reflected in its headquarters-subsidiary relationships but also asset configuration, which is argued to better indicate integration requirements (Gattiker and Goodhue, 2005).

Consequently, while the earlier studies emphasize the need for aligning business process reengineering efforts with business strategy (Olson *et al.*, 2005), they do not propose sufficient guidelines for realizing the alignment. To address the gap, the

current study asks and answers one question: how does an MNC's international management strategy affect process standardization in the context of a global ERP implementation?

We answer the question in three stages. First, drawing on a literature review, we explain the impact of a particular international management strategy on an MNC's structural characteristics in terms of both headquarters-subsidiary relationships and asset configuration. We assess the compatibility between the structural characteristics and process standardization as a centralizing coordination mechanism. This analysis gives rise to two propositions that argue process standardization in the course of a global ERP implementation is a better fit and thus is likely to be more successful in MNCs structured for global integration compared to those designed for local responsiveness. Second, we empirically examine the propositions using case studies of three MNCs that have experienced process standardization in the context of a global ERP rollout but vary in their strategic focus and therefore structural context. Third, using the propositions and empirical findings, the study then presents a contingency framework and develops conditions of fit between structural elements characterizing an MNC's international management strategy and process standardization.

The remainder of the paper is organized as follows. In Section 2, we use the literature to describe international management strategies in MNCs, process standardization, and the fit between the two. Section 3 presents our research methodology, followed by descriptions of the three cases and findings from within- and cross-case analyses in Section 4. In Section 5 we present a model to frame the fit between process standardization and MNCs' structural characteristics. Sections 6 and 7 conclude with a discussion of findings, contributions, limitations, and potential extensions of the research.

2. Theoretical background

In this section, we first present a definition of process standardization and the challenges that MNCs face when unifying process standards across subsidiaries. Second, we briefly describe two common types of international management strategy in MNCs and their implications for corporate structure in terms of asset configuration and the headquarters-subsidiary relationship. We also assess the compatibility between process standardization and MNC structural characteristics under the two international management strategies. This analysis gives rise to two propositions.

2.1 Global ERP and standardization

In the context of enterprise systems, standardization is the process of reaching an agreement on technical and business specifications to be used consistently across an MNC (Markus *et al.*, 2000). Hufgard and Gerhardt (2011) break down the ERP consolidation process into two steps: technical consolidation and business consolidation. Similarly, Ross *et al.* (2006) distinguish between technology standardization and corporate-wide data and process standardization as two separate stages of enterprise architecture maturity. Given these studies, we differentiate process standardization from technology standardization in the course of global ERP implementations. On the one hand, technology standardization refers to standardization of ERP infrastructure by moving all supporting ERP hardware to a single physical data center, adopting new server and disk storage consolidation technologies, or merging two or more clients into a single one (Hufgard and

Gerhardt, 2011; Zrimsek and Prior, 2003). On the other hand, process standardization in an MNC is the activity of defining and agreeing on a finite and manageable set of rules and standards for conducting business processes (Fernandez and Bhat, 2010; Rosenkranz *et al.*, 2010; Tay and Parker, 1990; Tregear, 2010). Process standardization is aimed to reduce variability in business processes across corporate subsidiaries (Tregear, 2010). Given these definitions, in this study, process standardization outcome refers to whether an organization succeeds in reducing variants in process and data standards.

Although it is possible to configure different process variants within a single system, discrepancies in configuration of a single ERP system increase system complexity and thereby its implementation and maintenance costs (Hufgard and Gerhardt, 2011). Consequently, semantic standardization is extremely important when implementing global ERP systems in MNCs (Huber *et al.*, 2000). Reducing ERP system complexity by limiting variations in the overall solution is not the only reason for process standardization. Better integration and hand offs, comparable performance figures, greater agility when introducing changes, and redeployment of people from one subsidiary to another are additional objectives that encourage MNCs to unify process standards across subsidiaries (Davenport, 2005; Hammer, 2010; Tregear, 2010). Given the complexity and costs of global ERP implementations, some researchers even argue that only MNCs seeking process standardization can achieve a positive return on such investments (e.g. Davenport, 1998; Hufgard and Gerhardt, 2011).

Tregear (2010) argues that in a perfect world, the "one true process" would be executed exactly the same way across an organization whether it is a single site operation or spread across a country or spread across many countries. Taking a mechanistic view to business processes, i.e. a fixed sequence of well-defined activities or tasks that convert inputs into outputs in order to accomplish clear objectives (Melão and Pidd, 2000), several studies suggest that operational similarity and producing "the same output" give rise to the potential for process standardization (e.g. Harmon, 2007; Mueller, 1994; Ross *et al.*, 2006; Tregear, 2010). However, while in theory all common processes are standardized everywhere, in practice local variations in business processes are inevitable and necessary. Emphasizing on the human aspects of business processes and viewing business processes as a set of subsystems of people, tasks, structure, and technology that interact with each other and with their environment, earlier studies on ERP implementation suggest many different reasons for why business processes are designed and executed differently in organizations. Dissimilarities in local market imperatives (Davenport, 1998; Hanseth *et al.*, 2001), and cultural and institutional distances (Gamble, 2010; Griffith *et al.*, 2000; Sheu *et al.*, 2004) are often cited as important sources of conflicts. These studies support the contextual embedding view that best practice is situationally specific (Carton and Adam, 2003; Wagner and Newell, 2004).

Another alternative view looks at standardization of business processes as a structural mechanism that organizations use to achieve coordination (Mintzberg, 1993). This view can better explain the organizational conflicts that often arise when standardizing business processes in the course of a global ERP system implementation. Process standardization as a coordination mechanism provides integration; however some organizations may simply not be positioned for integration and it might be in their best interests to have a certain degree of segregation (Davenport, 1998; Chen, 2001). Gattiker and Goodhue (2005) suggest that the need for integration is influenced by the interdependence between the subsidiaries of an MNC. In addition,

standardization of processes results in vertical centralization of organizations by reducing the decision-making power of lower line managers relative to those higher up (Mintzberg, 1993). By replacing local process standards with a limited set of corporate standards, process standardization takes away subsidiaries' control over their business processes. Therefore, resistance toward the implementation of a global ERP system with a standardized configuration may simply be the death rattle of local autonomy (Hammer and Stanton, 1999). Table I illustrates five examples of cases where process

Author	Case	Objective	Problem	Outcome
Geppert and Williams (2006)	Finnish multinational corporation	Implementation of company-wide model to rationalize operations	The global model challenged local management's power and strategic choices and was perceived to be a threat to the subsidiary's expertise	Headquarters decided to maintain original charter responsibilities of the subsidiary and its local processes
Grant (2003)	Multinational corporation, leader in specialty metal products	Implementation of a single ERP system to support a more flexible and seamless organization with lower costs	Centralized IT architecture contradicted the decentralized business operating model.	Insufficient buy-in for global ERP at subsidiary level created significant implementation difficulties
Hammer and Stanton (1999)	IBM	Worldwide standardization of operations to fit the customers operating on a global basis	IBM's existing management systems had concentrated power in the hands of subsidiary managers and they were reluctant to sacrifice their own ways of working	To realize standardization, IBPM centralized accountability for business processes and allocated power to members of the corporate executive committee
Hepsø *et al.* (2000)	Statoil	Global ERP implementation accompanied by business standardization	The program underestimated problems of making fairly autonomous subsidiaries accept a standardized solution Centralized solutions challenged the identity of the subsidiaries as responsible, competent actors	To correspond with the decentralized governance model, the strict standardization policy had to become flexible The project objective shifted from a standardized solution to local- and subsidiary-specific solutions without tight coordination
Markus *et al.* (2000)	UK-based multinational manufacturer of telecommunications equipment and power cables	Adoption of a single ERP package to reduce technology acquisition and implementation costs and to identify and disseminate the best operating practices across subsidiaries	Changes from past practices and the centralizing configuration of the system were perceived to be excessive by similar but autonomous subsidiaries that previously had control over technology decisions, subject only to central financial review	The company was obliged to spend several years in consensus building before initiating package implementation

Table I.
Examples of MNC cases where process standardization caused conflicts in headquarters-subsidiary relationships

standardization caused political struggles between headquarters and subsidiaries due to its lack of fit with the MNC's strategy or structure.

These examples suggest that process standardization as a centralizing coordination mechanism may not be suitable for all MNCs. Assuming that structure follows strategy (Donaldson, 1987), this study argues for the necessity of alignment between process standardization and international management strategy of an MNC. The next subsection discusses process standardization in relation to this contextual factor.

2.2 International management strategy and process standardization

In separate studies, Bartlett and Ghoshal (1999) and Prahalad and Doz (1999) proposed that the essence of MNCs' international management strategy was framed by the management of two imperatives: meeting local demands and capitalizing on worldwide competitive advantages. The importance of multinational customers and competitors, investment and technology intensity, and cost reduction are among the main pressures for an international management strategy based on global integration, whereas the differences in customer needs and distribution channels, importance of local competitors, and host government demands for local self-sufficiency encourage local responsiveness in MNCs (Bartlett and Ghoshal, 1999; Prahalad and Doz, 1999). An MNC's international management strategy in turn is devised along two structural dimensions: configuration of assets, and headquarters-subsidiary relationships (Bartlett and Ghoshal, 1999). While global integration strategy aims at maximizing corporate efficiency by global deployment of resources and central management of activities, local responsiveness strategy pursues context-sensitive decisions taken by self-contained subsidiaries (Bartlett and Ghoshal, 1999; Prahalad and Doz, 1999; Roth and Morrison, 1990).

Contingency theory proposes that superior performance comes from a good fit between strategy and environmental demands, and between organizational structure and strategy (Donaldson, 2001). Considering process standardization a structural coordination mechanism and drawing on contingency theory, we argue for the necessity of fit between process standardization in the context of global ERP implementation and an MNC's international management strategy. MNCs with a better fit between their international management strategy and process standardization better succeed in process standardization, i.e., reducing process variants. As illustrated in Figure 1, we discuss fit by raising the issue of causality, that is, by investigating how international management strategy and consequent structural characteristics affect process standardization and lead to a certain outcome for such efforts. In the next two subsections, we explore the fit by examining the compatibility of process standardization with asset configuration and the headquarters-subsidiary relationship under the two international management strategies of global integration and local responsiveness.

2.2.1 Global integration and process standardization. MNCs pursuing a global integration strategy typically configure their assets based on functional structure (i.e. grouping assets by knowledge, skill, or work function) (Bartlett and Ghoshal, 1999; Mintzberg, 1993). Functional grouping reflects an overriding concern for economies of scale at the expense of workflow interdependencies (Mintzberg, 1993); therefore specialized subsidiaries in such MNCs typically are highly interdependent (Jarillo and Martinez, 1990). Lacking built-in mechanisms for coordinating workflows, functional structures deploy process standardization, direct supervision, and action planning from higher managerial levels to manage interdependencies (Mintzberg, 1993).

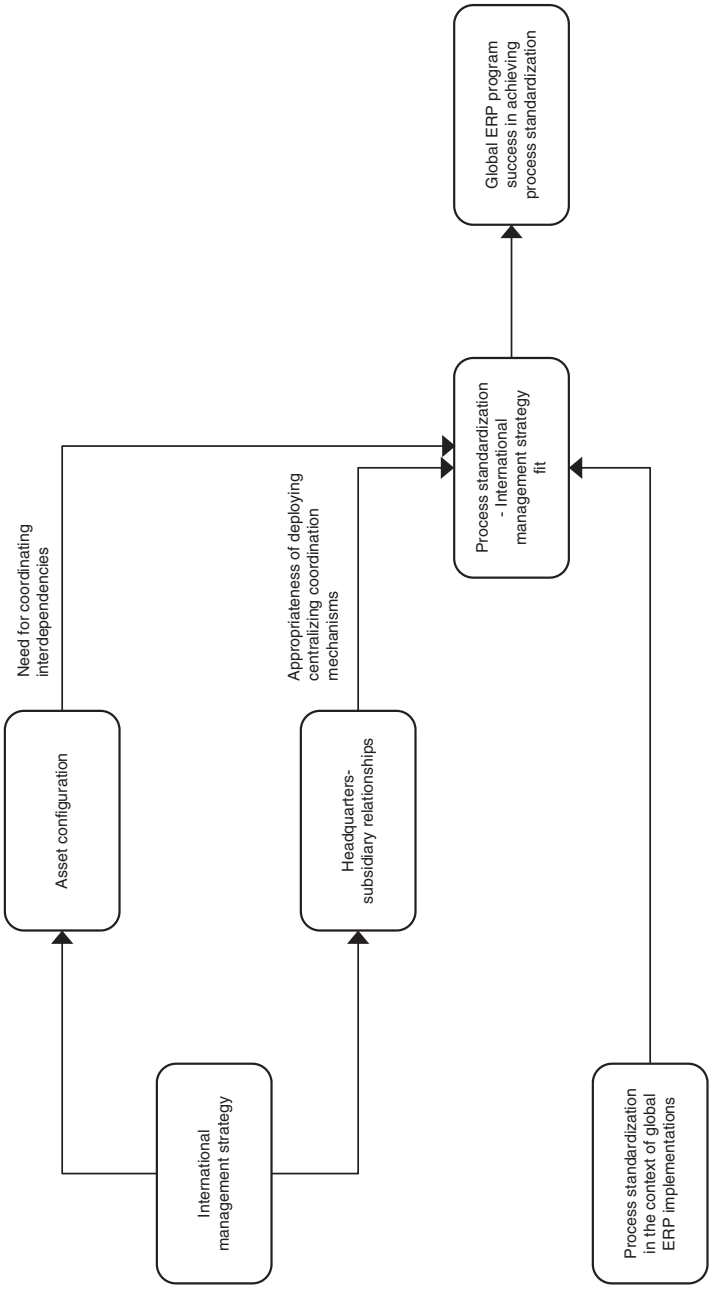

Figure 1.
Fit between process standardization and international management strategy

Therefore, in MNCs seeking global integration, headquarters-subsidiary relationships are usually based on operational control where subsidiary behavior is managed by the headquarters and where strategic and operational decisions are centrally controlled (Bartlett and Ghoshal, 1999). With centralized decision making and control, the role of the subsidiaries is to implement plans and policies developed at the headquarters (Bartlett and Ghoshal, 1999).

We argue that process standardization, as a centralizing coordination mechanism, is in line with hierarchical and bureaucratic control in MNCs pursuing global integration strategy and coordinates interdependencies across their functional structure. Indeed, integration and coordination are the prime motives for process standardization, as interdependencies trigger the need for a common formalized language (Cavusgil *et al.*, 2004; Gattiker and Goodhue, 2004; Gupta and Govindarajan, 1991; Mintzberg, 1993). Transactions between subsidiaries involved in similar business processes are expected to be less costly in time and effort. This leads to our first proposition:

P1. Process standardization in the context of a global ERP implementation has a higher degree of fit with MNCs pursuing a global integration strategy, in which process standardization coordinates interdependencies in the functional structure and does not disturb the operational control relationship between the headquarters and subsidiaries. This is likely to have a positive impact on process standardization success during the global ERP implementation.

2.2.2 Local responsiveness and process standardization. MNCs seeking local responsiveness usually configure their assets based on market-based structure to allow subsidiaries to respond to local or regional market differences (Bartlett and Ghoshal, 1999; Mintzberg, 1993). Market-based grouping sets up relatively self-contained subsidiaries, ideally comprising all the important sequential and reciprocal interdependencies (Mintzberg, 1993). Consequently, there are limited interdependencies across the subsidiaries, and subsidiaries' interdependencies to the common structure are mostly confined to drawing on resources and support services and contributing profit (Jarillo and Martinez, 1990; Mintzberg, 1993). Furthermore, as subsidiaries in MNCs targeting local responsiveness are sensitive to market situations, they are given considerable freedom to make their own decisions and then act on them (Bartlett and Ghoshal, 1999; Mintzberg, 1993). Therefore, the headquarters-subsidiary relationship is typically overlaid with financial control in which subsidiaries – usually setup as profit centers – are responsible for their financial performance (Bartlett and Ghoshal, 1999; Mintzberg, 1993).

We argue that because local responsiveness is negatively correlated with the level of control exercised by headquarters (Martinez and Jarillo, 1989), process standardization as a centralizing coordination mechanism may not fit MNCs structured for such strategy. An imposed centralized mechanism increases the likelihood of emergent conflicts if it undermines existing levels of subsidiary autonomy (Geppert and Williams, 2006). Furthermore, with all necessary coordination mechanisms contained within the subsidiaries, MNCs seeking local responsiveness will rely less on standardization for coordination. This leads to our second proposition:

P2. Process standardization in the context of global ERP implementation has a lower degree of fit with MNCs pursuing a local responsiveness strategy, in which process standardization disturbs the financial control relationship

between headquarters and subsidiaries and is less required for coordination as subsidiaries contain most of the necessary coordination mechanisms. This is likely to have a negative impact on process standardization success during the global ERP implementation.

3. Research methodology

Our propositions assert that process standardization in the context of a global ERP implementation better fits MNCs structured for realizing global integration strategy compared to those seeking local responsiveness. To demonstrate the relevance of our propositions, we conducted case studies in three MNCs that were undertaking or had already undergone process standardization alongside a global ERP implementation. The choice of methodology can be justified with respect to the explanatory nature of this study and our attempt to explicate the mechanisms that caused a certain outcome for process standardization efforts (Easton, 2010). The case study approach also enabled us to understand process standardization within the rich context of the cases and to explore whether any other contextual factors had influenced the process standardization outcome (Johnston *et al.*, 1999).

Adopting a theoretically determined sampling methodology (Eisenhardt, 1989), we based our case selection on the two structural elements characterizing an MNC's international management strategy, namely, asset configuration and headquarters-subsidiary relationship. As illustrated in Figure 2, the selected cases represent three different combinations of the structural elements, which provided the context necessary for clarifying our theoretical arguments. Therefore, the cases are polar-type cases selected to fill theoretical categories and to investigate the theorized differences across cases (Eisenhardt, 1989; Johnston *et al.*, 1999). Because all three cases were headquartered in Denmark, the research design controlled for potential country-of-origin influences on the choice of coordination mechanisms imposed on subsidiaries (Gamble, 2010). In addition, all three cases adopted a single-instance, single-client ERP architecture from the same vendor, thereby eliminating potential differences in process standardization caused by technical features of the ERP system. However, the three

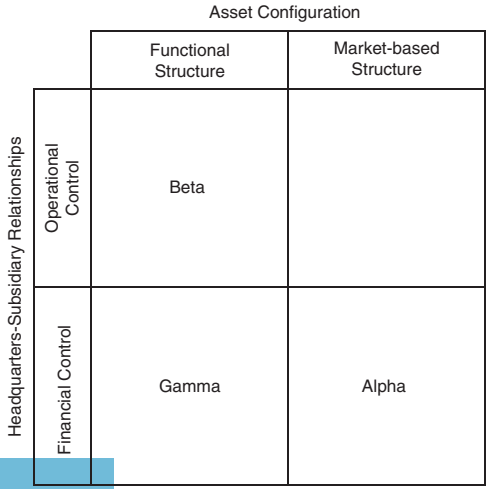

Figure 2.
Structural characteristics of selected cases

cases varied in subsidiaries' geographical distribution, and thereby institutional distance – that is, e.g., cultural and regulatory differences – across subsidiaries. Because the institutional distance may affect the success of practice transfer within an MNC (Kostova, 1999), during data collection we questioned the impact of culture and legislation on process standardization outcome.

We used semi-structured interviews as the primary method of data collection. To assess the propositions, we needed an understanding of the structural context of each case, the outcome of process standardization, and whether there was an association between the structural context and the success or failure of the global ERP program in realizing its goals for process standardization. While the interview questions targeted these specific topics, we aimed at gaining holistic insight into the drivers and challenges of the process standardization effort in each case. Our objective was to gain new understandings of process standardization and to identify any other potential factors that had impacted the process standardization outcome. Table AI presents the interview guide covering the topics and key questions directing the interview under each topic.

From September 2012 through October 2015, the first author conducted interviews with the business and IT representatives of the global ERP program in the three MNCs. A total of 21 interviews were conducted, all of which were recorded and transcribed. (Note: Some of the persons were interviewed more than once.) Follow-up questions occasionally supplemented the interviews to resolve ambiguities and inconsistencies. Having interviewed both business and IT members of the global ERP programs, we expect to have compensated for potential biases in interviewees' perceptions of the process standardization effort, its outcome, and the contextual factors that led to that particular outcome (Tracy, 2010). To obtain convergent validation from various data sources, we also collected data from archival sources describing the organizational governance structure, standardization objectives, global ERP program charter and business case, and corporate process standards and principles (Tracy, 2010). Table II presents the case study organizations and respective interviewees' positions.

Data analysis was carried out in two stages according to the pattern-matching approach (Yin, 2009). Pattern matching can be conducted using variation on either dependent or independent variables (Campbell, 1975; Yin, 2009). As our case selection implies, for this study we chose the dependent-variable design approach where we investigated the outcome of the process standardization effort in relation to each case's particular asset configuration and headquarters-subsidiary relationship. The first stage of data analysis aimed at assessing whether the evidence for each case was internally valid and supported our pre-specified propositions. In the second stage of data analysis, we performed an overall assessment to determine whether the data

Case	Description	Interviewees
Alpha	Producer of dairy foods	Global ERP program director, chief enterprise architect, enterprise architect, IT business manager
Beta	Producer of industrial equipment	Operational excellence director in operations, IT delivery manager for operations, business process manager for operations, business process manager for sales
Gamma	Supplier of engineering solutions to process industries	Six members of global ERP business process council, global ERP program manager, CIO, CEO assistant

Table II.
Cases and interviewees

across the cases provided sufficient evidence to support the propositions. Section 4 presents a summary of the within- and cross-case analyses. When analyzing the data, we took a middle position between open and theory-determined coding (Dey, 1993). Although we applied our pre-specified theoretical propositions in analyzing the three cases, our coding of the empirical data also aimed at allowing for new insights to emerge. Table AII provides the representative quotations from each case's data and illustrates selected first-order concepts and second-order themes generated during data analysis.

4. Empirical study

The literature review suggests the necessity of fit between process standardization in the course of a global ERP implementation and an MNC's international management strategy. The fit is essential to ensure compatibility of process standardization with the structural mechanisms that enable various international management strategies. In this section, we present our findings from the three case studies to assess the theoretical propositions. First, we present a description of each case to illustrate how the structural characteristics of a particular international management strategy affected process standardization in the course of a global ERP implementation. Second, we draw a comparison between the three polar-type cases to demonstrate how differences in international management strategy and thus structural characteristics influenced the global ERP program achievements with respect to process standardization. Table III presents an overview of the three cases with respect to their structural context and the motives, challenges, and outcomes of process standardization.

4.1 Case alpha

Alpha is a key player in the dairy industry with representation in 27 countries, most of which are European. To accommodate the differences in distribution channels and market structure in various geographical regions, Alpha grouped its assets into eight self-contained regional divisions with limited lateral linkages. Decision-making power was also considerably dispersed down the line authority chain to the regional divisions, limiting the role of headquarters to planning and controlling financial targets, allocating resources, and managing shared support services. In 2001, after a major merger, Alpha decided to consolidate the standalone ERP systems across the regional divisions by corporate-wide implementation of a single-instance, single-client ERP system. However, IT managers soon realized that ERP technical consolidation alone would not contribute value unless the underlying business processes were aligned. This was the start of an IT-commenced program that aimed at unifying Alpha into "one company" along with the global ERP rollout. The almost identical product portfolios and thus operational similarity of the regional divisions made process standardization appear to be a plausible goal (Mueller, 1994; Ross *et al.*, 2006; Tregear, 2010).

In addition to enabling a more cost-efficient IT architecture, Alpha aimed at deploying the integrative nature of process standardization to pursue three business objectives. The first was enhancing corporate agility for reorganization. In Alpha, IT systems and their embedded business processes had always been an obstacle for recurring organizational changes. The self-contained divisions encompassed an extensive network of sequential and reciprocal interdependencies. Despite optimal alignment within each division, business processes were not aligned across the divisions. As the regional divisions were frequently reconfigured, Alpha deemed

Concept	Alpha	Beta	Gamma
Asset configuration	Self-contained regional divisions predominantly located in Europe	Specialized business units for sales and production, distributed across Europe, America, and Asia	Interdependent business units for transfer of technology and delivery of turnkey projects, distributed across Europe, America, and Asia
Headquarters-subsidiary relationship	Headquarters had financial control over business units, responsible for planning and controlling financial targets	Headquarters had operational control over business units, directing strategic and operational decisions	Previously the headquarters had only financial control over the business units, but it gained operational control after a recent reorganization
Driver of process standardization	Corporate IT	Senior business managers in business process management teams	Corporate IT
Business motives for process standardization	Enable agile reorganization and seamless integration within regional divisions Optimize central allocation of resources based on comparable financial figures Enable central management of activities	Improve business performance by corporate-wide adoption of best practices Enable central management of dispersed resources Formalize collaborations across specialized business units	Formalize collaborations across interdependent business units Enable central management of dispersed activities
Process standardization challenges	The global ERP program did not possess the mandate to define, enforce, and maintain common process standards across the autonomous regional divisions	The global ERP program had to convince the business units of the need for process standardization, but also had the mandate to enforce the common process standards	The global ERP program did not possess the mandate to define the common process standards and had difficulties creating consensus across autonomous business units
Process standardization outcome	Global ERP rollout was highly localized Process standardization was more successful in corporate-owned business processes Process standards further diverged after program termination	Global ERP program succeeded in rolling out a strictly standardized global template, most importantly in core business processes Localization was allowed in cases of critical customer requirements and legislation	Global ERP rollout was highly localized in the first few pilot implementations Process standardization gained momentum after corporation centralized the corporate governance model

Table III. Comparative overview of cases

common process and data standards essential for maintaining seamless integration within the divisions. The second objective sought by process standardization was optimizing headquarters decisions on resource allocation. Only highly unified process standards could ensure comparable financial figures and performance reports from the regional divisions and thereby optimal resource allocation. As for the third objective, process standardization was a means to enable central management of a range of activities such as procurement. The absence of product diversification across the regional divisions served as the motive to centralize decision making (Mintzberg, 1993).

However, Alpha's corporate IT faced great difficulties in defining and imposing the common process standards. The regional divisions in charge of their own strategic and operational decisions resisted process standardization as they perceived it as a threat to their autonomy and accountability for maximizing financial performance. Neither the global ERP program nor the headquarters possessed the mandate to enforce the process standards:

> [Process standardization does not fit] because we are organized based on geographical national market. Because each market is allowed to work as they wish. Because each of them has their separate target provided that they comply with the target.
>
> [The divisions argued] if we are going to optimize our earnings, we have to be able to decide how to do things ourselves.
>
> Headquarters was not the police, had not control over the divisions. Divisions are huge. Headquarters could not force standardization.

Therefore, while by year-end 2005 Alpha was running on a single-instance ERP system, process standardization was by no means close to what the program had envisioned. The program was more successful in standardizing processes in corporate support services such as finance and human resource management. Although the program managed to facilitate financial reporting, through e.g., unification of chart of accounts and fiscal year, the figures were still not comparable due to the absence of common standards in all other related business processes. After termination of the global ERP program, lack of central governance for managing the process standards led to further divergence of standards to accommodate a higher level of flexibility in regional divisions. In the absence of strong process ownership, the old organizational structure reasserted itself (Hammer and Stanton, 1999):

> The degree of localization is very much higher than we aimed for. We did not succeed in the program. Back to the original targets of the program no we did not actually succeed.
>
> When the program office was closed and when the management team in the company had changed and the business thought there is no one guarding this anymore, and there is no one shouting at us if we do not do the changes, then we begin to do things as we used to. It is creeping.
>
> What would have been important instead of just running the program after the business model was defined was to say you are not implementing anything before we have corporate function in place where is actually the responsibility of this business model and processes. And they should have the necessary power to do that. Unless you have that you shouldn't continue. We should have waited until the full governance was in place and be sure that it was anchored.

Alpha represents a typical example of an MNC following an international management strategy based on local responsiveness. This strategy is projected in the distributed configuration of assets and decision-making authority across the regional divisions (Bartlett and Ghoshal, 1999). Process standardization in Alpha did not mainly have the objective of improving communication and coordination across the regional divisions, but had predominantly targeted coordination within the regional divisions. This contradicted the divisions' autonomy for coordinating their activities and eventually resulted in Alpha's failure to enforce and maintain the process standards. To summarize, in the presence of an international management strategy based on local responsiveness and decentralized asset configuration and decision-making authority, global ERP implementation in Alpha did not achieve its process standardization targets.

Therefore, Alpha illustrates our second proposition and suggests a lower degree of fit between process standardization in the context of a global ERP and MNCs structured for local responsiveness.

4.2 Case beta

Beta is a leading industrial equipment manufacturer, represented by its 80 business units in 55 countries in Europe, Asia, and America. Beta had a functional structure in which the business units were specialized as sales offices, production plants, and distribution centers. To coordinate interdependencies across business units, the headquarters not only had the responsibility for planning and controlling financial targets, but also had authority over how the corporation operated. In 1995, Beta started a journey toward business excellence after the new CEO questioned Beta's efficiency and competitiveness. The new strategy encouraged a higher level of concentration of physical assets and decision-making power. Emphasizing corporate efficiency rather than local performance, Beta gradually moved responsibility for profitability to the headquarters and increased its authority for directing business units' strategic and operational decisions. Later, as a part of efficiency and integration strategy, Beta launched a program to consolidate ERP systems across its business units by rolling out a single-instance, single-client ERP system with a standardized configuration.

In addition to reducing ERP operation costs, the global ERP rollout was an opportunity to reengineer business processes and improve corporate performance by adoption of industry best practices. Therefore, the global ERP program in Beta primarily targeted core value-adding business processes for standardization. Furthermore, Beta exploited process standardization to facilitate coordination across corporate business units in two ways. First, common process standards could facilitate central and integrated planning of dispersed resources and activities, and thus could improve operational efficiency in for instance production planning, inventory control, and material handling. Second, standardization could formalize routine transactions across the business units that were characterized by relatively limited value-chain activities and significant interdependencies. Therefore, process standardization was greatly encouraged by resource interdependencies across the corporation.

In Beta, process standardization was a relatively smooth process. The corporate functions owned the business processes and comprised business process management teams responsible for the design, control, and improvement of business processes across the corporation. The same teams assumed responsibility for unifying and aligning process standards in the context of global ERP implementation. While the process standardization effort faced some resistance from the business units, the central business process management teams had the mandate to enforce the new standards. As they were not held accountable for local profitability, business units indeed had little cause to resist process standardization:

> I think that is related to some kind of mandate from headquarters [to business process management organization]. It is a little bit both the carrot and stick that we prefer to use the carrot that companies can see the common benefits in these [process standardization] but in some cases we need some management decisions from headquarters that say now you need to do this.

> The companies' responsibility for P&L [profit and loss] has also been one of the challenges because of course they have looked at the local P&L. So but that was also changed so most companies now they do not have their own P&L. The local P&L should not be an argument against standardization.

Consequently, the program achieved a high level of process standardization and allowed for localization only where the legal institutional context and customers' critical requirements demanded differentiated process standards:

> We are pushing out standardization more and more now because we can see that if we really want to have economies of scale then in some cases we need to say yeah the way we do calculation of our productivity we don't want to argue about that. This is how we do it.
>
> When you talk about localization, it might be due to local regulations. Another thing could be customer behavior. These are social accepted. But apart from these business units must convince us that their way of working is better than the others. And if that is the case we will adopt their proposals and put it into the best practice and remove the other one.
>
> To get efficiency we saw the need to have some group functions in order to manage that because how we could have standardization if everything had to be discussed with all companies.

The relatively concentrated asset configuration and centralized decision making were the two important structural mechanisms that enabled Beta's strategy for global efficiency and integration (Bartlett and Ghoshal, 1999). Indeed, process standardization was a means to enhance the headquarters' ability to centrally plan and integrate activities across specialized and occasionally dispersed assets. This strong role empowered the headquarters to define and impose the process standards on corporate business units that had always been directed by the headquarters. In short, in the presence of an international management strategy based on global integration and centralized asset configuration and decision-making authority, global ERP implementation in Beta succeeded in achieving its process standardization targets. Therefore, Beta illustrates our first proposition that suggests a higher degree of fit between process standardization in the context of a global ERP implementation and MNCs that pursue an international management strategy based on global integration.

4.3 Case gamma

Gamma, a leading supplier of engineering solutions to process industry, comprises a group of gradually acquired engineering companies operating in more than 40 countries in Europe, America, and Asia. The business units in Gamma were divided into technology centers and market companies. The role of market companies was mostly limited to sales and services in various local markets. The technology centers, which specialized in different but related technologies, not only directly served the market but also assisted the market companies to serve local markets whenever the market companies lacked necessary technological competencies. Therefore, the business units were highly interdependent for technology transfer and delivery of joint projects that comprised a wide range of technologies. The business units had enjoyed a high level of autonomy for strategic and operational decisions, and only had been subject to financial control by headquarters. In 2012, Gamma launched an initiative to consolidate the ERP systems across its business units along with unification of financial structure to facilitate reporting. However, strongly believing that a solely technical consolidation could not be financially justified, the IT managers aimed at enabling business consolidation benefits by pursuing a higher level of process standardization along with the global ERP implementation. This turned the global ERP implementation into a business process management program that sought business outcomes to avoid disappointments generated by advanced technology deployments (Davenport, 1993).

While process standardization was essential for reducing the complexity of the global ERP implementation and operation, process standardization in Gamma was aimed at another important objective: efficient coordination of interdependencies across affiliated business units. Although the asset configuration did not represent a pure functional form, the corporate strategy for design and execution of turnkey projects had led to tight lateral interdependencies that were primarily managed by mutual adjustment among interdependent business units (Mintzberg, 1993). Lacking efficient mechanisms to coordinate interdependencies among the business units, the global ERP program aimed at exploiting process standardization to improve collaboration across the corporation. The IT managers could also foresee a day when common process standards would enable integrated planning of dispersed resources and activities such as procurement and inventory management. Therefore resource interdependencies were an important motive for process standardization.

However, in the early stages of the program, corporate IT encountered major challenges for defining the template of common process standards. To define the process standards, the global ERP program established a governance board comprised of business representatives from motivated and mature business units. However, the governance board did not possess formal authority to make decisions about corporate standards and was even reluctant to do so, anticipating the potentially negative impact of process standardization on business units' performance. This imposed a major burden that hindered the process of building the global template and led to highly localized ERP implementations in the first few pilot rollouts:

> We had people with ideas but we did not have anybody to make standardization decisions, nobody with defined empowerment to make decisions. And that is the prerequisite somebody with the overall responsibility.

> When I started the program the first day I thought when you go to the headquarters there would be more running the show but that is not the case. It is a decentralized company so it is not easy to come with IT and say now we go to the business and we pick guys from the decentralized organization and we put in centralized governance structure.

> You come to a powerful [local] managing director and he refuses to accept what has been done in the template and decided by the governance board and this guy is the guy earning all the money in that company, then he decides.

Later, a major reorganization facilitated process standardization. To transform Gamma into "one company," headquarters undertook an initiative to concentrate the dispersed decision-making authority and distributed assets. Indeed, the global ERP rollout was a prelude for this transformation. The newly established corporate functions were given the responsibility to manage interdependencies across even more interdependent business units and therefore they were held accountable for the management of business processes. Subsequently, the business representatives in the global ERP program board were replaced with individuals from central corporate functions who had the formal authority for defining corporate standards. This accelerated efforts for deciding and building the global template:

> Regarding governance if we take service there is this box called service management support and they have process development and data structure so in that box there is the background for having governance for having somebody here who makes the decisions. Now the responsibility for standardization decisions and enforcing principles is clear.

The organizational structure in Gamma was previously suboptimal as there was a mismatch between asset configuration and the nature of the headquarters-subsidiary relationship (Bartlett and Ghoshal, 1999). The highly decentralized governance model where the headquarters only acted as the financial controller lacked the hierarchical authority to manage interdependencies across business units. Therefore, while process standardization could facilitate managing lateral interdependencies, Gamma faced difficulties defining corporate process standards as it contradicted the business units' autonomy for coordinating their own activities. Process standardization gained momentum only after Gamma started the transformation toward a more centralized governance model. Therefore, while Gamma's previous state illustrates our second proposition and a lower degree of fit between process standardization and the financial headquarters-subsidiary relationship, process standardization better fits the new centralized governance model in support of our first proposition.

4.4 Cross-case analysis

Analyzed separately, each case supported testing the sufficient condition in which we assessed the outcome of process standardization efforts in the presence of a particular international management strategy reflected in asset configuration and the headquarters-subsidiary relationship (Hak and Dul, 2009). As the cases represent polar-type cases, each case can be used to test the necessary condition (i.e. assessing the outcome of process standardization effort in the absence of a particular international management strategy) (Hak and Dul, 2009). Process standardization in the course of global ERP implementation was less successful in cases Alpha and formerly in Gamma where neither of them was structured to support an international management strategy seeking global integration. Alpha represented the typical example of an MNC pursuing a local responsiveness strategy. Despite the interdependencies between business units, Gamma had adopted a highly decentralized governance model to ensure business unit responsiveness to its particular technology segment. Process standardization was more successful in Beta where centralized asset configuration and decision-making authority clearly indicated the corporate strategy for global integration. Figure 3 illustrates the outcome of process standardization in each case with respect to its structural context.

An organization's structures and processes typically reflect its institutional contexts (Mueller, 1994). Previous studies suggest the success of convergence and transfer of practices within an MNC to be negatively correlated with the institutional distance across the corporate subsidiaries (Kostova, 1999). The multiplicity of institutional contexts across corporate subsidiaries increases the likelihood of misfit between a globally standardized process and subsidiaries regulatory, cognitive, and normative institutions and thus difficulties in transferring the business process across the MNC (Kostova, 1999). Therefore, institutional distance could be an alternative argument for explaining the process standardization outcome in the three cases. In all three cases, the differences in local culture and legislation increased the number of process standard variants. However, interestingly the institutional distance cannot account for the greater success of process standardization in Beta where the business units are distributed across a wider geographical area, compared to Alpha where the divisions are predominantly located within Europe. Therefore, the empirical findings suggest that the structural context enforced by the international management strategy was more influential in process standardization compared to institutional forces imposed by the local environment.

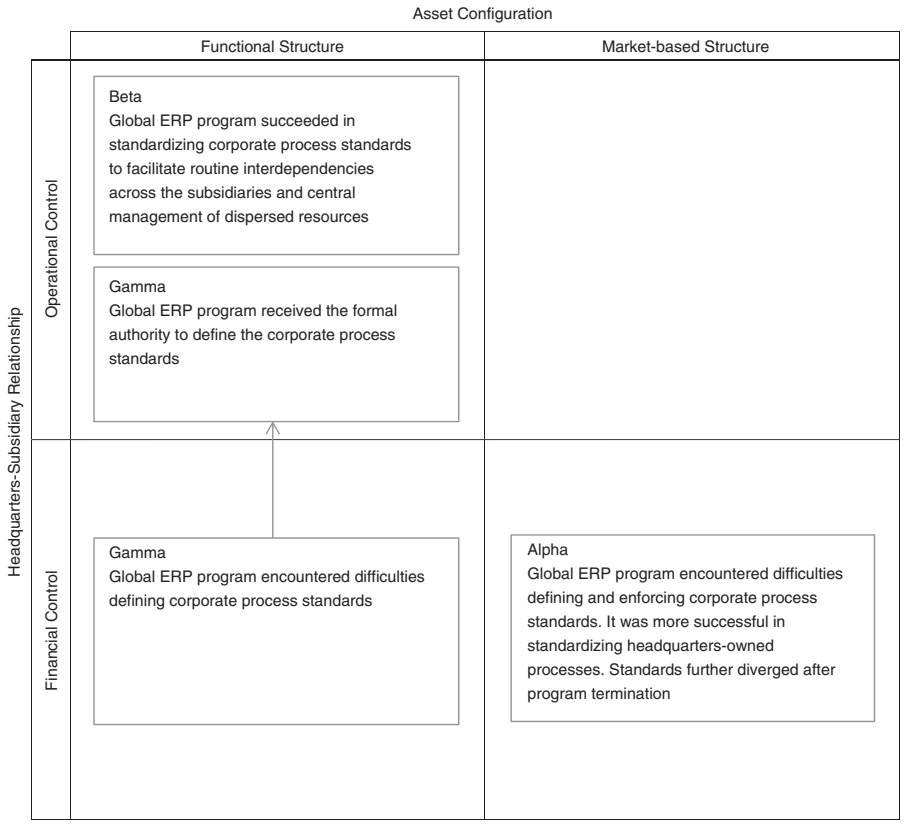

Figure 3. Process standardization outcomes in relation to structural characteristics of the cases

The institutional and resource dependency theories can explain the dominance of structural context over local environment for process standardization in MNCs seeking global integration. Institutional duality suggests that an MNC's subsidiaries are under simultaneous pressures for consistency with the local environment and at the same time with affiliated subsidiaries (Kostova and Roth, 2002). The dominant pressure is usually the one for which the subsidiary has greater resource dependency (Westney, 2010). Underlying this premise is the assumption that resource exchange between organizations generates isomorphic pulls on the dependent organization to reduce transaction costs and to gain the legitimacy required for accessing resources (Westney, 2010). Therefore, one can expect greater potential for process standardization in MNCs that are structured for global integration regardless of institutional distance. This is because subsidiaries in such MNCs perceive being more consistent with the business processes that internally have been institutionalized essential to achieve legitimacy for accessing resources.

5. Framework

The findings suggest that international management strategy and consequent structural characteristics influence process standardization in the context of a global ERP implementation. Building on this finding, this section presents a framework that

discusses conditions of fit between process standardization and structural elements characterizing the international management strategy of an MNC. In Figure 4, rows represent the headquarters-subsidiary relationship, namely whether the headquarters has only financial control over the subsidiaries or also direct their strategic and operational decisions. The columns indicate asset configuration and whether subsidiaries are self-contained or have lateral linkages with affiliated subsidiaries because of their limited value-chain activities. For each combination of the asset configuration and headquarter-subsidiary relationship, we explain the outcome of process standardization in the context of a global ERP implementation.

Process standardization as a centralizing coordination mechanism better fits MNCs structured for global integration; consequently, global ERP programs in such MNCs are more likely to succeed in unifying process standards across subsidiaries. In MNCs pursuing global integration, the need for worldwide coordination encourages adoption of common processes across subsidiaries (Cavusgil *et al.*, 2004). Process standardization not only formalizes the routine interdependencies across specialized subsidiaries (Davenport, 2005), but also facilitates central management and action planning of dispersed resources and distributed activities (Carton and Adam, 2003). In such MNCs, the headquarters' role and its authority for managing interdependencies allows for defining and imposing common business processes as coordination mechanisms.

Headquarters-Subsidiary Relationship	Asset Configuration: Functional Structure	Asset Configuration: Market-based Structure
Operational Control	Strategy: Global integration Process standardization is compatible with the role of the headquarters and coordinates interdependencies by facilitating central management of activities and formalizing routine transactions among interdependent subsidiaries	Mismatch between operational control and market-based structure Process standardization is in line with the headquarters' control over strategic and operational decisions but is less required and may contradict the objective behind establishing self-contained subsidiaries
Financial Control	Mismatch between financial control and functional structure Process standardization is required to coordinate the interdependencies but contradicts the autonomy of subsidiaries over their activities	Strategy: Local responsiveness Process standardization is not feasible and is less required as autonomous subsidiaries contain most of the necessary coordination mechanisms. Process standardization can be used to regulate the headquarters-subsidiary interdependencies

Figure 4.
Fit between MNCs' structural characteristics and process standardization

In MNCs where the role of the headquarters is limited to financial controller despite interdependencies across subsidiaries, process standardization during a global ERP implementation may not succeed as the headquarters is not authorized to manage interdependencies or make decisions about coordination mechanisms. According to Bartlett and Ghoshal's (1999) classification of MNC structure, in such MNCs there is, indeed, a mismatch between the asset configuration and the headquarters' role. Such MNCs will better succeed when deploying process standardization for coordination if they intend to centralize the corporate governance model, at least in those areas that require global integration.

Process standardization is less appropriate in MNCs structured for local responsiveness; therefore global ERP programs in such MNCs have a lower probability of succeeding in process standardization. The market-based structure diminishes the need for deploying process standardization for coordination, and the limited financial control over the subsidiaries, which allows for building local presence, contradicts the centralizing nature of process standardization. Process standardization in such MNCs may damage competitiveness especially when local differences are rooted in unique commercial propositions (van Leijen, 2005). Therefore, in such MNCs, the scope of process standardization may be limited to regulating the headquarters-subsidiary interdependencies, especially for financial reporting, resource allocation, and corporate support services.

In MNCs where the subsidiaries are self-contained but the headquarters has operational control over the subsidiaries, there is again a mismatch between asset configuration and headquarters-subsidiary relationship (Bartlett and Ghoshal, 1999). In such MNCs, although the headquarters may have the authority to decide about the common process standards during the global ERP implementation, process standardization may not be required due to limited lateral interdependencies among the subsidiaries and may even challenge the objective behind establishing self-contained subsidiaries that independently serve local markets. Process standardization better fits those areas where the MNC deliberately intends to concentrate assets or decision-making authority.

6. Discussion

Harmon (2007) suggests that if an MNC is doing the same activity in many different locations, it should consider doing them in the same way. While asserting operational similarity as a driver for process standardization, we argue that process standardization is a centralizing coordination mechanism and therefore its deployment in an MNC also needs to be in line with corporate strategic and structural contexts. This study suggests that while an MNC's asset configuration indicates whether process standardization is essential for coordinating the interdependencies across an MNC, the nature of headquarters-subsidiary relationships determines whether process standardization disturbs the balance of power between the headquarters and subsidiaries. Therefore, aligning the decision for process standardization with the corporate asset configuration and headquarters-subsidiary relationships may resolve the conflicts caused by efficiency-flexibility and universality-individuality dilemmas. While these findings assist the managers to consciously decide about process standardization based on their corporate structural context, the study as well has two theoretical implications that pave the way for future research.

First, our findings suggest that process standardization in the course of a global ERP implementation not only increases the level of centralization in an MNC

(Mintzberg, 1993), but also that achieving common process standards requires central governance to be in place, especially for managing and designing business processes. Mintzberg (1993) suggests that when an organization relies on systems of standardization for coordination, some power passes out from line managers to the designers of those systems. Alpha and Gamma were missing such designers of process standards at the corporate level as they relied on performance systems to control the subsidiaries. This issue was not present in Beta where the business process management teams at the corporate level formally had responsibility for the design, control, and improvement of business processes across corporate subsidiaries. Process standardization in Gamma received momentum only after responsibility for management of business processes was assigned to the newly established corporate functions.

Therefore, while acknowledging the positive impact of business process management for successful implementation of ERP systems (e.g. Žabjek *et al.*, 2009), we argue that central governance for managing business processes is essential for developing and imposing common process standards when rolling out a global ERP system. Furthermore, corporate-level process ownership needs to be a permanent role to maintain the process standards and prohibit their divergence, and to ensure that adjustments occur in line with business evolution (Hammer and Stanton, 1999). Although some studies suggest the CIO as catalyst for business process management (e.g. Doebeli *et al.*, 2011; Hammer, 2004), our empirical findings indicate that corporate IT functions cannot drive process standardization initiatives as they typically do not own the business processes.

Second, our findings suggest that the international management strategy of an MNC affects process standardization, but not necessarily ERP system distribution. As a single-instance ERP system typically employs a single logical database for the entire corporation, a number of previous studies assume that a global ERP system inevitably must be configured based on rigid rules and standards (e.g. Clemmons and Simon, 2001; Madapusi and D'Souza, 2005; Markus *et al.*, 2000; Morton and Hu, 2008). Building on this assumption, these studies suggest that ERP distribution decisions should be made in alignment with international management strategy and the need for control and coordination in MNCs (e.g. Clemmons and Simon, 2001; Madapusi and D'Souza, 2005).

However, as illustrated by case Alpha and discussed in other studies (e.g. Hufgard and Gerhardt, 2011), a single-instance, single-client ERP system may be configured to accommodate differentiated requirements in each subsidiary. Incorporating multiple clients within a single-instance ERP system will further enhance data separation and client-dependent configurations (Davidenkoff and Werner, 2008). A recent study by the American Productivity and Quality Center shows that 17 percent of the surveyed MNCs have implemented single-instance ERP systems that are configured based on different processes and data models (APQC, 2014). This may suggest that global ERP implementation in MNCs is an inherent part of efforts to centralize control of computing resources in the quest for IT system economies. Centralization of IT systems in search of IT economies of scale is also in line with the view that proposes MNCs may selectively centralize or decentralize assets and decision-making authority to meet the dual requirements of global integration and local responsiveness (Bartlett and Ghoshal, 1999; Rugman and Verbeke, 1992). However, while the empirical findings do not support a direct relationship between ERP system distribution and an MNC's international management strategy, a higher level of commonality in business processes better justifies the choice of a single-instance ERP architecture (Davenport, 1998; Ives and Jarvenpaa, 1991; Rayner and Woods, 2011).

7. Conclusion

A growing body of academic and practitioner literature has researched ERP implementations, but there are only few studies that explore global ERP implementations in MNCs. There are even fewer studies that investigate process standardization as one of the main drivers of a global ERP implementation. In this study we examined the fit between MNCs' international management strategy and process standardization. Drawing on findings from a literature review and three case studies, this study explains how an MNC's international management strategy and consequent structural characteristics affect process standardization in the context of a global ERP implementation. Our findings propose that process standardization better fits the functional structure and operational control found in MNCs pursuing global integration, whereas it is less required and disturbs the financial control in MNCs seeking local responsiveness. While the findings propose the necessity of fit between international management strategy and process standardization, the study does not identify the necessity of such fit for ERP system distribution across an MNC. Our empirical findings further suggest that central governance for management of business processes is vital for defining, enforcing, and maintaining corporate process standards.

While our study provides valuable insights into the implications of international management strategy for process standardization in MNCs, there are certain limitations. First, our study takes the MNC as the unit of analysis and assesses the overall outcome of process standardization in relation to corporate international management strategy. In that sense, our propositions are grounded on the assumption that MNC strategy can be classified into global integration and local responsiveness. However, MNCs may adopt different strategies and structures for various business domains and even subsidiaries to simultaneously achieve global integration and local responsiveness (Bartlett and Ghoshal, 1999; Rugman and Verbeke, 1992). This may necessitate a differentiated approach for process standardization across the MNC. We argue that the same propositions can guide decision making for process standardization at lower organizational levels; however, further research conducted at the business domain and subsidiary levels is needed to evaluate this assertion.

Second, in this study we investigate the outcome of process standardization by assessing its compatibility with MNCs' strategic and structural context. However, process standardization outcome in MNCs may also be affected by other factors such as the quality of the relationship between the headquarters and subsidiaries, the subsidiaries' motivation and capacity for absorbing knowledge from outside, and power resources and politics of managers within the subsidiaries. As these structures and mechanisms may influence each other's effect, the decision for process standardization needs to be in line with the sum of these structures. This encourages further studies that develop a more holistic view of factors influencing MNC structure and their impact on process standardization.

Third, while the study assumes that a better fit between international management strategy and process standardization leads to a greater level of process standardization, the fit and the consequent great level of process standardization also potentially improve the MNC's performance. However, the latter was not addressed in the current study. Further studies are required to assess the implications of process standardization for MNCs' performance. Fourth, our empirical findings suggest that fit is not necessary between ERP system distribution and the MNC's international management strategy. This conclusion in turn calls for further studies for

evaluating costs and benefits of implementing a single-instance ERP system in MNCs seeking local responsiveness. As MNCs structured for local responsiveness are not expected to reach a high level of process standardization, it would be interesting to assess whether a single-instance ERP system can be justified in the absence of business consolidation benefits.

References

American Productivity and Quality Center (APQC) (2014), "ERP consolidation: the rationale is growing stronger", available at: www.apqc.org/knowledge-base/documents/erp-consolidation-rationale-growing-stronger-0 (accessed November 22, 2015).

Bartlett, C.A. and Ghoshal, S. (1999), *Managing Across Borders: The Transnational Solution*, Harvard Business School Press, Boston, MA.

Bingi, P., Sharma, M.K. and Godla, J.K. (1999), "Critical issues affecting an ERP implementation", *Information Systems Management*, Vol. 16 No. 3, pp. 7-14.

Campbell, D.T. (1975), "Degrees of freedom and the case study", *Comparative Political Studies*, Vol. 8 No. 2, pp. 178-193.

Carton, F. and Adam, F. (2003), "Analysing the impact of enterprise resource planning systems roll-outs in multi-national companies", *Electronic Journal of Information Systems Evaluation*, Vol. 6 No. 2, pp. 21-32.

Cavusgil, S.T., Yeniyurt, S. and Townsend, J.D. (2004), "The framework of a global company: a conceptualization and preliminary validation", *Industrial Marketing Management*, Vol. 33 No. 8, pp. 711-716.

Chen, I.J. (2001), "Planning for ERP systems: analysis and future trend", *Business Process Management Journal*, Vol. 7 No. 5, pp. 374-386.

Clemmons, S. and Simon, S.J. (2001), "Control and coordination in global ERP configuration", *Business Process Management Journal*, Vol. 7 No. 3, pp. 205-215.

Davenport, T. (1993), *Process Innovation: Reengineering Work through Information Technology*, Harvard Business School Press, Boston, MA.

Davenport, T. (1998), "Putting the enterprise into the enterprise system", *Harvard Business Review*, Vol. 76 No. 4, pp. 121-131.

Davenport, T. (2005), "The coming commoditization of processes", *Harvard Business Review*, Vol. 83 No. 6, pp. 100-108.

Davidenkoff, A. and Werner, D. (2008), *Global SAP Systems Design and Architecture*, 1st ed., SAP Press, Boston, MA.

Dey, I. (1993), *Qualitative Data Analysis: A User-Friendly Guide for Social Scientists*, Routledge, London.

Doebeli, G., Fisher, R., Gapp, R. and Sanzogni, L. (2011), "Using BPM governance to align systems and practice", *Business Process Management Journal*, Vol. 17 No. 2, pp. 184-202.

Donaldson, L. (1987), "Strategy and structural adjustment to regain fit and performance: in defense of contingency theory", *Journal of Management Studies*, Vol. 24 No. 1, pp. 1-24.

Donaldson, L. (2001), *The Contingency Theory of Organizations*, Sage.

Easton, G. (2010), "Critical realism in case study research", *Industrial Marketing Management*, Vol. 39 No. 1, pp. 118-128.

Eisenhardt, K.M. (1989), "Building theories from case study research", *Academy of Management Review*, Vol. 14 No. 4, pp. 532-550.

Fernandez, J. and Bhat, J. (2010), "Addressing the complexities of global process harmonization", in Wang, M. and Sun, Z. (Eds), *Handbook of Research on Complex Dynamic Process Management: Techniques for Adaptability in Turbulent Environments*, IGI Global, New York, NY, pp. 368-385.

Gamble, J. (2010), "Transferring organizational practices and the dynamics of hybridization: Japanese retail multinationals in China", *Journal of Management Studies*, Vol. 47 No. 4, pp. 705-732.

Gattiker, T.F. and Goodhue, D.L. (2004), "Understanding the local-level costs and benefits of ERP through organizational information processing theory", *Information & Management*, Vol. 41 No. 4, pp. 431-443.

Gattiker, T.F. and Goodhue, D.L. (2005), "What happens afterwards: understanding the impact of interdependence and differentiation on plant-level outcomes", *MIS Quarterly*, Vol. 29 No. 3, pp. 559-585.

Geppert, M. and Williams, K. (2006), "Global, national and local practices in multinational corporations: towards a sociopolitical framework", *The International Journal of Human Resource Management*, Vol. 17 No. 1, pp. 49-69.

Grant, G.G. (2003), "Strategic alignment and enterprise systems implementation: the case of Metalco", *Journal of Information Technology*, Vol. 18 No. 3, pp. 159-175.

Griffith, D.A., Hu, M.Y. and Ryans, J.K. (2000), "Process standardization across intra- and inter-cultural relationships", *Journal of International Business Studies*, Vol. 31 No. 2, pp. 303-324.

Gupta, A.K. and Govindarajan, V. (1991), "Knowledge flows and the structure of control within multinational corporations", *Academy of Management Review*, Vol. 16 No. 4, pp. 768-792.

Hak, T. and Dul, J. (2009), "Pattern matching", in Mills, A.J., Durepos, G. and Wiebe, E. (Eds), *Encyclopedia of Case Study Research*, Sage, pp. 664-666.

Hammer, M. (2004), "Natural business evolution may spawn a new executive role and changes for the CIO", *Information Week*, March.

Hammer, M. (2010), "What is business process management?", in vom Brocke, J. and Rosemann, M. (Eds), *Handbook on Business Process Management*, Vol. 1, Springer, Heidelberg, pp. 3-16.

Hammer, M. and Stanton, S. (1999), "How process enterprises really work", *Harvard Business Review*, Vol. 77, November-December, pp. 108-120.

Hanseth, O., Ciborra, C.U. and Braa, K. (2001), "The control devolution ERP and the side-effects of globalization", *The Database for Advances in Information Systems*, Vol. 32 No. 4, pp. 34-46.

Harmon, P. (2007), *Business Process Change: A Guide for Managers and BPM and Six Sigma Professionals*, Morgan Kaufmann, San Francisco, CA.

Hepsø, I.L., Monteiro, E. and Schiefloe, P.M. (2000), "Implementing multi-site ERP projects: centralization and decentralization revisited", *Norsk konferanse for organisasjoners bruk av IT proceedings of conference in Oslo*, pp. 249-263.

Huber, T., Rainer, A. and Hubert, Ö. (2000), "Templates-instruments for standardizing ERP systems", *System Sciences 2000 Proceedings of the 33rd Annual Hawaii International Conference in Hawaii*, pp. 1-18.

Hufgard, A. and Gerhardt, E. (2011), "Consolidating business processes as exemplified in SAP ERP systems", in Schmidt, W. (Ed.), *S-BPM ONE-Learning by Doing–Doing by Learning*, Springer, Berlin Heidelberg, pp. 155-171.

Ives, B. and Jarvenpaa, S.L. (1991), "Applications of global information technology: key issues for management", *MIS Quarterly*, March, pp. 33-49.

Jarillo, J.C. and Martinez, J.I. (1990), "Different roles for subsidiaries: the case of multinational corporations in Spain", *Strategic Management Journal*, Vol. 11 No. 7, pp. 501-512.

Jarrar, Y.F., Al-Mudimigh, A. and Zairi, M. (2000), "ERP implementation critical success factors-the role and impact of business process management", *Management of Innovation and Technology 2000 Proceedings of the International Conference, IEEE*, pp. 122-127.

Johnston, W.J., Leach, M.P. and Liu, A.H. (1999), "Theory testing using case studies in business-to-business research", *Industrial Marketing Management*, Vol. 28 No. 3, pp. 201-213.

Karimi, J. and Konsynski, B.R. (1991), "Globalization and information management strategies", *Journal of Management Information Systems*, Vol. 7 No. 4, pp. 7-26.

Kostova, T. (1999), "Transnational transfer of strategic organizational practices: a contextual perspective", *The Academy of Management Review*, Vol. 24 No. 2, pp. 308-324.

Kostova, T. and Roth, K. (2002), "Adoption of an organizational practice by subsidiaries of multinational corporations: institutional and relational effects", *Academy of Management Journal*, Vol. 45 No. 1, pp. 215-233.

Madapusi, A. and D'Souza, D. (2005), "Aligning ERP systems with international strategies", *Information Systems Management*, Vol. 22 No. 1, pp. 7-17.

Markus, M.L., Tanis, C. and Van Fenema, P.C. (2000), "Enterprise resource planning: multisite ERP implementations", *Communications of the ACM*, Vol. 43 No. 4, pp. 42-46.

Martinez, J.I. and Jarillo, J.C. (1989), "The evolution of research on coordination mechanisms in multinational corporations", *Journal of International Business Studies*, Vol. 20 No. 3, pp. 489-514.

Melão, N. and Pidd, M. (2000), "A conceptual framework for understanding business processes and business process modelling", *Information Systems Journal*, Vol. 10 No. 2, pp. 105-129.

Mintzberg, H. (1993), *Structure in Fives: Designing Effective Organizations*, Prentice-Hall Inc., Englewood Cliffs, NJ.

Morton, N.A. and Hu, Q. (2008), "Implications of the fit between organizational structure and ERP: a structural contingency theory perspective", *International Journal of Information Management*, Vol. 28 No. 5, pp. 391-402.

Mueller, F. (1994), "Societal effect, organizational effect and globalization", *Organization Studies*, Vol. 15 No. 3, pp. 407-428.

Olson, D.L., Chae, B. and Sheu, C. (2005), "Issues in multinational ERP implementation", *International Journal of Services and Operations Management*, Vol. 1 No. 1, pp. 7-21.

Peterson, R.R. (2001), "Configurations and coordination for global information technology governance: complex designs in a transnational European context", *System Sciences 2001 proceedings of the 34th Annual Hawaii International Conference in Hawaii, IEEE*, p. 10.

Phelan, P. and Hardcastle, C. (2011), "Global ERP template: scope and content guidelines", Gartner Research, available at: www.gartner.com/doc/2613119/global-erp-template-scope-content (accessed September 30, 2016).

Prahalad, C.K. and Doz, Y.L. (1999), *The Multinational Mission: Balancing Local Demands and Global Vision*, Simon and Schuster, New York, NY.

Rayner, N. and Woods, J. (2011), "ERP strategy: why do you need one, and key considerations for defining one", Gartner Research, available at: www.gartner.com/doc/1556120/erp-strategy-need-key-considerations (accessed September 30, 2016).

Rosenkranz, C., Seidel, S., Mendling, J., Schaefermeyer, M. and Recker, J. (2010), "Towards a Framework for Business Process Standardization", Business Process Management Workshop, pp. 53-63.

Ross, J.W., Weill, P. and Robertson, D. (2006), *Enterprise Architecture as Strategy: Creating a Foundation for Business Execution*, Harvard Business Press, Boston, MA.

Roth, K. and Morrison, A.J. (1990), "An empirical analysis of the integration-responsiveness framework in global industries", *Journal of International Business Studies*, Vol. 21 No. 4, pp. 541-564.

Rugman, A.M. and Verbeke, A. (1992), "A note on the transnational solution and the transaction cost theory of multinational strategic management", *Journal of International Business Studies*, Vol. 23 No. 4, pp. 761-771.

Sethi, V., Sethi, V., Jeyaraj, A. and Duffy, K. (2008), "Enterprise resource planning systems implementation in a global subsidiary organization: lessons learned", *Journal of Asia-Pacific Business*, Vol. 9 No. 4, pp. 373-394.

Sheu, C., Chae, B. and Yang, C.L. (2004), "National differences and ERP implementation: issues and challenges", *OMEGA: The International Journal of Management Science*, Vol. 32 No. 5, pp. 361-371.

Tay, J.S. and Parker, R.H. (1990), "Measuring international harmonization and standardization", *Abacus*, Vol. 26 No. 1, pp. 71-88.

Tracy, S.J. (2010), "Qualitative quality: eight 'big-tent' criteria for excellent qualitative research", *Qualitative Inquiry*, Vol. 16 No. 10, pp. 837-851.

Tregear, R. (2010), "Business process standardization", in vom Brocke, J. and Rosemann, M. (Eds), *Handbook on Business Process Management*, Vol. 1, Springer, Heidelberg, pp. 307-327.

van Leijen, H. (2005), "The role of contextuality in process standardization", in Baets, W.R. (Ed.), *Knowledge Management and Management Learning*, Springer, pp. 251-286.

Wagner, E.L. and Newell, S. (2004), "'Best' for whom?: the tension between 'best practice' ERP packages and diverse epistemic cultures in a university context", *The Journal of Strategic Information Systems*, Vol. 13 No. 4, pp. 305-328.

Westney, D.E. (2010), "Institutional theory and the multinational corporation", in Ghoshal, S. and Westney, D.E. (Eds), *Organization Theory and the Multinational Corporation*, Palgrave Macmillan, pp. 47-67.

Yin, R.K. (2009), *Case Study Research: Design and Methods*, Sage Publications.

Žabjek, D., Kovačič, A. and Indihar Štemberger, M. (2009), "The influence of business process management and some other CSFs on successful ERP implementation", *Business Process Management Journal*, Vol. 15 No. 4, pp. 588-608.

Zrimsek, B. and Prior, D. (2003), "Comparing the TCO of centralized vs decentralized ERP", Gartner Research, available at: www.gartner.com/doc/383962/comparing-tco-centralized-vs-decentralized (accessed September 30, 2016).

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(The Appendix follows overleaf.)

Appendix 1

Topic	Question
Definition	How do you define process standardization?
Structural context	How is the corporate organizational structure? How many subsidiaries are there and how are they distributed across the globe? Are the subsidiaries operationally similar? How resources are distributed across the subsidiaries? Are the subsidiaries self-contained or only comprise a limited set of value-chain activities? How interdependent are the subsidiaries in your corporation? How the power is distributed between the headquarters and subsidiaries? What is the role of the headquarters? What are the accountabilities of the subsidiaries? What necessitated such corporate governance model? Are the corporate subsidiaries comparable in terms of their decision-making power and autonomy?
Drivers behind process standardization	What did initiate the global ERP implementation in your corporation? Why did you decide for process standardization along with the global ERP implementation? What were the main drivers behind this initiative? What were the problems that process standardization was supposed to resolve? How process standardization did support the corporate business strategy? In which areas process standardization was less/more important? Why?
Outcomes of process standardization	Do you perceive the process standardization effort in your corporation successful? Did you manage to achieve the goals for process standardization? In which areas did you achieve more success with process standardization? In which were you less successful in realizing the common process standards? Why? What have been the benefits and drawbacks of process standardization?
Challenges of process standardization	What were the main challenges you faced when defining and imposing common process standards? What were the arguments against process standardization? Did you face the same challenges imposing process standards in all subsidiaries? How the corporate subsidiaries differed with respect to accepting common process standards? What made them different? How the cultural and legal differences across the subsidiaries influenced process standardization?
Process standardization and structural context	Do you think process standardization fitted the corporate governance model? Why? How process standardization did influence the corporate governance model and the role of the headquarters and subsidiaries? Did you find process standardization more fruitful in some process areas/subsidiaries compared to the rest? What characterized these process area/subsidiaries?
Process governance	Who defined the common process standards? How did you manage common process standards after the global ERP program termination?
Global ERP	How the level of process standardization did influence the global ERP architecture? Could you still implement a single-instance, single-client ERP?
Learnings	What would you have done differently, if you had the chance to redo/restart the process standardization effort?

Table AI.
Interview guide

Appendix 2

Table AII. Quotations from cases

Theme	First-order concept	Representative quotation
Alpha		
Process standardization and global ERP systems	Process standardization not essential for a global ERP implementation	"You cannot force anything [standardization or a specific way of working] by moving it to one central singe system. You have to start from the other end. You have to convince the business that the standardization is a good idea all through the business for all the processes and you have to have someone centrally govern this. But you cannot use the ERP system for doing that, not possible. In ERP system you can do whatever you wanted to do"
	Process standardization to justify global ERP implementation	"When you are trying to create a new system that does not solve any problem really, but the underlying problem is the business processes. If the business processes are not aligned and do not work together, you cannot solve anything with implementing a new ERP system. What you would do is in fact spending a lot of money and getting nothing out of that and getting a lot of disappointment. So instead of just implementing a new system we looked at the planning of the business model of the company instead"
Drivers of process standardization	Process standardization to optimize central resource allocation	"So you have to do a very careful planning of how you allocate the milk to the products that you want to produce and sell to the customers. And the problem as we saw was that these eight divisions they were deeply interdependent on the same raw milk but process-wise they were not aligned and that make the process of allocating and optimizing the allocation very difficult"
	Process standardization to enable seamless integration during reorganizations	"The processes they are building [in divisions] is more or less build to support single stove pipes or single divisions and this means that IT is built to support these processes. It works within the division because everything is aligned towards the division and how they have decided to do things. But the problem is of course is that you are stuck to the organization" "Even a small change in the organization caused some very expensive and difficult changes in IT and was at that time preventing the processes and work flows to develop as fast and smooth"
	Process standardization to enable central management of activities	"This is what we aimed to do. If you look at the organizational chart, you see the stove pipes [divisions] are smaller, the cross-functional organization is a lot more visible [that is what we wanted]. We said the cross-functional organization should not only decide the financial targets but also decides how you are going to do this throughout"
Challenges of process standardization	Limited control of the headquarters over the	"And this diversification [in business processes] is what happens when the only guideline you get [from the headquarters] is the financial target and is said ok get this

(*continued*)

Table AII.

Theme	First-order concept	Representative quotation
	subsidiaries was the reason for diversified processes	financial target and it is up to you how to achieve it. You do it the way that you think is the best way of doing it and that means that you build silos and stove pipes"
	Process standardization contradicted the subsidiaries autonomy and their responsibility for their profitability	"[The divisions argued] if we are going to optimize our earnings, we have to be able to decide how to do things ourselves"
		"The divisions argued we don't want to standardize, no we don't want to change the way we do things, we want to make our own decisions. [By having process standardization] they could not make decisions at least at the processes. Standardization means change at least for someone, even everybody. If they change they fell they lose control, they lose money, they lose control on their own way of doing things, control of the business processes"
		"[Process standardization does not fit] because we are organized based on geographical national market. Because each market is allowed to work as they wish. Because each of them has their separate target provided that they comply with the target"
	The headquarters role did not allow enforcing process standardization	"Headquarters was not the police, had not control over the divisions. Divisions are huge. Headquarters could not force standardization"
Outcome of process standardization	Process standardization did not realize the envisioned targets	"The degree of localization is very much higher than we aimed for. We did not succeed in the program. Back to the original targets of the program no we did not actually succeed"
	Process standardization more successful in process areas managed at the corporate level	"What are moved to the corporate functions are close to being standardized, but things that still belong to single divisions are less standardized"
	Divergence is growing due to lack of central governance for management of business processes and demand for local flexibility	"There are lots of strong [local] people that they want back their own personal flexibility but they are not thinking of the flexibility of the company so I think the company is moving back to the left again, to more diversity"
		"When the program office was closed and when the management team in the company had changed and the business thought there is no one guarding this anymore, and there is no one shouting at us if we do not do the changes, then we begin to do things as we used to. It is creeping"
	Business growth despite lack of process standardization	"Maybe all this standardization thing is crap. Maybe I have misunderstood everything, but the company is succeeding, the company is growing, it is doubled in three years' time, so it is growing very fast. The company survives and all other companies in the

(*continued*)

Theme	First-order concept	Representative quotation
		world producing the same thing are having the same problem but they could have optimized better on that and get a higher margin"
Factors essential for process standardization	Process standardization requires headquarters control over subsidiaries' operations	"The control of the business processes and business model should be a corporate function. So are they interfering into the daily processes in the business divisions, yes, in a way they are because they are telling them how to do it, not just what to achieve but how to do it"
	Process standardization requires change in the role of the headquarters and subsidiaries	"Of course there is [loss in local performance because of process standardization]. But you have to think the way that maybe it is a little bad for the single business units but for the company as a whole there are more or less eliminating each other, because when you do process standardization you move responsibility to the top of the business, so that also means that you are moving decision and power to the top of the business and that means again that you remove some of the responsibilities from the single business units and take it at the corporate level instead"
	No process standardization before establishing corporate function managing the business processes	"What would have been important instead of just running the program after the business model was defined was to say you are not implementing anything before we have corporate function in place where is actually the responsibility of this business model and processes. And they should have the necessary power to do that. Unless you have that you shouldn't continue. We should have waited until the full governance was in place and be sure that it was anchored"
Beta		
Process standardization and global ERP systems	Global ERP for business and not technical consolidation	"One of the reasons we put in SAP was to align processes. So it is about process alignment it was not about putting in SAP"
Drivers of process standardization	Process standardization based on best practices to improve corporate efficiency	"The new CEO questioned our competitiveness. So he said we better have three ways of working: closing the whole lot, moving the whole lot to Eastern countries or low cost countries, or finding new ways of working. So this finding new way of working was the key part of it"
		"There was 10 years ago within operations the CEO had a meeting with all operational managers and there he stated that in some ways across our factories we do things too differently and It means that we are not efficient enough. He had a slide that showed our

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Table AII.

Table AII.

Theme	First-order concept	Representative quotation
		different entities and then how they were doing things differently and they wanted us to be aligned to be more efficient"
	Process standardization to support central management of business processes	"You could say it is easier to manage and govern the processes that they are more alike because performance measures, the indicators they are rooted in the same way of working whereby you could say they are some more aligned measures picked on the same platform and so forth. You could say it eases the governance of these processes and also the management in each individual company"
		"But in general we believe if we can standardize it is easier to share these best practices between the different companies it is easier to make improvements. If we have different processes then it is difficult to be efficient in improving these processes and it is more difficult to implement the improvement"
	Process standardization to support central management of dispersed activities	"There were discussions about how we can standardize our businesses even further that could be in relation to getting supplies into our company, in relation to how we could plan and be better off to forecast and run our businesses that was more visible in terms of demands, stock development and way of working"
		"If you standardize often it also comes with it is easier to have once decision body centrally making decisions across entities which have the same processes and that is also what we are seeing in this company"
		"Having shared service centers has become a part of our daily life and one of the key reasons being able to do so is standardization"
	Process standardization enabled resource deployment across corporation	"Despite being a small company you can get a big advantage of still being fully aligned because the business will run that much easier. Let's say you are a very small company where you have only one planer, if that planer is ill and the process is standardized then another planer from another company can take that role"
	Process standardization to optimize inter-company transactions	"We can see that different setups between different companies sometimes it gives confusion signals between the companies it means that if one supplying company is doing things differently from buying company does then sometimes it causes inefficiencies because buying company does not know the signals what it means from the supplying company. It can also if different rules are followed if one company believes that we do it like this you can only buy it this way and this is not aligned with the buying company then maybe they have to carry higher burden of inventory or longer lead times or stuff like that"

(*continued*)

Theme	First-order concept	Representative quotation
		"We could also see that internally between our companies it was difficult to operate efficiently because people were operating in different ways and sometimes these local processes were contradicting with what people were doing in other parts of the organization so it means that we were not able to agree on the setup between our companies so one company would order parts form another company in a way which would not be cost efficient for the corporation"
Challenges of process standardization	Subsidiaries resisted process standardization but central business process management teams gained the mandate to enforce process standardization	"When it becomes close to [business units] daily operations then there can be lots of discussions around whether the best practice method was better than their local method. And in some cases it causes some discussions and some resistance besides the usual resistance of having to do something new. So it was very much convincing them standardization will be a benefit for them as well and then standardization objective on a higher corporate level. There is still an element that we have to convince local companies that it is a good idea if they standardize. It has also developed over the years. Our [business process management team] mandate [for process standardization] has grown stronger and stronger"
		"I think that is related to some kind of mandate from headquarters. It is a little bit both the carrot and stick that we prefer to use the carrot that companies can see the common benefits in these but in some cases we need some management decisions from headquarters that say now you need to do this"
	Responsibility for local profitability was an argument against process standardization but it was moved to the corporate level	"The companies' responsibility for P&L [profit and loss] has also been one of the challenges because of course they have looked at the local P&L. So but that was also changed so most companies now they do not have their own P&L. The local P&L should not be an argument against standardization"
		"I think that is the case where sometimes when you try to standardize in a big organization there could be processes where standardization is not always seen as the benefit for single units and that is the balance we are always trying to strike that we should only standardize where it makes benefits for corporation as a whole and sometimes it means that single units they will see disadvantage but if you could justify it by a bigger benefit to the corporation as a whole then we do standardization. But if we cannot justify that it will benefit the corporation as a whole then we will not require the local units to follow the standardized process"

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Table AII.

Table AII.

Theme	First-order concept	Representative quotation
Outcome of process standardization	Process standardization as much as possible unless it contradict local regulations or customer requirements	"But we intended to move to as much standardization as possible because it will serve the business you can say and in some cases you can say it will impact the customer part in these cases we will move the other way around making sure we are fulfilling the customer request"
		"When you talk about localization, it might be due to local regulations. Another thing could be customer behavior. These are social accepted. But apart from these business units must convince us that their way of working is better than the others. And if that is the case we will adopt their proposals and put it into the best practice and remove the other one"
	Process standardization enforced further by the headquarters	"We are pushing out standardization more and more now because we can see that if we really want to have economies of scale then in some cases we need to say 'yeah the way we do calculation of our productivity we don't want to argue about that. This is how we do it'"
Factors essential for process standardization	Centralization essential to enable process standardization	"You could argue to get efficiency we saw the need to have some group functions in order to manage that because how we could have standardization if everything had to be discussed with all companies"
		"At the early stages of strategy group management and operations management they were pinpointing people who were supposed to centrally take the ownership of the processes so they appointed corporate process managers and process consultants who were supposed to develop and improve processes"
Gamma		
Process standardization and global ERP systems	Process standardization to justify global ERP implementation	"[Rolling out ERP with no standardization] is not enough to justify in my world spending between 20 and 60 million euro that is not enough. So from that point of view I could just make a rollout with SAP but we have no value whatsoever. So let's focus on what is really important. That is to ask the business what are the benefits that you can see in case we get a chance to standardize our processes"
Drivers of process standardization	Process standardization to facilitate inter-company transactions	"Twenty percent of business units are asking for standardization, ask us to standardize as soon as possible because they have a pain for example when they want to do joint projects. That is typically countries where they have huge projects running with different intern competences or technologies. Another point where I can put my finger is a problem is when I look at the engineering [shared service center] in India where they work for different technology centers at the same time, they clearly have a problem when they want to combine two or three drawings or two or three process

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Theme	First-order concept	Representative quotation
		methodologies into one delivery. So they quite often say just standardize so we can get on with what we are doing"
		"Direct waste is assumed by the business to be close to 5 to 10 percent of the total joint project. That is a lot. So from that point of view that is justification enough for me to look into common processes"
	Process standardization to facilitate central management of activities	"Standardization will also help with better organization of the activities considering the overlapping areas, such as procurement and inventory management"
		"Standardization concept is very welcomed in the corporate, since at the moment and in some case the companies are operating too independently and in many areas, there are no definite rules. This may reduce the potential benefits that could have been achieved"
		"The higher visibility over the local companies will lead to more decisions taken at the corporate level rather than local level. These decisions will be mainly regarding inter-company relationship and the approach towards the customers"
Challenges of process standardization	Defining common process standards challenged by lack of central governance	"We had people with ideas but we did not have anybody to make standardization decisions, nobody with defined empowerment to make decisions. And that is the prerequisite somebody with the overall responsibility"
	Process standardization contradicted the subsidiaries' autonomy	"Business units used to make all the decisions. Now somebody else comes and tells them what to do and they have never tried that before"
		"You come to a powerful [local] managing director and he refuses to accept what has been done in the template and decided by the governance board and this guy is the guy earning all the money in that company, then he decides"
		"I would say that for some individual companies the drawback would be that they fear or actually in reality get less decision power by themselves. I mean all those aspects of a daily life in a company there will be areas there that that decision power is not as local as it used to be"
	Process standardization contradicted the headquarters role limited to financial control	"When I started the program the first day I thought when you go to the headquarters there would be more running the show but that is not the case. Of course the headquarters is doing a lot of controlling and managing the business but I don't feel that they are really governing it as such. It is a decentralized company so it is not easy to come with IT and say now we go to the business and we pick guys from the decentralized organization and we put in centralized governance structure"

(*continued*)

Table AII.

Table AII.

Theme	First-order concept	Representative quotation
Outcome of process standardization	Process standards not defined and decided	"We had much localization in the first two rollouts. The template is not fixed and there are many corporate principles and standards to be defined and decided"
	Central governance of business processes will facilitate process standardization	"They are only now designing the organization I assume regarding governance if we take service there is this box called service management support and they have process development and data structure so in that box there is the background for having governance for having somebody here who makes the decisions. Now the responsibility for standardization decisions and enforcing principles is clear"
Factors essential for process standardization	Interdependencies decisive for process standardization	"When business units collaborate with the others it makes sense to standardize but if a company is completely on their own probably it makes no sense to standardize except for the financial reporting. So you need to look into interactions, if there are sales and operation interactions with others it makes sense to standardize, if it is a closed environment where they make only money and report to the headquarters then you should only focus on reporting aspects"
	Central governance for management of business processes essential for process standardization	"Standardization will not work if organization does not have centralized governance. It will be a very bumpy road. I don't think standardization itself changes the governance structure because it is the other way around you first need to define who makes decisions then you can define the level of standardization and do the standardization. In theory it should be governance first and standardization afterwards"
		"In order to standardize practices among the significant number of companies in the segment, some decisions are required to come from the top. Sometimes standardization means to impose things, leading to a heavier and centralized structure. Distributing the standardized solution may require acting as a centralized company to impose the solution"
	Process standardization requires change in the role of the headquarters and subsidiaries	"Having standardization in place, the emphasis should shift from the local companies' EBIT to the corporate level EBIT, since following the common approach may contradict with the local interests"