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Explaining the Unintended Consequences of Management Control Systems: Managerial Cognitions and Inertia in the Case of Nokia Mobile Phones*

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ABSTRACT

Management control systems (MCS) have been known to produce unintended, dysfunctional consequences. However, relatively little is known about how MCS can contribute to the inertia and even decline of a firm. Our analysis in the abductive mode was triggered by a surprising case study observation that although Nokia Mobile Phones (NMP) certainly had many capabilities that could have facilitated a timely response to disruptive environmental change, this did not happen. In developing an explanation for this, we draw on the managerial cognitions literature, showing how the cognitions at NMP, developed in the era of organizational success, became embedded in its MCS. This embeddedness, in turn, intensified existing cognitions. As the cognitions became less accurate over time, the once effective MCS started to cause various inertial effects, such as suboptimal and slow decision-making. We contribute to the literature on the dysfunctional consequences of MCS by theorizing how MCS can contribute to inertia via cognitions in two ways: first, by reinforcing prevailing cognitions and hence preventing management from realizing a need for change; and second, by moderating the impact cognitions have on actions by delaying actions based on renewed cognitions. Both ways may be fatal, especially in hyper-competitive contexts.

Keywords: management control system, unintended consequences, managerial cognition, organizational inertia, decline

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Expliquer les conséquences imprévues des systèmes de contrôle de gestion : schèmes cognitifs des gestionnaires et inertie chez Nokia Mobile Phones

RÉSUMÉ

Les systèmes de contrôle de gestion (SCG) sont connus pour entraîner des conséquences imprévues et dysfonctionnelles. Toutefois, on en sait relativement peu sur la façon dont ils peuvent contribuer à l'inertie, voire au déclin d'une entreprise. Notre analyse en mode abductif a été déclenchée par une étonnante observation : même si Nokia Mobile Phones (NMP) avait sans l'ombre d'un doute les capacités pour mettre au point une réponse en temps opportun à un changement environnemental perturbateur, cela ne s'est pas produit. En élaborant une explication à cette situation, nous avons fait appel à la littérature sur les schèmes cognitifs des gestionnaires, montrant de quelle façon les schèmes cognitifs chez NMP, qui datent de l'époque où l'organisation connaissait du succès, sont devenus partie intégrante du SGC. Cette intégration, en retour, a amplifié les schèmes existants. Alors que les schèmes cognitifs perdaient de leur exactitude au fil du temps, le SGC, jusque-là efficace, a commencé à provoquer divers effets inertiels, tels qu'une prise de décision lente et sous-optimale. Nous enrichissons la littérature sur les conséquences dysfonctionnelles des SCG en proposant une théorie selon laquelle les SCG peuvent contribuer à l'inertie par l'entremise des schèmes cognitifs de deux façons : d'abord, en renforçant les schèmes existants, empêchant ainsi les gestionnaires de prendre acte de la nécessité du changement, puis en atténuant l'impact des schèmes sur les actions en retardant la mise en œuvre des actions fondées sur des schèmes cognitifs renouvelés. Ces deux mécanismes peuvent avoir des effets catastrophiques, en particulier en contexte de très forte concurrence.

Mots-clés : système de contrôle de gestion, conséquences imprévues, schèmes cognitifs des gestionnaires, inertie organisationnelle, déclin

1. Introduction

The research on management control systems (MCS) has been predominantly interested in how to design and use MCS under specific circumstances to contribute to organizational success.[1] It has also been known that MCS may simultaneously produce unintended and dysfunctional consequences while also promoting certain initiatives (Ridgway 1956; Ashton 1976; Hopwood 1983). The literature on the design and effects of budgets, performance measurement systems (PMSs) and incentives provides abundant evidence on the problems emerging with incompetent design and the use of such MCS (Jensen 2001; Chenhall 2003; Jensen et al. 2004; Merchant and Van der Stede 2007; Libby and Lindsay 2010; Bourmistrov and Kaarbøe 2013; Franco-Santos and Otley 2018). It has also been found that, by solving such problems, new or modified MCS may create new, unanticipated problems (Quattrone and Hopper 2005).

In their recent literature review, Franco-Santos and Otley (2018) comprehensively illustrated the large variety of unintended undesirable consequences of performance management systems that have been found in empirical studies. However, the MCS literature has not explicitly linked these various dysfunctional effects and consequences to organizational inertia and decline.[2] Within organizational and strategic management research, on the other hand, the question of why successful companies fail to respond to environmental change has occupied a central position

1. Management control systems refer to all the systems that top managers intentionally and actively use to influence the behavior of managers and motivate employees lower down in the organizational hierarchy to improve organizational performance/success (Flamholtz et al. 1985; Langfield-Smith 1997; Marginson 2002; Malmi and Brown 2008).
2. The term organizational inertia refers to the inability to enact internal change in the face of significant external change (Miller and Friesen 1980; Tushman and Romanelli 1985; for further discussion, see Gilbert 2005).

(Miller 1994; Christensen and Bower 1996; Tripsas and Gavetti 2000; Barnett and Pontikes 2008; Tripsas 2009). Organizational inertia is one commonly discussed explanation for this.

In explaining organizational inertia and decline, the research on managerial cognition has provided a powerful explanation: managerial cognitions can hinder effective and timely responses to environmental change, even when an organization possesses the appropriate capabilities for a timely strategic response (Barr et al. 1992; Tripsas and Gavetti 2000; Kaplan 2008). The constraining effects of managerial cognitions typically materialize through their influence on what information is attended to, how that information is processed, and what actions are taken based on this information (Barr et al. 1992; Tripsas and Gavetti 2000; Marcel et al. 2010; Gary and Wood 2011).

Although there is some evidence of the constraining (but also enabling) effects of both managerial cognitions and MCS, researchers have tended to address these constraining effects separately (Kaplan and Henderson 2005). However, the two are closely interrelated (Kaplan and Henderson 2005; Hall 2011; Englund and Gerdin 2015). MCS reflect top managers' beliefs and cognitions (Simons 1990, 1994; Bettis and Prahalad 1995). They are also powerful mechanisms for diffusing cognitions (Simons 1995; Lampel and Shamsie 2000), hence influencing the cognitions and behavior of managers lower down in the organizational hierarchy (Simons 1994, 1995; Ocasio 1997). On the other hand, MCS may influence and potentially reinforce managerial cognitions (Kaplan and Henderson 2005; see also Hall 2011), for example, by providing narrow or biased performance updates based on formerly determined performance metrics.

In the current paper, we bring forth a theoretical and empirical puzzle deserving more attention: despite good intentions to ensure organizational success, MCS may contribute to organizational inertia, decline, and even failure. Consequently, we address the following research question in the current study: How may MCS contribute to organizational inertia and decline?

The focus of our empirical investigation is on Nokia Corporation, a Finland-based telecommunications company, and its mobile phone business, which experienced rapid growth and high profitability, as well as a sharp downturn, all during a relatively short period of time. Although the failure of Nokia Mobile Phones (NMP) has been widely analyzed, the role played by the MCS therein has not been addressed in detail (Doz and Kosonen 2008; Laamanen et al. 2016; Doz and Wilson 2017). Hence, our aim is to complement existing explanations.[3] From a theoretical point of view, we use Nokia as a convenient case to theorize the relationships between managerial cognitions, MCS, and organizational inertia/decline.

We particularly contribute to the current literature on the dysfunctional effects of MCS by analyzing why and how MCS may cause inertia and feed into the failure of an entire successful firm operating in a highly competitive industry. We illustrate how cognitions shape the design and use of MCS, along with how these systems reinforce existing cognitions, leading to the inability to recognize a need for change in a timely manner. Furthermore, we argue that cognitions not only constrain firms' ability to recognize the needs for change, but their embeddedness in MCS also prevents firms from implementing change, which may be fatal, especially in hypercompetitive contexts. We contribute to theory by elaborating on the mechanisms by which MCS contribute to inertia.

The following section briefly summarizes the previous literature on the causes of organizational inertia and decline. We then develop a basic theoretical understanding of how MCS may contribute to inertia and decline. The subsequent section explains the methodology, covering the research method, unit of analysis, and data collection and analysis. Section 4 presents our case analysis, showing how the inertial forces caused by the embeddedness of the cognitions in MCS evolved over time at Nokia. The section is structured into four time periods that represent different phases in the case company's strategic focus, competitive position, managerial cognitions, and MCS configurations. Finally, section 5 elaborates on the mechanisms through which MCS can contribute to inertia and decline based on the empirical findings. Section 6 concludes the paper.

3. For the most comprehensive research-based accounts so far, see Doz and Wilson (2017) and Lamberg et al. (2019).

2. Theoretical background and prior literature

Managerial cognitions in explaining organizational failure

The current management literature on the decline and failure of incumbent organizations acknowledges that existing success feeds into the persistence of managerial cognitions (Barr et al. 1992; Tripsas and Gavetti 2000; Gilbert 2005). These cognitions cause inertia by filtering information gathering and interpretation. Cognitions also lead to overamplification of a success recipe (Miller 1993), resulting in inertia caused by the high cost of disrupting the current organizational configuration (Barnett and Pontikes 2008). Inertia in turn leads to the decline or failure of a firm.[4]

The concept of managerial cognition has been studied by applying a multitude of related terms and definitions, including cognitive frames, cognitive representations, knowledge structures, mental maps, and mental models (Walsh 1995; Krishnan et al. 2005; Hall 2011; Kaplan 2011; Naranayan et al. 2011; Gavetti 2012; Englund and Gerdin 2015). Walsh (1995) identified 77 different related terms used in the field. Common to these terms and definitions has been the emphasis on the interpretation and simplification of information (Daft and Weick 1984; Barr et al. 1992; Bettis and Prahalad 1995; Walsh 1995; Gavetti 2012). For example, Gavetti (2012, 276) used the term "cognitive representation" to refer to managerial cognition as "a conceptual structure in the minds of individuals that encapsulate a simplified understanding of the reality individuals face." There is also widely shared acknowledgment that cognitions can reside not only at an individual level (Polyani 1958; Douglas 1986), but also at a collective level (Daft and Weick 1984; Walsh 1995; Bingham and Kahl 2013). At the organizational level, the formation of supraindividual cognitions is typically influenced by the experience and cognition of top managers, who are in a dominant position and can persuade others to be receptive to their cognitions (Daft and Weick 1984; Prahalad and Bettis 1986; Lampel and Shamsie 2000). We focus on those cognitions that emerge (primarily) from the organizational experience of actors.

In and of themselves, managerial cognitions are essential to well-functioning, well-performing organizations; they serve as carriers of encapsulated, simplified information (Walsh 1995; Gavetti 2012). This helps organizational members—boundedly rational in their information processing capabilities—to cope with the inherent complexities of their working environment (Daft and Weick 1984; Walsh 1995). However, cognitions can also considerably constrain the organizational capability to react to environmental change (Barr et al. 1992; Tripsas and Gavetti 2000).

The inertia stemming from managerial cognitions can be understood by considering their fundamental properties. First, cognitions are inherently *incomplete* given the cognitive limitations of individuals (Cyert and March 1963; Daft and Weick 1984; Barr et al. 1992). Second, managerial cognitions can also be or become *increasingly inaccurate* (i.e., inconsistent vis-à-vis the environment/context) as an organization's external or internal context changes (Porac et al. 1989; Barr et al. 1992; Walsh 1995; Tripsas and Gavetti 2000).[5] They are also *retrospective*; that is, they are distilled from prior experience and learning (Kiesler and Sproull 1982; Prahalad and Bettis 1986; Barr et al. 1992). Managerial cognitions are also *self-referring*; that is, they focus on the changes that are the most salient, offering support for the prevailing cognitions. Changes that are remote from current cognitions are typically left unnoticed or unattended (Barr et al. 1992; Tripsas and Gavetti 2000; Gavetti 2012). Finally, managerial cognitions also tend to be *persistent*. Changes in cognition typically start to occur only when performance starts to deteriorate substantially (Barr et al. 1992; Barr 1998).

By now, empirical research has presented compelling evidence that managerial cognitions can significantly constrain the organizational capability to react to environmental change (Barr et al. 1992; Tripsas and Gavetti 2000; Gilbert 2005; Kaplan 2008; Eggers and Kaplan 2009;

4. Organizational failure has also been explained by overconfidence bias related to the ability to change in literature (Barnett and Pontikes 2008). A recent study suggested people believed in organizational agility at NMP, suggesting overconfidence in the ability to change played a role in inertia and decline (Lamberg et al. 2019).

5. The terms "accurate" and "accuracy" have been established in the related literature and refer to the extent to which a cognition corresponds to reality, for example, with regard to the competitive landscape the organization faces (Barr et al. 1992; Gary and Wood 2011; Kaplan 2011).

Marcel et al. 2010). However, how cognitions and MCS are related in explaining inertia has not been well theorized.

Unintended consequences of MCS, inertia, and organizational decline

In their recent review of studies on the unintended undesirable consequences of PMSs, Franco-Santos and Otley (2018) summarized the most salient unintended consequences found in existing research as gaming, information manipulation, selective attention, illusion of control, and altering social relationships. In the management literature, selective attention has been linked to inertia (Miller 1993; Tripsas and Gavetti 2000), but the prior accounting literature has not done this explicitly. By focusing on those aspects of organizational goals and activity that can be measured, PMS may cause other important aspects to be overlooked (Christopher and Hood 2006; Kerpershoek et al. 2016), leading to the inability to respond to changes in the environment. Further, Franco-Santos and Otley (2018) referred to ossification, a tendency toward being in a rigid state, constraining responsiveness, and resisting change (Smith 1995; Mannion and Braithwaite 2012), as an unintended consequence of PMS. Hansen et al. (2003) discussed how budgets may constrain responsiveness and act as barriers to change (see also Neely et al. 2001). Actors are not empowered to take necessary actions because resources are predetermined and allocated in budgets. In the PMS context, Mannion and Braithwaite (2012) illustrated how attempts to achieve preset performance targets may constrain responsiveness by leading to the non-adoption of the latest techniques in a healthcare setting. This line of the literature, although suggesting inertial dysfunctional effects of MCS, has not linked MCS directly to organizational decline. Hence, we add to the literature on the dysfunctional consequences of MCS by theorizing how MCS may contribute to organizational decline through inertia.

Prior research on the relations between corporate life cycle stages and MCS (Moores and Yuen 2001; Davila 2005; Granlund and Taipaleenmäki 2005) has provided some insights into how MCS and organizational decline are linked. This stream of literature has shown that as companies grow and mature, their MCS also need to be developed; MCS typically become more formalized, and companies adopt an increasing number of sophisticated MCS. The study of Moores and Yuen (2001) is the only study addressing the decline stage, showing that as firms' activities become stagnant with limited resources at the decline stage, their MCS become less formal. These analyses do not consider how MCS may contribute to life cycle development, especially regarding harmful inertia that MCS may cause in this case.

Managerial cognitions and MCS causing inertia

Most prior accounting research relying on psychological concepts has suggested MCS have an impact on organizational behavior and performance and that this link can be influenced by mental models (Hall 2011). In the present study, we adopt a different perspective. Given that the management literature has provided evidence of cognitions causing inertia and preventing the timely reaction to environmental changes, we can ask what role MCS may play in the link between cognition and action. The literature has given us reason to believe that, on the one hand, MCS may reinforce or intensify existing cognitions, making it difficult to change cognitions despite changes in the external environment (Kaplan and Henderson 2005). In other words, MCS can impact cognitions, and this precedes the cognition-action link. On the other hand, once cognitions change, MCS may moderate the link between cognitions and actions by delaying the necessary actions. We elaborate on these potential mechanisms.

In a conceptual paper, Bettis and Prahalad (1995) argued that cognitions are reflected in MCS. In a recent study, Englund and Gerdin (2015) showed how middle managers transformed a set of performance measures into a so-called enabling PMS; here, the actors mobilized two different forms of mental models of the operations (specific and generalized) as important means in their development work. In their case, the middle managers were able to reconstruct the existing mental models of operations, leading to changes in the use of MCS. Their study is important

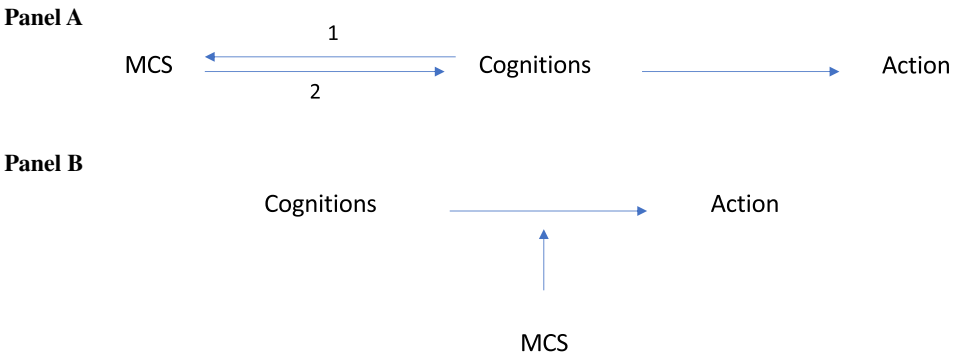
because it provides empirical evidence that mental models have an impact on how MCS is configured (see also Krishnan et al. 2005).

The current literature suggests cognitions cause inertia by filtering information gathering and interpretation (Barr et al. 1992; Tripsas and Gavetti 2000; Gilbert 2005). Both financial and nonfinancial PMSs, as well as incentive systems, play an essential role in both information gathering and interpretation. In the case where existing cognitions are built into MCS (Bettis and Prahalad 1995; Simons 1995; Krishnan et al. 2005; Englund and Gerdin 2015), it is likely that these MCS reinforce prevailing cognitions because it is widely recognized today that accounting systems/MCS construct reality (Hines 1988).The prior literature has suggested this happens, for example, by MCS providing narrow or biased performance updates based on formerly determined performance metrics (Kaplan and Henderson 2005; see also Hall 2011). The link between cognitions and MCS is likely to be reciprocal. Hence, MCS may help explain why cognitions are self-referring and persist, hence causing inertia despite changes in the environment.

The management literature has indicated that cognitions change once organizational performance starts to deteriorate significantly. The MCS literature suggests that once cognitions change, and management realizes a need to enact internal change to cope with changes in the environment, MCS are mobilized to implement changes within organizations (Chenhall 2003). Hence, MCS moderate the link between cognitions and actions. However, it could turn out that, in fact, MCS hinder or delay the required actions, contributing to inertia. Prior research shows that changing the MCS in a large organization is not a simple and straightforward task (Malmi 1997; Granlund 2001; Chenhall and Euske 2007; Lukka 2007). It may take considerable time and face resistance, and these delays in implementing new strategies to confront disruptive innovations may be fatal in hyper-competitive contexts. Hence, we propose that MCS may contribute to inertia by delaying those actions based on the changed cognitions.

Figure 1 summarizes how MCS may contribute to inertia via cognitions. Panel A illustrates how cognitions influence MCS and how, in turn, MCS reinforce cognitions, creating inertia and preventing timely action to environmental change. Here, MCS precede the link between cognition and actions. In panel B, MCS moderate the link between cognition and action. Once cognitions change and managers realize a need for change, MCS may delay the required actions,

Figure 1 How MCS contribute to inertia via cognitions



Notes: Panel A: Cognitions become embedded into MCS (arrow 1). As the external environment change, cognitions become inaccurate. MCS reinforce cognitions (arrow 2), making them persistent, and hence contributing to inertia by preventing timely action. Panel B: Once cognitions have changed, and leaders realize a need for action, MCS may contribute to inertia by delaying action.

hence contributing to inertia. We further elaborate on these mechanisms based on our empirical evidence.

3. Methods

Research method and unit of analysis

To examine how MCS may contribute to inertia and decline, we conducted an in-depth, historical case study of Nokia Corporation's development from 1992 to 2013. This time period enabled us to examine critical phases in Nokia's development, including growth into an industry leadership position with a 40% global market share and the subsequent dramatic downturn, which ended in the sale of the company's mobile phone business to Microsoft in 2013. Having experienced rapid growth and high profitability, as well as a sharp downturn during a relatively short period of time, Nokia provides a particularly intriguing case (Yin 2003; Eisenhardt and Graebner 2007; Siggelkow 2007; Sætre and Van de Ven 2021) for examining the causes behind organizational inertia and decline. In a similar vein to Tripsas and Gavetti's (2000) earlier study on Polaroid Corporation, our case company had many capabilities that could have facilitated a timely response to the disruptive environmental change. As we will argue based on our analysis and theorizing, the managerial cognitions—and their embeddedness in MCS—can explain Nokia's inertial behavior to a considerable extent.

As a research method for our study, the in-depth historical case study method provided us with a number of advantages. The case study method is particularly suitable for research endeavors, such as the one documented here, where the purposes are to develop new theoretical insights and elaborate on existing theory (Eisenhardt 1989; Ahrens and Dent 1998; Eisenhardt and Graebner 2007; Pratt 2009).

A historical perspective facilitates an examination of the evolutionary dynamics of key theoretical constructs over time (Burgelman 2011). Researchers conducting historical case studies are often warned about the potential drawbacks of impression management and retrospective sensemaking (Yin 2003; Eisenhardt and Graebner 2007; Kaplan 2011). We took various steps to reduce these effects. First, we followed the advice of Eisenhardt and Graebner (2007, 28) in that we "interviewed numerous highly knowledgeable informants who view the focal phenomena from diverse perspectives." According to Eisenhardt and Graebner (2007, 28), "It is unlikely that these varied informants will engage in convergent retrospective sensemaking and/or impression management." Second, we used several types of public and internal data to capture contemporaneous cognitions and events (Kaplan 2011). Third, our actual research process was longitudinal, covering an extensive period from 2006 to 2014. This provided us with further visibility into the longitudinal development of contemporaneous cognitions and events.

Data collection

The data for our analysis were drawn from several sources, which is consistent with the case study method (Ahrens and Dent 1998; Eisenhardt and Graebner 2007; Gibbert et al. 2008). The first set of data comprised publicly available information, including annual reports. A large number of books and articles on Nokia and the telecommunications industry were also drawn upon. The second set of data originated from Nokia's internal documents.[6] Historical manuals, protocols, process descriptions, templates, and performance metrics complemented the publicly available data.

The third set of data came from 80 theme interviews conducted with Nokia's contemporaneous and former managers, as well as with other key informants who were thoroughly familiar with the details of Nokia's development over time. The interviews were conducted in two

6. We are very grateful to Nokia's top management for their permission to use internal documents and conduct an extensive number of interviews within the company. We would also like to underline that none of the authors have been employed by the case organization before, during, or after our research process.

phases.[7,8] The first set of interviews was conducted between 2006 and 2010. These interviews were contemporaneous in character, focusing on managers' value creation, management cognitions, and the use of MCS at the time. A total of 25 interviews with 19 individuals were conducted during that time period. The interviewed managers represented multiple functional areas (strategic planning, finance, HR, marketing, and line management) and multiple levels of the organizational hierarchy (top and middle management from several hierarchical levels). The interviews lasted between 30 and 120 minutes, with an average length of over 70 minutes.

The second set of interviews was conducted from 2012 to 2014. The purpose of the second set of interviews was to provide a more extensive visibility of the potential role of managerial cognitions and their embeddedness in the MCS in explaining Nokia's evolution over time. Even though our primary focus was on explaining organizational inertia and decline, it was essential to develop an understanding of the role of cognitions in explaining the company's earlier, remarkable success. This enabled us to understand how managerial cognitions had initially emerged. In the second set of interviews, 55 individual interviews were conducted. The interviewed individuals varied along several dimensions because our purpose was to develop as unbiased a view as possible by interviewing informants who had different perspectives (Eisenhardt and Graebner 2007; Vaivio 2008). In line with our first interview phase, the interviewed managers represented multiple hierarchical levels (top and middle management at several hierarchical levels) and functional areas (strategic planning, finance, HR, IT, R&D, design, sourcing, logistics, marketing, and line management). Because our purpose in this second interview phase was to cover an extensive period of Nokia's evolution, the interviewed managers were also different regarding the specific time period during which they had worked for the company. Many of the interviewed managers had, however, extensive experience (20–30 years) from several functions at Nokia. Finally, we also interviewed a group of other informants who could provide us with a further perspective into Nokia's evolution. This group of interviewees included suppliers, consultants, industry analysts, and experts.

The interviews conducted during the second interview phase lasted from 60 to 150 minutes, with an average length of over 80 minutes. These interviews were open-ended but based on a common set of questions. The interviewees were first asked to describe their specific role in the company, along with how that role had evolved over time. Those interviewees who had no direct experience working for Nokia were asked to discuss their involvement with the company over time. The interviewees were then asked to discuss their perceptions about Nokia's value creation and management practices, as well as reasons for Nokia's inability to respond to environmental change in an effective and timely manner. When addressing these issues, interviewees were specifically asked to voice their perceptions about the potential role of MCS in explaining organizational inertia and decline. The interviews were retrospective in character, but they also included a contemporaneous section when we interviewed those managers working for Nokia at the time of the interview. A chronological list of all 80 interviews is presented in the Appendix. Further information about the interviewees' employment at Nokia is presented in online Appendix A.

7. The first set of 25 interviews was conducted by the second author alone because it constituted a significant part of her doctoral dissertation. During the second interview phase, interviews were conducted by two authors working together when feasible (42/55 interviews). This facilitated multifaceted discussions during the interviews. It also allowed for continuous reflection and discussion about the emerging insights between the researchers. This contributed to data analysis and preparation for further interviews (Miles and Huberman 1994; Eisenhardt and Graebner 2007).

8. At the time of the interviews ethics review of the research plan was neither mandatory nor a common practice in Finland for non-medical research. The Aalto University Research Ethics committee only carries out evaluations in advance of commencement of any research project. Hence we could not seek for ethics review ex post at the time of submitting our manuscript for publication.

Data analysis

Following the research methodology of abductive reasoning, our data analysis involved several rounds of iteration, moving back and forth between theory and empirical data (Dubois and Gadde 2002; Lukka and Modell 2010). Although empirical observations formed the starting point for our reasoning within inductive research methodology (Lukka and Modell 2010), our analysis was informed by prior theoretical knowledge related to managerial cognitions, MCS, and inertia. In short, we sought to follow the advice by Lukka and Modell (2010, 467) of applying abductive reasoning to "develop theoretical explanations with the help of everything that is known empirically and theoretically about the issue being examined" (see Figure 1).

Once the more specific theoretical focus for our study had been identified through the process of abductive reasoning, our subsequent data analysis was conducted in several stages, involving both time series analysis and explanation building (Yin 2003). The first stage of our analysis involved composing a time-ordered matrix of the key factors relating to our research (Miles and Huberman 1994).[9] These factors were related to three areas. The first group of factors was related to our case company's competitive position, the second set to cognitions at the time, and the third set to the key elements of the MCS configuration. The matrix shows significant shifts in Nokia's competitive position throughout the analysis period, underlining the stability of managerial cognitions and composition of the MCS configuration. The only changes to the value creation logic occurred when the cognition related to cost efficiency was added during the second phase of 2001–2007 and when the other two cognitions—growth and scale—were dropped during the last phase 2010–2013 when Nokia had clearly lost its industry leadership and the company was going through a major downsizing program. Managerial cognitions related to the management style, on the other hand, remained unchanged until the last phase 2010–2013 when that cognition related to the effectiveness of presenting multiple voices in decision-making was replaced by that emphasizing clear accountability.[10] The key elements of the MCS configuration, on the other hand, remained the same throughout the entire analysis period. The reconfiguration of some of the elements often changed, whereas some remained relatively unchanged, as will be described in the analysis section.

The second stage of our analysis focused on explanation building (Yin 2003). It involved developing networks of the key factors (Miles and Huberman 1994), including analyses of potential causalities (see Lukka 2014 on building causal explanations, particularly in case-based research). This involved the identification of the links between cognitions, MCS, and their inertial effects. Supporting information in online Appendix B contains further quotes supporting these linkages. Thereafter, we followed the advice of Miles and Huberman (1994, 158), transforming our case-specific (causal) network analysis into a generic one that "can give you more powerful explanations, usable in other cases." In other words, our analysis allowed us to elaborate on the mechanism of how MCS may cause inertia and decline via cognitions beyond what was known theoretically and empirically before the present study.

4. Case analysis

Our case analysis is structured into the following time periods: (i) 1992–2000: rapid growth—emergence of cognitions, (ii) 2001–2007: continuing growth in market share—build-up of inertial forces, (iii) 2008–2010: dissolution of industry leadership—inertia in action, and (iv) 2010–2013: downsizing and acquisition by Microsoft—reassessment of cognitions. The case analysis for each time period is divided into two sections. The first section addresses Nokia's competitive position and performance. The second section focuses on the managerial cognitions and their embeddedness in MCS, as well as the inertial forces.

9. This matrix is available from authors upon reasonable request.

10. Although one may ask to what extent we were able to analyze cognitions, we argue that the triangulation of a massive amount of interview and other data enabled us to build at least credible "proxies" of them and their differences. In follow-up discussions, the interviewed people never questioned our interpretations in this regard.

1992–2000: Rapid growth—Emergence of cognitions

Competitive position and performance

In 1992, when Jorma Ollila, long-term CEO and Chairman of Nokia, was appointed CEO, Nokia could be characterized as a diversified conglomerate under considerable financial distress. Facing this difficult situation, the company's top management decided to focus exclusively on telecommunications. Nokia's business was restructured around two businesses: telecommunication networks and mobile phones. All remaining businesses were divested by 1995 (Häikiö 2001; Ollila and Saukkomaa 2013).

The decision to focus on telecommunications was successful. The global market for mobile phones grew from 9 million to 402 million in 1992–2000 (Häikiö 2001). Nokia's aim was to capitalize on this market growth as much as possible. Net sales grew from 3,056 MEUR to 30,376 MEUR during 1992–2000, showing an average annual growth rate of over 30%. The average number of personnel doubled from 26,700 to 58,708 (Nokia Annual Reports). Production volume also multiplied: the number of phones produced increased from 1.6 to 128 million during the period (Häikiö 2001).

Nokia was arguably the innovation leader in the industry. Its mobile operating system, Symbian, had won the competitive battle against the rival Microsoft [Windows] camp. Eventually, the majority of mobile phone producers—including Samsung, LG, and Sony Ericsson—had opted for Symbian. Nokia's mobile phone devices were also well ahead of those of its competitors. Nokia's global market share in mobile phones grew accordingly, from 18% to 24% during the period of 1993–2000 (Häikiö 2001). In 1998, Nokia passed Motorola to become the largest producer of mobile phones in the world. In 2000, the company's share price reached its all-time high at €65.

Emergence of managerial cognitions and their embeddedness in MCS

This highly successful era in Nokia's history resulted in the emergence of persistent managerial cognitions regarding value creation and management. The first and most deeply rooted cognition was related to value creation and the importance of *growth* and *scale*. Growth itself was imperative; it energized the organization. On the other hand, scale was critical. It strengthened market power in relation to suppliers, customers, competitors, and regulators, leading to cost advantages.

Growth and scale quickly became embedded in various MCS. Most importantly, global market share became the primary target for years to come. As early as the early 1990s, when Nokia's global market share was below 20%, the target was set as high as 40%. Top management ensured that the predominance of growth and scale became shared by managers lower down in the organizational hierarchy. Market share became one of the key targets included in monthly and quarterly reports, as well as in bonus schemes. A manager in charge of a European country organization at the time recalled the following:

> Top management saw to it personally that all managers knew where the company was heading. They gave direction and communicated key targets. Once you went back to your own organization, you had a clear understanding of your key objectives and targets. These targets are related to business performance, for example, to market share.

Cognitions of growth and scale were also reflected in other target setting practices. CEO Jorma Ollila's comment in his 2013 book provides an insightful explanation of this:

> Growth does not mean only that sales grow and that shareholders get their profits. Growth is important for other reasons. . . . Growth ensures that individuals working for the company have the strength to strive further. . . . If the company's top management does not set sufficiently ambitious growth targets, individuals working in the research laboratory do not take the extra effort to look for one more alternative. Marketing people settle for the first proposal presented by an advertisement agency. The HR department settles for a mediocre recruitment even when the best possible person would have been available. And the functionality of phones is not tested thoroughly. Defective or even dangerous products get launched to the markets. (Ollila and Saukkomaa 2013, 356–57)

Between 1994 and 1999, four consecutive option schemes, the last covering almost 5,000 individuals, were introduced to strengthen organizational members' commitment to the company's ambitious growth targets (Ollila and Saukkomaa 2013, 343). Resource allocation for new product development (NPD) projects was also considerable. As long as the project proposal showed significant growth potential, resources were committed. The organizational structure also supported rapid growth. The mobile phone business was structured along three regions: the Americas, EMEA (Europe, Middle East, and Africa), and the rest of the world. Regional organizations and the country organizations below them operated rather independently. Opportunities and challenges arising in the field could be addressed without delay.

Other key cognitions were related to management. The first cognition regarding management style was related to the *predominance of financial metrics*. According to this cognition, the global Nokia organization could be effectively managed by focusing on key financial metrics. This had its origins in the company's conglomerate heritage. It was also in line with the empowering management approach, in which business and country managers were given much leeway in managing their operations. An experienced finance manager recalled the following:

> Our focus was almost entirely on financial metrics. We also followed market share development, but apart from that, we focused on financial information.

The stringent focus on financial metrics applied to corporate- and business-level target setting. Individual-level target setting and the system referred to as the business performance multiplier, which was used to calibrate bonuses, also included nonfinancial metrics, such as customer satisfaction.

Yet another cognition focused on decision-making. According to this cognition, *decision-making* was considered to be *effective when multiple voices could be presented*. The roots of this can be traced back to 1992, when Nokia's top managers defined group work as one of its key management principles (Ollila and Saukkomaa 2013, 231). In the 1990s, this cognition was not yet formally embedded in the MCS. It materialized more informally and became part of the organizational modus operandi. Decision-making was built on a shared practice of consulting and involving multiple individuals across organizational boundaries. Organizational members were encouraged to take the initiative, to participate in decision-making, and to take subsequent action. This mobilized the organization and strengthened commitment toward a common goal.

> When I started at Nokia in the late 1990s, I was amazed by the level of commitment. If you went to a meeting, the discussion focused on what should be done. Then, a number of people would raise their hands and say voluntarily, "This is extremely interesting; I would like to do this!" This was the first impression that I got: we were all driving toward a common goal. Everyone contributed their own competence and vigor. (Vice President for an important corporate function)

The final cognition regarding the management style related to the importance of *shared organizational values* in driving commitment toward a common goal. The fundamentals of this can be traced to the top management meeting held in 1992, where key management principles were defined (Ollila and Saukkomaa 2013, 229–31). This cognition became embedded in *The Nokia Way* document, a formal value statement used to outline corporate values and key operating principles.[11] This cognition was also mobilized, for example, in recruitment and training. These measures were effective. Organizational values were widely shared. This drove commitment toward a common goal.

> What was amazing was that, whichever Nokia location you went to in the world, there was a similar kind of atmosphere. Top management's values and targets were so firmly integrated into daily work. . . . Everyone was talking the same language. (Finance Manager)

11. Nokia's corporate values included "customer orientation," "achievement," "continuous learning," and "respecting the individual" (Ollila and Saukkomaa 2013, 228–31).

> The organizational culture was incredibly energetic. Everyone knew that something should be done—not exactly what—but something. There were no boundaries in a way that this is your responsibility, and you focus on that. Top management empowered individuals to take initiative. Everyone was strongly motivated: the motivation was intrinsic. If you saw a fire, you went to put it out. (Director, Business Operations and Planning)

From a theoretical point of view, this time period illustrates how cognitions emerged and became embedded into the MCS configuration (cf. Englund and Gerdin 2015; see Figure 1, arrow 1).[12] Cognitions regarding value creation became embedded in most of these key MCS. Those regarding management style became embedded to a lesser extent. Cognition highlighting the predominance of financial metrics became embedded in corporate- and business-level target setting. Cognition underpinning the importance of shared organizational values became embedded in the formal value statement document. It was also mobilized through recruitment and training. Finally, cognition relating to the significance of multiple voices in decision-making was not yet formally embedded in the MCS. Its effect materialized more informally. We found no references to the dysfunctional effects of MCS during this era. Overall, all systems constituting the MCS configuration contributed to organizational members' commitment toward the common goal: the growth and scale of Nokia's mobile phone business.

2001–2007: Continuing growth in global market share—Build-up of inertial forces

Competitive position and performance

In 2001, the growth in the global market for mobile phones slowed down. This was an environmental change that led Nokia to adjust its MCS, as will be discussed below. However, it did not impact Nokia's willingness to pursue growth and scale, but the significance of market share growth further increased. That was to be achieved by extending into new business areas (e.g., N-Gage mobile gaming devices) and by providing an extensive portfolio of products catering to different consumer tastes.

This strategy required resources. It called for massive investments in R&D. Nokia's R&D expenditure was high compared with most of its major competitors. During the period from 2001 to 2007, Nokia's R&D costs as a percentage of net sales was, on average, 10%, while corresponding figures for Motorola, Apple, and Samsung were 12%, 6%, and 3%, respectively (source: Thompson Database).

The outcome of this R&D investment was, however, disappointing. Nokia was unable to produce any radically innovative products. The R&D effort merely produced incremental improvements to existing products. Nokia's position as an innovation leader in the industry was called into question. Soon, Nokia's competitors were able to introduce superior products. These included BlackBerry's business-oriented mobile phones with email and internet features in 2003, Motorola's ultrathin RAZR phones in 2004, and Apple's iPhone in 2007. Nokia responded slowly to these competitive threats. It was still able to maintain its strong market position because of its strong brand and capability to launch new, yet typically only marginally differentiated, models continuously. In 2006, Nokia introduced 39 new mobile phones (Cord 2014, 19). Its sales and market share continued to grow. The year 2007 was a record year for Nokia; it reached its long-term target and gained a market share of 40%. Nokia's profit before taxes was over 8 billion euros. However, this was the period in which the seeds of Nokia's inability to respond to a major environmental change, that is, technological disruption by Apple and Google, were planted.

12. Our focus is on those critical MCS that embedded managerial cognitions, and later on, that were causing inertia. We acknowledge that some more marginal MCS, like detailed policies and operational process guidelines, remain outside our focus.

Managerial cognitions, MCS configuration, and inertial forces

All of the cognitions that had emerged during the highly successful era in Nokia's history persisted. Those related to *growth* and *scale* continued to be embedded in most MCS constituting the MCS configuration. A new influential cognition emphasizing the significance of *cost efficiency* appeared; this complemented those cognitions related to growth and scale. To secure growth both in sales and market share and ensure profitability, a reduction of product costs was deemed essential.[13] This surfaced from top management's interpretation that the global market for mobile phones would commoditize. A comment by a Nokia executive illustrates the background of this:

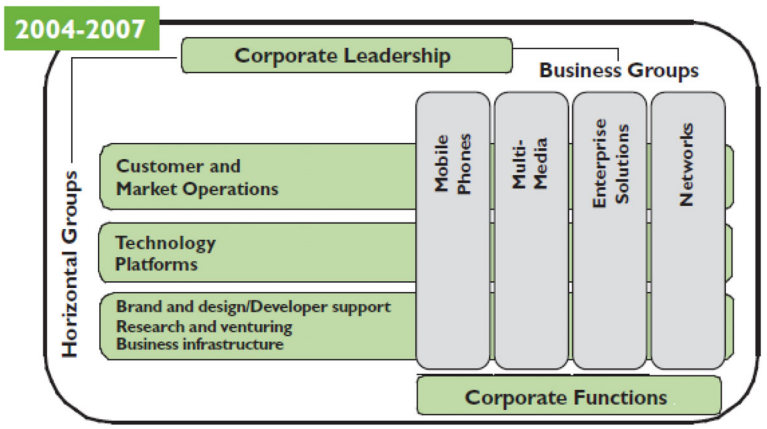
> The market growth slowed down. In monetary terms, it barely grew at all. We no longer had the luxury of ignoring costs. (Cord 2014, 66)[14]

This new cognition became embedded in the MCS. The significance of cost efficiency and profitability was underlined in target setting and resource allocation.

Cognitions relating to management style also persisted. Their embeddedness in the MCS configuration continued and extended. First, cognition emphasizing *multiple voices in decision-making* became formally integrated into the MCS configuration by establishing a new matrix organization in 2004 (Figure 2).[15] The purpose of the matrix organization was to drive growth by broadening the offering while ensuring scale benefits in R&D, manufacturing, logistics, and sales.

The embeddedness of cognition, highlighting the *predominance of financial metrics*, escalated. This cognition became embedded in reward and resource allocation systems. A corporate-wide business performance multiplier was created in 2000 to include only three financial metrics: net sales, profitability, and working capital rotation. Until 2000, business areas had used their own multipliers, which had also included nonfinancial metrics, such as customer satisfaction. The significance of financial metrics also increased regarding individual-level target setting. The resource

Figure 2 Nokia's organizational structure 2004–2007 (Doz and Kosonen 2008, 117)



13. Cost efficiency did not replace heavy investment in R&D in this time period. In essence, one could argue Nokia tried to become an ambidextrous organization.
14. Please see online Appendix B, quote 1. To provide further empirical richness, online Appendix B includes additional quotes to those reported in the body of the paper.
15. The network business was subsequently merged with that of Siemens to form Nokia Siemens Network in June 2006.

allocation system for NPD projects was, on the other hand, complemented with a formal financial analysis model in 2005–2006. This new model reviewed all NPD projects with the same financial metrics and procedures. Finally, the cognition relating to the significance of *shared organizational values* became embedded in the individual-level target setting and performance evaluation system. Individual organizational members' performance was now evaluated not only by regarding their targets, but also by considering how individual behavior was aligned with the organizational values. Both components were given a weight of 50% in the evaluation system.

The inertial forces caused by the embeddedness of managerial cognitions in MCS started, however, to take shape. Nokia's performance regarding key targets—market share, sales, profitability, and cost efficiency—were at a very high level. These indictors did not provide any signal as to the need for change. Apple's entrance into mobile phone markets was put into perspective—Apple was new to the mobile phone business with no market share. In addition, given the high price point, the iPhone was believed unlikely to capture much of the market share over time. One could argue that because the performance in all of these indicators that were the result of existing cognitions was excellent, the MCS in place reinforced existing cognitions. Similarly, because Apple had no market share, it was not perceived as a threat, reinforcing the cognition of scale.

The embeddedness of cognition highlighting the predominance of financial metrics also had constraining effects, preventing top management from developing a realistic understanding of Nokia's competitiveness, as commented by a Senior Vice President:

> It should have been visible to us that the productivity of the R&D function went down drastically. . . . Somehow, the control mechanism was structured so that this information was not sufficiently visible. This is an important issue. A fall in R&D productivity should have woken top management and even the board of directors to analyze the situation.[16]

One reason for low R&D productivity was related to the fact that much of the R&D resources were being directed toward dealing with the increasing difficulties caused by the complexity of Nokia's mobile operating system Symbian. However, although many product programs lagged behind schedule, Nokia managed to introduce 39 new models in 2006. This, combined with high financial performance and strong market share, did not send any clear alarming signals.

Furthermore, the predominance of financial metrics caused myopia, as suggested rather bluntly by an experienced industry expert and consultant to Nokia:

> In my opinion, the company was managed to optimize volume and cost efficiency. The focus was extremely short term. The long-term vision was zero. All information regarding the industry's long-term development was ignored. The idea was to take care of it later and make money now.[17]

The majority of Nokia's volumes, revenues, and profits came from the mobile phones business unit. That unit was doing extremely well financially, especially given the fact that unit volumes and cost efficiency were deemed key for success. In other words, the embedding of cognitions related to value creation and cost efficiency, as well as the predominance of financial metrics in performance evaluation and incentive structures, constrained the organizational capability to recognize a need for change.

The embeddedness of cognitions in MCS started to constrain Nokia's innovation capability. The cognition related to cost efficiency manifested itself in product decisions through gross margin requirements. Many interviewees indicated that the focus on costs started to intensify when Olli-Pekka Kallasvuo started as COO in late 2005 and as CEO in mid-2006. A VP from the multimedia division recalled the following:

16. Please see additional quotes in online Appendix B, quotes 2–5.
17. Please see additional quotes in online Appendix B, quotes 6–7.

> At that time, the product cost started to be terribly important, driving product specifications and everything . . . the price point was determined really tightly in advance, including required margin, and there were totally stupid decisions from the consumer perspective as we were driving this system by numbers.[18]

Although the heavy investments in R&D continued during this period, the emphasis on cost effectiveness led to decisions that had a significant effect on Nokia's inability to respond to the disruption by Apple and Google. An Executive Vice President explained this as follows:

> You have a generic application processor separate from the rest of electronics, which is much more expensive compared with an integrated one. And we (multimedia division) had made a decision to go for open application processor architecture . . . and it was ruled out, and Nokia adopted such a typical old mobile phone system mongrel . . . for a much lower cost, the difference was 4 to 5 dollars per device, and when you multiply that by hundreds of millions. . . . This decision was made at the end of 2007 . . . and it led to a situation where we had fine products in a physical and mechanical sense but having the engine of a Lada inside. . . . With the Lada engine, you cannot perform the tasks of a Ferrari.[19]

Nokia's innovation capability was also constrained by the fact that the cognition highlighting growth, and resulting in demanding target setting, was embedded in the resource allocation system. Target setting for NPD projects became unrealistic. Although the company was good at inventing novel small-scale features, the new financial model gave primacy to short-term financial metrics. This further constrained product development. Nokia was unable to produce other than incremental innovations. According to the Vice President for an important corporate function:

> There was a rule of thumb that a new business should grow into a billion euro business in two years. Otherwise, there was no investing in it.[20]

Furthermore, the new matrix organization, which embodied cognition about the effectiveness of involving multiple voices in decision-making, slowed down decision-making. This was made worse by the fact that business-level target setting was demanding. Competition for shared resources intensified; for example, negotiations on the allocation of R&D and manufacturing resources dragged on. Therefore, the business areas established their own complementary resources in, for example, R&D and sales, making the organization more complex. The fact that the two essential MCS—organizational structure and the business-level target setting system—were not aligned with each other reinforced the inertial forces materializing through these respective systems. The functionality of the new matrix structure called for extensive collaboration and coordination between managers. The highly demanding business-level target setting, here aiming for growth and focusing mainly on financials, on the other hand, drove managers to focus on the attainment of their own targets. This further slowed down decision-making, intensifying business areas' efforts to build their own complementary resources.[21]

The fact that the targets set at an individual organizational member's level were so highly demanding led to a decrease in commitment to the firm. This was aggravated by the fact that the targets included in the business performance multiplier were often very demanding. The Corporate Strategy Director recalled the following:

> When Nokia reached its record performance in 2007, nobody got any bonuses. An internal video was launched where Olli-Pekka [the CEO of the time] commented that "We did not meet our targets." . . . He was right, but it demotivated the organization.

18. Please see additional quotes in online Appendix B, quotes 8–9.
19. Please see additional quote in online Appendix B, quote 10.
20. Please see additional quote in online Appendix B, quote 11.
21. Please see additional quotes in online Appendix B, quotes 12–14.

The fact that option schemes had lost their relevance because of a significant fall in share prices further weakened organizational members' commitment.

From a theoretical perspective, one could argue that slowing down market growth represented an environmental change leading Nokia to diversify and change its MCS by adopting a matrix structure. In this way, cognition relating to multiple voices in decision-making became embedded in the formal MCS configuration. Moreover, environmental change led to a new cognition that emphasized the significance of cost efficiency, which became embedded in target setting and in reward and resource allocation systems. Other cognitions persisted as the financial performance continued to be good and the embedding of those cognitions extended to a larger number of MCS. Hence, the evidence above illustrates how the cognitions became more broadly embedded in MCS and how, in turn, MCS reinforced existing cognitions, preventing management from realizing a need for change (see Figure 1, panel A, arrows 1 and 2). Similarly, the evidence above suggests that some leaders saw a need for change, but their attempts to act upon environmental change were ruled out. Moreover, MCS started to slow down decision-making and impede innovations, providing the initial signs of the role MCS may play in delaying actions despite having the right cognitions (Figure 1, panel B).

2008–2010: Dissolution of industry leadership—Inertia in action

Competitive position and performance

After Nokia reached its record performance in 2007, its position as the industry leader started to dramatically deteriorate. The most severe challenge came from Apple's iPhone, which had a highly disruptive effect on the market and can be regarded as a major environmental change.[22] A Senior Vice President commented with the following:

> The game had changed. It wasn't any more about how many models you have; it was about how rich an application platform you have.

To make things worse, Nokia also lost its competitiveness in the mid-range and low-end categories. In the low-end category, low-cost Chinese producers started to sell cheap components to practically anybody. Barriers to entry disappeared: new entrants had their phones produced at a very low cost. In the middle-range category, Samsung's market share was growing rapidly.

Nokia's difficulties were reflected in its financial performance. Net sales decreased from €51 to €42 billion during 2008–2010 (Nokia Annual Reports). Earnings before interest and taxes decreased from 5 to 2 billion euros during the same period (source: Thompson Database). The erosion in Nokia's competitiveness and financial performance did not go unnoticed by Nokia's board of directors. In September 2010, the company announced that its CEO, Olli-Pekka Kallasvuo, would be succeeded by Stephen Elop from Microsoft.

Managerial cognitions, MCS configuration, and inertial forces

The inertial forces caused by the embeddedness of cognitions in MCS intensified during this era. This was caused, on the one hand, by most of the prevailing cognitions becoming increasingly inaccurate because the environment had changed considerably. On the other hand, it was caused by the fact that the embeddedness of these largely inaccurate cognitions continued to intensify. First, the focus on financial metrics on corporate- and business-level target setting constrained top

22. Before the launch of Apple, mobile device market competition was largely a question of scale—who had the most attractive product range to please various customer tastes. Apple's entrance increased the value of services and made devices and their operating systems into platforms, that is, the kind of applications customers can use on their devices. The attractiveness of devices became dependent on the services available on their platform. Applications were developed by a huge number of independent developers, in addition to incumbent organizations, and to make an application work with different operating systems, each operating system required a developer to write code. Please see additional quotes in online Appendix B, quotes 15–17.

management's visibility to the gravity of the downfall in Nokia's competitiveness, as explained by a senior business development director:

> The year 2008 was difficult for us. But we misinterpreted the financial information: We thought the figures were caused by the general economic downturn. It took us too long to get to the actual causes.[23]

Second, the dominant coalition (Cyert and March 1963) believed in scale and cost efficiency, and decisions were made based on financial calculus. Our interview evidence suggests that some leaders saw a need for changes earlier than others. Those coming from the multimedia and enterprise solutions divisions were of a different opinion regarding company direction than those having a mobile phone background.[24] The CEO Olli-Pekka Kallasvuo, lawyer by education and long-time CFO of Nokia, had a background in mobile phones. Many interviewees suggested CEO background and personality were the reasons Nokia did not invest heavily in high-performance, innovative smartphones.[25]

Third, although the need for change in value creation was understood, Nokia was not capable of changing its course of action because of inertia built into its MCS and practices. Based on a book by Jorma Ollila, chairman of the board of directors until 2012 (Ollila and Saukkomaa 2013), as well as many interview testimonies, organizational structure appeared to be one of the most important control mechanisms for Nokia's top managers.[26] Continuous changes in the organizational structure during this period further suggest questioning of the prevailing cognitions regarding value creation was started by the dominant coalition somewhere around 2009.

The first organizational restructuring during this period was still a result of old cognitions. When the new organization, referred to as "integrated" or "functional," was established at the beginning of 2008, cognitions relating to *growth and scale* and *multiple voices in decision-making* became more firmly integrated into the company's structure (Figure 3).[27]

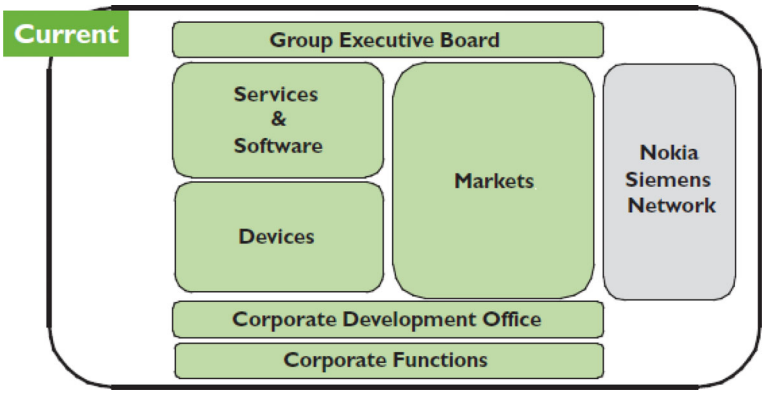
The purpose of this structure was to enhance growth to new service business, that is, to increase the supply of mobile applications. The role of the scale behind this structure was explained by Executive Vice President:

> We saw that services will play a major role in monetization in future, so let's use scale up to a maximum so that we create all services at one place . . . we used to have three Strategic Business Units, and Enterprise solutions and Multimedia made different types of services, and it was apparent there was no scale.

The restructuring would also contribute to scale economies in the device business. However, a boost for service business was not achieved with this structure. Nokia tried to create services largely on its own.[28] One reason for this was the Symbian operating system, which required different code to be written for different phone models, effectively lowering external application

23. Given that the environment had changed and smartphone software/application development had a major role, the KPIs at that time could have included the number of new applications and the number of new applications developed by external parties to the Nokia OS, Net Promoter Score (NPS) of both developers and customers, etc. Please see additional quotes in online Appendix B, quotes 2–5.
24. Please see additional quotes in online Appendix B, quotes 18–21.
25. Please see additional quotes in online Appendix B, quotes 22–23.
26. Please see additional quotes in online Appendix B, quotes 24–27.
27. A number of sources testified to the dominance of the chairman of the board (until 2012) and CEO (until 2007), Jorma Ollila, at the board and top management team level after the dissolution of the "dream team" in 2004–2005. Hence, one may question how well this cognition of multiple voices in decision-making materialized at that level. However, our data suggest that, at least below the top management, this cognition of multiple voices in decision-making was present and influenced organization structure and meeting practices. This may, however, also reflect CEO Olli-Pekka Kallasvuo's quest for consensus decisions, as testified by some informants (supporting information in online Appendix B, quote 28).
28. Please see additional quotes in online Appendix B, quote 29.

Figure 3 Nokia's formal organizational structure 2008–2009 (Doz and Kosonen 2008, 117)



developers' interest in investing in application development for the Symbian operating system environment.

In addition, the new organization had significant constraining effects. Devices and services, as well as markets, were responsible for their own profit and loss statement (P&L). Furthermore, to boost service business, Nokia acquired Navteq, a navigation system company, for USD 8.1 billion in late 2007. Navteq was left as a separate business unit, having its own P&L responsibility, reporting directly to the CEO. Because each business was maximizing its own profits and incentives were tied to profits, Navteq maps were not utilized to their full potential, as explained by the VP:

> Our internal transfer pricing, if they inserted navigation into that product they had to pay for that, it was included into the bill of material (BOM), and it was a quite hefty sum, then some product categories said we would not install navigation as it would prevent us reaching our target margin and price point. . . . And my team tried to argue all products should include navigation as we have paid fortunes for it (Navteq), it should be in every phone, this is just a transaction (transfer price) on paper. But as long as this is not reflected in incentives, they were incentivized with the old (product-based BOM) gross margin system; it was broken, the whole system, and these examples are plenty.

Within this new organization, it was not clear where the decision rights were in cases of disagreements between services, devices, and market organizations. Moreover, a new staff function, called the corporate development office, was created. One senior executive stated the following:

> I wrote a document in 2007 before organizational renewal and I wrote into it (into the operational document) that Services will decide; Services drives (decision-making) as services are what customers see. But that sentence was removed from there (the operational document). . . . And the other problem, which I see as a fundamental design flaw in the organization, was the establishment of the corporate development office . . . it was not in the original document . . . it was totally insensible to take customer-oriented solution development to a corporate staff function.

The new organizational structure slowed decision-making. It almost paralyzed the organization. It also diverted attention away from internal issues.

> When the iPhone came, the market changed radically. Suddenly, the most significant competitive driver was no longer scale; it was speed. And this happened at a time when we had just gone through a major organizational restructuring that maximized organizational capability in

> relation to scale. . . . In our new organization, we could not delegate decisions; an enormous number of issues were pushed upwards. No matter how much top managers sought to say "please, make decisions," it was not feasible. Decisions required contradictory compromises, and the issues kept being pushed upwards. It took an awfully long time to get any instructions about how to proceed. In my opinion, inertia was built in to the functional organization. (Executive Vice President)

> So these committees emerged to decide on everything; almost every issue was subject to a steering group decision. I used to say that the next person I will hire will be a professional steering group participant; she can report directly to me. Even though I tried hard—24/7—I could not be present in every steering group I had been nominated to. (Another Executive Vice President)

The organizational structure was subsequently changed in October 2009, when a new solutions organization was established to combine Nokia's service and device offerings. This increased the complexity of the organization and further slowed down decision-making. Subsequently, Nokia's top management implemented several modifications to the organizational structure. This caused insecurity and uncertainty among employees and further contributed to the fact that organizational members' attention was largely focused on issues internal to the organization.

Many other aspects of MCS, in addition to organizational structure, contributed to Nokia's inability to implement change and renew its offering to confront disruption. Although the organizational structure changed frequently, other systems constituting MCS configuration remained largely untouched. All the constraining effects that had emerged during the previous period continued. Resource allocation for NPD projects continued to be based on demanding financial targets,[29] and those targets were the same for all products,[30] constraining Nokia's capability for innovation:

> Our key performance indicators were too stable. For example, our product programs were evaluated on the gross margin metric the whole time. With hindsight, you can ask if that is sensible. Nokia has always been criticized for not producing innovative products. But we had many good ideas and great concepts which were killed simply because their product-specific gross margins were not good enough. (Senior Business Development Director)

As Nokia's competitiveness rapidly increased, it became difficult to retain prevailing performance levels. Focus on cost efficiency and profitability-related metrics intensified, and target setting became even more demanding. Suboptimization and myopia became more severe. The inefficient use of resources continued as well. Ongoing NPD projects and marketing campaigns were often rejected simply to meet quarterly targets. A decrease in organizational members' commitment continued:

> The general feeling was that my own performance did not matter that much anymore. Especially when Nokia's performance started to decline, and the corporate-level targets were not met, it all became very demotivating. Regardless of what my own performance was, we would not get the bonuses anyway. (A Global Marketing Director)

To conclude, Nokia's MCS configuration, which had supported effective management in the 1990s, had reached a state in which it was causing significant inertia. Most systems constituting the MCS configuration had inertial effects. The embeddedness of managerial cognitions had, over the years, contributed to this development.[31]

29. Please see additional quotes in online Appendix B, quotes 18, 19, and 21.
30. Please see additional quotes in online Appendix B, quote 8.
31. The only managerial cognition that was not causing inertia through its embedding in MCS was the one relating to the importance of shared organizational values. This was because the individual values of many Nokia employees were in alignment with formal organizational values (Häikiö 2001; Ollila and Saukkomaa 2013).

From a theoretical point of view, Apple's entrance to markets marked a major environmental change in the mobile phone industry. Nokia's initial response was a new functional organization. Although the organization changed, many other aspects of MCS were logically retained intact such as SBU responsibility for profits, incentives based on profits, and decision-making at product level based on required margins. This organization was based on old cognitions of growth, scale, and cost efficiency, as well as on beliefs in financial targets and responsibilities and in financial numbers providing clear guidance for decisions. As the cognitions regarding value creation gradually started to change, management attempted to change MCS by further changing organizational structure but still did not change the other aspects of MCS. Evidence from this period illustrates how MCS first prevented management from recognizing a need for change (Figure 1, panel A, arrow 2); and once they realized a need for change, MCS did not allow them to implement changes fast enough, causing severe inertia (Figure 1, panel B).

2010–2013: Downsizing and acquisition by Microsoft/Reassessment of cognitions

Nokia's competitive position and performance

Nokia's performance continued to deteriorate when Stephen Elop started as CEO in the autumn of 2010. Nokia's long-awaited N97 model, which launched in June 2009, was a disappointment. In February 2011, Nokia announced that it would change its mobile operating system. Nokia's first Windows-based phone, Lumia, was finally launched in October 2011. It was technologically competitive. By that time, though, consumers and operators had lost their interest in Nokia. The sales figures were disappointing.

Nokia's market share in smartphones continued to drop. By 2013, Nokia's market share in smartphones had fallen to around 3%, a dramatic decline from 2007 when the market share had been around 50%. Nokia's financial performance was hit accordingly (Figure 4). The average number of personnel was halved from 129,355 in 2010 to 59,333 in 2013 (Nokia Annual Reports). The downfall in competitiveness and performance resulted in the sale of Nokia's mobile phone business to Microsoft in September 2013 for €5.4 billion.[32]

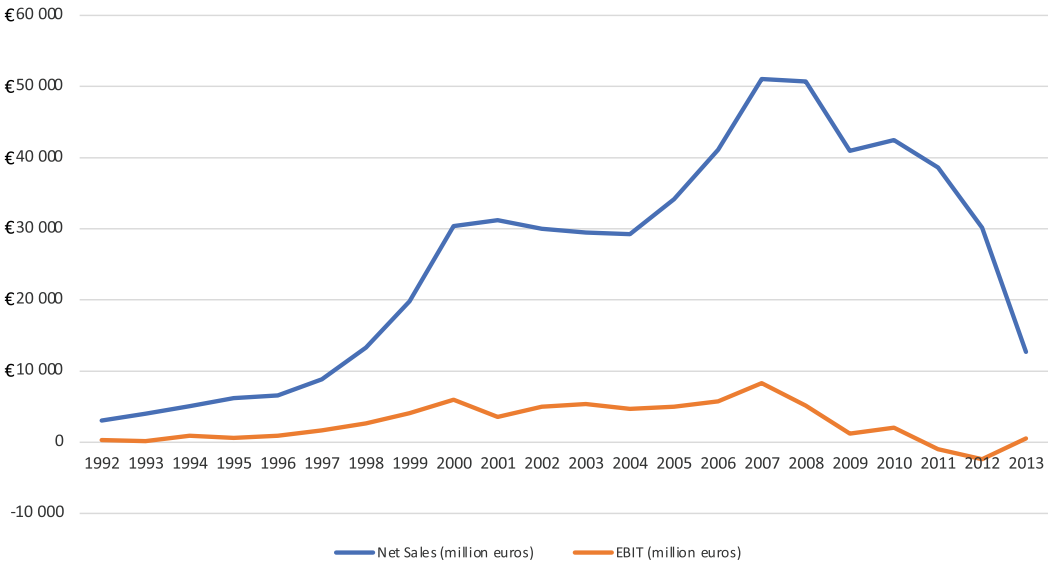
Managerial cognitions, MCS configuration, and inertial forces

The radical changes in the environment, Nokia's competitive position, and financial performance forced top management to reassess its cognitions related to both value creation and management. As described above, the questioning of value creation had already started during the last years of Kallasvuo's term, but the appointment of a new CEO finally led to major changes. Although Nokia could not rely on *growth* or *scale* as drivers for value creation, the significance of *cost efficiency* intensified. Several ambitious cost-cutting programs were launched. The significance of cost-related performance metrics intensified during planning and follow-up. R&D costs, as well as sales and marketing costs, became part of the "Key Financial Figures" package reported to investors.

Cognitions regarding the management style, along with their embeddedness in the MCS, were also reassessed. Nokia's prior functional organization had made it visible that the cognition relating to the effectiveness of *multiple voices in decision-making* was largely inaccurate. The organization was streamlined, and clear accountabilities were established. The cognition emphasizing multiple voices in decision-making was replaced by one relating to *clear accountability*. Target setting continued to be demanding, as could be expected, considering the gravity of Nokia's financial distress. The bonus scheme was, however, modified so that a minimum level was set for the corporate-level business performance multiplier. This ensured that individuals meeting their targets would receive some bonus, regardless of corporate-level performance.

32. The acquisition was finalized in April 2014 when the competition authorities had given their approval.

Figure 4 Nokia 1992–2013: Net sales and earnings before interest and taxes (EBIT) in MEUR (Thompson Database)



The purpose of this was, of course, to counter the demotivating effects caused by Nokia's poor overall performance. The *predominance of financial metrics* continued to constitute a significant part of management style. The use of performance metrics was, however, extended to include nonfinancial, forward-looking metrics, such as application coverage per market.

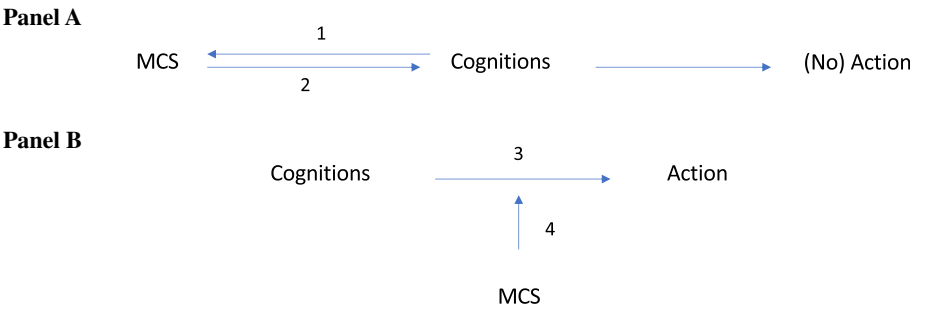
Although this last period clearly shows that the cognitions changed and that parts of MCS other than organizational structure were amended, changes in MCS took time. Because organizational inertia refers to an inability to enact internal change in the face of significant external change, this period suggests internal change took place, but because it took time, it did not result in material impact on competitive position or financial performance. Hence, MCS delayed the impact of cognitions on those actions needed to cope with external change, moderating the cognition-action link (Figure 1, panel B).

The reason these changes in cognitions were possible at this point goes back to deteriorating financial performance and the newly appointed CEO. The new CEO, external to the organization, was able to change the cognitions that persisted among the former leaders who had experienced the era of Nokia's success.

5. Discussion

Our research question was about how MCS may contribute to organizational inertia and decline. Earlier literature has suggested that MCS may maintain and intensify existing cognitions, preventing management from realizing a need for change (Bettis and Prahalad 1995; Kaplan and Henderson 2005). Our case evidence suggests this can happen by two different mechanisms (see Figure 5, panel A, arrows 1 and 2). As growth, scale, and cost efficiency were built into target setting and performance indicators, and these indicators still showed extremely good performance in 2007, there was no reason to question the prevailing cognitions. One could also argue the opposite. The recipe for success had been the same for a long time, and it seemed to yield great financial benefits. What is measured matters, and because cognitions determine what is measured, these measures become self-referring, offering support for the prevailing cognitions. It is evident from the case that Nokia's R&D productivity deteriorated and that the indicators used did not

Figure 5 Elaborating on the mechanisms how MCS contribute to inertia via cognitions



Notes: Arrow 1: Cognitions are built into a larger number of MCS and more intensively into some MCS over time. Arrow 2: (i) MCS intensify cognitions by specifying objectives narrowly and providing performance updates vis-à-vis narrow objectives, (ii) similar signals from various MCS systems echo each others' reinforcing cognitions. Arrows 3 and 4: (i) MCS delay the cognitions-action link. Changes in MCS take time, authority to make decisions is not clear, performance measures, target setting and incentives are not aligned with new cognitions, (ii) only some leaders have accurate cognitions but no power to act upon them.

capture this. Similarly, the service business would have required different kinds of indicators. The threat of one competitor, Apple, was judged against its low market share. Hence, one could argue that the MCS provided a too narrow and partly biased view of performance, hence reinforcing existing cognitions instead of questioning them.

MCS may also maintain or intensify the prevailing cognitions because of an escalation of the embeddedness of cognitions into MCS over time. Our findings suggest that cognitions become embedded in individual MCS and that embeddedness gains momentum and escalates over time. Escalation can proceed in two ways. First, a particular cognition becomes embedded in a larger number of MCS over time. Second, the embeddedness of a particular cognition in a specific MCS intensifies over time. In our empirical context, there was evidence of both escalation types. The embedding of cognitions relating to the predominance of financial metrics extended to a larger number of MCS over time. We propose that when many systems provide similar signals, those signals tend to echo each other, making cognitions self-referring. At Nokia, the different MCS elements worked in the same direction, making it difficult to change the prevailing cognitions regarding value creation.

The cognition highlighting the effectiveness of multiple voices in decision-making became, on the other hand, integrated into the formal organizational structure with increasing intensity. One could think that bringing multiple voices into decision-making could actually facilitate the questioning of existing cognitions because, for example, new external recruits do not necessarily share cognitions similar to those with long tenure. This did not seem to be the case at Nokia, and it is interesting to ask why. Our evidence suggests the decision authority was not clear, and there was a quest for consensus decisions. This led to an escalation of issues up the hierarchy, where the dominant coalition was under a large amount of time pressure to solve various issues. Dealing with a continuous stream of daily challenges does not leave time for rethinking of the big picture. Moreover, because decisions were made based on short-term financial criteria, those ideas and views questioning prevailing cognitions could be rejected on these grounds. It would perhaps be too far of a stretch to argue that the embeddedness of cognitions into MCS in increasing intensity would prevent leaders from questioning the prevailing cognitions. However, we could argue that this intensification did not facilitate such questioning, either. Therefore, we propose that

escalation, especially in the number of systems, reinforced cognitions, impeding management from realizing the need for change.

MCS may also contribute to inertia by moderating the cognitions-action link (Figure 5, panel B). In this case, MCS delay the impact of accurate cognitions on actions; here, our evidence suggests two different mechanisms at play. The literature has suggested that cognitions change only once performance remarkably deteriorates. At Nokia, cognitions related to growth and scale started to change among the dominant coalition around 2009. Some leaders seemed to have questioned those cognitions related to scale and cost efficiency earlier than the dominant coalition. However, these leaders did not have enough power to mitigate inertia. The financially focused MCS provided the dominant coalition with the means to justify their choices, and those choices did not foster internal change to confront the external disruption in the industry.

It seems that the cognitions related to management, for example, predominance of financial measures, demanding target setting, and multiple voices in decision-making, changed only when the new CEO, having not experienced Nokia's era of success, took office in late 2010. However, it took the new CEO time to find out the issues Nokia was facing, deciding on how to respond to these, and then implementing changes in organizational structure, accountabilities, Key Performance Indicators (KPIs), and incentive systems amid massive scaling down regarding the number of employees. So even with the right cognitions, both in terms of value creation and management, the changes in MCS took time, and those changes further delayed the necessary actions. Conceptually, MCS moderated the link from cognition to actions, causing inertia. This moderation was partly because of the lack of power of those who tried to act upon environmental change and partly because of the time lag needed to reconfigure MCS once a need for change was evident for a dominant coalition (Figure 5, panel B).

An interesting question is why some cognitions may or may not change. The management literature has suggested cognitions are persistent and change only when performance substantially deteriorates (Barr et al. 1992; Barr 1998). Our findings are in line with the literature suggesting MCS may provide narrow and biased views of performance, reinforcing existing cognitions and, thus, delaying a change in cognitions. As performance continues to deteriorate, cognitions regarding value creation eventually change. However, our evidence suggests that the cognitions related to management did not change in parallel with those related to value creation. We have two potential explanations for this.

The first explanation builds on the temporal sequence of addressing the challenges organizations face and limitations related to human attention. As the environment changes and performance starts to deteriorate, leaders start to question the logic of value creation. This puzzle of value creation takes up a lot of their time and diverts attention away from management issues. Once the question of value creation has been solved and the required changes are to be implemented, issues in management become evident. Hence, questioning of those cognitions related to management becomes obvious only after the cognitions in value creation have changed.

The second potential explanation relates to the fact that it may be easier for leaders to accept that poor performance is caused by external forces, such as competitors, rather than assuming that poor performance is because of poor management, including how MCS are configured. Therefore, the cognitions related to value creation are questioned earlier than those related to management.

It is important to keep in mind that the literature on cognitions has suggested that cognitions result from prior success. Nokia used to be a conglomerate operating in various industries and was in financial trouble in the early 1990s. Because of poor performance, there is no reason to believe the leaders at that time would have shared similar cognitions related to value creation or management. Hence, there was no link between MCS and cognitions at that time. The leaders were able to come up with cognitions over time as Nokia's newly focused business turned out to be extremely successful. With a large number of leaders experiencing this success, one could think this led to some kind of group think, suggesting that cognitions were present not only at the individual, but also at the collective level (Daft and Weick 1984; Walsh 1995; Bingham and

Kahl 2013). As we have shown in the current study, these cognitions were built into MCS. Once cognitions have been built into MCS, MCS may contribute to inertia via the mechanisms we have outlined.

It is also evident from the case that cognitions can change when top management changes, for example, when the new CEO comes from outside the organization. Because a new CEO has not experienced the success of the firm, only facing the problems and issues at hand, at least at the outset of their term they can question all organizational practices, including MCS.

Prior accounting literature has paid relatively scant attention to organizational inertia.[33] Selective attention has been discussed in management literature as one explanation for inertia (Miller 1993; Tripsas and Gavetti 2000), and in accounting literature, selective attention is recognized as one unintended consequence of MCS (Christopher and Hood 2006; Kerpershoek et al. 2016; Franco-Santos and Otley 2018). However, in the accounting literature, selective attention has not been linked directly to organizational inertia and decline. Our findings extend the accounting literature on selective attention by making this link explicit. Moreover, the embeddedness of cognitions into a larger number of MCS over time, and the various systems echoing each other, are likely to foster selective attention.

The accounting literature has also discussed how MCS may constrain responsiveness. Traditional budgeting has been argued to constrain responsiveness and act as a barrier to change (Neely et al. 2001; Hansen et al. 2003). Budgets have been viewed as stifling initiative and ". . . fail to empower people to act by providing them resource capabilities because resources have been committed for the budgeting period" (Hansen et al. 2003, 102). The literature on PMS, mainly dealing with the public sector and published in journals other than accounting, has suggested ossification as one dysfunctional consequence of PMS. Smith (1995, 299) defined ossification as organizational paralysis brought about by an excessively rigid system of performance evaluation: "The need to choose performance measures and set targets in advance means that new threats and opportunities may be ignored by managers." Mannion and Braithwaite (2012, 571) provided an example from the healthcare context: "Wanting to maintain targeted day case rates may inhibit the adoption of the latest techniques for treating patients on an outpatient basis."

Although these inertial effects are well known, they have not been linked to organizational decline. Decline seldom happens instantaneously. Our analysis and theorization have extended the temporal dimension vis-à-vis prior literature on MCS and inertia. The implicit assumption in the budgeting and PMS literature has been that resources and targets are set for the planning period, typically for one year. Hence, systems may cause inertial effects during the year, but the next planning round allows for the accommodation of environmental changes to targets and resource allocation. Cognitions allow us to explain why those practices related to target setting and resource allocation may not change to reflect changes in the environment over time, thus limiting managerial responses to environmental changes and contributing to organizational decline.

Prior accounting research has also paid little attention to longitudinal developments in MCS along the different life cycle stages of organizations (see Moores and Yuen 2001; Davila 2005; Granlund and Taipaleenmäki 2005). The basic thrust of that stream of the literature has been in understanding how MCS need to develop to support a successful transition from one life cycle stage to another. Moores and Yuen (2001), for example, uncovered how and why MCS formality changed during organizational development, and Davila (2005) studied what drives adoption of MCS in growing firms. Our evidence is in line with prior observations regarding MCS developments in the growth stage. In other words, in that stage, our evidence supports the idea that organizational developments over the firm life cycle are likely to drive developments in MCS.

33. There is a vast literature on stability and change in accounting and resistance to accounting change, but that literature has focused on inertial effects related to changes in accounting (Malmi 1997; Granlund 2001; Chenhall and Euske 2007; Lukka 2007; see also Burns and Scapens 2000). Our focus is on how accounting/MSC cause organizational inertia and decline.

However, contrary to Moores and Yuen's (2001) findings, we did not observe MCS formality as decreasing in the decline stage. Our findings suggest that, instead of adapting to a new stage in the life cycle, MCS contribute to a change in the life cycle. Hence, in line with Granlund and Taipaleenmäki (2005), we demonstrate that the relationship between corporate life cycle stages and MCS may be reciprocal. What is new in this regard is that although MCS were developed in growth stages to be more versatile and sophisticated, they also became obstacles to successful developments at the maturity stage, when revival would have been necessary. Prior studies have pointed to the enabling nature of MCS regarding a successful transition from one life cycle stage to another but have not considered the inertial effects of MCS contributing to decline.

Our study also contributes to the literature on managerial cognitions and inertia by elaborating on the mechanisms through which the embedding of managerial cognition in MCS causes inertia over time. Quite surprisingly, this stream of the literature has almost totally ignored the role of MCS in such developments because only indicative evidence has previously been presented to suggest that the embedding of cognitions in MCS causes inertia (Miller 1993; Noda and Bower 1996). We see notable possibilities for future research in this field regarding the role of MCS vis-à-vis organizational inertia and decline.

6. Conclusions

Our study contributes to the literature on the dysfunctional consequences of MCS. We studied inertia and decline—dysfunctional consequences that have not received much attention in the literature. Because inertia has been explained by cognitions in the management literature, we drew on this concept, as it allowed us to understand and theorize on the mechanisms by which MCS may contribute to inertia. The first way MCS may contribute to inertia precedes the cognitions-action link. We identified two mechanisms of action here. Our case provided evidence of MCS reinforcing existing cognitions by focusing on a narrow and partly biased set of indicators. To some extent, this mechanism has been discussed in the management literature. Second, we suggested that the escalation of embeddedness of cognitions into MCS, especially into a larger number of MCS, further intensified existing cognitions. The various systems echo each other, further delineating why cognitions may be self-referring and persistent. Various MCS reinforcing each other is the second mechanism by which MCS may reinforce existing cognitions. This prevents managers from acting upon environmental change.

Second, MCS may contribute to inertia through the moderation of the cognitions-action link. MCS studies relying on psychological concepts and theories have addressed the MCS-action link, studying how mental models or cognitions moderate this link. We focused on the link between cognitions and action, following how MCS moderates that link. Our evidence suggests at least two different mechanisms on how this moderation works. One relates to organizational power to act. The other, the temporal one, relates to the time required to implement changes in a large organization.

In addition to theorizing on how MCS may contribute to inertia and decline, our study contributes to the literature by illustrating how managerial cognitions may relate not only to value creation but also to the ways of managing. In other words, managers may have cognitions regarding proper ways of designing and using MCS. Our case illustrates how both types of cognitions escalate and become embedded into a larger number of systems over time. It is important to note that these cognitions were not residing only at the individual level. They were shared among the leaders.

Although it is well known that MCS may constrain responsiveness, we contribute to the literature by illustrating how this may feed into the decline of a leading, successful firm. Cognitions allowed us to explain why practices related to target setting and resource allocation may not change to reflect changes in the environment over time. Our study explains why these constraining effects may persist. We also contribute to existing literature by linking selective

attention, a commonly discussed dysfunctional consequence of MCS, to organizational inertia and decline.

Finally, we also contribute to the literature dealing with MCS developments over corporate life cycles. Few prior studies have analyzed the development of MCS over the life cycle stages of companies. Investigations of the enabling nature of MCS regarding successful transition from one life cycle stage to another are even more rare. However, earlier research has not considered the inertial effects of MCS contributing to the organizational decline stage.

Our study suggests several managerial implications that are worth highlighting. Our case evidence suggests that managers should not rely on simple rules of thumb or purely financial measures in complex environments. Changing the organizational structure should be accompanied with changes in other elements of the MCS configuration as well—especially regarding decision rights, accountability, performance measures, and incentives. Managers should be aware of the risks of familiar success recipes in turbulent environments over time. They should question the validity of strategies and business models on a continuous basis. And they should understand how existing MCS may feed into inertia.

Our study provides opportunities to further enrich our understanding of the dysfunctional consequences of MCS, especially in relation to inertia and decline. Future research could pay attention to how cognitions—or beliefs more generally—regarding proper management emerge and become incorporated into MCS, also over the different life cycle stages of organizations. Moreover, future research, as well as practitioners, could address how the transparency of MCS—and MCS configurations more comprehensively—can be enhanced to make the cognitions embedded in the MCS visible and more exposed to reassessment. Future research could also explore how the features of adaptability can be built into MCS configurations, without jeopardizing their coherence. Such transparency, reflexivity, and adaptability, we argue, are critical in responding to environmental change. They are likely to have notable implications for management practice. Further examination of the reciprocal relations between cognitions and MCS is needed (see Hall 2011; Englund and Gerdin 2015).

Appendix: List of interviews

No.	Date	Interviewee	Length (min.)
1	June 21, 2006	Corporate Planning and Analysis Director	120
2	July 10, 2006	Corporate Planning and Analysis Director	90
3	August 10, 2006	Director, Marketing Strategy and Planning, Mobile Phones	90
4	August 14, 2006	Corporate Planning and Analysis Director	120
5	August 23, 2006	Vice President HR, Global Rewards and Benefits	90
5	August 23, 2006	Director, Competency and Performance Management	90
6	September 13, 2006	Corporate Planning and Analysis Director	90
7	September 21, 2006	Head of Finance and Control	45
8	October 13, 2006	Vice President, Business Improvement Services	90
8	October 13, 2006	Senior Development Manager, Business Improvement Services	90
9	October 23, 2006	Corporate Strategy Director	90
10	October 27, 2006	Senior Development Manager, Business Improvement Services	60
11	November 3, 2006	Vice President, Business Improvement Services	60
12	November 29, 2006	Corporate Strategy Director	60
13	November 30, 2006	Competence and Performance Management Director	90
14	January 7, 2008	Director, Business Development and Partnering, Devices R&D	90
15	January 14, 2008	Corporate Planning and Analysis Director	30
16	January 14, 2008	Director, F&C (Service & Software)	90
17	January 22, 2008	Director HR, Executive Development, Talent and Performance Management	90
18	March 14, 2008	Senior Manager, Go-to-Market Strategy and Portfolio	60
19	March 15, 2008	Cost Management and Business Control Director, Mobile Phones	30
20	June 11, 2009	Senior Manager, Finance and Control	30
21	June 15, 2009	Finance Director, Markets	30
22	June 17, 2009	Director of Finance	40
23	August 31, 2010	Senior Vice President, Global Head of Marketing	60
24	September 27, 2010	Executive Vice President 1, Member of the Nokia Group Leadership Team	50
25	September 28, 2010	Head of Strategic Planning, Corporate Strategy	90
26	October 23, 2012	Head of Business Operations and Planning	120
27	October 25, 2012	Senior Solutions Manager	90
28	November 2, 2012	Industry Analyst, Investment Bank A	90
29	November 2, 2012	Head of Operations Development, Mobile Phones	90
30	November 5, 2012	Head of Strategic Pricing	90
31	November 7, 2012	Head of F&C IT Solutions Management	90
32	November 7, 2012	Vice president, Emerging Markets	60
33	November 12, 2012	Researcher	150
34	January 31, 2013	Director, Corporate Finance	90
35	February 7, 2013	Head of Global GTM Portfolio and Program Management	90

(The table is continued on the next page.)

(continued)

No.	Date	Interviewee	Length (min.)
36	March 5, 2013	Director, IT	90
37	March 6, 2013	Senior Vice President, Marketing	90
38	March 7, 2013	Director, Head of Strategy (Devices)	60
39	March 19, 2013	Executive Vice President 2, Member of the Nokia Group Leadership Team	45
40	March 22, 2013	Vice President, IT systems	60
41	March 22, 2013	Director User Experience Design, MeeGo Devices	120
42	March 28, 2013	Director, IT	60
43	April 8, 2013	Head of People Process Solutions	60
44	June 4, 2013	Executive Vice President 1, Member of the Nokia Group Leadership Team	60
45	June 10, 2013	Global Account Director for Nokia, Supplier B	90
46	September 18, 2013	Vice President, Corporate Function	90
47	September 20, 2013	Industry Analyst, Investment Bank B	75
48	September 23, 2013	Material Planning Manager	90
49	September 23, 2013	Director, Innovation Acceleration/Strategic Business Development	60
50	September 23, 2013	Head of Sustainability	100
51	September 25, 2013	Former Director General, the Finnish Funding Agency for Innovation	60
52	October 3, 2013	Senior Capability Manager, Customer Logistics Capability Unit	90
53	October 7, 2013	Program Manager, Nokia Sales Capability Area	90
54	October 14, 2013	Director, Business Planning and Analysis	60
55	October 15, 2013	Director, Product Investments Planning	135
56	October 15, 2013	Senior Vice President, Operations and Logistics	100
57	October 15, 2013	Industry Analyst, Investment Bank C	60
58	October 17, 2013	VP, Operational Excellence and Quality	60
59	October 17, 2013	Chief Executive Officer, Supplier A	135
60	October 18, 2013	Senior Manager, Lumia Product Marketing	100
61	October 21, 2013	Director, the Finnish Funding Agency for Innovation	100
62	October 24, 2013	Head of Finance and Control	70
63	October 24, 2013	External consultant	60
64	October 28, 2013	Director, Marketing Strategy and Planning, Mobile Phones	80
65	November 1, 2013	Head of Design Strategy and Portfolio, Nokia Design	90
66	November 8, 2013	Marketing Manager, Germany	60
67	November 14, 2013	Chief Financial Officer in one of Nokia's largest country organizations	80
68	November 28, 2013	Vice President, Corporate Social Responsibility	60
69	December 12, 2013	Senior Director, Global Consultancy Company A	60
70	December 18, 2013	Chief Executive Officer, Supplier B	60
71	January 28, 2014	Head of Portfolio Management, Smartphones	150
72	February 5, 2014	Vice President, Entry Business	30
73	February 19, 2014	Senior Vice President, Multimedia	90
74	February 19, 2014	Head of Investment Planning	90
75	February 20, 2014	Senior Director, Global Consultancy Company B	60

(The table is continued on the next page.)

(continued)

No.	Date	Interviewee	Length (min.)
76	April 2, 2014	Executive Vice President 3, Member of the Nokia Group Leadership Team	60
77	May 6, 2014	Senior Vice President of Strategy and Business Infrastructure	60
78	June 6, 2014	Executive Vice President 4, Member of the Nokia Group Leadership Team	60
79	July 29, 2014	Executive Vice President 5, Member of the Nokia Group Leadership Team	90
80	December 18, 2014	Chairman of the Board, Supplier B	140

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:
Appendix A. Time at Nokia by interviewees with direct Nokia work experience
Appendix B. Additional quotes