

Performance, Risk, and Overflows

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Performance, risk, and overflows: *When* are multiple management control practices related?

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Abstract

Current research relates multiple control practices as packages, systems, or accumulations. This relationship signifies that management control practices exist as multiplicities and interact in various ways. These interactions strengthen management control practices. However, this generalisation misses the *when* of relations, which is a problem, as management control practices are not always related, for example, because they often have their own domain attached to an organisational entity's tasks. This paper reports on a study of a firm's (Automaker) management control of its supply chain. This was organised as two types of concern – risk and performance management – that were delegated to two organisational entities each having its associated management control practices. This organisation was a delegation of responsibilities, decision rights and control practices. The study draws on Michel Callon's distinction between framing and overflow to analyse the framing activity involved in upholding this separation and the overflows stemming from the difficulties of upholding strong framings. In effect, the paper discusses *when* risk and performance management practices are related, un-related and re-related and concludes that the *when* helps explain how the relation works to rearrange the importance of the framings and via overflows to introduce completely new framing devices.

1. Introduction

There are often multiple management control practices in a firm. They may be a system of complementary/substitutive tools and procedures (Grabner & Moers, 2013; Güldenpfennig et al., 2021), a package of different tools and procedures (Malmi & Brown, 2008), or a gradual accumulation of tools and procedures that make sense to individuals (Cooper et al., 2019). This multiplicity of management control practices helps managers perform their jobs either because they are functionally relevant (Gerdin, 2020; Grabner & Moers, 2013; Malmi & Brown, 2008) or because they make sense to managers' understanding of the world and their role in it (Cooper et al., 2019; Yu & Mouritsen, 2020). These are situations where the relations between multiple management control practices support a firm's aspirations for control.

However, what does it mean that they are related? After all, each management control practice may cater to its own domain. Budgeting practices may be related to strategy practices, but they also have

their own practice that organises the firm's financial planning, delegates the right to spend money, and attempts to coordinate disparate actors' targets and resources (Covaleski et al., 2003). Likewise, operational, accounting, and human resource management control practices, even if they may all be related to performance management, they also each has their own domain (Hansen, 2021). It thus seems that diverse management control practices are not necessarily always related, as they are delegated to different organisational entities (Armstrong, 1985; Lowe & Koh, 2007; Yu & Mouritsen, 2020). Therefore, are management control practices always related? Are they related sometimes? Are they related only in certain situations? What happens when they are related? There are no obvious answers to these questions, but they do indicate that management control practices may function differently when they act as a singular entity or in relation to other management control practices.

Therefore, this paper asks the following research question: *When* are there relations between management control practices? This general question harbours concerns about (a) how management control practices differ from each other, (b) the timing of their relatedness, and (c) their roles when they are (un)related.

To investigate this research question, this paper draws on the field of inter-organisational relations. In particular the paper addresses a key tension in supply chains which says that suppliers have to become ever more productive which may decrease their ability to be profitable, and that suppliers have to be resilient and maintain a position in the supply chain, and thus uphold its integrity, which however, requires their profitability to be significant. This is a tension to which management control practices are alert.

Learning from different authors, including Williamson (1998) and Castells (2000), this study of inter-organisational relations benefits from focusing on the transaction flow between entities, such as focal and supplier firms. Transactions are the objects (products, materials, tools, information etc.) that make up the relationship between firms, and management control practices are the means to make them amenable to intervention and control. Focal firms organise themselves around the transaction flow by delegating responsibilities to their organisational entities to maintain an uninterrupted transaction flow. These responsibilities are facilitated by management control practices, and as responsibilities differ, management control practices likely also differ among these organisational entities. Delegation implies that organisational entities have separate and different tasks and goals. There is no obvious way in which such different entities are related, as delegation, in principle, reduces the need for relations. When would they then become related?

To study the delegation of responsibilities and their associated management control practices in relation to transactions between focal and supplier firms, Michel Callon's (1998a) distinction between framing and overflow is useful. Framing is the effort made to put together one or more management control practices and delegate them to organisational entities. Framing here implies making management control practices coherent and relevant to an overall concern. As the overall concern may be complex, such as the transaction flow, a task for framing is to determine how many organisational entities are to be responsible for various parts of the concern. This separates the management control practices from each other in relation to the overall concern. Framing is the process of separating out the things that are made to belong to the separate management control practices and make them clear and coherent. However, framing implies that this coherence is achieved at the cost that not everything that could be part of the particular management control practice is included. Certain aspects and dilemmas are omitted from framing. This may generate overflow, which appears when these omissions become increasingly heavy and problematic. Overflow appears when it is possible to question whether the framings hold and are good enough to handle the tensions pertaining to the whole transaction flow. Therefore, there may be relations between different framings—different management control practices—but these are not obvious all the time. They are only obvious when they require things from each other that are difficult to deliver. Then they relate to each other and then overflows may occur even if it is not a priori obvious *when* the outside of the framing will create an overflow. This is a dynamic theory of management control practices where overflows happen because the framing of a practice performs rather than misfires.

To study framing and overflow in relation to a transaction flow, this paper draws on empirical materials from a firm's relations with suppliers. This case considers the transaction flow as framed by two different concerns. One concern was the risk of suppliers being removed from the supply chain due to their potential bankruptcy. This required suppliers to be 'financially sound.' Another concern was the performance and productivity of the transaction flow through a target costing procedure, which required suppliers to become more productive over time and potentially becoming 'financially weak.' This is a paradox. The transaction flow was amenable to control by framing risk as a problem for procurement departments and framing performance as a problem for engineering (new products) and purchasing (existing products) departments. The delegation of tasks and associated management control practices and tools were expected to handle both sides of the flow, largely independently of each other. In effect, most of the time, these management control practices were not related as practices; they were only related when they could not honour their responsibility.

When suppliers went bankrupt too fast, partly because the target costing procedure was harsh and their profitability was challenged, the two management control practices were related. This was a relation of overflow, where the firm then had to invent new efforts to reconstruct the transaction flow by adding new things to the framing activity. While the framing in risk and performance was an attempt to economise the transaction flow, with each overflow, new and costly investments had to be made. Thus, relations do not always exist; in this case, when they existed, they were related because of their association with overflow, which happens, paradoxically, because the framings—as practices—enable a workable delegation.

2. Theory linkages

2.1. Multiple control systems

A design may consist of many elements or many types of management control practices that contribute to the firm's aspiration for being in control (Bedford et al., 2016; Busco et al., 2007; Friis et al., 2015; Gerdin, 2020; Grabner & Moers, 2013; Malmi & Brown, 2008; van der Meer-Kooistra & Scapens, 2008). These different management control practices exist simultaneously and engage with different aspects of business activity. They may also exist as accumulations of different management control practices in different organisational situations and with different agendas and time horizons (Christner & Strömsten, 2015; Cooper et al., 2019; Hald & Mouritsen, 2018; Revellino & Mouritsen, 2009; Skærbæk & Tryggestad, 2010; Yu & Mouritsen, 2020). All these ways that management control practices relate are different, but in all cases they appear to 'add up' in the sense that they all contribute to or at least do not stand in the way of the firms' totality of management control practices.

Alternately, management control practices may compete when their co-existence is contradictory, leading to mutually exclusive management control practices (Christensen et al., 2019; Mouritsen, 1999; Mouritsen et al., 2009). In this situation, multiple management control practices lead the organisation in different directions, for example, into both insourcing and outsourcing strategies (Mouritsen, 1999; Mouritsen et al., 2009), into the direction of both the financial economy and the industrial economy (Ahrens, 1996; Lowe & Koh, 2007; Mouritsen, 1998), or in the direction of both quality and standardisation (Fischer & Ferlie, 2013). These are contradictory because they would

imbue the firm's aspirations for being in control with such different orientations that the aspiration would be incoherent and impossible to realise, thus making these management control practices 'incompatible' (Christensen et al., 2019).

It is therefore reasonable to suggest that management control practices have to be "balanced" (Stouthuysen et al., 2019; van der Kolk et al., 2020). Balancing implies that managers intervene and attempt to add to and repair management control practices to incorporate unforeseen problems and dilemmas. This may be a long, continuing process of fitting management control practices to each other over time (Andon et al., 2007; Mouritsen, 2005; Quattrone & Hopper, 2001).

However, this raises the question of whether management control practices are connected all the time and everywhere. Are there always relations between management control practices so that balancing is a continuous affair? It is likely that they are not always balanced because management control practices are also differentiated to cater to different organisational problems. There are differences between control practices in operations, in human resources, and in accounting and performance management practices (Ahrens, 1996; Armstrong, 1985; Hansen, 2021; Lowe & Koh, 2007; Yu & Mouritsen, 2020). This suggests that there is a considerable division of labour between organisational entities/departments that requires them to focus on different tasks to handle their responsibilities and therefore draw on different management control practices. Separating management control practices is logical because organisational structure makes it possible for individual managers to manage their set of delegated problems independently of other managers' efforts (Kilmann, 1983). The subsequent coordination problem is approached by budgeting and planning activities (Covaleski et al., 2003; Ezzamel et al., 2012). Therefore, there are reasons to presume that the separation of management control practices is as likely, or even more likely, as their relatedness. This demonstrates the relevance of the research question: *When are management control practices related?*

2.2. Supplier risk and performance management

To study the question of when management control practices are related, this paper draws on empirical evidence from the role of management control practices in inter-organisational relationships. There is already burgeoning literature about the variety of such control practices (Caglio & Ditillo, 2008; Dekker, 2004, 2008; Håkansson & Lind, 2004, 2006). Management control practices mediate the relationship between focal firm and supplier, drawing on tools and procedures that managers draw on to maintain or develop interaction (Hald & Mouritsen, 2018; Miller &

O’Leary, 2007; Mouritsen & Thrane, 2006). Management control practices articulate the forms in which the focal firm and supplier realise the relationship. Therefore, open book systems (Agndal & Nilsson, 2010; Alenius et al., 2015; Kajüter & Kulmala, 2005; Windolph & Moeller, 2012), target costing (Carr & Ng, 1995; Mouritsen et al., 2001), competency maps (Hald & Mouritsen, 2018; Mouritsen & Thrane, 2006), road maps (Miller & O’Leary, 2007), various forms of collective planning activities and governance (Håkansson & Lind, 2004; Zahir-Ul-Hassan et al., 2016), and partner selection mechanisms (Dekker, 2008; Ding et al., 2013; Reusen & Stouthuysen, 2019) enable the coordination between parties. Extant research here shows how interactions can be prolonged and develop over time. It shows that it is possible to maintain coordination across the supply chain via management control practices, even if parties may not share interests. A main conclusion of extant research is that the management of tensions is handled and reduced with control systems.

The general problem in the management of inter-organisational relations has often been suggested to be the dual issues of risk and performance management (Wieland & Wallenburg, 2012). Supplier risk arises because of a focus on lowering production and sourcing cost (Norrman & Jansson, 2004; Verbano & Venturini, 2011; Zsidisin & Ritchie, 2008). Khan et al. (2008, p. 141) stated that “global sourcing and offshore manufacturing appears to bring potential benefits to a firm, specifically cost savings driven by lower labour costs. As a consequence in many cases companies are exposed to greater risk and uncertainty in their supply chain since they are too focused on costs and cost reduction at the expense of other considerations” (p. 141).

Cost reduction generates two types of risk. First, it generates relational risk, which “relates to a partner’s inability to capture a fair share of the rents generated by an alliance and arises from behavioural uncertainty of the alliance partner, coupled with investments in alliance-specific assets and incomplete contracts” (Anderson et al., 2014, p. 5). Relational risks are a consequence of transaction characteristics, such as a high transaction size and investment in specific assets. This creates lock-in when “the cost of “starting over” with a new partner exceeds the cost of continuing with an existing partner” (Anderson & Dekker, 2009, p. 206). Second, cost reduction generates performance risk, which occurs when partners collaborate fully. It is “found in all decisions that put execution of the firm’s strategy in jeopardy” (Anderson & Dekker, 2009, p. 206), including supplier failure.

Outsourcing has generally been related to risk in the supply chain since much of a manufacturer’s production happens under the jurisdiction of other firms. In some industries, such as the automotive

industry, the costs of supplied components amount to more than 80% of the total cost (Zsidisin & Ritchie, 2008). Once transactions have been outsourced, transaction characteristics, such as asset specificity and transaction size, generate relational and performance risk. Such risks are often managed by design efforts, such as the selection of suppliers and development of contracts with a trusting relationship (Ding et al., 2013). High risk levels also seem to favour more inclusive and specific contracts and the use of supply chain practices, such as target setting through target costing, operational reviews, and joint problem solving (Ding et al., 2013).

The focus of this literature thus far has been to define the problems associated with the design of the relationship, and performance and risk have been noted as two central concerns. The designs are understood to prevent risks from materialising, and therefore, they are mechanisms that would mitigate disruption. However, this reasonable idea is rarely tested as a practice. This is the aim of the current analysis.

2.3. Framing and overflow

Design can be understood as an outcome of a process of framing by which actors create a boundary around things to consider when an organisational entity is equipped with responsibility. This is the type of problem that Michel Callon (1998a) proposed to analyse by a distinction between framing and overflow. Callon was generally interested in how the economy is made practicable. His suggestion was to look towards the tools and devices used to single out products as objects, enable profit calculation, and transfer products and services from one actor to another (Çalışkan & Callon, 2009; Callon, 1998c, 2007, 2016; Callon et al., 2002; Callon & Muniesa, 2005; Muniesa & Callon, 2007). Callon was intrigued by seemingly small and mundane technologies, such as accounting, which create the infrastructure to differentiate products, sellers, and buyers, enabling trade. To Callon (1998b), such small devices help actors to perform in the economy, which are understood as techno-economic networks that are “a coordinated set of heterogeneous actors which interact more or less successfully to develop, produce, distribute and diffuse methods for generating goods and services” (Callon, 1998a, p. 133). The network is held together to “the extent to which the processes of translation and its circulation of intermediaries lead to agreement” (Callon, 2009, p. 144). Intermediaries are tools, such as accounting, and the processes of translation are the management control practices that draw on these tools (see also Ascui & Lovell, 2011; Christensen et al., 2019; Christensen & Skærbæk, 2007; Georg & Justesen, 2017; Skærbæk & Tryggstad, 2010; Vinnari & Skærbæk, 2014).

Framing is an attempt to separate something from its environment. It is an operation of defining what is inside and what is outside. As such, it is a 'cut' that puts otherwise interdependent activities on two sides of a divide. As Callon (1998a) mentions, a firm may be responsible for its profitability but disregard its pollution, which may be put outside the firm via framing. Framing is a method of identifying and organising the entities being considered. To give such entities the capacity to think and act, Callon (1998b, p. 23) underscores the role of tools, such as accounting, that not only describe things but perform them as they "contribute powerfully to shaping, simply by measuring... the reality that they measure." In this sense, framing is not only a design but also an installation of a set of dispositions developed by the tools that help realise it via processes of performativity (see also Busco & Quattrone, 2017; Miller & Power, 2013; Mouritsen et al., 2009; Yu & Mouritsen, 2020).

However, to Callon, this performativity is fragile because framing is always challenged by the things that it has put outside. He (1998a, p. 255) offers the following consideration:

Framing is costly because overflows happen all the time, since they are fed by multiple sources and flow down multiple channels. Framing cannot be achieved by contractual incentives alone, but ensure that certain courses of action are followed and at the same time generate externalities; this costly framing process is necessarily incomplete: first because a wholly hermetic frame is a contradiction in terms, and second because flows are always bidirectional, overflows simply being the inevitable corollary of the requisite links with the surrounding environment.

Framing produces boundaries by separating things from other things in an ongoing flow of activity. Thus, framing creates clarity, reduces ambiguity, defines priorities, and produces focus that are mobilized by its tools and makes it perform. It singles out objects (such as products and suppliers), subjects (such as decision makers) and interventions (via the priorities made durable by tools). However, framing may always overflow because the very notion of the frame implies that important links remain outside and therefore will not be considered systematically. It asks questions about which objects to include (which suppliers are important enough to be recognised?), subjects (which decision makers are responsible for which suppliers?), and which tools (e.g. is risk to be understood as financial or technological risk?). Framing therefore does not include everything that could have been relevant but only those that are made the concerns of a manager/organisational entity. Framing frees action from its complex context and therefore makes it amenable to management, but the *effects* of this action cannot be freed from the context that the framing has put outside its boundaries. This

means that there could have been other ways of identifying objects (e.g. by capability), subjects (e.g. skills) and tools (e.g. ones that trade off difficult concerns). The point is that framing makes the world clear and amenable to intervention. But framings also forget the things that are not taken into account. These things do not cease to exist, though. They still exist but are not taken care of. There are other objects, there are other subjects and there are other management control processes that are not taken into account.

Callon (1998a) proposes that coordination and alignment happen when the framing is not challenged. He termed this a 'cold' period where "[a]ctors are identified, interests are stabilized, preferences can be expressed, responsibilities are acknowledged and accepted" (Callon, 1998a, p. 261). However, as framings are incomplete, in 'hot' periods, "everything becomes controversial; the identification of intermediaries and overflows, the distribution of source and target agents, the way effects are measured" (ibid.). This is when the "list of actors, as well as their identities, will fluctuate in the course of the controversy itself and they will put forward mutually incompatible descriptions of future world states" (Callon, 1998a, p. 260). When overflows react against the framing, it is increasingly difficult to "arrive at a consensus on how the situation should be described and how it is likely to develop" (ibid.).

When situations are 'cold,' the framing of inter-organisational transaction flow is not questioned, and the course of affairs confirms that the design is functional. When situations are 'hot,' the framing becomes fragile, and the tools to secure the performativity of the framing play less important roles. New tools may be mobilised to account for overflowing relations. Analytically, during 'cold' periods, management control practices ('framings') appear to be unrelated, while during periods of overflow, they appear related. It is unclear *when* this happens and *what* the relations produce.

Other accounting research has also drawn on Callon's ideas to understand the production of management control practices (Ascui & Lovell, 2011; Christensen et al., 2019; Christensen & Skærbæk, 2007; Georg & Justesen, 2017; Skærbæk & Tryggestad, 2010; Vinnari & Skærbæk, 2014). They focus on the co-existence or absence of opposing frames – or materialised interests – while a management control system is developed and designed. The present study is different as it was more concerned with the relationship between management control practices during 'cold' and 'hot' periods. This is also Callon's key interest because he noted that overflows are always possible, and therefore, we must attend to their effects (Callon, 1998a, p. 256).

3. The empirical case and methods

Relations between performance and risk in supply chains are well known tensions in the literature (Dekker, 2016; Ding et al., 2013; Wieland & Wallenburg, 2012). They are concerned with the problem of upholding the integrity of the supply chain. It is not difficult to imagine that a firm has a performance management department and a risk management department that use different tools and methods to highlight these aspects of a firm's overall aspirations for control (Anderson et al., 2014; Tekathen & Dechow, 2013). Neither is it unreasonable to presume that risk and performance control practices are different. Arguably, risk is concerned with events that organisations would prevent from happening, while performance is concerned with events that organisations would encourage to happen (Mikes, 2009, 2011). This distinction explains why firms frame their general aspiration for control along these two management control practices; one scans for dangers, while the other incentivises performance. Extant literature tends to understand this tension from the perspective of framing (and design) rather than from the perspective of overflow. Therefore, this paper considers how framing operates, how it leads to overflow, and what happens to management control practices during periods of overflow regarding the integrity of the transaction flow between focal and supplier firms.

To analyse this theme, this paper draws on empirical materials about Automaker (pseudonym), a French-based multinational corporation (MNC) selling more than 50% of its products outside France and with production sites in all major geographic locations of the globe. This case is relevant for our research because its sourcing activities comprised more than 60% of sales turnover and 80% of the cost of production. It was also selected because a researcher (one of the authors) was granted in-depth firm access (Stake, 2000), which is important when attempting to understand practices of management control. 'In-depth' indicates access to a wide range of archives and to actors from all areas of the organisation (innovation, purchasing, marketing, and production) and different hierarchical levels (middle, senior, and top management) over twelve months. However, the researcher was limited by time constraints and practical difficulties, such as the inability to observe all meetings, particularly those organised on an ad hoc basis and in an informal and on-the-spot basis.

Automaker is also relevant because it was under economic pressure because of the financial collapse of some of its strategic suppliers. This challenged the integrity of its transaction flow. Public opinion interpreted these economic difficulties as the result of managerial decisions aimed at increasing their

profits. Finally, the firm was selected because it provided full access to innovation, supplier management, and risk management functions. Direct access to suppliers was enabled, albeit limited, because the researcher was based in the buying firm, and the inter-organisational relationships had tensions. However, Automaker's top management guided us to suppliers to be interviewed based on a list of suppliers that were strategic at a critical financial stage, which was curated by the researcher.

This paper builds on empirical work conducted over a period of twelve months and which used a qualitative and ethnographic approach to study organisational processes and managerial control practices in detail. It included seven months on-site at the headquarters of Automaker, five visits to strategic suppliers' premises, and participation in strategic working group discussions and professional events at Automaker's national branch. Data was collected in three ways. First, through 53 tape-recorded semi-structured individual interviews lasting 50–80 minutes, with 23 employees at Automaker and 9 respondents from Automaker's production network and public authorities. This included interviews with 21 senior and middle managers, 8 managers, and 3 public authorities. Senior and middle managers were interviewed at the beginning of the study to understand how intra- and inter-organisational relations concerned with sourcing activities were organised at Automaker. Open-ended questions were asked about managerial tools used in sourcing strategic components. We applied the 'snowball sample' technique by which the interviewees were asked to recommend other actors who were involved in strategic sourcing activities and responsible for managerial tools concerned with sourcing activities. We then applied the 'purposeful sample' technique by which relevant interviewees were selected with the aim of understanding the role played by managerial tools concerned with sourcing activities. These sampling techniques implied a view of interviewees as 'active respondents' who collected insights, structured the data collection, and made conclusions (Fortado, 1998). Finally, we re-interviewed the 10 most reflexive and relevant actors to understand the role played by performance and risk management tools concerned with sourcing activities in the financial collapse of Automaker's strategic suppliers.

The second method of data collection consisted of studying Automaker's internal archives. Those archives included strategy statements, corporate videos, training materials, minutes of general assembly meetings, internal organisational processes, and historical files of financially collapsed strategic suppliers. This led us to the second stage of the analysis, which provided insights into the role played by performance and risk management tools concerned with sourcing activities in the financial collapse of Automaker's strategic suppliers.

The third method of data collection was through informal, non-participant observation. We participated in 20 meetings, during which we took field notes (van Maanen, 2011) before, during, and after the meetings. We had a desk in Automaker's headquarters in the purchasing department on a 1000 m² open space floor, where all strategic functions were located. We were given senior managerial clearance access to the intranet. Presence on-site enabled informal meetings with staff during coffee breaks and lunches. Purchasing meetings, where risk and performance management tools concerned with sourcing activities were a central actor, were also attended. During fieldwork, an electronic diary was used to accumulate notes on events and decisions related to the management of suppliers. The diary served as a link between observations, document readings, and interviews. The extracted data was translated into English and reviewed by a native English speaker to validate the translation.

We analysed the collected data with a multi-thematic coding approach to identify emerging themes and keywords. As ideas emerged and connections were made, we wrote a new set of notes with themes, directions, unsolved questions, and patterns to be explored in the next research phase. The data analysis process was iterative (Alvesson, 2011). In the beginning, codes concerned general questions about how supplier relations were administrated. It soon became clear that the conclusions of extant research about risk management were too optimistic to fit the case, and a clearer focus on risk management and performance management emerged. This occurred because there was much more evidence about the emergence of distress than about resolving distress. Accordingly, the boundaries between risk management and performance management became more of an issue. It was not clear if risk management processes were considered when making sourcing decisions that responded to performance targets. Then, codes about risk management and performance management began to accumulate, and it became clear that risk management and performance management had separate identities. Gradually, the analysis established an account of risk management and performance as management control practices, developing more codes relating and un-relating them, both physically and abstractly.

The analysis focused on two distinct levels. The first level was the analysis of the practices of performance and risk management practices, demonstrating their potential for overflow. It also illustrated that potentially important issues in the management of suppliers were left out of risk and performance management framings. This analysis, however, did not give any input on how the two systems were related and affected processes and decisions.

Therefore, we decided to follow an embedded case of a key strategic supplier that was in financial distress. This case enabled us to analyse how risk and performance management practices were related in specific processes and thus analyse their dynamics and interaction from distress signals to re-sourcing of transaction flows.

4. Framing and overflowing at Automaker

Framing is the practice of organising and inscribing the relationship between Automaker and its suppliers. This study looked at this primarily from the perspective of Automaker, who attempted to develop governance of the transactions that moved things and knowledge between itself and its suppliers. Through framing, Automaker articulated both the principles and values of the relationship and delegated the tasks of risk and performance management to two departments. Framing specified responsibilities and equipped organising entities with tools and procedures to accomplish them. Framing built on two management control processes: performance management practices with concerns for productivity and cost and risk management practices concerned with the capabilities of the supplier pool. Subsequent analyses about the relations between risk and performance management are structured sequentially; first, the mechanisms of the two framing devices are described in a ‘cold’ period and then during the emergence of a ‘hot’ situation where frames of performance and risk management practices overflowed.

4.1. Risk and performance framings at Automaker: Coordination and tension in management control practices during a ‘cold’ period.

Automaker equipped its management control practices with tools and devices, such as calculations of bankruptcy risk for the risk management of suppliers and target cost calculations for its performance management of suppliers.

4.1.1 Risk management practices

Risk framing concerned the firm’s dependency on suppliers’ ability to maintain their role in the supply chain, and this work was developed and executed from a separate supply risk management unit in the procurement department that was tasked with finding and monitoring actual and potential firms in the future transaction flow:

Here we make the risk analysis... The concern is this: What is the probability of failure of suppliers with which we work? In other words, what is the probability that its failure will lead to having a request for support from Automaker or interruption, for example, of the production line of components, a problem of the delivery of components? Suppose the company that transports components fails, how should we transport the products from the factory to the customer? That's very strategic... And there are a lot of suppliers that we will qualify as strategic because they can create problems and we cannot easily switch to another supplier.

A numerical calculation of the probability of their bankruptcy framed and evaluated strategic suppliers' ability to uphold their business. It considered the suppliers' financial statements, liquidity, and credit performance. Risk management was a financial matter, rather than a risk template, on which other research tends to focus (Anderson et al., 2014; Jordan et al., 2016; Tekathen & Dechow, 2013). It was calculated from the suppliers' financial statements, Bloomberg reports, Dun & Bradstreet scores (payment history and payment trends), company watch scores (a firm's financial health compared to that of similar companies that failed), and the Altman Z-score (bankruptcy probability based on accounting ratios; (Altman, 1968). The risk management template was mathematical, but when being used, additional aspects were added, such as trust- or reputation-based selection criteria (Ding et al., 2013).

The calculation translated risk into a rating framework ranging from A to D (from Automaker's Risk management template; Table 1). This financial framing of the risk helped identify the types of components a supplier was allowed to supply. Only suppliers with the two highest ratings, A and B, were allowed to obtain new component orders from which they could earn significant profits. C and D suppliers were put on hold, i.e., no new orders were assigned to these suppliers, but they could maintain the production of low-value components. Suppliers were rated once per year and more often when there were articulated problems such as failing profitability.

Table 1 around here

Figure 1 about here

Risk management practices were performed via the tool shown in Table 1, and Figure 1 illustrates how this happens during 'cold' periods. Figure 1 shows a long process where component orders (agreements to produce a component type) moved between suppliers over time due to the given risk

rating. It related risk ratios to decisions about allocating amounts of transactions of certain components. In effect, it illustrates that it was possible for Automaker to handle the volatility of the transaction flow by moving component orders among suppliers.

In Year 1, Supplier A's risk rate was downgraded from A to C because of deteriorating profitability and an increasing debt ratio. According to an internal note, Supplier A's financial difficulties were analysed and expected to be merely temporary since they "resulted from two competitor takeovers and research and development costs for products that will be manufactured in future years." Between Year 2 and Year 3, Supplier A acquired another supplier that already had component order 3, which was used widely for automobile factories across Europe. This brought Supplier A new revenues but also new investment requirements in tooling and uncertainty about market developments. Therefore, Supplier A's turnover increased by 8.4% according to Automaker's explanatory note on rating for supplier A. However, profitability started to deteriorate due to the extra investment required. This led to the following explanatory note on Supplier A:

The results of Supplier A are "bad" and above all, they are not in line with the expectations of the group's financial partners and clients... Supplier A had a totally unbalanced financial structure with insufficient equity capital, negative working capital and a debt of ... i.e. 2.7 times its equity capital ... Supplier A then announced that it wanted to sell all of its component orders 1, 2 and 3 activities to Supplier C.

Thus, (largely) because of risk rate deterioration, Supplier A had to stop producing and shipping component orders 1, 2, and 3.

Supplier C acquired component orders 1, 2, and 3, and Supplier A was put on hold as a supplier. Supplier C improved its risk rate from Year 3 until Year 9, but then its risk rate was reduced to C and later D in Year 10, requiring the transfer of component orders 1, 2, and 3 to Supplier D, who benefited from a robust risk rate.

Figure 1 illustrates that it was possible via risk management practices to move transactions between suppliers and that there was a pool of suppliers not all of which had then current relations. There was an option to include and exclude firms to carry the transaction flow between Automaker and its suppliers. There were ambiguities on the financial strength of suppliers and their capabilities, and many of these were articulated by interpreting the ratio through explanatory notes. In particular when

risk ratios deteriorated a risk committee had to be mobilised to make judgment about the component orders that a suppliers could be assigned. When these ambiguities could be handled and when substitutions for a failing supplier (due to decreasing risk rates) were identified, this management control practice appeared to help coordinate the transaction flow and maintain its integrity.

4.1.2. Performance management practices

Performance framing aimed to increase financial performance and productivity by reducing the cost of components. This was developed and managed by engineering and purchasing departments. The performance framing drew on multiple numerical Key Performance Indicators (KPIs) (Table 2). For example, the KPIs of *Purch* focused on continuously increasing suppliers' productivity in low value-added components. The KPIs of *Eng* required cost savings through technical improvements and innovations so that suppliers' engineers could reduce the costs of new components. The KPIs of *Comm* monitored the cost of sales. Since sourcing costs accounted for 75% of the products' net revenue, component costs were key.

Insert Table 2 around here

Table 2 shows the tools utilised by the performance management practices of Automaker. Many types of cost were relevant and likely covered most economic and financial aspects of supplier relations. There was a process of dialogue attached to this framing, as explained by an engineer articulating how the cost of sales worked through a target costing system:

The budget is defined by the corporate controller manager. They say: I can sell this product at this price. Let's say this product, given these specifications ... I sell it on average at [a number] million Euros. I want to make X profit on it. Also, I'm going to get 10% margin. I'll make Y copies. So for this to work, I do not exceed this specific level of investment and require that the cost of manufacturing this product does not go above this target price.

After settling the cost of sales, engineers and purchasing managers developed budgets for high- and low-value components. There was an extended interaction on the KPIs of Table 2, which formed a comprehensive framing device.

These budgets were considered very demanding by engineers and purchasing managers. This raised tension because they were sceptical about the feasibility of cost targets. The costs of sales were

estimated by (absent) corporate controllers through proposed costs based on market standards, but (local) engineers and purchasing managers argued that it was difficult to make accurate estimations on new components because innovation would result in uncertain production costs. Engineers found ways to reduce costs by redesigning old components—instead of designing new ones—so that negotiations would be based on (better) known costs. Purchasing managers reduced costs and put pressure on suppliers' margins on low-value components in exchange for giving suppliers an advantage in new component orders. An engineer reflected on these demands, stating that even if Automaker's purchasing managers knew that suppliers had to 'make a margin' to survive, they tended to ignore this. They knew that the performance framing would tend to make suppliers 'financially weak.' Even in this 'cold' period, where cost targets were honoured and new suppliers could take on the roles of failing suppliers, there was tension about the meaning of performance and risk.

Thus, the performance management device framed interactions with suppliers in terms of cost reduction. The tension brought about by this framing considered unit costs across the transaction flow, which were reduced through the target costing system, implying a reduction in investment, cost, and prices while still requiring an increase in quality. This challenged the rationale of the risk framings, which would favour suppliers having a low risk of bankruptcy.

Cost reduction led to increased outsourcing so that Automaker retained very little design work, which was organised instead by strategic suppliers:

And the outsourcing trend went deeper so that people within Automaker who had the ability to draw new components were not allowed to draw... Engineers were practically the managers of the suppliers' engineering teams... When I was at the engineering department we were not even allowed to use the word "designer", it was not politically correct. Designer was a word designating suppliers' engineering teams. Automaker's engineering teams were professional buyers not designers.

Cost-based outsourcing generated a shift in competencies. Engineers were not allowed to design, the responsibility of which was located with suppliers. Such concerns with technology and skills were absent from performance and risk framings, and they were to be managed by suppliers themselves. Engineers were aware that these tensions were present. However, the tensions were not widely circulated, even though engineers had pointed out these problems. In doing this, engineers suggested that the framing of performance management practices may be debatable because there were

important things existing outside the framings. These ‘absent things’ were technology, skills, and discretionary investment funds. As one quality engineer explained:

It was up to suppliers to develop the concerned components, to manage the problem, not him [the manager]; that was the philosophy. You see, when you prevent engineers from committing on components, telling them that it is the supplier who has to commit to components, it is not easy. Well, in the end the engineers adopted this logic and they became well aware that they are not supposed to design components... And they think, as they are not on the supplier’s premises, that maybe they [the suppliers] have the problem under control and the required solutions work... [But] There were so many other cases where we had problems!

The framings excluded concerns related to technology and emphasised framings of cost and financial risk. The framings identified Automaker as a financial space based on the responsibility for decreasing the cost of sales and subjectivising engineers as financial controllers (Miller & Power, 2013). Engineers became professional buyers; thus, design and development were not their responsibility. They were suspicious about supplier competencies, but there was uncertainty about whether their suspicions would lead to actual problems. It seemed unclear whether suppliers could handle the development of components cost effectively. Therefore, concerns about technological competencies were ambiguous enough to be ignored but clear enough to cause frustrations. Here, the performance management framing was a bit tremulous.

4.2. The case of Supplier E: A suffering strategic supplier

It was possible for the two framings to maintain relations with suppliers continuously over long periods of time (Figure 1). The reduction in cost could be achieved, and it was possible for the risk department to find new suppliers that could substitute suppliers that were having financial difficulties. This tension existed during ‘cold’ periods, but because suppliers in this period were able to develop and deliver components, nobody questioned the framings. Production and product development were organised across a space of suppliers, and this network did perform. Transactions flowed and cars were produced.

However, there was doubt about the sustainability of the framings, which was challenged in particular when performance framings had been so successful that suppliers would suffer financially and when

the risk framing would not be able to identify good substitutions when a supplier's risk rating deteriorated. This was illustrated by strategic Supplier E, whose risk of bankruptcy increased over time, and it turned out to be difficult to find substitutions for it.

4.2.1. Emergence of the 'hot' period

Supplier E was a strategic supplier that had a reputation for being able to develop and produce high-value components. It was an important part of Automaker's production network, as it had superior capabilities in its area. However, Supplier E also had financial difficulties, and the risk ratings proposed that it was on the verge of bankruptcy. As it was a strategic supplier and difficult to replace, Supplier E put the integrity of the supply chain at risk. This was a situation where, over time through performance management, costs had been reduced. So, to Automaker, Supplier E had been profitable. In this situation, the "list of actors, as well as their identities, will fluctuate in the course of the controversy itself and they will put forward mutually incompatible descriptions of future world states" (Callon, 1998a, p. 260), making it increasingly difficult to "arrive at a consensus on how the situation should be described and how it is likely to develop." In conceptual terms, when the 'hot' period of time arrives, new actors – people and tools – framed the situation anew. First, the existing framings – risk and performance – were side-lined because they could only economise the transaction flow and the integrity of the transaction flow required investment. Second it was difficult to know precisely which decisions were to be contemplated and therefore delegation was not the solution – escalation was.

A 'hot' period is when the established framings do not offer much coherent guidance about useful courses of action. This is where the interventions along the framings make little sense. Even if risk rates are bad, it is still necessary to find capable suppliers to uphold the integrity of the transaction flow, and although productivity and cost may be hampered, it may be necessary to invite new suppliers by increasing the price of components. This is where the transaction flow cannot follow the framing of management control practices. This is when risk rates and cost and productivity measures were put on hold, and instead, as will be clearer subsequently, a new set of framings around skill, capability, technology and extra money gained more relevance.

Supplier E was a leading manufacturer of different components with design and engineering capabilities that helped the supplier establish close relationships with several of Europe's leading car manufacturers, including Automaker. A purchasing director warned that Automaker was highly

dependent on activity from Supplier E “because of the diversity of products, know-how and proven competitiveness, which made Supplier E present on almost every product of the firm.” Supplier E had succeeded in increasing its share of Automaker purchases, and this dependence required Supplier E to have a risk rating of A.

When Supplier E experienced financial difficulties, Automaker could not quickly find another supplier. Therefore, Automaker started to obtain new resources by financing raw material purchases and by providing new high-value component orders to help it increase its profitability. This resolved the immediate bankruptcy problem but also increased Automaker’s dependence on Supplier E. An engineer at Automaker explained:

Supplier E was not a very robust supplier; it was a completely subservient supplier (...) We asked them: Do you know how to make this and that and they knew of course that they had their backs to the wall to make it. They used processes that were not developed and therefore not reliable. Finally, they made a commitment in situations where they (...) were not certain that it had the expertise and the reliability of the technical solution required. Therefore, Supplier E pays through the nose. So it was not very surprising that they had financial troubles.

Supplier E in turn accepted responsibility for new components for which engineers were not certain they had the right expertise. Engineers from Automaker were concerned about Supplier E, as they imagined that Supplier E had delivery problems, but they could not be certain that Supplier E could not solve these problems by itself. This uncertainty prevented engineers from speaking out about technical difficulties, which were already outside their remit. Engineers instead focused on the target costs framed by performance management. Instead of indicating that Supplier E was a problem for Automaker, engineers allowed the KPI *Eng* (unit cost) to be increased. They were encouraged to manage Supplier E at a distance and trust its capabilities to solve components’ technical problems:

The manager of the project concerned with (a particular set of) components never said anything to his boss! Regularly the boss told him: “Well it may be necessary one day to check Supplier E’s ability to produce... (The manager of the project said:) We should talk about Supplier E’s competences because there is a problem! But he (the manager) didn’t say anything because he had no authority on these types of concerns. He (the manager) knew very well that Supplier E appeared “shaky”, but he felt it was not his job to say it.

Such suspicions about technology and skills were absent from the risk ratings of the risk framing. The risk management system only focused on predicting bankruptcy based on historical financial ratios and left little room to evaluate capabilities and expertise.

An increasing number of orders were given to Supplier E, who promised to reduce the cost of components as required by the performance framing. Supplier E accepted considerable price reductions on low-value component orders in exchange for orders of new, more profitable components:

All that because the people (the purchasing managers) who were there at the time, they gave, gave, gave, gave, and gave businesses (for orders on new components) to Supplier E while they kept pushing, pushing, pushing! Supplier E ended up facing financial problems!

Later, the commercial failure of one of Automaker's products—in which Supplier E had invested significantly to develop new components—contributed to its bankruptcy:

Supplier E had plenty of (those new) components. The commercial failure of (that product) reduced (...) the number of orders! That is, there were less volume than expected! The problem was that the volumes of orders were supposed to pay for the development of components and production investments made by the supplier. You know in a project all production investments are finally paid by the supplier. The supplier is supposed to get its investments back (...) through the forecast order of components.

The possibility that Automaker would not honour its forecasts was neither part of the risk nor the performance framing, and this uncertainty in the forecast of Automaker's product was not specifically reflected as a commitment to the contract. Automaker's concerns and the uncertainties facing Automaker were largely absent as a source of uncertainty for Supplier E. However, this uncertainty was central to Supplier E's crisis, and in turn, it became a risk to Automaker when Supplier E left the transaction flow. As one purchasing manager explained:

Supplier E was about to close its businesses, and we were the only manufacturing firm using almost all the production capacity of one of its two (...) production sites... So it posed a real problem... Let's say that 80% of Supplier E's turnover was devoted to us.

Supplier E was highly dependent on Automaker because 80% of its turnover was devoted to Automaker. It was also a problem for Automaker that required the components to uphold the integrity of the transaction flow.

During the ‘cold’ period, the framings tended to operate performatively—the framings produced what they described. However, as part of a myopic process, it was difficult to see and appreciate how the framings gradually generated tensions that were difficult to contain. The risk framing encouraged bankruptcy risk evaluation but was less supportive of technology risk evaluation. Performance framings encouraged cost reduction, but it was difficult to handle engineers’ sense that suppliers would accept orders whose economic effects and technological capabilities they might have difficulty both understanding and handling. This was a complex and ambiguous situation because high-value components might increase their margins, which were continuously reduced on low-value components. Therefore, tensions arose within the framings that, for a long time, had facilitated their coordination and alignment. However, tensions gradually grew because of two endogenous things: performance framings led suppliers into financial challenges, and the risk framing saw this as a potentially failing supplier rather than one that would uphold the integrity of the transaction flow and be profitable. In this situation, the two framings were related via their effects, even though they were not related as singular management control practices given the delegation of responsibilities and tasks.

The relatedness of the two framings initiated the ‘hot’ period via their effects when their performativity led to the opposite result specified by the framings and the tools embedded in the framing were not those required to maintain the integrity of the transaction flow, leading to overflow.

Automaker had limited options to respond to this situation. They developed three options to consider how to distribute the transactions across its production network. They could (a) invest more in Supplier E (commit extra discretionary investments) and prevent it from going bankrupt; (b) insource low value-added components (requiring new investment in Automaker capabilities); or (c) invest in and move Supplier E’s activity to Supplier F, a new supplier (requiring investment in switching costs). All three strategies were costly and tended to increase component costs. In the relationship with Supplier E, all three strategies were contemplated.

4.2.2. Phase 1. Propositions about insourcing

Supplier E's bankruptcy was a likely scenario. Insourcing components to Automaker was difficult due to the high specificity of production and associated assets, and bankruptcy would require the transfer of the supplier's production machinery. Automaker considered insourcing, but this was difficult because the firm's engineers did not have Supplier E's technical expertise, which had gradually been eroded when Automaker moved to manage the development of components by target cost reduction rather than by technical specifications. A purchasing manager wrote to the CEO of Automaker:

... insourcing was investigated but was not selected for the following reasons: Given the wide variety of components supplied and associated technologies, the total insourcing requires time estimated at 18 months. Such an operation would require the mobilization of scarce resources such as engineering, logistics and purchasing resources ... the associated costs of insourcing the components consist of the adaptation of the manufacturing processes of the buyer taking over Supplier E activities and the associated price increases. These costs are estimated at around 10% of Supplier E's current revenue (...) it would not solve our problems (...). Additionally, our insourcing would precipitate the liquidation of Supplier E.

The insourcing of Supplier E's production was difficult for Automaker, as it would be costly and only solve the problem of direct purchases, not orders with other suppliers interacting with Supplier E. There was also the problem of retrieving the technology, moving production tools to another location, or obtaining the blueprints or requisite tools. In some cases, suppliers' top management and unions could block access to tools or blueprints because they were important for negotiating future compensation with manufacturing clients and were part of the resources and capabilities that the organisation possessed:

Now, do these people (Supplier E actors) agree to give their blueprints? Do they agree to give their expertise to this new entity (the buyer taking over Supplier E activities) that wants to swallow them, so you know, you can imagine they will be reluctant to give them.

Another possibility would be to ask engineers at Automaker to redesign the blueprints. This strategy would be expensive and economically unviable because it is common for suppliers to modify their production tools to adapt to clients' demands; thus, the blueprints would have been changed over time, making it more difficult to recreate them. Engineers would have had to start from the much earlier blueprints, and doing so would be both costly and slow.

Moreover, there was the problem of skills. Engineers at Automaker did not have the required expertise to redesign suppliers' machinery because they were required to manage suppliers, not to manage the development of suppliers' technologies. Engineers explained that the lack of competencies within Automaker was the result of continuous organisational demands for engineering departments to manage strategic suppliers instead of designing new components or being concerned with suppliers' technical competencies. Engineers were restricted from involvement with suppliers' innovation and development activities, as a Senior Engineer explained.

Actually, I did have on my team a group of people who had developed components on their own but they had such a range of components to manage that they had to abandon them and then they were finally pushed to manage more components... They were supposed to be the managers of suppliers and not designers anymore... It was a real objective that the engineers were committed to manage components and not develop parts in-house... This was the responsibility of the supplier...

Competencies in developing components were lacking in Automaker as their role had changed from being designers to being cost controllers. It was suppliers' responsibility to design components and master the needed development and design competencies. Therefore, engineering competencies were a barrier to insourcing components from the supplier. Facing the supplier's bankruptcy, Automaker had to invest in skills to be able to manage the supplier's expertise in-house, making insourcing a complex strategy:

In the case of Supplier E, insourcing components was a gas plant for us. It was not only the problem of killing the supplier by taking out its activity. It was the problem that we were not able to absorb all the sourcing activity. You know very well what happens when you insource. You must develop the activities again, you must re-develop the concerned components. This is the basics of sourcing: First, you kill a supplier that developed and produces components and then you decide who is going to do it? Therefore, this means that the firm that takes over must be able to re-produce the components.

Automaker was thus dependent on Supplier E, and the possible solution to insource or change the production location was expensive due to the lack of technical blueprints and competencies. Therefore, it seemed reasonable instead to attempt to transfer resources to Supplier E and attempt to prevent its bankruptcy. This would increase its risk rating and make production more costly.

4.2.3. Phase 2. Transfer of components from Supplier E

Once the supplier was in financial distress, one solution to maintain the flow of components would be for Automaker to inject substantial financial resources. As the senior purchasing manager explained, “once the supplier is in trouble you have the choice... The conflict arises: Do I support the supplier financially or do I decide to do without it? An economic and technical assessment is made.” Refinancing would involve overriding the risk framing, which would suggest termination of the relationship due to financially weak risk ratings. It would also override the performance framing since it would consist of offering new component orders, thus improving the supplier’s cash flow despite their risk and performance.

Automaker could increase financial investments to a suffering supplier to uphold the integrity of the supply chain. The senior purchasing manager continued:

In this case we can clearly see engineering insisting we support the supplier... Their development time estimation of alternative sourcing is often very long and so costly... that we say: “Well here, it’s downright impossible to develop an alternative source!”

When collapse seemed likely, neither did risk nor performance framings underwrite interactions. It was possible to inject discretionary money, and it was possible to transfer the production of components to low-rated or risky suppliers. However, both contradicted the two framings. Automaker would be hurt by laying off Supplier E; thus, it had to pay to keep Supplier E producing its components until an alternative source was found. Despite this, Supplier E filed for bankruptcy.

4.2.4. Phase 3. Moving low-value component orders from Supplier E to Supplier F

When Supplier E went bankrupt, Automaker turned to an alternative source. A note written by the controller in charge of risk ratings at the time suggested three potential suppliers, of which Supplier F—another strategic supplier of Automaker—was favoured. An engineer explained that even though he was unsure about the suitability of Supplier F buying Supplier E’s production sites, it was practically impossible to find another supplier:

I was not particularly enthusiastic about Supplier F, but clearly at the time our problem with the buyer was to find suppliers willing to take over Supplier E production sites, and we consulted quite a number of them.

When Supplier F proposed buying Supplier E's production sites, Automaker's managers were in a difficult situation because they doubted Supplier F had the financial and managerial strength to take over Supplier E's activities. However, at the same time, they saw no other choice because they needed Supplier F's technology and skills to maintain the transaction flow. This was more important than its relational risks (Anderson & Dekker, 2009, p. 206) :

When Supplier F started showing interest in the bankrupt supplier, the situation was a bit confusing. Right away, we felt Supplier F had very limited financial structure and managerial skills to swallow the bankrupt supplier that was truly in a difficult situation.

Supplier F took over Supplier E. Even though Automaker needed Supplier F, Automaker was suspicious that their competencies were not adequate, like Supplier E. A purchasing officer argued:

I remember a meeting I attended with the owner of Supplier F and the Chief Manager [of Automaker] said: "Are you able to take this thing? Be careful! Do not come to me later, under my skirt, tears in your eyes telling me that you did not know how to do things ... Yet, Supplier F maintained its offer."

Supplier F had to commit to components in the same way as Supplier E. Competencies were their responsibility. Supplier F, however, required Automaker to increase the prices of low-value component orders and provide further new components in exchange for taking over Supplier E's component orders, which Automaker needed. One quality engineer explained:

We had to give volume to Supplier F, saying: "You keep the (low-value components) components". Anyway, we cannot put it anywhere else. Suddenly Automaker gave Supplier F new component orders (...), so we were completely tied up in things like that! Strategically, it is interesting.

This strategic conundrum arose from overriding the financial framing. Costs went up rather than down because additional resources had to be committed to move the production of low-value components to Supplier F. Otherwise, it would have immediately become a victim of the risk framing. Strategically, this also increased the dependency of Automaker on Supplier F and raised the question of whether Supplier F could be as productive as or even more productive than Supplier E. One engineer explained that Supplier F was able to negotiate steep price increases:

Supplier F, of course, bought Supplier E, but it came with a request, a request for price increases. After Supplier F had bought Supplier E, it asked for, I do not know... 7X euro per component while Supplier E charged 1X euro or 3X euro per component, I do not remember! So it asked for an additional cost that was completely phenomenal.

Supplier F was able to negotiate increased margins on low-value component orders. Automaker had no real choice because, otherwise, the supply chain would lose integrity. It was also doubtful whether Supplier F would be able to develop competitive costs on new component orders because it was not clear that it had the skills to manage innovation:

The price of components was defined according to the innovation and development costs supported by the strategic supplier. These costs were not fixed and were calculated in hours of Research & Development resources. To these costs were added the Automaker components assembly cost within suppliers' factories! These are heavy budgets! So when Supplier F said: "For these components, I (Supplier F) will require 2000 hours of R&D resources" ...but thanks to our (Automaker) experience (with the same kind of components) we were aware that the components required 3000/3500 hours of R&D resources and not 2000 hours, I did not know how it could manage to do so.

Supplier F seemed to calculate very aggressively and completely beyond Automaker's expectations. This was a sign that Supplier F would not be a long-term solution. Supplier F would likely become a risk because it accepted too few resources for development work.

However, even after having recognised that 'hot' periods required other management control practices and other tools than those embedded in risk and performance framings, Automaker acted on Supplier F in the same way it acted on Supplier E. Automaker gradually requested price reductions from Supplier F and therefore transactions continued to be risky despite rectifications. During the 'hot' period, considerations from risk and performance framings were side-lined and substituted by other considerations, such as technology, skills, and new discretionary money, which were new framings for the situation and were both costly and outside the risk and performance framings. However, when the situation was considered 'cold' again, risk and performance framings again maintained the transaction flow, and a new cycle of cost reduction and bankruptcy risk was initiated. Risk and performance framings returned. Automaker knew that at some point, there would be a new important overflow when risk and performance framings did their work. This design could not evade

its tensions, and overflow was inevitable but rare and costly because the transaction cost of technology, skills, and extra investment was framed in the coordination and alignment of the two framing devices. Eventually, Supplier F went bankrupt, but an overflow did not emerge. At that time, risk management practices had established alternatives to Supplier F. The difference between the cases of Supplier E and Supplier F is small but the *when* was different as risk management at that time did produce alternatives to Supplier F. Due to due to the *when* of the relationship, the effect of a failing supplier was different.

5. Overflow in controlling the transaction flow: The dynamics of risk, performance, technology, skills, and discretionary money

During a ‘cold’ period, risk and performance framings were not related. They were delegations seeking to handle different problems and cope with different responsibilities. Each frame had its own focus; the performance framing focused on cost reductions, and the risk frame circulated suppliers in and out of the transaction flow by their financial strength. When these delegations were able to perform their responsibilities, the period was ‘cold.’ This does not mean that the framings were uncontested, as they helped change the quality of relations with suppliers. For example, engineers were not allowed design, and it was not their job to question suppliers’ commitment to develop and deliver components.

The ‘hot’ period emerged when the two framings were unable to contain Supplier E’s problems in relation to its promise to develop many components whose costs could not be recuperated, as sales forecasts were too optimistic. For Automaker, this was a problem, as there were no obvious alternative suppliers to Supplier E. Supplier E was in the process of failing, leaving Automaker with limited options. It suspended the reliance on the risk and performance framings and added new framing devices, such as technology, skills, and discretionary investments and resources. While the risk and performance framings made financial performance central, three new ones added cost and reduced financial performance. A ‘hot’ period is an effect of the relatedness of management control practices. It is not an effect of misaligned systems, overt politics and disagreement, system misuse, or cultural differences. It is enabled by the different responsibilities of management control practices. In the case of Automaker, the supplier could not be both ‘financially strong’ and ‘financially weak’ even if the aspirations for control at Automaker seemed to imply this.

Generally, the case illustrates how framing/overflow can refocus attention to the relation between multiple management control practices.

5.1. When are management control practices related?

Automaker's two management control practices were separated by framing—by design. This is a process of delegating responsibilities, decision rights, and associated tools and processes. Compared with other research about multiple control practices, the case of Automaker shows their organisational separation in the sense of delegation and also their strategic interdependence, as risk and performance were two opposing forces in transaction flow management.

In a sense, Automaker's two framings constituted a package of control systems (Bedford et al., 2016; Malmi & Brown, 2008) because they existed simultaneously but their relations were not specified in any great detail. Similar to the theory of the package, this case shows that several management control practices exist, but it continues to be unknown how they are related because they do not exist in the same space, only at the same time. Therefore, the idea of the package is only a preliminary characterisation of the relations found in Automaker. Automaker illustrates that relations happen because of the effects of control practices more than in their direct relations as for example in a calculation that finds a balance between the two concerns. Relations are more abstract in the sense that the combined effects of risk and performance management can only be seen when there is a problem with suppliers failing. As practice, relations are superseded by a delegation that requires strong framing (Yu & Mouritsen, 2020).

It may also be that Automaker's two management control practices are systems (Gerdin, 2020; Grabner & Moers, 2013; Guldenpfennig et al., 2021) in the sense, for example, that investing more in risk management practices may make performance management easier and more powerful. This might happen if risk management would be able continuously to find supplier candidates that would have appropriate capabilities to develop components and handle cost and productivity requirements. This may happen during 'cold' periods, but it hardly happens during 'hot' periods. During 'cold' periods, it may be a system; during 'hot' periods, this is hardly the case. Therefore, the determination of whether there is a system or not depends on when this is considered. This may change over time (Andon et al., 2007; Mouritsen, 2005; Quattrone & Hopper, 2001).

In a sense, it may also be that Automaker's management control practices are a sensible result of a historical accumulation of bits and pieces from many control practices over time (Cooper et al., 2019; Yu & Mouritsen, 2020). It does appear, for example, that engineers' roles have changed over time as the performance framing took even more power. It seems that because of performance framing, engineers changed their role from design people to supply controllers. However, this is an addition to the framing that changes management control practices and which creates turmoil and ambiguity rather than increases sense making.

Therefore, the *when* of relations is relevant. *When* does not happen all the time. Control practices do exist over time but may not meet and may not become integrated as a set of practices that consider two management control concerns simultaneously. They exist as independent practices because of delegation, and therefore, generally they are not balanced in the sense of trading off properties of the two control practices. They are separated and individualised; as a framing, each management control practice 'cuts' its environment out. The *when* happens in episodes, as event time (Cuganesan, 2021), where overflows emerge from accumulated tensions from the paradox that risk framing seeks 'financially sound' suppliers while performance framing tends to make suppliers 'financially weak.' When this happened, the two framings were unable to uphold the integrity of the transaction flows, and they were substituted by a set of new framings that held new and different tools and procedures found in skills, technology, and discretionary money. Here, the risk and performance framings moved into the background and performed no discernible roles. Here, the two framings were side-lined by new ones that have largely opposite, or at least different, concerns to them.

Relations such as those found in Automaker are not only much less intensive and only episodically dramatic than those found in other research about packages, systems and accumulations of multiple management control practices. They are also much less intensive than the relations discovered by research that focuses on the contradictions, competition or incompatibility of and between management control practices (Ahrens, 1996; Christensen et al., 2019; Dent, 1991; Fischer & Ferlie, 2013; Kurunmäki et al., 2003; Lowe & Koh, 2007; Mouritsen, 1999; Mouritsen et al., 2009). These items of research analyse control tools and practices as ammunition machines (Burchell et al., 1980) where control practices are not only at odds with each other but they also meet (confront) regularly. They are situated in the same times and places and enter into combat.

The complexity of the *when* of relations among management control practices is particularly important when considering the effect of overflow. In a sense, an overflow could be a misfire or a

counter-performative response, producing adverse effects (Boedker et al., 2019; Callon, 2010). However, some of these effects happen because of the framing rather than despite it. They happen because framing works. Such overflow differs somewhat from other ways of thinking about the friction of relations. Other researchers have, for example, analysed and discussed situations where framing is a political contest between interested groups (Christensen et al., 2019; Christensen & Skærbæk, 2007; Themsen & Skærbæk, 2018; Vinnari & Skærbæk, 2014), where logic and culture challenge each other (Cushen, 2013; Dent, 1991; Fischer & Ferlie, 2013; Hyndman & Lapsley, 2016; Mikes, 2009), and where there is friction between modes of justification and the possibility of compromise (Annisette et al., 2017; Annisette & Richardson, 2011; Chenhall et al., 2013; Revellino & Mouritsen, 2009, 2017; Stark, 2009), in addition to managerial responses, such as balancing acts (Hansen & Mouritsen, 1999; Stouthuysen et al., 2019; van der Kolk et al., 2020). However, these pieces of research tend to consider situations where there is competition between the appropriateness of framing in relation to concerned groups.

This was not the case in Automaker; people abided generally by the framings and they performed their roles. This means that the framing helped to perform the world. As performativity, the framing encouraged myopic behaviour and people, even if they (thought they) saw tensions accumulating, it was not so obvious how they could be put forward, as during ‘cold’ periods of time, generally results convinced top managers that the framings worked.

5.2. Framing the tools of performance measurement

Framings operate through tools, and in the case of Automaker, risk drew on a tool for evaluating bankruptcy risk, and performance drew on a set of measures from a target costing procedure. As shown in Tables 1 and 2, these are numbers on paper or on a computer screen. Typically, for both risk and performance management practices, tools are calculations or visualisations that provide windows to the world that enable action at a distance (Arena et al., 2017; Dambrin & Robson, 2011; Justesen & Mouritsen, 2009; Mennicken & Espeland, 2019; Mikes, 2009, 2011; Mouritsen et al., 2009; Robson, 1992; Robson & Bottausci, 2018).

However, the case of Automaker illustrates a problem to managing via visibility through numbers (Roberts, 2018). Managers can only see what is presented to them by framing. This is important not only because the framing could have been different (Farjaudon & Morales, 2013; Mouritsen et al., 2009; Strathern, 2000; Tsoukas, 1997) but because not all framing devices are based on numbers. As

Automaker showed, numbers are important in the rather long stretches of ‘cold’ periods, where it is possible to hold together the responsibilities that have been delegated to organisational entities. However, in ‘hot’ periods, new types of mediators occupy the framing, and bankruptcy and productivity are not at stake, but technical matters, such as machinery, blueprints, and means of production are; rather than numbers, actors were concerned with (the lack of) individual and organisational skill and capabilities. When technology and skill turned out to be difficult to move, another mediator in the form of discretionary money, investments, or other resources made the productivity and profitability requirements of risk and performance ratings irrelevant. Then, new framing objects—skills, technology, and discretionary money—were redesigned in the transaction flow by the following: differentiation of capabilities between the focal firm and supplier; the supplier’s relationship with specific investments; the focal firm’s commitment to provide profitable business for the supplier; and the ownership of jointly produced planning and design materials, among others. These concerns only exist in ‘hot’ periods. The *when* of ‘hot’ periods is accompanied by the substitution of number-based framing devices for other devices based on material transformations.

With this redesign, Automaker entered another ‘cold’ period with Supplier F as a strategic supplier. However, the ‘cold’ period also re-introduced the previous delegation of control to the framings and the devices in risk and performance practices. The friction between risk and performance enabled the ‘hot’ period but did not interfere with the relevance of this set-up. After the ‘hot’ period, in the subsequent ‘cold’ period, risk and performance framings re-emerged to control supplier relations. Therefore, when looking at the firm during ‘cold’ periods, framings tend to suggest the ability to coordinate and align practices. It may be that the ‘cold’ situation can be extended for a (long) period via managerial interventions (Andon et al., 2007; Hansen & Mouritsen, 1999; Quattrone & Hopper, 2001; Stouthuysen et al., 2019; van der Kolk et al., 2020), and therefore, it may be understandable that there were no obvious attempts at reframing the situation more generally. Even with a new framing, there would be (another kind of) overflow. Instead of re-arranging the framing, top managers relied on the two organising entities to make do and extend the durability of the framing as much as they could. From time to time, this will still create ‘hot’ periods.

Would it be possible to avoid ‘hot’ periods? One argument against is that the management control practices are delegated to different aspects of the transaction flow and therefore to some extent they are myopic. It is not so easy to see the new investments made in the ‘hot’ period of time as trade-offs between risk and performance management. Risk and performance economised the transaction flow

while the ‘hot’ periods made it more expensive. Another argument against is that success experienced during ‘cold’ periods of time was difficult to argue against. The visible results in cost reduction were much louder than the sounds made when people talked about suppliers’ possible mistakes when they accepted economically strained contracts (Kavanagh, 2014). Talk is local and evanescent while the visibility created by tools shines and can be seen from afar also by corporate controllers.

6. Conclusions

The paper shows that the *when* of relating management control practices is central to understanding how relating, un-relating and re-relating happen as multiple management control practices are rarely, if ever, always related everywhere. This is important in relation to both systems and package literature (Gerdin, 2020; Grabner & Moers, 2013; Malmi & Brown, 2008) and to literature on the accumulation of management control practices (Cooper et al., 2019; Yu & Mouritsen, 2020). Management control practices are often delegated and therefore, as practices, are oriented towards certain domains, such as risk and performance. For example, in the case of Automaker, they framed differing tools and responsibilities to organise an object, such as the transaction flow across firms. This makes control practices independent of each other, making them productive and focused. Ambiguity is removed by framings that put the responsibility for a lot of difficult problems to the outside of the framing; if they were included in the framing, it would be more complex, ambiguous, and possibly impossible to execute. Therefore, as shown by Automaker, the *when* of directly relating the two control practices is rare.

However, the two sets of control practices are related by their effects that become contexts for the development of ‘hot’ periods. This happens when the two framings individually perform well to their own standards; costs are reduced, and only suppliers with financial stamina are included in holding the transaction flow. Here, the two framings are independent as practices. However, sometimes they cannot contain their results when suppliers start to go bankrupt because their prices have been driven too low. When this occurs, there is a ‘hot’ period, and here, the two framing devices are not related because they are suspended. Instead, other framing devices that are more material (skill, technology, and discretionary money) take over, leaving little space in the delegated framing devices (Tables 1 and 2). *When* this occurs, neither risk nor performance framings underwrite practices.

Their existence recurs, however, when the redesigns prompted by the ‘hot’ period have a resolution. Then, risk and performance recur as framing devices, and in the future, there will likely be new ‘hot’ periods framings can never consider everything. A new framing would have to be devised, and this is not easy. If not attempting to coordinate and align the transaction flow by risk and performance concerns, then what? The ‘hot’ period may be postponed by managerial intervention (Andon et al., 2007; Hansen & Mouritsen, 1999; Mouritsen, 2005; Reusen & Stouthuysen, 2019; van der Kolk et al., 2020) but probably not all the time. There will be new ‘hot’ periods where management control practices stand in the way of each other and existing framings help produce overflows.

More generally, management control practices are dispersed organisationally. They are associated with different organisational problems and they are therefore not necessarily related in any interactive sense but more in the sense of handling different objects, subjects and time-horizons. They are thus not necessarily connected substantively (Yu & Mouritsen, 2020). They enact the world differently (de Laet & Mol, 2000; Law & Singleton, 2005; Mol, 2002) and enable different types of practices on the same object. Compared with the transaction flow, it is different between risk management functions and performance management function. These different practices can survive without much coordination even if it does make things difficult. As Law and Singleton (2005) show a liver disease is a different thing in a hospital compared with a social worker’s office: in the first instance the solution is stop drinking, while in the social worker’s office this is not a solution as the alternative is harder drinks. These are incompatible: it is impossible to stop and not stop drinking.

This is also the case for management control practices. It may be difficult to trade off such practices because the calculation would be cumbersome. An alternative might be to rank them so that some concerns become more important than other ones (Annisette et al., 2017; Annisette & Richardson, 2011). And then, there are situations where the control practices cannot exist simultaneously as in the case of Automaker and where, during ‘hot’ periods of time, the whole design of control practices has to be side-lined for a while. This is when completely new framing devices are called upon. This is *when* it seems obvious that existing framings deliver only few cues to the concerns facing the situation at hand. There is an interesting relation between the normal run of established management control practices and their *episodically fluid* consequences that can be expected to happen because they are overflows, but not when and how.

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Table 1: Risk framings: Four classes of suppliers (A to D) and their possible roles in relation to Automaker

Rating	Allowed a place in the panel of new suppliers	Allowed to supply high-value component orders	Allowed to supply low-value component orders	Presented as case in supplier risk committee if at risk	Explanation of the supplier risk
A	Yes	Yes	Yes	No	An excellent rating and certification of the company with no reservations. Absence of financial risk with as much as a maximum dependency level of 30% of the total turnover of the component over a period of 3 years.
B	Yes	Yes	Yes	No	Certification “with reservations” linked to either financial fragility or uncertainty over the medium term, requiring half-yearly monitoring of the supplier.

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C	No	No	Yes	Yes	Signifies financial risk and puts a supplier on hold. That is, no new component orders are allowed without formal consent from an <i>ad hoc</i> risk committee.
D	No	No	No	Yes	Signifies serious financial risk justifying immediate referral to an <i>ad hoc</i> risk committee. The supplier runs a high risk of bankruptcy. Any order is strictly prohibited, and an <i>ad hoc</i> risk committee prepares disengagement plans.

Table 2: Key Performance Indicators in the performance framing

Key Performance Indicator	Name	Definition
Purch1	Purchasing performance	Measure of reduction in costs and associated benefits of purchased parts. Measured monthly Two main indicators 1. Height: % variation in price compared with previous year 2. Savings: monetary amount of from specific products compared with previous year due to price changes.
Purch2	New product improvement	Measure of value generated by new models by comparing the price of the substitute product with that of the replaced product plus cost of technical improvement. Measured ½ yearly
Purch3	Created value	Measure of value of sourcing from different localities, countries and geographies with different economies. Measured ½ yearly
Eng4	IOR synergies	Measure of improvement in purchasing costs due to re-design of components. Measured monthly
Eng5	Punctuality of commercialisation agreements	Measure of on-time delivery of commercialisation agreements per region. Measured monthly
Eng6	Quality costs	Measure of quality costs at the end of the supply chain by the number (proportion) of defective components of a car model /per month Measured monthly
Eng7	Selling price by product's technical improvement	Measure of % variation in selling price due to technical improvements compared with replaced product Measured annually
Eng8	Innovation costs	Measure of cost of innovation processes plus development costs and maintenance of serial production. Measured monthly
Prod9	Transformation value	Measure of performance of manufacturing plants. The total expenditure incurred by a factory.
Comm10	Commercial contribution.	Measure of contribution: turnover minus cost of sales minus marketing costs and operating costs. Variation by region Measured monthly
Ress11	Staff motivation	Measure of motivation by external accredited agency
Ress12	Management quality	Measurement of management quality by an external accredited agency

Figure 1: An example of using risk ratios

