



Supply chain decision-making supported by an open books policy

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ABSTRACT

Based on a study of a buyer–seller relationship in the automotive industry, this article identifies 17 different decision-making processes where openly sharing cost data—a so-called open books policy—plays an important supporting role. These processes relate to supplier selection, various activities that occur prior to production, and the full-speed production stage of the exchange process. Overall, open books plays the greatest role in the pre-production stage, although it is found to support decision-making relating to supplier selection and decision-making during full-speed production to a greater extent than the literature recognizes.

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1. Introduction

Due to escalating global competition, many firms are aggressively looking to reduce costs. One increasingly important response to cost pressure is outsourcing, i.e., buying goods and services that can be more efficiently produced externally (e.g., Schotanus and Telgen, 2007; Axelsson and Wynstra, 2002). When purchasing costs constitute an increasing share of manufacturing costs, though, belonging to an efficient supply chain becomes critical (Cottrill, 1997; Cooper, 1995; Hines, 1994; Schorr, 1998; Farahani and Elahipanah, 2008; Chan, 2003). To achieve cost efficiency, efforts are often directed towards careful selection and development of the supply chain (Chan, 2003; Chan and Kumar, 2007; Jain et al., 2004). One increasingly important aspect of this is collaboration between buyers and sellers in cost reduction programs (Berry et al., 2000; McIvor, 2001; Carr and Ittner, 1992). Joint cost reduction, however, often involves *cost transparency* in the supply chain.

When suppliers disclose cost (and similar) data to buyers, this is termed *open books policy* or *open books*

(Ellram, 1996; Christopher, 1998). The relevance of open books in practice is increasingly reflected in research. Studies can primarily be found in two fields, production and supply chain literature (e.g., Christopher, 1998; Hines, 1994) and literature on cost management (e.g., Cooper and Slagmulder, 2004; Cooper and Yoshikawa, 1994). The earliest reports on open books practices were studies of Japanese firms (e.g., Carr and Ng, 1995; Cooper, 1996). Since then, research has spread also to western firms (e.g., Axelsson et al., 2002; Kulmala et al., 2002; Ellram, 1996). Whilst early studies tended to focus on describing the phenomenon (e.g., Munday, 1992a,b), later research explains under what conditions an open books policy is likely to occur, and when it is likely to fail (e.g., Kajüter and Kulmala, 2005; Kulmala, 2004).

The most widely recognized purpose of open books is controlling, i.e., to ensure that suppliers act according to buyers' wishes (Berry et al., 2005; Dekker, 2003, 2004, 2008; Seal et al., 2004; Tomkins, 2001; Langfield-Smith and Smith, 2003; Gulati and Singh, 1998; Cuganesan, 2007). Another purpose is to help buyers and suppliers in the processes of making decisions that increase supply chain efficiency (Carr and Ng, 1995).

Although research on open books provides insights concerning contextual determinants of its usage as well as its control function, studies tend to ignore the actual

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decision-making that often justifies open books in the first place. For example, purchases of complex components may require intense collaboration over long periods. This can begin even before the supplier is selected (e.g., Choy et al., 2007; Chan and Chan, 2004) and may continue throughout the planning and full-speed production stages. During this collaborative process, numerous decisions regarding products and production processes are made. To ensure informed decision-making, exchanging cost information may be vital (e.g., Cooper and Slagmulder, 1999, 2004; Ellram, 1996, 2000; Fisher, 1995). Few, if any, studies address in detail *when* and *how* an open books policy is used to support decision-making, though.

Another limitation of extant open books research is that, although authors often argue for the importance of *joint* efforts and *mutual* benefits (e.g., Cooper and Slagmulder, 1999), studies nearly always focus on *buyers* and how they manage their supply chain (Ellram, 1996, 2000; Christopher, 1998; Seal et al., 1999). Therefore, although an open books policy requires the cooperation of suppliers, the suppliers' role in such practices is poorly explored (Kulmala et al., 2002; Nilsson, 2004).

In summary, few studies investigate how and when an open books policy supports decision-making, most research also ignoring the role of the supplier. This article addresses these two gaps. More specifically, it aims to identify *cost management decision-making processes in buyer-supplier relationships supported by an open books policy*. This article is, thus, concerned primarily with how decisions are arrived at rather than decisions as such. We use the term "decision-making" to denote that process.

This article firstly defines what an open books policy entails. Then, it presents a framework for identifying open books practices. Subsequently, the method of an empirical enquiry is discussed, followed by the presentation and analysis of that study. Then, its findings are discussed. Finally, some conclusions are drawn and implications and limitations of the study are addressed.

2. Open books policy

Since activities and decisions in one organization can cause costs in another, opening the books and sharing cost data can be an important way to increase supply chain efficiency. Typically, it is the supplier who gives the buyer access to such data (Ellram, 1996), although data can be shared both upstream and downstream (Christopher, 1998). Opening the books allows the buyer to support the supplier in identifying critical areas where efficiency improvements can be made. This, then, supports decision-making regarding products and production processes. In effect, "[o]pen book [policy] is a strategy that leads towards cooperation between firms situated in a supply chain, and this information is used to influence the flow of products and services between the firms in question" (Mouritsen et al., 2001, p. 225).

Suppliers can be motivated to open their books when they lack knowledge and resources to reduce costs on their own (Agndal and Nilsson, 2008; Fitzgerald, 1996), in particular when buyers and suppliers work closely

together to create a more competitive supply chain (Carr and Ng, 1995; Cooper and Slagmulder, 1999). The extent to which data are shared and the willingness with which parties engage in such practices vary, though (Kajüter and Kulmala, 2005; Seal et al., 1999). Carr and Ng (1995) distinguish between suppliers on a continuum from those who are "*totally open book*" to "*down right awkward*". Similarly, Cooper and Slagmulder (1999) talk about "*partial open book*" and "*full open book*" policies when discussing how much cost data the supplier is willing to share. The literature implies that both willingness and ability to participate can be determined by the supplier's costing system per se, though, which may not be able to produce the data required (e.g., Kajüter and Kulmala, 2005; Seal et al., 1999). Studies also show that open books requires an atmosphere of trust (Kajüter and Kulmala, 2005; Kulmala, 2004).

2.1. Open books policy in the exchange process— A framework of three stages

Although the literature is fairly vague regarding when and how open books is actually used, it still implies that open books may be relevant in making decisions concerning products and business processes. The related supply chain *target costing* literature discusses such activities in greater detail, though, and provides support for identifying broadly defined *stages* when different decisions are made. Drawing on target costing studies, a general framework can be constructed to identify also when open books supports decision-making.

When dealing with cost management, Slagmulder (2002) as well as Seuring (2002) distinguish between two stages when this occurs, pre-production and full-speed production. Fisher (1995) supports this distinction, although he focuses mainly on activities prior to production. He suggests that these be divided into further stages: product planning, product design, and a pre-production stage (note that his use of the latter term primarily entails setting up manufacturing processes and making experimental runs, while other authors include all activities occurring before production). In particular, Fisher (1995) breaks down product planning into activities relating to product concept and specifications, development schedule, target price and volume, target profit and cost, and cost estimation. Largely, the subsequent product design stage consists of allocating target costs to components, and design-related activities (concept design, basic and detailed design), as well as ordering product moulds and dies, and building prototypes. Although some of these activities are particular to target costing, an open books policy may support such efforts (Ellram, 2000).

Ellram (1999, 2000, 2006) and Ansari et al. (1997), also focusing on target costing, support the idea that a stage approach is appropriate. They add the notion that the supplier has an important role to play, though, and call for supplier input in the exchange process. This is especially important when costs are broken down at material/component level, and later when changes in design, materials, and other specifications occur (Bordoloi and Guerrero, 2007).

Although cost management in an interorganizational setting calls for collaborative efforts (Cooper and Yoshikawa, 1994), there is limited emphasis on decision-making concerning the establishment of buyer-supplier relationships in target costing process models. The explanation can be found in the fact that the conventional target costing literature almost exclusively focuses on individual transactions (Cooper and Slagmulder, 1999) where suppliers are considered largely interchangeable in the supplier selection stage. In line with the production-oriented literature (e.g., Choy et al., 2007; Chan and Chan, 2004; Chan and Kumar, 2007; Jain et al., 2004), though, Ellram (2000) offers an exception by stressing that supplier identification and qualification are both important and complex parts of the exchange process. Research implies that an open books policy may have a role to play also here (Cooper and Slagmulder, 2004).

In summary, drawing on target costing studies three main stages of an exchange process can be identified where open books may be relevant for decision-making. Firstly, there is a supplier selection stage, when decisions are made whether and with whom a relationship should be established. Secondly, a number of decision-making processes take place after the supplier is selected, but before production commences. Here, we term this the pre-production stage. Third, there is a stage of ongoing, full-speed production.

2.2. Formal and informal uses of open books to support cost management decision-making

An open books policy can be used to support cost management decision-making in different ways. Open books is not a cost management technique in itself, though. Rather, sharing information by opening the books is often done *within the frame* of formal cost management techniques. Although numerous such techniques are described in the literature (Ellram, 1996, offers an overview), Cooper and Slagmulder (1999) argue that there are three main ways to reduce costs in a relationship by joint cost management: (1) to design a product that can be manufactured more cheaply, (2) to reduce the costs of ongoing production, and (3) to make the relationship as such more efficient. We capture this by focusing on four formal cost management techniques presented by Cooper and Slagmulder (1999, 2004). Three relate primarily to product development and often take their starting point in functional analyses (Yoshikawa et al., 1989). These include concurrent engineering (CE), interorganizational cost investigations (IOCl), and quality-function-price trade-off (QFP). The fourth technique, kaizen, is used mainly for process development during production. In addition to these four techniques, there are informal uses of open books that have no specific labels. Below we further explore formal and informal open books practices.

2.2.1. Concurrent engineering

The basic idea behind CE is to relate the cost of certain characteristics of the product to what the customer is willing to pay (e.g., Zhang and Zhang, 1995). For example,

CIMA (1996, p. 34) defines CE as “[a]n activity which helps to design products which meet customer needs at the lowest cost while assuring the required level of quality and reliability.” CE, therefore, supports efforts to manage the cost–function trade-off (Ansari et al., 1997; Bordoloi and Guerrero, 2007; Elgh and Cederfeldt, 2007).

Parallel CE means that the supplier is provided with detailed information at the beginning of the project and then develops the component relatively independently. In simultaneous CE, the cooperation also starts early on, but is carried out jointly by engineering teams from both parties (Cooper and Slagmulder, 2004). CE is, thus, most commonly encountered in the early phase of product development and entails relatively extensive cost investigations (Cooper and Slagmulder, 2004). Open books is, therefore, likely to be of great importance in supporting decision-making related to CE (Nilsson, 2004).

2.2.2. Interorganizational cost investigations

IOCl are similar to CE since they are concerned with R&D (Cooper and Slagmulder, 2004). When IOCl are applied, the scope of design changes contemplated is narrower than in CE, though, and the buyer is usually less willing to change *their* product to fit the supplier's component. IOCl also often include design engineers from two or more tiers in the supply chain (Cooper and Slagmulder, 2004).

Cooper and Slagmulder (1999) argue that there are four key factors for a successful IOCl: high value and benefit from redesign, manufacturing activities are divided between at least two firms, a stable cooperative relationship, and the use of network protocols (an interorganizational incentive system). Therefore, even though joint IOCl are less far-reaching than CE, open books is still likely to support decision-making since IOCl require close cooperation.

2.2.3. Quality–function–price trade-off

QFP analysis entails trade-offs between product properties (Cooper and Yoshikawa, 1994; Ong, 1995). Quality is defined as conformance to specifications and function is defined by the specifications. Price is the supplier's sales price, and includes all costs, such as investments, production, and marketing (Cooper and Slagmulder, 1999). Since trade-off decision-making is based on cost, open books can serve an important supporting role.

As QFP trade-offs include three different main dimensions, they can be used as a negotiation tool (Cooper, 1995) to increase the likelihood of reaching a solution equitable to both buyer and seller. The optimal trade-off gives the highest product profitability (Koga, 1999). QFP differs from CE and IOCl in that QFP typically entails less far-reaching collaboration.

2.2.4. Kaizen

Kaizen (or value analysis) is a “*system to support the cost reduction process in the manufacturing phase of the existing model of product*” (Monden and Hamada, 1991, p. 17). It refers to the accumulation of small improvements rather than revolutionary innovations, focusing on cost reduction by more efficient production (Cooper and

Slagmulder, 1999). This can be contrasted to CE, which aims at reducing cost through more efficient product design (Chan et al., 2005).

Monden and Hamada (1991) and Cooper and Slagmulder (1999) distinguish between two kinds of kaizen. One involves activities implemented to improve performance when actual cost exceeds target cost. The other comprises activities implemented continuously every period.

2.2.5. Informal use of open books

Not all uses of open books are tied to formal cost management techniques. For example, the purchasing and supply management literature (e.g., Christopher, 1998; Lamming, 1993; Albright and Davis, 1999) suggests that open information exchange can be useful to help suppliers identify lacking competencies and help them find ways of developing these. This can take place within supplier development (Lamming, 1993; Monden and Sakurai, 1989; Monden, 1992) and benchmarking projects (Nilsson, 2004), the overall purpose of which are to increase the efficiency in the buyer-supplier relationship.

However, in addition to making the relationship more efficient, open books can, arguably, also be used informally in regard to all three stages of the exchange process. Basically, this occurs when cost (and similar) information is exchanged outside the frame of a cost management technique. Further, not all information exchange has specific, short-term goals. Buyers may want to become informed about conditions concerning specific suppliers or the supply market in general. Then, cost data may be very important even if it is exchanged more informally. Calculations may also be very precise, even if they do not fall within the frame of specific cost management techniques. Research provides few examples of such practices, though.

2.3. Synthesis

In summary, we aim to identify supply chain cost management decision-making processes supported by open books in buyer-seller exchange. This involves looking for formal cost management techniques, in particular CE, QFP, IOCIs, and kaizen. We also look for less formal practices.

Although we do not focus on target costing per se, we find support in studies that adopt a process perspective on target costing to identify decision-making processes concerning cost management. We distinguish three broad stages where we expect to see an open books policy supporting such decision-making. These stages are not drawn from a single framework but are a synthesis of the literature. They include (1) supplier selection, (2) pre-production, and (3) production.

3. Method

3.1. Research design

The empirical study reported here is a case study (cf., Yin, 1989; Eisenhardt, 1989). When prior knowledge about

a phenomenon is limited, exploratory case research is often deemed appropriate (Otley and Berry, 1994). Clearly, knowledge about open books in regard to decision-making processes is limited. There is also significant support for approaching issues relating to open books in this way; indeed, most empirical research in the area is case research.

We argue that adopting an open books policy entails collaborative efforts to reduce costs in the context of a relationship. Therefore, we consider the relationship as such to be the case rather than the buying or selling firm. Case research is often argued to be suitable when relationships are studied, due to their inherent complexity (Nilsson, 2004).

3.2. Case selection

A case can be chosen to represent the mainstream or the extreme (Kaplan, 1986). We have looked at a buyer-supplier relationship in the Swedish automotive industry, a sector in which cost management practices are often held to be highly developed (Yoshikawa et al., 1990; Lamming, 1993; Christopher, 1998). We have also studied a case where a first-tier supplier manufactures a relatively complex and high-value product, since open books practices are likely to be more extensive under these conditions (Cooper and Yoshikawa, 1994). Thus, while the case may be seen as representing an extreme, the phenomenon is likely to be "transparently observable" here (Yin, 1989).

In practical terms we used an industry expert to identify a firm fulfilling these requirements, inquired whether the firm would be interested in participating in the study, and ensured that deep access to data would be granted. The initial contact was taken with the Chief Financial Officer (also head controller) of the supplier, who also secured the participation of the customer firm. The case, thus, does not represent a "random" selection, but rather a theoretically grounded selection which is often recommended for case research (Eisenhardt, 1989).

3.3. Data collection and respondents

Data were collected mainly through personal interviews with key informants. Case studies allow for multiple sources of information (Yin, 1989), however. Therefore, when meeting respondents, we also looked at reports, blue prints, prototypes, and protocols, and visited manufacturing facilities and test labs. Additionally, observations were made at two meetings where open books was used to support decision-making. Some publicly available material was also collected.

The choice of respondents was a result of discussions, initially with the Chief Financial Officer at the selling firm who, based on our description of the project, put together a short list of people he thought could contribute to the study. Later, other respondents suggested more people to interview. In effect, identifying respondents and collecting data followed the iterative process suggested appropriate for case research (e.g., Eisenhardt, 1989).

Eight respondents were interviewed at the supplier and five at the buyer. These include purchasing manager (buyer), purchasers (two at buyer), member of supplier development team (buyer), controller (seller and buyer), key account manager (seller), marketing manager (seller), other technical staff (seller), and a project manager (seller).

Main interviews lasted 2–4 h and were carried out in person. A semi-structured guide (see Appendix 1) was used to ensure that no important areas were overlooked. A large number of follow-up interviews were later made via telephone. This was part of the iterative data collection process; since it was impossible to predict in detail exactly which decision-making processes we would encounter, for reasons of reliability and validity respondents had to be contacted to ensure that the same issues were covered across interviews to the extent possible and that no misunderstandings arose. Throughout, detailed notes were made and interviews were tape recorded.

Additionally, one of the authors has significant experience from cost management consulting. This proved very helpful, since it inspired an atmosphere of trust and allowed for fairly technical interviews. In fact, neither party refused sharing any of the information we requested, except for some sensitive plans concerning technical details and some internal reports regarding the other party. Throughout the research process, all respondents were highly cooperative and several, on their own initiative, sent us additional material they thought might be of interest.

3.4. Analysis and research quality

We carried out the analysis in three steps. Along the way we undertook measures to safeguard for quality. First, interview and other data were structured according to the stage of the exchange process. To avoid over-reliance on the accounts of single respondents, we consistently attempted to interview more than one individual about each issue under enquiry. When possible, we also interviewed representatives of both the buying and the selling firm on the same topics to get a balanced picture of open books practices. When ambiguities arose, respondents were again contacted. Second, all available data were compiled into a case history. This was sent to selected respondents for comments and adjustments (the case below is a summary). Third, the case history served as a basis for identifying decision-making processes supported by open books, through a process of manual content analysis (see analysis). This entailed creating a two-dimensional table of decision-making processes relating to each of the three stages of the exchange process, and then noting all open books practices relating to decision-making. This resulted in 17 broadly defined decision-making processes. When identifying these, careful attention was paid to formal and informal open books practices.

4. Empirical study

Open books is often perceived as sensitive (Carr and Ng, 1995), and in our experience managers can be

disinclined to discuss such practices. To overcome their reluctance and to achieve our desired depth of study, the two firms were guaranteed anonymity. Consequently, we do not reveal their names or information that might lead to their identification. As a result, only very general descriptions of the firms and the product are provided.

AutoParts was founded more than 50 years ago, already from the beginning focusing on the automotive industry. Due to the firm's early competencies in plastics and, later on, rubber, it gained an advantage over most competitors. To keep this edge, throughout *AutoParts'* history heavy investments have been required in R&D. Whilst *AutoParts* manufactures a number of different products, this study focuses on its most complex component. It is attached to the vehicle in such a way that decisions must be made concerning adaptations of both the vehicle and the component. Its development and manufacture, thus, require significant collaboration with the buying firm, *CarMaker*, but also with firms in *AutoParts'* supply chain.

CarMaker is a large car assembler. The component *CarMaker* buys from *AutoParts* is entirely customized, and includes a number of modules and sub-components, many of which require knowledge regarding different materials and manufacturing technologies. This means that *AutoParts* needs a wide range of competencies to meet *CarMaker*'s requirements. Some of the modules are sub-contracted, though, which means further involvement with sub-suppliers, both for *AutoParts* and for *CarMaker*.

CarMaker is not *AutoParts'* only customer. *AutoParts* delivers components to other car assemblers as well as to automotive sub-contractors, operating as first- and second-tier supplier.

4.1. The supplier selection stage

Activities surrounding supplier selection depend on whether the component is based on a previous component or if the project entails developing a new component.

4.1.1. Supplier selection in case of new component

AutoParts always sells products to *CarMaker* within a project following the life cycle of a vehicle. The end of a project does not mean the end of the relationship, though. Due to ongoing contacts with *CarMaker*, *AutoParts* is informed at an early stage in the development of a new car model. Respondents at *AutoParts* describe this as an opportunity to start working on a preliminary solution, in order to improve chances of submitting the most competitive offer. Since *AutoParts'* work also impacts on other parts of the vehicle, there is often a two-way flow of information early on.

Nonetheless, if the project deals with an entirely new component, the supplier selection process tends to be formal in nature, and *AutoParts* is invited to submit an offer along with competing suppliers. With the invitation to tender, *CarMaker* provides a target cost. This represents a rough estimate, though, since the product is not yet developed. The key account manager at *AutoParts* stresses, “*The first offer is based on a vague foundation and a*

number of assumptions, [and] you can be pretty sure that the first price we offer will not be the final price." This view is shared by the production planning manager at AutoParts, who notes "*The final product never looks like the one that was used as a basis for the first offer.*"

Typically three-six formal meetings are held and further detailed cost information is required by CarMaker. These costs are calculated jointly by a specialist controller at AutoParts and AutoParts' key account manager responsible for the offer. After about 2 months, AutoParts, along with other potential suppliers, presents a more detailed offer outlining a solution. Along with technical information, costs are also specified in detail. Since the solutions can differ drastically between potential suppliers—both in terms of price and design—cost information is provided in order to avoid misunderstandings, and to enable CarMaker to make a fair comparison. For example, the material in different offers may vary, with cost consequences. Several respondents at CarMaker stress how important it is to be well informed regarding relatively small details, since these may have great cost consequences. Information sharing at this stage, thus, involves a combination of technical specifications and cost estimates. What we see here is the first step in a parallel CE process as well as IOCLs. This supplier selection process may appear cumbersome, but respondents at CarMaker stress that it is necessary given the complex component involved.

Although the final choice of supplier is not simply based on the lowest bid, the role of price should not be underestimated. During interviews, the importance of price and cost reduction is emphasized by respondents from both AutoParts and CarMaker. Jokingly during a coffee break, a controller at AutoParts says, "*There are three things they [i.e., CarMaker] seem to care about. The first is price, the second is price, and the third is, of course, price.*" The purchaser at CarMaker similarly notes, "*In the extreme competition in the automotive industry, we simply can't survive if we don't work with the best and most cost efficient suppliers.*"

4.1.2. Supplier selection in case of component based on existing platform

To reduce costs AutoParts and CarMaker often attempt to re-use the design of previous components, either by making minor changes to components designed for another vehicle, or by creating a new component partly based on existing modules. Respondents at both AutoParts and CarMaker stress that this improves quality, reduces delays, and allows immediate benefits from past efforts at cost management. The controller at AutoParts says that their own studies show that the greatest cost reductions in ongoing production can be achieved during the first 3 years. After that, main improvements have been implemented and only minor advances can be achieved. From a cost management perspective, CarMaker and AutoParts, thus, benefit from years of joint efforts to reduce costs, including both value engineering and kaizen, even before the new component is developed, let alone manufactured.

Another reason for continued cooperation is underlined by AutoParts' key account manager: "*Just the fact that we know each other makes the collaboration so much easier. Not only when it comes to understanding about opening the books and where the numbers come from, but also more generally.*" The key account manager also stresses benefits such as knowing each others' abilities regarding R&D—especially important in case of strong time pressure—manufacturing, and knowledge concerning the other organization's structure. The latter is especially important considering the large number of staff involved on both sides. Another benefit concerns working with suppliers with a strong reputation. As the key account manager puts it, "*show me your buyers, and I can tell you who you are.*"

When the product is based on an existing platform, supplier selection is, thus, typically much less formal in nature. As one of the respondents at AutoParts puts it "*if we don't do anything really stupid, we get those projects.*" AutoParts is then asked to present a solution and, along with this, an offer. The technical specifications are not very detailed at this stage, though. As the key account manager at AutoParts notes, "*In the best case we are informed about the overall frames and a number of goals, or certain performance requirements.*"

Along with information from CarMaker providing the basis of the invitation to tender, a (component) target cost is provided. It is based on previous similar components, although typically sets a lower target. Primarily, it provides a general goal for costs, even if it is not always adhered to rigidly. Needs for new tools or other equipment specific to the component are also included. Intense price discussions can occur, especially if costs are calculated differently by AutoParts and CarMaker. What we see here is a combination of target costing, the first steps of a QFP analysis (functional analysis) as well as cost reductions from prior kaizen projects.

4.2. The pre-production stage

Even if the development of a component can begin during supplier selection, in the pre-production stage the component is developed in detail and costs are determined in several steps.

Firstly, at what may be described as an early concept stage, numerous joint meetings are held when costs are related to various product features, quality, tool requirements, cost of machinery, and choice of sub-suppliers. To begin with, AutoParts' costs are estimated per year across the life cycle. Some information is taken from AutoParts' costing system, some information may relate to costs of previous components, and some represents joint estimates. This information is summarized in a table to generate an overview of costs for different parts of the final component. The cost of each operation, subcomponent, quality controls, etc. is broken down at a great level of detail to facilitate QFP analyses. The controller at AutoParts explains, "*When we discuss our open books, of course costs are often specific to the particular discussion. This means that during a project costs are presented in a hundred different ways.*"

The key account manager at AutoParts further notes that the way costs are calculated per se (e.g., underlying assumptions, allocation bases and standards) is also discussed, but, as he says, “*to a much lesser extent than you might expect.*” One reason for this is the long-standing relationship; CarMaker has insights into the conditions of AutoParts’ costing system and cost data presented previously. The key account manager further underlines that, although the negotiations are usually tough, both parties benefit from acting honestly. “*There is simply no time to play games. [...] We are suppliers to the most competitive industry in the world, so we have to be professional and not act like horse traders in a village market.*”

This view is shared by a purchaser at CarMaker, who notes that AutoParts is “*focused, efficient and easy to work with.*” The controller at AutoParts also stresses that if costs are too high, the important thing is to sit down and jointly try to find out why they are too high, and then together try to identify ways of reducing costs. He also points out that this can serve to maintain a good working relationship. Also, at times AutoParts opens their books solely to convince CarMaker that costs are reasonable.

In a second step, a platform is developed. Then, the two parties are jointly involved in decision-making regarding the cost level of a component with certain characteristics, which serves as a platform for adding or deducting costs based on changes in the component. Here, activities again vary depending on the degree to which the component is based on previous components.

4.2.1. Further development of an existing platform

When the component is based on an existing platform, the development process requires less interaction and efforts compared to the development of a new component. The joint work can best be categorized as QFP trade-offs since changes are limited. A target cost is set based on the previous product, according to the logic “old target cost+costs added–costs removed = new target cost.” The same logic can be applied to component modules. Cost plus profit margin, yields the price. The profit margin, which can vary slightly, is determined jointly (specific levels were mentioned during an interview but are kept confidential at the respondent’s request). Thus, the price paid for an earlier component serves as the basis when arriving at a decision concerning the price of a new component.

A problem expressed by AutoParts already in regard to supplier selection—that annual price reductions are required as industry standard based on expected continuous efficiency improvements (i.e., kaizen)—again becomes apparent; efficiency improvements can typically only be achieved in the first years of production, and, consequently, profit margins may decrease when a new component is largely based on an old component, and higher levels of efficiency may be difficult to attain. Therefore, decision-making regarding price is especially important at this stage, not just for the component at hand, but also for future components that may be based on the current component. Sharing cost data is, therefore, absolutely crucial to clearly inform CarMaker about

margins and to negotiate realistic price reductions. Again, this is a combination of QFP analysis and experiences from past projects, as well as expected pressure from future kaizen projects.

Also, existing tools may be used for new components. Established practice dictates that CarMaker pays for the tools and, accordingly, owns them. The tools are, nonetheless, ordered and used by AutoParts, the reason being that AutoParts should be solely responsible for their production processes, including timeliness of delivery and quality. During discussions concerning tools, they are either categorized as “new tools” (to be purchased) or “carry over tools” (those that can be kept). Open books—here in the form of QFP, IOCI, and CE analysis—clearly serves the purpose of supporting joint decision-making.

4.2.2. Development of a new platform or component

Once selected as supplier, AutoParts continues to develop the concept in detail, in particular its electronic and mechanical components. Concerning target cost and pricing, the problem is that still at this stage no one really knows what the finished component will look like. Largely, this is a consequence of the vehicle in question not yet being designed. To solve the issue of target costing and pricing, the open books approach plays a crucial role. It allows both parties to agree on an acceptable price level. In effect, AutoParts’ offer includes specified costs which serve as a platform to which both parties have agreed. Costs are then typically added or deducted from the platform used for supplier selection. However, the marketing manager at AutoParts emphasizes that the numbers are used as a guide. As the controller at AutoParts puts it, “*Just because we are using open books, doesn’t mean that we are slaves to our product costing system.*”

It is typically AutoParts’ controller along with other staff at AutoParts who calculate costs, so CarMaker is never involved with AutoParts’ costing system per se. This enables the controller to make adjustments in data from the costing system, which is designed for routine decision-making, profitability analysis, etc., and does not cover all new decision-making processes that may occur.

During this process, there are also numerous meetings between CarMaker, AutoParts, and AutoParts’ suppliers of components, equipment, tools, and software. These meetings are usually coordinated jointly by AutoParts and CarMaker and involve full transparency regarding costs. The cost management techniques applied are mainly IOCI and CE.

As the component is developed and its design is increasingly finalized, more detailed cost information is shared regarding production processes (including logistics and tools), quality controls, and purchased subcomponents. Typically, AutoParts works relatively independently and presents CarMaker with a number of alternative solutions where costs are specified in great detail. During the process, there are also a number of milestone meetings when the whole project is addressed, including the formal presentation of all relevant costs. The cost management technique applied is CE. Final design decisions are then often arrived at jointly. If the cost of a certain

operation or purchased subcomponent appears too high to CarMaker, AutoParts and CarMaker jointly investigate the factors causing this and try to identify opportunities for cost reduction.

4.3. The full-speed production stage

The full-speed production stage of any given component lasts for years, and, as modules can be used for more than one component, AutoParts sometimes manufactures particular modules for a decade or more. During such extended periods, conditions can change compared the supplier selection stage and the earliest stages of product development, and price levels may have to be adjusted. Open books plays an important role when such changes occur.

As part of the initial agreement, prices are reduced by a certain annual rate, typically between 2% and 5%. CarMaker expects AutoParts to accomplish this through increasing efficiency, both internally and in regard to its supply chain. According to AutoParts, though, this goal is not always reached and, consequently, the profit margin may erode towards the end of a project. With complete cost transparency, this may serve as a basis for renegotiating contracts, with adjustments for failures to increase efficiency. Here we, thus, see that the open books policy helps in recalculating the price—or, more accurately, the expected price reductions—even if it does not support interorganizational efforts to reduce costs.

During production, AutoParts is expected to carry out minor continuous improvements, similar to those described in the kaizen literature (even if CarMaker is commonly not directly involved in these efforts). The open books policy means that if these improvements exceed expectations marginally, this can be very beneficial to AutoParts. As the production manager of AutoParts puts it, “*If we run faster or use our machines more efficiently, we reap the benefits.*” With regard to open books there is, accordingly, no need for AutoParts to hide minor efficiency improvements.

If there are more drastic cost reductions that occur primarily through joint efforts, or if cost reductions are based directly on suggestions by CarMaker, they are shared between the firms. This type of cost reduction usually requires considerable joint efforts, as well as investments in, e.g., new machinery, tools or processes, which are included in calculations and decision-making regarding profit sharing. Here, open books plays a role in determining actual cost reductions. The discussions are described by AutoParts’ marketing manager as “*intense*”, but cost data usually allow the firms to reach a decision perceived as equitable by both parties. Rare disagreements typically occur only when a large number of variables are discussed simultaneously, making the decision-making process very complex.

Decision-making regarding major cost savings can also focus on which party should carry out, for example, an assembly operation or quality control, or how items should be packed for shipping. This may be part of kaizen or can include a QFP analysis. Sometimes AutoParts’

suppliers are also involved, in which case IOCI may also be a relevant technique.

Open books is also used to regulate price changes due to changes in conditions over which the parties have little control, e.g., cost of raw materials and energy. That such adjustments should occur is part of the initial contract. This is crucial to AutoParts, especially considering the low profit margin in the automotive industry. AutoParts then shares data regarding cost increases with CarMaker. Correspondingly, AutoParts is also expected to share data regarding cost reductions.

Another factor concerns the quantity purchased each year. CarMaker commits itself to buy a certain number of components. If there are deviations, the price is recalculated. The marketing manager says that open books is here used to arrive at a decision on a new price, which is typically a relatively simple negotiation since costs and profit margins are known to both parties.

Also in product redesign open books plays an important role. Respondents at both AutoParts and CarMaker underline that the component should be considered finalized in terms of design when full-speed production commences, since design changes at this stage tend to be costly; Changes can, for example, require purchasing new tools and subcomponents, with significant start-up costs. However, ideas regarding changes do appear during the production stage and the production planning manager at AutoParts notes that such changes are more common lately, as part of tougher demands to reduce costs. Product redesign can be initiated either by AutoParts, with its superior insights into production processes, but also by CarMaker, who has better knowledge about how components are received, quality controls, and final assembly.

The benefits of the redesign are typically shared, and again open books supports reaching a mutually agreeable decision. The production planning manager at AutoParts points out that then both manufacturing and purchasing/marketing departments are involved. He says that technical discussions commonly run smoothly and the presentation of costs typically plays a relatively minor role, although may direct attention to areas where savings can be achieved. “*We work together to solve problems.*” The commercial side of such negotiations can be complicated, though, since interests are more obviously conflicting. Cost transparency can, then, be a way of overcoming conflicts.

In addition to uses of open books within the frame of a project, as part of the close relationship between CarMaker and AutoParts, CarMaker sends “supplier development teams” to AutoParts, paid for by CarMaker. The aim is to make AutoParts a more efficient firm generally to improve their ability as supplier. In this case, the open books policy occasionally serves to help addressing problems with high costs, which are analysed and decisions are made concerning the initiation of joint projects to reduce cost.

Open books also serve another purpose for CarMaker, namely to help keep the firm informed about developments further up in the supply chain. This is important to CarMaker, since the firm is vulnerable to, e.g., supply chain disruptions. Sharing information about suppliers also

inspires confidence in CarMaker that AutoParts charges a fair price for their components. An important benefit to AutoParts is that CarMaker is a better informed buyer, which facilitates negotiations. AutoParts' key account manager stresses that "CarMaker understands us."

5. Case analysis—17 decision-making processes supported by open books

The case reveals a number of decision-making processes regarding cost management. We break these down into 17 broadly defined main processes supported by open books; 1–2 relate to the supplier selection stage, 3–13 occur during pre-production, and 14–17 relate to the full-speed production stage (see Table 1 for an overview).

- (1) *Whether to buy entirely new or partly modified component.* The case shows that there are significant benefits to buying modified components from existing suppliers compared to buying new components or even establishing new relationships, since the former benefit from efficiencies achieved through past cost management. The formal techniques that support this decision-making process by justifying buying partly modified products are mainly QFP analysis (for minor changes) and IOCI (greater changes, which may include cooperation further upstream). Interestingly, however, significant benefits occur from past Kaizen and other cost reduction efforts.
- (2) *Selecting among suppliers of new component.* In the case of purchasing new and complex components, even if buyers provide desired specifications these may be interpreted differently and different solutions may be proposed. To make sense of individual suppliers' offers, information concerning cost is required. On a more general level, supplier selection decision-making may also be supported by open books when buyers wish to assess the general competence of the supplier by gaining an overview of the supplier's cost situation. None of the main techniques appear to play a major role for supplier selection as such, but CE and IOCI are partly integrated into the process.
- (3) *Trade-off at concept level.* Before the component is designed, decisions are made concerning its general properties at concept level. The supplier presents costs to facilitate these discussions and subsequent decision-making regarding functionality. This could be seen as the start of the CE process and involves early QFP trade-offs as well as IOCIs in case sub-suppliers are involved.
- (4) *Cost platform.* A platform for certain types of costs is established early on and is based on costs previously presented to the buyer. These serve as a reference point when features are added to or removed from the component. It is important that estimates used in cost platform decision-making are realistic, since the supplier will be held to these estimates at a later stage. The platform also serves to avoid future

Table 1
17 Decision-making processes

Stage	Decision-making process	Uses of open books
Supplier selection	(1) Whether to buy entirely new or partly modified component (2) Selecting among suppliers of new component	Partly formal (QFP, IOCI, based on past Kaizen) Partly formal (CE, IOCI)
Pre-production	(3) Trade-off at concept level (4) Cost platform (5) Changes in costs for components based on previous similar components (6) The buyer's internal decision-making process regarding component characteristics (7) Component characteristics (8) Who shall carry out a certain operation (9) Manufacturing processes and quality control (10) Procurement of raw materials and components by the supplier (11) Acquisition of specialized tools by the supplier (12) Final price (13) Future price reductions	Largely formal (CE, QFP, IOCI) Largely formal (CE) Partly formal (based on past CE) Largely formal (CE, IOCI, QFP) Largely formal (CE, QFP, IOCI) Largely informal Largely informal, although more formal if part of product design Largely formal (IOCI) Largely formal (CE, IOCI) Partly formal (based on costs disclosed previously) Largely formal (Kaizen)
Full-speed production	(14) Price revisions based on changes in conditions (15) Process improvement through investments in new technology (16) Process improvements through new routines (17) Component redesign	Largely informal Largely formal (Kaizen) Largely informal Largely formal (QFP, CE, IOCI)

misunderstandings. CE is the main technique since changes here are great, requiring costs to be tied to certain features and to the initial agreement.

- (5) *Changes in costs for components based on previous similar components.* If a component is similar to or based on a component from an earlier project, this can also serve as a cost platform. Previous costs are known to both parties, although conditions may have changed, and new cost data may have to be exchanged when making the decision.
- (6) *The buyer's internal decision-making process regarding component characteristics.* Not all decision-making regarding features is joint. Sometimes the buyer makes decisions internally regarding certain features and sub-components. This is, then, related to costs specified by the supplier. When costs are attached to different design solutions, decision-making is facilitated by parallel CE, IOCI or QFP analysis.
- (7) *Component characteristics.* The buyer and seller are then involved in joint decision-making regarding

- final features, based on the supplier's costs. This is the core of the CE process. We also see QFP trade-offs and IOCl supported by an open books policy.
- (8) *Who shall carry out a certain operation.* In addition to determining characteristics of the component, manufacturing processes must be designed. An important element is making the decision who should perform operations such as assembly, logistics, and quality control. These discussions can include operations potentially carried out by the buyer or seller, but also by an actor further up in the supply chain. None of the established techniques appear to be used here, although opening the books facilitates decision-making.
- (9) *Manufacturing processes and quality control.* In addition to determining who shall carry out a certain operation, decisions must also be made regarding how or even if they should be carried out. Decision-making can be conducted in two different ways: (a) based on more general discussions concerning tools and equipment as part of regular supplier development, in which open books directs attention to processes that could potentially be conducted in a more efficient manner; (b) as part of product design, e.g., determining which equipment should be used to manufacture certain components given the performance of that equipment. Similar decisions are made regarding quality controls, logistics, and use of information systems.
- (10) *Procurement of raw materials and components by the supplier.* When the cost of purchased goods represents a significant share of the final price, the buyer can support the supplier's efforts to find cheap subcontractors. The buyer, then, gains access to the supplier's costs of direct material and tools, and the supplier's main purchasing costs. This may include supply chain meetings involving several tiers of suppliers. This is a clear example of a decision-making process supported by IOCI involving several parties, where optimal solutions are sought regarding, e.g., price, function, quality, profit margin, and terms of delivery.
- (11) *Acquisition of specialized tools by the supplier.* Tools can represent a significant share of the cost. In the case we see that it is actually the buyer of the component who owns the tools, although the acquisition process is managed by the supplier. This decision-making process focuses on costs of future products and so-called lock-in effects. It can therefore be seen as a part of the CE and IOCI processes.
- (12) *Final price.* Jointly a decision is made based on costs for the whole project, costs that are now well known to both parties. In addition to price, decisions are made regarding the number of units to be bought and terms of delivery. Costs are normally used to find a fair fixed price that both parties can accept. Occasionally, when the supplier's costs are higher than what the buyer seems willing to pay, the supplier calculates costs in order to legitimize the price level. This is a way of reducing tension in the relationship that could otherwise occur if the buyer gets the impression that the price is too high. None of the established techniques appear to be used to support making this specific decision, although the process is facilitated by costs disclosed previously.
- (13) *Future price reductions.* As part of the contract, the price is to be reduced on an annual basis. This decision is made jointly based on expected cost reductions by the supplier, mainly due to expected increases in efficiency in manufacturing and other processes. Price reductions become increasingly difficult over time, though. Actual price reductions are achieved through minor continuous improvements similar to Kaizen, and the decision-making process as such is clearly supported by the supplier opening its books.
- (14) *Price revisions based on changes in conditions.* Changes in the cost of raw materials, components and energy may require changes in price levels. Here a form of sensitivity analysis is carried out and the impact of price changes on total cost is estimated. This is part of the contract, which may also be the case for price revisions based on lower or higher production quantity. Cost effects are calculated by the supplier and presented to the buyer in order to justify price changes to support the decision-making process. No formal techniques appear to be used.
- (15) *Process improvement through investments in new technology.* During the production stage, both parties try to improve the supplier's efficiency (e.g., in terms of quality and speed of production) by utilizing new technology. This often requires investments. The decision-making process entails calculating costs and benefits to find out whether improvements are feasible. Here, open books supports kaizen by enabling the parties to reach a decision concerning benefit sharing that both find fair.
- (16) *Process improvements through new routines.* Also new administrative and logistical routines result in increasing efficiency. Such improvements may, again, be initiated by either party, and benefits are shared. Although information is exchanged in regard to such decision-making, no particular technique is employed.
- (17) *Component redesign.* To redesign a component is not a planned part of the project, though it occurs occasionally. Changing the component can be costly for both parties, but new technology and materials may still make changes favourable. Like in pre-production product design, the techniques employed in decision-making can include QFP analysis, CE, and IOCI.

It should be noted that these 17 decision-making processes are neither strictly sequential, nor relevant for all purchases. If a modified component is bought (process 1), there is no selection among suppliers (process 2). Also, trade-offs at concept level (process 3) and establishing a cost platform (process 4) are relevant primarily when buying a new component (process 2), while process 5 occurs only in case of modified component. It should also

be noted that, while we have identified 17 decision-making processes rather than specific events, these processes may vary greatly in length and complexity. They can also vary in the number of times they are repeated within the broader context of an exchange process. For example, while you select a given supplier once, you may undertake numerous price revisions during full-speed production.

6. Discussion

The literature typically presents open books as a general and constant flow of information within a relationship (e.g., Kajüter and Kulmala, 2005), but empirical evidence outlining its specific use in the context of decision-making is next to nonexistent. In fact, most of the literature addressing open books—such as the purchasing literature (e.g., Ellram, 1996), the literature on supply chain management (e.g., Christopher, 1998; Handfield and Nichols, 1999), and the general cost management literature (e.g., Cooper and Slagmulder, 1999)—tends to mention open books largely in passing. When looking at decision-making processes, on the other hand, our study indicates that open books is a more complex phenomenon than previously acknowledged. It also implies that its uses, frequency, importance, and forms vary in regard to the different activities carried out while exchanging a product.

Although we identify 17 decision-making processes supported by an open books policy, we cannot say that open books plays an equal role in all of these. The case implies that formal uses of open books are especially important in decision-making during pre-production, in particular concerning product features. The importance of open books for supplier selection should not be underestimated, though, since cost management efforts can begin already at this stage, and—as the case shows—formal uses of open books can play a significant role also here. Similarly, open books appears to have a role to play during full-speed production, both in regard to product and process redesign, even if this stage of the exchange process is characterized to a greater extent by informal uses of open books.

While the frame of reference outlines four major, formal cost management techniques, the case implies that their relative importance and the decision-making processes they support vary. Largely, though, we found the techniques where the literature implied. CE, IOCl, and QFP trade-offs were used mainly in the product design stage (cf., Bordoloi and Guerrero, 2007; Maffin and Braiden, 2001; Yoshikawa et al., 1989). Kaizen was used during full-speed production to improve efficiency (cf., Ansari et al., 1997). We further see that the techniques suggested by the literature to be most useful in the pre-production stage, such as CE and QFP trade-off (Cooper and Yoshikawa, 1994; Cooper and Slagmulder, 2004), were used also in product redesign in the full-speed production stage and in supplier selection.

We also note that supplier selection can be significantly more complex than suggested by the target costing

literature, where it is typically portrayed as a question of whether a supplier is willing to accept the target cost (derived from the market, not supplier's cost) or not (Cooper and Slagmulder, 1999). Our study shows how open books can facilitate complex decision-making through a combination of competitive bidding, CE and, to some extent, target costing. As far as we know, this has not previously been recognized in the literature on cost management. Further, supplier selection carried out in this transparent manner can benefit from years of joint kaizen costing. This is apparently also not raised in previous studies.

Additionally, while it is often assumed or even explicitly stated in the literature that the buyer wants information from the supplier that the supplier is reluctant to provide (e.g., Munday, 1990, 1992a,b; Carr and Ng, 1995; Cooper and Slagmulder, 1999), we found little evidence of such a power struggle in the relationship we studied. This article, thus, presents a picture of a seller with more a positive attitude towards open books than is the case in many other studies. Several possible reasons for this might be identified. While the buyer is the relatively more powerful actor, that power is apparently seldom exercised overtly, which is instrumental in creating an atmosphere of mutual trust and commitment. The seller has also clearly benefited from opening the books, e.g., when price increases are brought about by changes in factor costs. Thus, under some circumstances opening the books is perceived also by the supplier as positive and beneficial, and does not necessarily occur only at the insistence of a powerful buyer.

The question remains, however, if the seller would have been less positive towards opening its books had it not been implicit in the relationship that the buyer is the more powerful party. Also, while opportunistic behaviour on the part of the seller can be checked by adopting an open books policy, as applied in our case open books does not prevent opportunism on the side of the buyer. To a great extent, the seller has to trust that the buyer uses openly shared information to benefit both parties, even if the seller has limited ways of actually ensuring this. There may, thus, be negative effects of openly sharing information that should not be underestimated, even in long-term relationships.

The literature makes another point regarding willingness and ability to work with open books, namely that this is partly determined by the suitability and refinement of the supplier's costing system (e.g., Kajüter and Kulmala, 2005; Yoshikawa et al., 1989). Our case observations present a somewhat different view; the buyer never works directly with the supplier's costing system per se. Rather, cost data and reports are prepared by the supplier's representatives to suit the decision-making at hand. The actual costing system is not adapted to the buyer, something that would hardly be possible anyway, given that different buyers may have very different requirements. At least in this case, thus, the costing system as such is shown to be less important than might have been expected beforehand.

The case also shows that open books can serve purposes not directly related to cost management decision-making.

We find four such purposes: (1) opening the books can be a way of allowing the buyer to help the supplier develop its efficiency not related to a specific component, e.g., by improving administrative routines and manufacturing processes, as well as helping in sub-supplier selection. An added benefit is that the buyer may gain significant knowledge about the supply market, which can then be utilized in other supplier relationships. (2) Opening the books can also be a way to ease the tension occasionally occurring in negotiations, particularly in regard to pricing. For example, opening the books then serves to justify a certain point of view or a suggested price level. This role of open books as an “arbiter” is recognized by Håkansson and Lindh (2004). Even if that role should not be exaggerated, this openness signals willingness of the supplier to build a long-term relationship. (3) Open books may also serve a role in general supplier evaluation. Then, the overall capacity and capabilities of the supplier can be assessed in areas such as quality, R&D, strategy, and financial position. This can also focus on evaluating the costing system. (4) General relationship building can also be facilitated by an open books policy. In line with the literature (e.g., Tomkins, 2001; Seal et al., 1999; Dekker, 2003), both parties in our case underline that opening the books is a way of showing trust, openness, and commitment to a long-term relationship.

Of course, even if we find that open books aids in cost management decision-making as well as in activities not specifically related to costs, overall our findings support the basic premise that the adoption of an open books policy is driven by cost savings (Carr and Ng, 1995; Munday, 1992a, b). In some situations we see more intense collaboration and more complex techniques because these situations offer greater cost savings. In that sense, our study supports extant research. Since we have studied only one component exchanged within one relationship, we cannot really comment on whether component or relationship characteristics drive open books practices, though. Nonetheless, we find it unlikely that we would have seen such extensive collaboration had our studied component been a very simple one, or had not the relationship been deep and well established.

7. Conclusion

This article makes several contributions to the literature on open books. First, it makes an empirical contribution in the form of a detailed account of open books practices in a buyer-supplier relationship in the automotive industry. It shows when opening the books can play a role in decision-making, and what cost management techniques can be used in different stages of the exchange process.

Second, it outlines 17 decision-making processes that are supported by formal and informal open books practices. This represents an important contribution to the literature, which until now has presented a very vague picture of when open books is actually used. This article also raises some uses of open books not

address before, such as its importance in supplier selection. We further find that open books can play a greater role in the full-speed production stage than generally recognized.

Third, the article shows that an open books policy is not necessarily something implemented by the buyer solely for the buyer's benefit. We have found open books to take place in a collaborative environment where it is recognized to have beneficial effects for both parties. Even if it occurs at the initiative of the buyer, cost transparency can clearly help the seller when contracts become unprofitable and must be renegotiated, e.g., due to cost increases. Therefore, we argue that the conflict that some of the literature hints at being inherent in open books may not always be present.

Several limitations of this work must be recognized, though. First, our findings are based on a single case study and we cannot lay any claims to having reached general conclusions. This is especially true for the connection between cost management techniques and decision-making processes, which remains highly contextual. Second, likely we have neither identified *all* supply chain decision-making processes that may be supported by open books, nor all relevant or possible cost management techniques used to that end. We also cannot claim to have established the relative importance of an open books policy for the different decision-making processes that such practices may support. Third, it should also be noted that the 17 processes occurred within a relationship characterized by *extensive* and *developed* use of open books. Therefore, it can be expected that our findings are not characteristic of all relationships where an open books policy is implemented.

These limitations give rise to suggestions for future research. In particular, the relative importance of various cost management techniques for different decision-making processes is an important issue to address, one which may also have far-reaching implications for the development of managerial practice. Additionally, the relative importance of opening the books in different decision-making processes remains to be addressed. Future research should also be concerned with another of the shortcomings of this work, namely the context-specific nature of its results; subsequent studies should look at firms in other geographical and industry contexts to investigate practices there.

Even if this study does not aim at identifying optimal conditions for open books or clearly measures its effects, it still has implications for practice. It shows managers how and when an open books policy can serve to provide information for joint decision-making. Specifically, it points out that open books can serve a role throughout the life cycle of a component, not just in its early stages. It also shows that open books can support numerous decision-making processes. It must be stressed, however, that managers would be wise to consider open books as one part of more far-reaching cross-functional cooperation between two or more firms. To be successful, an open books policy should be implemented as part of relationship management, since it is closely integrated with how firms cooperate regarding, for example, R&D and effi-

ciency improvements. Managers should also recognize that implementing an open books policy is not always just a question of willingness on the side of the seller. To support decision-making processes by opening the books suppliers must actually be able to calculate and present cost in ways useful to buyers. Therefore, buyers wanting to implement an open books policy may have to help suppliers develop their costing systems.

Appendix 1. Interview guide

1. General information regarding the respondent
 - Background
 - Years with the firm
 - Position(s) with the firm
2. Important changes in the respondent's firm over the past 10 years
3. Important changes in the respondent's function/department over the past 10 years
4. History of the relationship
 - Initiation
 - Products involved
 - General development
5. Detailed description of working processes involving other firm in the relationship
 - Processes relating to supplier selection
 - Processes relating to R&D
 - Processes relating to production/delivery phase
 - Other processes
 - Equipment involved, prototypes, reports, etc.
6. Detailed description of cost data and reports used in regard to each process identified in 5 (when possible, actual reports and related documents (or examples) viewed)
 - Reports produced using the firm's or other firm's costing system
 - Reports produced when working together with other firm
 - Reports produced for internal use regarding issues involving other firm
7. Specific changes in the firm that have occurred due to cooperation with and due to requirements from other firm in the relationship
 - Working processes
 - Costing/report system
8. Main benefits of cooperating with other firm in the relationship
 - Short-term
 - Long-term
9. Main challenges of cooperating with other firm in the relationship
 - Short-term
 - Long-term
10. Other respondents to interview
 - To substantiate information provided by respondent
 - To complement information provided by respondent

Note that this guide covers areas discussed with the respondent rather than direct questions. It served mainly to provide structure for the interviews and to ensure that no important areas were overlooked. Typically, interviews would not strictly follow the interview guide.

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