

Determinants of the propensity to use open book accounting

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by

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To UP and WK

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1 Introduction

1.1 Inter-organizational cost management

The ever increasing importance of inter-firm relationships is omnipresent as firms establish cooperations with each other in order to successfully deal with an increasingly competitive environment. Globalization, intensified competition, empowered customers, and increased knowledge requirements are only some of the issues that nowadays challenge firms.

As a consequence of the intensified competition, many firms have concentrated on their core competencies leaving them with more outsourced activities (Baiman, Fischer, & Rajan, 2001; Baiman & Rajan, 2002; Van der Meer-Kooistra & Vosselman, 2000). To successfully cope with this competitive environment, firms cannot rely simply on their own resources anymore, but are required to constitute close inter-firm collaborations leading to a blurring of organizational boundaries and the emergence of new firm networks (Das & Teng, 1996, 2000; Langfield-Smith, 2005; Van der Meer-Kooistra & Vosselman, 2006; Mouritsen & Thrane, 2006; Otley, 1994; Thrane & Hald, 2006; Tomkins, 2001). For example, automotive industry steadily increases the number of components outsourced while at the same time the number of suppliers is reduced (Baiman et al., 2001). This leaves the firms with less, but more important supplier relations. Seal, Berry, & Cullen (2004) characterize the forming of close relationships with independent partner-firms as re-embedding efforts which are reaction to the dis-embedding efforts of outsourcing activities.

Degraeve & Roodhooft (2001) indicate that the cost of purchased products and services constitute the largest share of the total cost for most of the companies. All of this leads to an increased importance of the supply side of companies and an ever growing importance of buyer-supplier relations. Considering this, what would be more self-evident than (constructively!) incorporating the supply side into firm-border crossing development efforts and inter-organizational cost management?

The Boeing Company (Boeing) set one of the most recent and prominent examples of including its suppliers into the sourcing and development process by forming a firm network. For the new 787 airplane family the design and production of nearly all of the aircraft's sys-

tems, such as the cockpit or the fuselage, were outsourced to highly specialized suppliers. As a matter of fact, the only major part which is still made by Boeing itself is the vertical fin (Nowlin, 2007). All of the key suppliers were involved early in the aircraft's design and were made responsible for entire technology systems by themselves. Boeing itself would concentrate on the project management process, organize the international supply chain and focus on the final assembly of the airplane in its plant in Everett, WA. Inter-organizational teams consisting of members from independent companies all over the world were set-up in order to guarantee a smooth and unobstructed development of the new aircraft. For example, the team responsible for the fuselage consists of employees from Alenia Aeronautica (Italy), The Boeing Company, Kawasaki Heavy Industries, Ltd. (Japan), and Vought Aircrafts Industries, Inc. (USA) (Stundza, 2007; Nowlin, 2007). This graspable example makes clear how for certain purposes arms length transactional firm relationships diminish, clear cut firm borders blur, and inter-organizational collaborations emerge.

Unfortunately, such collaborative buyer-supplier engagement still represents an exception and not the standard procedure. There are only a few examples reported in the literature in which inter-organizational cost management is used truly bilaterally (Hoffjan & Kruse, 2006). That is, many firms still do not show collaborative efforts in managing the cost level together with their partner firms (Kajüter & Kulmala, 2005). This is even more surprising because a joint management of cost is by far not the only advantage a collaborative inter-firm partnerships can bring to the involved organizations (Twigg, 1998). Among the other advantages a firm can experience from collaborative inter-firm action are: shortened lead and response times in product development and logistics, streamlined transactions, and quality gains (Barringer & Harrison, 2000; J. L. Johnson, 1999; Johnston & Lawrence, 1988; Larson, 1992). There are additional, not directly measurable, gains, which are not directly accountable for lowered cost or an increase in profits. However, these gains still significantly promote a firm. For instance, a firm, especially start-ups and rather new firms, can gain significant legitimacy within its industry by establishing alliances with top-class leader in the field or build up the image of a firm that has the knowledge to collaborate with other firms (Barringer & Harrison, 2000). Beyond this, hybrid forms of inter-firm collaboration enable the cooperating partners to obtain access to foreign markets, technologies, competencies, and economies of scale *and* scope more efficiently than it would be possible using either one of the extremes, market guided transactions or vertical integration, which are the constituents of the classical transaction cost economics framework (Barringer & Harrison, 2000; Geyskens, Steenkamp, & Kumar, 2006; Williamson, 1983b).

Increased outsourcing activities lead to the problem of information asymmetry between the buyer and the supplier in a transaction (Cooper & Slagmulder, 2004). This can lead to a cost increase on either side of the supply chain. This situation cannot be completely governed by contracts, since no matter how specified a contractual agreement between the firms is, it will always be incomplete (Coad & Cullen, 2006). Further, Geyskens et al. (2006) indicate that relational governance contains informal, non-enforceable components that do not allow an contractual fixing or a legal enforcement. Instances of these informal mechanisms are mutual dependence, trust or fairness (Bradach & Eccles, 1989; Coad & Cullen, 2006). To pay tribute to the increased importance of inter-firm relationships, Dyer & Singh (1998) propose a 'relational view of inter-organizational competitive advantage'. Classically, the industry structure view proposed by Porter (1980) suggests that a firm's return is a function of the membership in a certain industry and returns are favorably influenced by factors such as entry barriers or high bargaining power. Hence, the relevant object of investigation is the industry (Dyer & Singh, 1998).

In his resource-based view Barney (1991b,a) claims that firm performance differs due to the different capabilities of firms to accumulate critical resources which are rare, hard to substitute, and/or difficult to imitate. The analysis from this point of view, hence, concentrates on the firm as the main unit of analysis. Dyer & Singh (1998) take another approach to the sources of competitive advantage. The authors argue that traditionally the search for competitive advantage has concentrated on resources within firms. In their relational view of competitive advantage the authors suggest that a firm's critical resources, as the foundation of competitive advantage, may span a firm's boundaries.

The topic of inter-organizational structures and inter-organizational interaction has entered the research agendas of the different disciplines of economic research at different speed and intensity. Mainly the literature on logistics, industrial dynamics, supply chain management, and operation management has intensively been tackling the issue of inter-firm collaboration within supply chains (Seal, Cullen, Dunlop, Berry, & Ahmed, 1999). Starting with the work of Milgrom & Roberts (1988), this direction of research has mainly dealt with the use of demand information. Exemplary, Aviv (2001) analyzes the effect of collaborative forecasting on the performance of supply chains whereas Cachon & Fisher (2000) as well as Zhu & Thonemann (2004) investigate the benefits of sharing demand information within a supply chain network. Even before logistic and operations management literature approached inter-organizational collaboration from an economic point of view, researchers from other disciplines such as sociology or organizational theory had long recognized the importance of inter-organizational structures.

Whereas scholars from all kinds of disciplines have paid attention to the relations between firms for a long time, research on management accounting has long ignored linkages in the supply chain (Dekker, 2003). Researchers in this discipline only slowly started to pay appropriate attention to the aspect of inter-organizational relationships (Dekker, 2003, 2004; Van der Meer-Kooistra & Vosselman, 2006; Seal et al., 1999).

Finally, from a managerial accounting point of view it was Otley (1994) who identified the necessity to extend the traditional understanding of management control.¹ The author identified the need for management accounting to change and adapt to new requirements. In his work he proposes that management control is no longer to stop at the legal boundaries of an organization. Accordingly, changes in the business and the social environment such as outsourcing, business process re-engineering, or value chain analysis lead to a necessity to broaden the approach of management accounting such that it '[...] will often have to cross both legal organizational boundaries and national boundaries to effectively manage business processes which cut across these' (Otley, 1994, p. 293). Thenceforward, researcher from the field of managerial accounting have increasingly tackled the question about the role of management accounting in supply chains and inter-firm cooperations. The essential definition of management accounting dates back as far as the mid-1960s in which Robert Anthony established many of the well known principles of management control (Anthony, 1965). Mainly based on accounting information, this classical understanding was based on a context of hierarchically structured organizations in which managerial performance and behavior needs to be controlled (Otley, 1994). Traditionally, management accounting took the part of the information provider in order to make a well founded decision about make-or-buy alternatives. Once the decision was made, management accountants no longer participated in the optimization of production and sourcing process. Management accounting and its wide assortment of cost management instruments has focused on cost optimization at an (intra-)firm level (S. W. Anderson & Dekker, 2005; Dekker, 2003). This suits the classical transaction cost economics point of view proposed by Williamson (1975, 1985) in which it is the primary goal to minimize the structural transaction cost from a single firm point of view. According to this theoretical approach, a firm will choose that degree of vertical integration which minimizes the sum of production and transaction cost from its point of view (Kogut, 1988). This traditional interpretation of management accounting becomes critical because in a hybrid inter-firm set-up supply chain optimization must be based on joint efforts for cost optimization as neither the pressure of market mechanisms nor the execution of hierarchical governance in

¹The terms managerial accounting, management accounting, and management control will be used interchangeably

a pure form are available (Cooper & Slagmulder, 2004; Van der Meer-Kooistra & Vosselman, 2006). Van den Abbeele (2006) points out that because of their internal orientation, traditional management accounting instruments are barely able to adequately support a value chain analysis. Typically, the classical instruments focus on the maximization of the difference between the purchasing cost and the selling price. By neglecting linkages to other organizations in the value chain, traditional management accounting systems mislead decision makers to exclusively focus on the price and ignore additional (indirect) cost, which a selection of a supplier may cause.

The increasing prominence of inter-firm cooperations shifts the focus from a single company based view of cost optimization towards a supply chain wide view. Management accounting is now required to provide the information not only for intra-firm, but also for inter-firm optimization and coordination activities (Dekker, 2003; Mouritsen, Hansen, & Hansen, 2001).

The issue of inter-firm cooperation has increasingly evoked attention among researcher in management control (Cooper & Slagmulder, 2004; Dekker, 2003; Kajüter & Kulmala, 2005; Kulmala, Paranko, & Uusi-Rauva, 2002; Van der Meer-Kooistra & Vosselman, 2006; Mouritsen et al., 2001; Mouritsen & Thrane, 2006; Seal et al., 2004). There is wide agreement among researchers that the increased importance of inter-firm alliances brings new challenges to management accounting (Dekker, 2003; Mouritsen et al., 2001).

At first glance, the issues mentioned above look just as additional requirements management accounting has to fulfill. But as Kulmala et al. (2002) point out, it must be the goal of inter-organizational cost management efforts to obtain a lower supply chain cost level, which would not be possible to achieve by independent optimization efforts by the single members of a supply chain alone. The authors point out two major advantages of the coordination of cost management across firms. First, the efficiency of the interface of the two firms can be significantly improved and second, additional ways of reducing the manufacturing cost can be discovered. Mouritsen et al. (2001) complement the reasons promoting an inter-organizational cost management approach as they argue that the sharing of information along the members of a supply chain will lead to a situation in which 'more elements can be inserted into one planning mechanism' rather than optimizing every single member of a supply chain at its individual optimum (p. 225).

Acknowledging the necessity to extent the classical approach of management accounting, researchers have proposed various types of cost management tools that aim at fulfilling the increased requirements of inter-firm cooperations. In the subsequent section, open book accounting as a specific instance of an inter-organizational cost management tool will be introduced. A strict distinction between different 'interpretations' of the term open book account-

ing is provided and characteristics of the understanding of open book accounting in the present context as a tool to jointly manage cost are pointed out.

1.2 Open book accounting

Defined as the systematic disclosure of cost information between firms that are independently owned, but operationally linked (Hoffjan & Kruse, 2006; Seal et al., 1999), open book accounting (OBA) and the cooperative exchange of cost information represents an alternative draft to the partner-squeezing approach which has long been proposed, especially in industries such as automotive or aircraft industry. Recently, open book accounting has drawn quite a lot of attention in the management accounting literature, as recent publications in highly ranked scientific journals show (Dekker, 2003; Kajüter & Kulmala, 2005; Mouritsen et al., 2001). According to Seal et al. (1999) open book accounting is an adequate tool for the management of a partnership between firms. The literature has identified different functions open book accounting can obtain in an inter-firm relationship.

Hoffjan & Kruse (2006) state that open book accounting can be used to check the integrity of a quote. It can be used to identify low priced, not sustainable price offers during the sourcing competition, which will soon result in price increases the buyer will have to accept once he has committed himself to this supplier. Information about the cost calculation provided to the buyer prior to the sourcing decision and thus the reduction of the information asymmetry between the supplier and the buyer can signal the fair intentions of the supplier, reducing the risk for the buyer.

Once the inter-firm alliance is established, open book accounting can take a different role in the collaboration framework. As Carr & Ng (1995) and Seal et al. (1999) propose, in a collaborative inter-firm setting OBA can serve as a tool to legitimate and justify prices and price changes between the supplier and the buyer. The authors argue that buyer-firms will be more likely to accept higher prices of outsourced parts if the increase can be justified based on cost information that are shared between the partners. For instance, the supplier could reveal the increased cost for raw materials and thus have a better stance in the price re-negotiation process. This application of open book accounting is especially evident in a context in which the contractual agreement between the partners is based on a cost-plus arrangement in which the supplier is granted the cost incurred plus a fixed fee (Hoffjan & Kruse, 2006).

However, the abovementioned applications of open book accounting are still somewhat close to the classical, single company focused, function of managerial (cost) accounting, such as the provision of relevant information for the decision whether or not to outsource an activity

or the calculation and control of the price paid for outsourced activities. It is most likely that open book accounting, if considered and used as a price controlling or price legitimation tool, will be applied in a framework of mostly standardized products, which feature almost no customer specific features.

After all, it is the third scope of application, specifically the *optimization of the value creation along the supply chain*, that extends open book accounting from a single company to an inter-organizational cost management instrument. This inter-organizational cost optimizing function of open book accounting constitutes the framework for the present investigation. Cooper & Slagmulder (2004) claim that a considerable information asymmetry evolves between the buyer and the supplier as more and more significant items of the production process are being outsourced. The authors argue that, in order to attenuate the uncertainty about the quality of the delivered products and to make sure the outsourced product will meet certain standards, the buyer will make specifications that exceed the necessary requirements and will thus cause an increase in the cost of control. In their specific example, the supplier, forced to comply with the specifications provided by the buyer, develops the parts using more expensive raw materials than it would actually be necessary. Kajüter & Kulmala (2005) argue in a similar direction as they propose open book accounting to be used to identify over-specifications of a product which unnecessarily drive up the cost.

It is the task of inter-organizational cost management, specifically open book accounting, to reduce cost induced by information asymmetry. Cooper & Slagmulder (2004) propose that managers from the buyer and the supplier meet during the product development process to adjust the specifications of the product such that overall costs are minimized. Open book accounting can make transparent the effects that design changes or the shifting of activities within the supply chain have on the cost efficiency. Thus, the sharing of cost information can lay the foundation for a value chain analysis, which can help discovering cost reduction potentials across all firms involved (Dekker, 2003).

To conclude, the sharing of cost information not only can help reducing the information asymmetry between the supplier and the buyer, but it also enables the involved organizations to jointly search for inefficiency and cost reduction potentials in the supply chain set-up. While the positive effect of open book accounting on the inter-firm cost level is indisputable, Mouritsen et al. (2001) suggest open book accounting to have a positive effect on the *intra*-firm cost level as well. The authors argue that, before the inter-organizational cost level can be optimized, the individual firm is required to create transparency regarding their own cost structure. This means that the firms are obliged to analyze their own cost structure, which in

many cases will already lead to an extension of the knowledge base that can be used to further improve internal processes.

In the next section a literature review on important studies on inter-organizational cost management is provided. Classified by the methodological approach, the different research designs are reviewed and the key findings of the studies are reported.

1.3 Literature review

The review on prior research on open book accounting and inter-organizational cost management will be structured by the applied research methods. To do so, the classification of scientific methods in management accounting which was proposed by M. D. Shields (1997) is adopted. In his literature review Shields classifies the research into seven methodological streams. Analytic, survey, archival, laboratory experimentation, literature review, case/field study, and behavioral simulation. For research on open book accounting some methodological approaches have not yet been taken. This may be because the research topic is a rather new research topic, or because some approaches are just not as feasible as others.

| Studies on inter-organizational cost management | | | |
|---|---|------------------------------------|--------------------------------------|
| Authors | Subject of investigation | Method | Theory |
| Munday (1992) | Cost accounting data exchange between buyer and supplier | Survey | Explorative research |
| Carr & Ng (1995) | Total cost control in the automotive industry | Case study | Explorative research |
| Seal et al. (1999) | The role of management accounting in a European supply chain | Case study | TCE & Industrial organization theory |
| McIvor (2001) | Lean supply strategies in the electronics industry | Case & Survey | Explorative research |
| Mouritsen et al. (2001) | Inter-organizational controls and organizational competencies—target cost management/functional analysis and open book accounting | Case study | Management control analysis |
| Baiman & Rajan (2002) | Inter-firm incentives and accounting in supply chains | Analytic modeling | Incomplete contracting |
| Dekker (2003) | Value chain analysis in inter-firm relationships | Case study | TCE & organizational theory |
| Cooper & Slagmulder (2004) | Inter-organizational cost management during the product design phase | Case study | Relationship analysis |
| Dekker (2004) | Open book accounting as a means for inter-organizational control | Framework development & case study | TCE & organizational theory |
| Kulmala (2004) | Cost management in customer-supplier relationships | Case study | Consumer buying behavior |

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|--------------------------|---|--------------------------|--------------------------|
| Seal et al. (2004) | Long term evolvement of supply chain cost management in UK electronics manufacturing | Case study | Structuration theory |
| Kajüter & Kulmala (2005) | Inter-organizational cost management in firm networks—achievements and reasons for failure | Case study | Contingency theory |
| Leotta (2005) | Cost information disclosure in buyer-supplier relationships | Formal analytic modeling | Game theory |
| Coad & Cullen (2006) | The evolvement of inter-organizational cost management practices | Case study | Evolutionary theories |
| Hoffjan & Kruse (2006) | Open book accounting in supply chains—a meta analysis of the implementation | Literature review | Information sharing |
| Van den Abbeele (2006) | The exchange of detailed life-cycle cost information vs. no detailed cost information under different relative power settings | Experiment | Exchange theory |
| Van Triest & Blom (2007) | Open book accounting as a tool for price justification | Case study | TCE & agency theory |
| Drake & Haka (2008) | Effect of activity-based costing information vs. volume-based cost information on information exchange | Experiment | Inequity aversion theory |
| Yao, Yue, & Liu (2008) | Vertical cost information sharing | Analytic modeling | Game theory |

Table 1.1: Studies on inter-organizational cost management

To the best of the author's knowledge, there has neither been archival nor behavioral simulation research covering inter-organizational cost management (IOCM). Hence, the subsequent literature review will concentrate on the areas of analytic modeling, survey, case/field, and experimental research.

Most of the research on IOCM in general and open book accounting in particular has been of qualitative nature (Fayard, Lee, Leitch, & Kettinger, 2006). The vast majority of the authors

who analyzed IOCM have taken a case study based, qualitative approach. Recently, experimental research on cost information exchange has evoked quiet considerable attention in the research literature. Survey based research is yet to take a strong stance in the research community on inter-organizational cost management. Subsequently, an overview over important studies in the area of IOCM/OBA is provided and a short summary of the main results is given. Table 1.1 provides an chronological overview.

As pointed out in section 1.2, the present study views open book accounting as a tool to manage inter-organizational cost and not as a tool for cost or price justification, as it it sometimes proposed and argued (Hoffjan & Kruse, 2006). Hence, in the subsequent literature review, the main focus lays on those studies on inter-organizational cost management which emphasize the exchange of cost information as an collaborative task for the optimization of the supply chain cost level. A more general literature review on management control in inter-firm relations is provided by the Editorial Board of *Management Accounting Research* (Van der Meer-Kooistra & Vosselman, 2006) and by Hoffjan & Kruse (2006).

Analytic Formal analytic modeling as a research approach to inter-organizational cost management or even open book accounting in particular has been chosen only by very few researchers. Baiman & Rajan (2002) used an formal analytic approach to model inter-firm relations from a management accounting perspective. Based on aspects of incomplete contracting, the authors model the trade-off situation between an improved production efficiency by increased information sharing and potential opportunism. The authors show that the denial of information exchange is oftentimes the result of rational considerations. Even though, this leads to a situation in which not all of the inter-firm optimization potential is realized. Further, the authors report that, partially, these inefficiencies can be resolved by installing an information linkage between the buyer and the supplier.

More specifically, Leotta (2005), based on game theory, analyzed the exchange of cost information in buyer-supplier relationships. Assuming completely rational decision makers, the author comes to the conclusion that, even within a symmetrical power relation, there is no incentive to share or exchange cost information with the partner firm. However, the assumption of a completely rational behavior eliminates effects of *soft* influencing factors, such as trust. This simplification is somewhat questionable because the social context in which interactions take place should not be neglected (Ghoshal & Moran, 1996; Van den Abbeele, 2006). It is here where the present thesis seeks to extent the research framework and to take into consideration important characteristics of inter-firm relations by accounting for variables such as

trust or risk which are important factors for the analysis of inter-firm relationships (Van den Abbeele, 2006).

Yao et al. (2008) analyzed the information sharing between a supplier and two retailers. The supplier would use the obtained cost information to determine the wholesale price to the retailers. The authors used a game theoretic approach, as well. In their findings, Yao et al. point out that the market base plays a crucial role for the willingness to vertically reveal cost information. For the two retailers there is no incentive to share their private cost information, unless a certain threshold for the market base is exceeded. The authors indicate that, under certain conditions, an equilibrium can be reached in which both suppliers share their private cost information and in which a win-win situation for all the involved parties is achieved.

Survey There has only been sparse survey based research in the area of IOCM in general or even open book accounting in particular. However, two examples of surveys covering aspects of inter-organizational cost management can be found in the literature: Munday (1992) and McIvor (2001).

Already Munday (1992) indicates the importance of cost information sharing between firms. In his study on cost management among firms which produce plastic injection molded components the author propose two important results. First, Japanese firms require a more thorough exchange of cost information from their supply chain partner. Second, already in this very early study of a limited industrial sector, the author provides evidence that, if used in a ‘constructive manner, rather than just to pressure supplier margins [...], the generation of efficiencies was possible’(p. 250). This shows that open book accounting, as proposed the understanding for this thesis, depicts more than just the unilateral sharing, preferably from the weaker to the stronger partner, of private cost information. Rather, it represents a chance to jointly and mutually manage the cost across firms borders.

McIvor (2001) conducted research in the electronics industry on the implementation of joint buyer-supplier cost reduction—a key element of lean supply. The results include that buyers and suppliers show joint interaction during the new product development process and that suppliers are also increasingly involved in the new product design process. As a further result, McIvor reports a generally high level of information exchange in the supply chain. However, there are also some constraints to the interaction of buyer and supplier. The management of cost could be described as joint, but not as mutual because the buyer demanded the majority of the benefits of the inter-organizational cost optimization. Further, rapid technology and product changes are typical for the electronics industry, hence, it is questionable whether

suppliers will enter long term relationships characterized by high uncertainty and in which a dominating buying firm will claim the majority of the cost savings for itself.

Recent survey-based research was conducted by Van den Abbeele (2006). In the third part of her dissertation she applies a survey-based research design to investigate the interplay of trust, control, and information. The results of the survey support the results of her experimental research and also provide support for the proposition by Tomkins (2001) that the interaction of trust and information depends on the maturity of the inter-firm relation. While in early stages trust and information form additives, in later stages of the inter-firm relation, trust can substitute the need for information concerning inter-firm governance aspects, such as perceived risk.

Field/case Generally, the joint management of cost between buying and supplying companies originated from Japanese manufacturing companies, which was one reason, among others, for the significant competitive advantage over western companies (Kajüter & Kulmala, 2005). Carr & Ng (1995) provide one of the first case-based publications about collaborative cost managing practices at Nissan Motor Manufacturing. Based on target costing, Nissan demonstrated that the early-on involvement of supplying firms in the sourcing can lead to significant cost reduction. Even though target costing was already known as a cost management technique, the Nissan approach introduced new aspects to cost management. Its 'total cost control' approach accounts for the fact that 80% of the cost are 'bought-in' from supplying companies and consequently extends the scope of cost management beyond corporate borders and adapts a supply chain wide perspective to coordinate collaborative cost reduction. However, this integrative approach was still based on the principles of target costing, which derives cost target from market considerations. The described practice by Nissan was in line with the claim by Hopwood (1996) and Otley (1994) to extent management control beyond the legal boundaries of firms (Van der Meer-Kooistra & Vosselman, 2006). Lately, several authors have taken up this suggestion and issued several pieces of research in which inter-organizational cost management was conducted through the exchange of cost information. In their case-study Seal et al. (1999) report of two non-japanese U.K. manufacturing companies which formed a strategic alliance. Within this collaborative environment, different types of information, such as demand information, were exchanged. However, the most significant cost savings were realized by sharing information on cost concerning product design or locational issues. However, the issue of the distribution and appropriation of the savings caused by the joint cost management were not picked out as a central theme of the study. An interesting aspect of open book accounting in an inter-firm relation was brought up by Mouritsen

et al. (2001) who analyzed the outsourcing process of significant parts of the production of a company. Outsourcing their production activities and simultaneously binding the partner firm to provide a detailed report on cost incurred during the production process, provided the outsourcing firm with cost information at a detailed level, which had not been available from their own cost management system. Even though the opportunity to misuse the gained information was certainly given, the initiating firm used the gained information productively for the coordination of development and sales activities between the two firms. In a similar manner, Cooper & Slagmulder (2004) found that information exchange is not only a suitable means for counteracting the losing of knowledge and for attenuating information asymmetry between the buying and the supplying firm, but it can also help the partner firms to ‘find ways to take advantage of their disparate capabilities’ [p. 23]. In particular, the authors show with different examples how lower cost solutions can be implemented by including the supplier in an early stage of the product development phase and by jointly adopting design changes. Further, the authors clustered the observed inter-firms relations into three groups of inter-organizational cost management techniques. It ranged from a low ability to perform IOCM by simply analyzing functionality-price-quality trade-offs with the partner firm to a medium ability in which inter-organizational cost investigation were conducted and finally the highest ability-level in which the cost were concurrently managed between the buying and the supplying firm. Another consequence of the investigation on the inter-organizational outsourcing decision is the need to extend the scope of cost data taken into consideration when a make-or-buy sourcing decision is made. Specifically, the authors propose to account for cost of IOCM intervention, which may incur when time is spent by engineers or management accountants for the formalization of design changes.

The general analysis of open book accounting and the collaborative exchange of proprietary cost information, if conducted properly and in a fair manner, have shown to bear significant potential to foster inter-firm relationships. As a consequence, recent research activities in the field of inter-organizational management accounting have started to tackle the question which factors can positively influence and enhance the collaborative exchange of information and what situational factors cause resistance, or worse, a misuse of revealed cost information.

Kulmala (2004) found that the transfer of cost information between supply chain partners depends on three factors: the trust level between the firms, the power relation between the firms, and the volume of the firms’ mutual business. The author reports that higher trust level between the interacting personnel leads to a transfer of more cost information and also evokes an intensified utilization of the provided data. At the same time, the author points to the ambivalent results on trust in IOCM. On the one hand, there are studies which consider trust as

a prerequisite for the revelation of cost information, on the other hand, the author provides evidence on studies which have found open book accounting with its transparent sharing of information to create trust among parties. Further, Kulmala proposes that OBA is most suitable for inter-firm connection with a balanced power structure. Asymmetrical power relations may lead to a situation in which important cost information are only shared one-way, that is, from the less powerful to the more powerful partner. For the context of the present thesis, this behavior would foil the understanding of open book accounting as a tool to *mutually* and *collaboratively* engage in cost information exchange. Both aspects, trust as well as the relational power structure, will play a role in the present research project. Further details on the two theoretic concepts will be provided in Section 2.2.2 for trust and Section 2.5 for relational power. The last determining factor identified in Kulmala's study was the volume of the mutual business. However, considering the results of the study, it remains ambiguous whether open book accounting as a complex instrument, should only be used in inter-firm relationships which feature a high volume or whether open book accounting is a reason that buyers tend to shift volume from other traditional supplier relations without an open book policy, to the more progressive supplier partnership in which joint cost management is applied. There is also a third possible reason for the importance of the volume. The prospect of increased volume can be applied to bait a partner firm into inter-organizational cost management activities.

Seal et al. (2004) provide an interesting long term case study on supply chain efforts in a UK electronics manufacturing company. Based on structuration theory the authors describe the evolution of cost management techniques within a supply chain. Among the results, the authors propose that, especially in car industry, target costing has been used (over-)extensively, even though open book accounting provides 'richer modalities' and is more powerful. Further, similar to Kulmala (2004), the authors found aspects of power, dominance, and dependence to be major determinants of the development of sophisticated information exchange. Specifically, the authors report of resistance by rather powerful target firms when asked to engage in cost information exchange.

Kajüter & Kulmala (2005) applied a contingency theory based approach to analyze different buyer-supplier set-ups in divers industries. The authors investigated if, and to what extent, open book accounting is used as a means to manage the cost structure in the value chain. The authors analyzed open-book accounting in a large German car manufacturing network and also in three distinct Finnish manufacturing networks. In the former situation open book accounting worked well within the car manufacturing network. A strong and dominant car manufacturer initiated IOCM-activities with its 1st tier suppliers and encouraged the suppliers to install open book accounting with their suppliers. To attenuate suppliers' concerns about

possible disadvantages by the cost information disclosure, the car manufacturer took several actions. It had, to a certain extent already formalized the exchange of cost information. For example, it had prepared pre-structured worksheets to cover the major cost categories and it offered to provide the supplier with technical personnel free of charge to analyze and optimize the suppliers' production processes. For the later example, the three Finnish manufacturing networks, a totally different picture is drawn. In none of the networks the effort to install IOCM was successful. Based on these findings, the authors derive six key reasons for the failure of open book accounting activities.

1. Suppliers experience no extra benefit.
2. A win-win situation is not created.
3. Suppliers think that accounting information should be kept in-house.
4. Network members cannot produce accurate cost information.
5. Suppliers are afraid of being exploited.
6. Suppliers do not have the appropriate resources for developing accounting systems and the partner firm cannot agree on how open book accounting should be implemented.

As mentioned above, the research perspective on open book accounting has somewhat changed. Prior research often analyzed the general implementation of open book accounting and IOCM. The question then was whether inter-organizational cost management can lead to a comparative advantage of supplying networks. In general this question has been answered positively, such that IOCM in general and open book accounting in particular can achieve significant competitive advantages. The latest case research has concentrated to identify key factors and important variables which influence the implementation process of OBA. Even though case study research can identify the conditions under which IOCM was successfully implemented, it can hardly identify generalizable causal relationships. Per definitionem, experimental research is most suitable for the identification of causal effects (Schulz, 1999). The next section will give an overview of important prior experimental studies on IOCM.

Experimental Experimental research on the topic of inter-firm cost information exchange has been scarce so far, but has increasingly evoked the interest of researchers in management accounting. Van den Abbeele (2006) used experimental designs to derive conclusions on the effect of various external (for example the power relationship of the two partners firms) and internal (for example the existence of a control mechanism) factors on the process of information exchange. In a first set of experiments, the author analyzes the effect of cost information

on buyer-supplier negotiations in different power settings. She draws the conclusion that the disadvantages of less powerful buyers are less pronounced when they are able to make detailed cost information available in the exchange process. Further, Van den Abbeele argues that this is due to the fact that, by making detailed cost information available, less powerful buyers can create a cooperative and constructive environment. The author proposes that in this cooperative relationship the more powerful seller is more inclined to consider the less powerful buyer's goals and objectives. Further, if the less powerful buyer offers information that helps to reach a prominent solution, the target firm, even though more powerful, will more likely reciprocate the effort (Campbell, 1963; Gouldner, 1960). That is, the gathering (and offering) of detailed cost information can, to a certain extent, compensate for a lack of power.

In a second set of experiments Van den Abbeele (2006) examined the question whether information and control mechanisms have an impact on the formation of trust and the joint profits in inter-firm settings. The control mechanism was manipulated by informing the participants that an auditor was supervising the negotiations and in case false or faulty information was shared, the participant would be punished. In order to manipulate the strength of the control system, the author varied the probability that the auditor would observe the negotiations. Whereas in the strong control system the auditor would for sure monitor the negotiation, in the weak control system condition, there was only a 10% chance that the auditor would monitor. The author argues that, at the beginning of an inter-firm relationship, a positive relation between trust and formal control mechanisms exists, whereas as the relationship matures trust and control form substitutes with regard to profit. This means, once trust has been established in an inter-firm relationship, less information and formal control is necessary to maintain the inter-firm partnership.

Based on inequity aversion theory (Fehr & Schmidt, 1999), Drake & Haka (2008) conducted laboratory experiments in order to examine how individuals' concerns about inequity may negatively influence the willingness to share necessary information in situations in which the sharing of detailed information would lead to a more efficient investment decision. The authors indicate that the detailedness of the cost information (detailed activity based vs. less detailed volume based cost information), which could be used to optimize the inter-firm relationship, actually elicits concerns of inequity among the negotiating partners. Additionally, the authors report that individuals finding themselves in a competitive environment facing losses are more willing to share detailed cost information than those placed in a profitable environment.

It can be concluded that the revelation of cost information encounters resistance. It is the question whether for the successful initiation of an open book accounting process the disclo-

sure of much cost information is necessary or whether it can be replaced by some other kind of commitment device or stimulating mechanism.

1.4 Research context, objectives, and structure of thesis

Research context Whereas in a German context at least the term ‘Controlling’ is used without ambiguity—though with different emphasis—(Berens & Bertelsmann, 2002; Horváth, 2006; J. Weber & Schäffer, 2006), in an Anglo-american research context, there are diverse denotations *and* understandings for the internally oriented accounting (Atkinson, Kaplan, & Young, 2004; Drury, 2004; Garrison & Noreen, 2003). However, since it is the goal of the present thesis to investigate the determinants of the propensity to use a particular inter-organizational management device, the exact nomenclature of the field of application is of minor relevance for the present study. Therefore, the term management accounting and/or managerial accounting can be used interchangeably.

Behavioral approaches have increasingly played a significant role in the research on management accounting and managerial control. The present thesis continues the line of research as an element of behavioral (management) accounting research. Classical behavioral accounting research has integrated aspects of sociology (Busco, Riccaboni, & Scapens, 2006; Coad & Cullen, 2006; Covalevski, Evans III, & Shields, 2007), psychology (Birnberg & Shields, 1989; Birnberg, Luft, & Shields, 2007; Mason & Mitroff, 1973), and organization theory (Ghosh, 2000). However, especially in a German context, there is a lack of conceptual work on behavioral management accounting (Hirsch, 2007). Even though there has been considerable work in rather specific research areas, such as the Federal Employment Office (Hoffjan, 1998) and R&D project termination (Zayer, 2007), these works concentrate on the formulation of recommended follow-up action, which, however, could also be derived based on general behavioral theory (Hirsch, 2007, pp. 1–2). J. Weber & Schäffer (2006) point out the general focus of German management accounting research on the derivation of recommended action and a negligence of explanatory approaches (p. 3). Solutions are oftentimes presented in the form of recommended action for a particular case, leading to solutions hardly transferable to universally applicable management accounting theory. Hence, a necessity evolves for behavioral management accounting to develop an integrated theoretical research framework. Limited cognitive capabilities, motivational issues, and the consideration of expectations about the future and future conduct are examples for some of the theoretical aspects for a behavioral

management accounting research framework (Dekker, 2004; J. Weber, Hirsch, Linder, & Zayer, 2005; J. Weber & Schäffer, 2006). This thesis does not claim to fill this research void, but, by applying sound theoretical background to the investigation of the application of open book accounting, it is trying to conform to the plea for behavioral based theory in management accounting research (Dekker, 2004; Osborn & Hagedoorn, 1997; Schäffer & Weber, 2003).

Research objectives Extending the experimental research on factors that influence the institutionalization of a collaborative cost information exchange as a basis for open book accounting, this thesis intends to pursue different research question. Research on specific investments have yielded mixed results for different time frames and applications (See Section 2.4).² Hence, no indisputable prediction concerning the effect in an inter-organizational cost management framework is possible. This leads to the first research void which the present study is trying to fill:

What is the influence of an offer of relation-specific assets and the initially offered cost information quantity on the propensity to use open book accounting and the actually reciprocated amount of cost information?

Further, extant research has indicated that there are attitudinal and perceptive factors that determine the propensity to use open book accounting. For an answer to these aspects, the question is proposed:

What is the effect of the specific asset and the information quantity on variables such as trust, perceived risk, perceived own benefit, or the fear of opportunism?

User acceptance has shown to be an important factor for the successful implementation of new management tools in general. Especially aspects of perceived ease of use and perceived usefulness, both derived from aspects of technology acceptance, have shown to strongly determine the intention to use as well as the actual usage of an information system. Transferring the aspects to the field of open book accounting and investigating what factors beyond organizational support foster the acceptance of a rather new management approach, the study asks:

²Note: The terms specific and idiosyncratic will be used interchangeably, just as the terms asset and investment.

What role do aspects of user acceptance play for the propensity to use open book accounting?

Power as one of the most thoroughly investigated concepts has always been a rich field of interest in inter-firm research. It would be negligent omitting this aspect when investigating collaborative buyer-supplier interactions. It is the question whether there is different behavior of the involved firms under different power relations. Hence, the present investigation strives for an answer to the question:

What is the role of the relative power structure in the propensity to engage in the joint management of cost?—Will power plaster everything?

Structure of the thesis Figure 1.1 shows the structure of the thesis and illustrates the course of the analysis. After this introductory part, Chapter 2 provides the theoretical background required for the thesis. It includes a critical appraisal of the well known Transaction Cost Economics Theory (TCE), which has widely been used as an approach for the analysis of inter-firm relations. Further, the chapter will closely assess whether TCE is a suitable approach for a study on open book accounting or whether there are other theoretical approaches that are more suited for the analysis of inter-organizational management. In Chapter 3 it is analyzed how the extent of the initial offer of cost information and a relation-specific asset as a commitment device influence the propensity to engage in IOCM. Chapter 4 extends the research question to a situation in which the partner firms have unequal relative power. Thus, the analysis provides answers to the question whether possible effects of the cost information quantity and a relation-specific asset can be transferred to an asymmetrical power setting. In the subsequent Chapter 5, first, aspects of generalizability are covered by examining effect-robustness and the external scope of validity. Then, moderator and mediator analyses are conducted to further determine the type of effects of exposed variables. An integrative path model of the propensity to use open book accounting, which additionally considers aspects of user acceptance, is proposed and tested in the 6th Chapter. Finally, Chapter 7, summarizes the main results and provides implications for theory and management as well as possible future directions for research.

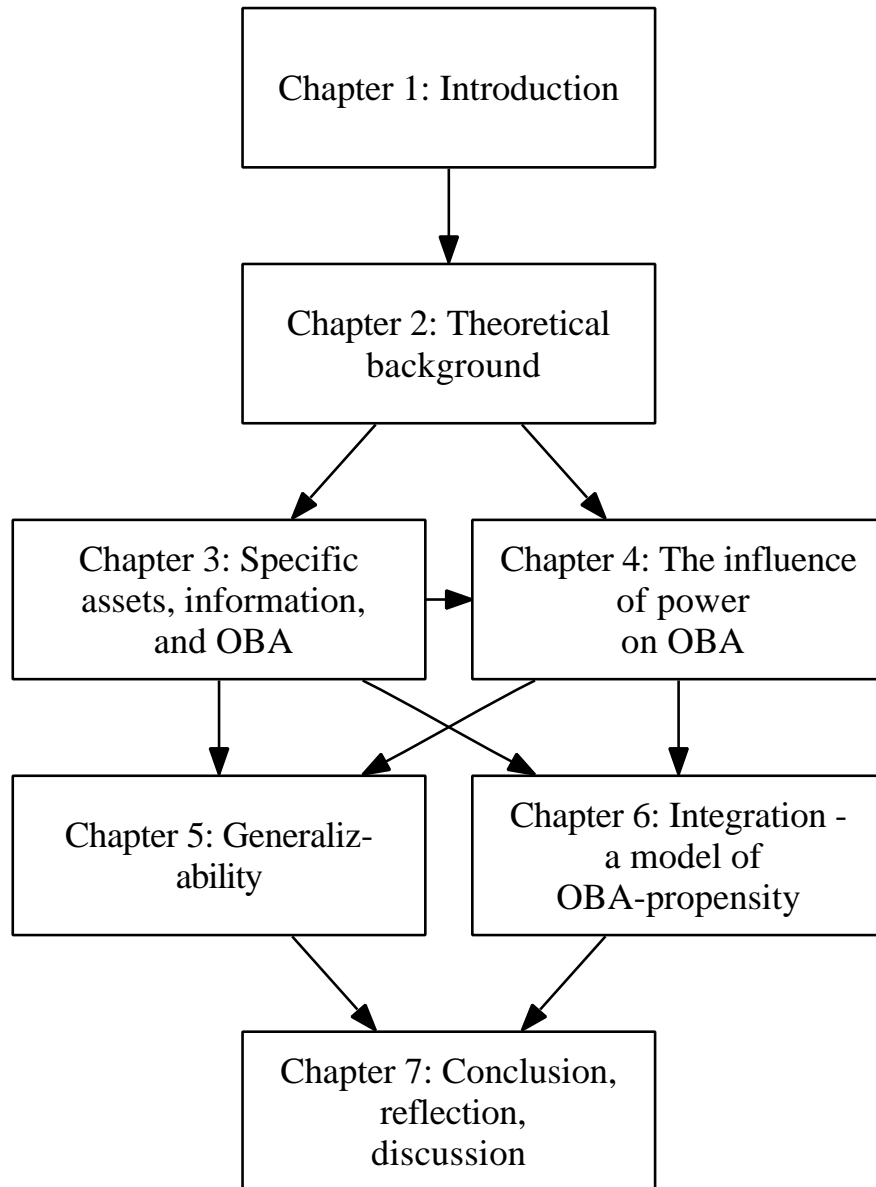


Figure 1.1: Structure of the study

2 Theoretical approaches to open book accounting

This chapter introduces the general theoretical background for this thesis. By basing this thesis on multiple theoretical foundations, the plea by Dekker (2004) and Osborn & Hagedoorn (1997) is followed to apply multiple theories to the analysis of complex inter-organizational management accounting practices.

2.1 Transaction Cost Theory

2.1.1 Basic tenets

One of the most prominent theoretical approaches to inter-organizational relations in general and to inter-organizational cost management in specific is Transaction Cost Theory or Transaction Cost Economics (TCE) (Coad & Cullen, 2006; David & Han, 2004; Geyskens et al., 2006; Shervani, Frazier, & Challagalla, 2007; Wathne & Heide, 2000). It was introduced to economic literature by Ronald Coase in his famous article 'The Nature of the firm' (Coase, 1937). Coase' main goal was to establish an explanation why firms exist at all and economic activities are organized within firms and why there are not just arm's length transaction based on market mechanisms (Madhok, 2002). One of Coase' main conclusions was that the use of the price mechanism as a coordination device is not free of charge and that cost exist to determine the relevant price of a service or a good. In general, TCE proposes the concept that firms are not described by neoclassical terms such as production functions but in organizational terms such as governance structures (Macher & Richman, 2006; Rindfleisch & Heide, 1997).

In his work, Oliver Williamson further developed and refined transaction cost economic theory (Williamson, 1975; Williamson, 1979; Williamson, 1988). He extended the theory by introducing a concept to operationalize transaction cost and by making it more predictive and normative concerning the adequate choice of transaction mechanisms contingent to situational

exchange (Jacobides & Winter, 2005; Madhok, 2002). The theoretical approach proposes that, dependent on the transactions to be arranged, certain forms of governance structures are better suited than others (Tsang, 2006; Williamson, 1975). Depending on certain variables that characterize an inter-firm governance scenario, Williamson identified stereotypical exchanges that should be conducted within a firm and those that should rather be conducted through market mechanism (Rindfleisch & Heide, 1997). Assuming that transactions will be conducted in that manner that minimizes the total cost involved (= transaction cost, including indirect cost such as monitoring or negotiating cost), the critical question in a transaction cost economic setting is whether a specific transaction ought to be performed within an organization (vertical integration, hierarchical governance mechanism) or outside an organization (market mechanisms and governance) (David & Han, 2004; Geyskens et al., 2006).

In other words, transaction cost theory provides a framework for vertical integration decision in which a firm decides whether to forward integrate, for example into distribution and sales, and/or to backward integrate, for instance into the supply of raw materials, along the supply chain (Rindfleisch & Heide, 1997). Thus, the basic tenets of TCE concern the make-or-buy decision that minimizes the transaction cost for a certain good or service. The independent variables that, according to Williamson, span the dimension of the TCE framework are (environmental and behavioral) transaction uncertainty, asset specificity of the transaction, and the frequency of the transaction (David & Han, 2004; Geyskens et al., 2006; Williamson, 2005). The governance mode, which is considered the dependent variable, consists of a continuum which is constituted through market, hybrid, and hierarchical governance modes. The three alternative modes of transaction governance can briefly be characterized as follows: Market governance refers to classical, arm's length, contracting in an anonymous market. The transacting parties do not involve in any dependent relation and the compliance of the contract is assured by classical contract law with formal legalistic terms and authorities (Williamson, 1979, pp. 236–237). In the second governance mode, the parties engage in a hybrid relationship. This means that the institutions involved remain autonomous, but they find themselves in a situation in which they are bilaterally dependent in a not trivial way. In these circumstances, the transaction partner cannot be replaced without noticeable cost incurred. David & Han (2004) indicate that, different from market relations, hybrid relations are governed by neoclassical contracts (Williamson, 1979, pp. 237–238). These contracts provide a more 'elastic' and 'adaptive' framework because they incorporate a 'tolerance zone' to cope with unanticipated eventualities. However, in order to use this tolerance zone appropriately, information must be disclosed mutually increasing the dependence structure. Lastly, in the case of dissent the hybrid form of governance proposes for arbitration instead of, or prior to, appealing

to court (David & Han, 2004). Finally, the hierarchical organization of governance provides even more elasticity and adaptiveness. In this case, if necessary, adaptation is implemented by authority and fiat (David & Han, 2004). Instead of relying on external institutions parties involved in a hierarchical governance mode resolve dissenting opinions internally, as disturbance is dissolved by themselves or, alternatively, hierarchical structure is involved to make a decision (David & Han, 2004).

Besides the three constitutional variables, transaction uncertainty, asset specificity, and transaction frequency, there are three assumptions concerning the behavioral patterns of the transactors in a TCE framework. First, the decision makers are assumed to exhibit bounded rationality. Thus, they are restricted in their cognitive capabilities and show limited rationality. Further, (some) decision makers are assumed to opportunistically seek their self-interest, including guile (Rindfleisch & Heide, 1997). Finally, a general risk neutrality concerning the decision making is assumed.

A priori, transaction cost theory assumes that market governance is more efficient than hierarchical governance using vertical integration. However, certain properties of transactions evoke transaction costs and cause the market mechanism to fail (Geyskens et al., 2006). The assumptions of bounded rationality and restricted cognitive capacity becomes problematic in an uncertain environment in which the performance cannot be measured and verified ex-post and/or the circumstances surrounding an exchange situation can not be specified ex-ante (Geyskens et al., 2006; Rindfleisch & Heide, 1997). Geyskens et al. (2006) refer to the first type of uncertainty as behavioral uncertainty and to the second one as environmental uncertainty¹. Due to the restricted cognitive capacity of the actors involved in an interaction, oftentimes, it is impossible to design a comprehensive contract to control for all eventualities of an interaction (Tsang, 2006; Williamson, 1979). This incomplete contracting can result in a situation in which one or more of the parties will encounter significant transaction cost, for example, when, due to a modified specification of a good, significant re-negotiation efforts occur (Rindfleisch & Heide, 1997). According to TCE, this is one exemplary reason for the market mechanism to fail. This danger can cause firms to abandon the market mechanism for coordination and to chose a more vertically integrated governance mechanism. In combination with the presence of uncertainty, there is a second aspect which can cause a shift from market governance to a more vertically integrated governance mechanism. The general assumption that decision makers will act opportunistically and seek their self-interest with guile can cause

¹Further classification approaches for the uncertainty construct have been suggested. For example, Walker & Weber (1984) propose to further split the concept of environmental uncertainty into volume uncertainty and technological uncertainty. Alternatively, for their experimental analysis on uncertainty in a transaction environment, Sutcliffe & Zaheer (1998) distinguish between primary, competitive, and supplier uncertainty.

a shift away from arm's lengths transactions because counteractive measures (authority and fiat) against non-collaborative action and opportunistic behavior are more readily available in vertically integrated transaction set-ups.² From the fact that it is difficult to know a priori who will cooperate and who will shirk, problematic situations can arise, especially when relation-specific assets that are aimed at supporting the relationship are involved. Specific assets are those whose value is limited outside the dedicated relationship (Rindfleisch & Heide, 1997). Examples of specific assets include joint training efforts of the sales force or joint investment in machinery or property. Once the parties have invested specifically in their relationship, one of them could exploit the situation by demanding concessions from the other or by threatening to abandon the relationship (Rindfleisch & Heide, 1997). This is particularly problematic because, once the parties have engaged in a relationship which includes specific assets, the switch to a market mechanism as an alternative transaction will incur significant cost (Rindfleisch & Heide, 1997). To complete the transaction cost theoretic framework, transaction frequency as the third dimension of TCE is to be mentioned. This aspect, however, has received only very limited attention in research thus far (Geyskens et al., 2006; Rindfleisch & Heide, 1997). In TCE it is proposed that greater transaction frequencies form an incentive to engage in hierarchical, more vertically integrated, governance structures (David & Han, 2004; Rindfleisch & Heide, 1997; Williamson, 1985). Similar to the combination of uncertainty and opportunistic behavior, the coexistence of transaction specific assets and a high transaction frequency build an incentive for a shift from a market mode of governance to a hierarchical mode (Williamson, 1979; Williamson, 1985). In a nutshell, the installation of a hierarchical governance structure is a suitable way for those transactions that involve specific assets and recur frequently. If conducted through market mechanism, significant cost to monitor the partner firm's behavior would incur. Further, transactions that occur only occasionally will hardly be able to recover the bureaucratic overhead cost of a hierarchical governance structure (David & Han, 2004; Geyskens et al., 2006; Williamson, 1979).

Summarizing the principles of TCE, David & Han (2004) propose six normative statements which constitute the core tenets of TCE in a nutshell:

1. As asset specificity increases, the transaction cost associated with market governance increase.
2. As asset specificity increases, hybrids and hierarchies become preferred over markets; at high levels of asset specificity, hierarchy becomes the preferred governance form.

²Walker & Weber (1984) discuss whether, as Williamson (1979) argues, uncertainty and opportunistic behavior have to appear simultaneously to rise the cost of market transactions or whether both aspects can influence the transaction cost independently.

3. When asset specificity is present to a nontrivial degree, uncertainty raises the transaction cost associated with market governance.
4. When asset specificity is present to a nontrivial degree, increasing uncertainty renders markets preferable to hybrids, and hierarchies preferable to both hybrids and markets.
5. When both asset specificity and uncertainty are high, hierarchy is the most cost-effective governance mode.
6. Governance modes that are aligned with transaction characteristics should display performance advantages over other modes: for example, when both asset specificity and uncertainty are high, hierarchy should display performance advantages over markets and hybrids.

2.1.2 Critical perspectives on TCE as a basis for inter-firm analysis

At a first glance, TCE and its framework, are a suitable approach for the analysis of inter-firm relations and interactions. And many researchers have used it as the theoretical underpinning of their research. However, if examined closely, there are drawbacks of TCE as a theoretical approach to analyzing inter-firm relationships. In their critique on transaction cost theory, Ghoshal & Moran (1996) seriously doubt whether TCE is the right approach to analyze organizational, not to mention inter-organizational, issues. The authors even go as far as claiming that organizations, which follow the normative implications of TCE concerning the structuration of their contracting and governance modes, will encounter competitive disadvantages. There are a number of assumptions of the transaction cost economics framework that have increasingly been criticized. The subsequent section gives an impression of the main points of criticism.

Bromiley (2005) points out a very interesting inconsistency concerning the role of bounded rationality within the TCE framework. On the one hand, TCE assumes that individuals are subject to bounded rationality when they design and sign contracts. As a consequence, bounded rationality leads to incomplete contracts. On the other hand, when it comes to selecting the proper governance mode, complete rationality is assumed (Bromiley, 2005, pp. 97–101). TCE proposes that firms will adopt that governance mechanism which is most suitable for them. Consequently, the choice of the appropriate governance mechanism for a certain inter-firm transaction is no longer among the possible sources of competitive advantages and performance differences.

Ghoshal & Moran (1996) claim that opportunism and opportunistic behavior, as characterized in Williamson's framework, will inevitably lead to a cycle of self-fulfilling prophecy. The authors argue that the effects proposed in TCE, for example the attenuation effect of hierarchical authority on opportunistic behavior, are by far not unambiguous. Rather, hierarchical authority can be the cause of a opportunistic behavioral pattern. In Williamson's theory authority and fiat as hierarchical controls present means to control for opportunistic behavior. Williamson argues that fiat, monitoring, and control can impose significant cost on the individual by sanctioning opportunistic behavior. This in turn would reduce the opportunistic behavior because the individual follows her or his perceived incentive scheme and recognizes that it is better off not to behave opportunistically. However, this assumption concerning the behavioral pattern would only hold if the tendency to show opportunistic behavior is inherent to the individual and not determined by any internal or external influencing factor. Ghoshal & Moran (1996) continue that there is thorough evidence from attitude-behavior research which contradicts the effect-chain proposed by TCE. Using the well known and established Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the authors propose a cause and effect chain which proposes results which are ambiguous, if not contradictory, to those suggested by Williamson. According to the Theory of Reasoned Action, behavior is caused by behavioral intention, which is influenced by attitudes and norms. Taking this into account, the authors argue that hierarchical controls can evoke negative feelings for the entity, which increase the propensity to engage in opportunistic behavior, which, then causes opportunistic action, which, in turn, will provoke sanctions in form of fiat or hierarchical action, and so forth. The authors do not claim that this cause and effect chain will prevail and be stronger than the effect proposed by Williamson. However, the effects stand diametrically opposed to each other and it is nearly impossible to judge what the net effect will be. However, the effects mentioned above bring into question one of the central constructs of TCE.

Madhok (2006) turns TCE's assumption that at least some of the actors will act opportunistically into the opposite by asking 'What if we operated on an assumption of trust (or even its potential) instead of opportunism?' (Madhok, 2006, p. 8). TCE itself proposes that only a portion of the people will act opportunistically, and that the majority of the people will not act opportunistically. So why should the underlying assumption not be that an actor is not opportunistic, but trustworthy? Further, the author agrees with the argumentation by Ghoshal & Moran (1996) that the concentration on possible opportunism can be counterproductive because controlling efforts take up significant resources and, eventually, even destroy mutual efforts for value creation.

The abovementioned critical issues lead to another source of criticism concerning TCE, which is the static nature of the framework (Dekker, 2004; Ghoshal & Moran, 1996; Van den Abbeele, 2006). This can also be demonstrated very vividly by means of opportunism as a central element of TCE. In a transaction cost framework, opportunism is treated as a constant rather than as a variable. This is due to the fact that the social context in which transactions appear is neglected because it is assumed to have no influence on the attitude towards and/or the execution of opportunism and opportunistic behavior. However, the example shown above strongly suggests not to treat opportunism and opportunistic behavior as a constant, but as a variable, which is influenced by attitudes and intentions as well as situational conditions.

An increasing number of researchers have acknowledged these issues and generally criticize that TCE puts too much emphasis on the structural and static aspects and neglects process-related and dynamic aspects (Dekker, 2004; Ghoshal & Moran, 1996; Gulati, 1995; Madhok, 1996; Van den Abbeele, 2006). This represents a drawback especially in an inter-organizational cost management context because it is usually embedded in social interaction (Dekker, 2004). Further, the negligence of dynamic aspects is rather critical because, opposing to a static view, there is strong indication that behavioral patterns, especially opportunism, should not be looked at as a constant (E. Anderson, 1988; John, 1984; Wathne & Heide, 2000). As pointed out, transaction cost theory assumes opportunism and opportunistic behavior to be inherent in the individual's nature and implies further that joint and collaborative strategic action is not among the primary goals of individuals (Ghoshal & Moran, 1996). This contradicts findings from sociological disciplines in which exchange is typically incorporated into social structures that exhibit opportunistic behavior only in an exceptional case (Heide & John, 1992).

Further, the classical TCE framework does not differentiate between attitudinal and behavioral aspects. Hence, opportunism is seen simultaneously as an attitude and the behavioral manifestation of opportunistic behavior. These two constitutional assumptions are critical concerning the modeling of inter-firm relationship for several reasons. Most important, in many social science disciplines, for example psychology and organization theory, there is incontestable evidence that attitude and behavior are two separate and distinct concepts and cannot be summarized using one generic concept such as the opportunism (Ghoshal & Moran, 1996). The Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and its successor the theory of planned behavior (Ajzen, 1991) are the dominant theoretical approaches for the analysis of the relationship between attitude and behavior. In this theoretical framework the behavior is treated as a variable. The behavior is influenced by the intention which itself can be influenced by the attitude toward the behavior, subjective norms,

and perceived behavioral control. At this point, no further details on the Theory of Planned Behavior are given because the point that (opportunistic) behavior should not be treated as a given constant is established and further details on how the aspect of opportunism is treated in this specific research will be presented in Section 2.2.2.

As Dekker (2004) points out, TCE neglects informal ‘self-enforcing safeguards’ such as norms of reciprocity, reputations, and trust (Dyer, 1996b; Dyer & Singh, 1998), which can foster an exchange relationship. Heide & John (1992) argue that this is especially harmful for the analysis of inter-organizational cost management because there is thorough evidence that norms play a very important role in inter-firm relationships, which consist of two or more independent firms. Heide & John (1992) continue that the assumption that a norm of opportunism will be the underlying behavioral concept may lead to an inaccurate description of the object of investigation. In summary, the assumption of opportunism to be a constant underlying behavioral norm limits the applicability of the theoretical framework since contradicting empirical evidence exists.

There have been approaches to extend the classical TCE framework by process-oriented variables such as the evolvement of trust (Langfield-Smith & Smith, 2003; Van der Meer-Kooistra & Vosselman, 2000; Williamson, 1993a; Zaheer & Venkatraman, 1995). Ghoshal & Moran (1996) judge these incremental modifications of TCE as very critical. They argue that research has revealed trust to be an important factor in inter-organizational relationships and that instead of proposing the necessity of adopting the transaction cost economics framework, different theoretical approaches which are more suitable for the analysis of organizational issues should be developed and applied. The authors even go as far as saying that TCE is ‘bad for practice’ because the fixed assumption of opportunism and the efforts to deal with it, will themselves provoke the behavioral pattern they are actually trying to attenuate. Considering opportunistic behavior as a given becomes even more critical because there is evidence that individuals will opt to cooperate in a social situation even though defection would have been the ‘best’ strategy (Frank, Gilovich, & Regan, 1993). Shifting the attention from these general points of criticism to the more specialized application in an inter-firm cost accounting set-up, additional critical issues of the application of TCE in a cooperative inter-firm relation need to be considered. While clearly dominating the research concerning organizational boundary decisions (Geyskens et al., 2006), the adequacy of transaction cost theory regarding the explanation of relational governance in collaborative inter-firm relationships has been questioned

Dekker (2004) criticizes that TCE treats hybrid forms of inter-firm relationships as a homogeneous category that is positioned between market and hierarchy. Rather, the author suggests that inter-organizational relationships enclose a variety of transactional types and serve vari-

ous objectives among which the minimization of the transactional cost may be one of them, but not necessarily the most important objective. Osborn & Hagedoorn (1997) argue in the same direction when they propose that inter-firm alliances are a rather heterogeneous matter and that reducing transaction cost is one objective among others, but not the only rationale behind the forming of an inter-firm alliance.

Opposing to the TCE rational, a decision for an inter-firm relationship can be influenced by profit considerations, which might result in a more costly, but altogether more profitable choice. Accordingly, strategic behavior can as well provide an explanation for the formation of inter-firm alliances (Kogut, 1988). Whereas TCE and strategic behavior solely provide economic reasons for inter-firm alliances, there are alternative approaches to explain the forming of relationships between firms. Inter-firm set-ups provide a means by which the frequently quoted ‘tacit knowledge’ can be transferred (Polanyi, 1967). This type of knowledge cannot be transferred by other means such as licenses because the special knowledge is embedded in the organization (Kogut, 1988).

Despite the doubts concerning its appropriateness for the analysis of inter-firm relationships TCE is widely accepted especially among the mainstream management literature (Möllering, 2002). Its strength lies in the simplicity and comprehensibility of the theoretical framework. For instance, trustworthiness is simply seen as an opposite to opportunism. Möllering (2002) points out the ample amount of ‘common sense’ that underlies the TCE framework. As an example the author mentions the fact that according the TCE trustworthy suppliers need to be controlled less intensively.

However, there is evidence that, at least for some theoretical constructs, TCE presents an over-simplification, for example concerning the aspect of trust. In the course of the present investigation the trust concept will play an important role. It will be shown, that it is a complex construct and cannot just be dealt with as a unidimensional concept. To provide an example, the ambiguous role of trust and contractual agreement will briefly be illustrated by following the argumentation provided by Möllering (2002).

While TCE proposes contracts as an important governance mechanism, the role of the contract remains somewhat unclear. Contracts as a mean of hierarchical governance are preferably used with partners whom one does not trust. Hence, TCE looks at contractual agreements as a remedy to distrust or stated positively as a source of trust. Consequently, it could be argued that one does not need a contractual agreement with a partner whom he trusts anyway. However, it is also plausible to argue that a buyer trusts its supplying partner *because* there is a contract. This little example demonstrates ambiguity of the general question whether trust is a prerequisite or the consequence for a certain perception, attitude, or behavior.

Transferred to an inter-organizational cost management context, this raises the question whether open book accounting and the sharing of cost information is a means to create trust or whether trust is a condition under which collaboration can be achieved. Other researchers even go as far as proclaiming that trust is the prerequisite even for contracts (Hägg, 1994) and any form of human interaction (Coleman, 1984). Due to the heterogeneous nature of inter-organizational relationships, several authors have suggested to abandon singular theory based approaches to analyzing alliances and networks and to adopt a multidimensional, more sophisticated theoretical research framework (Dekker, 2004; Osborn & Hagedoorn, 1997). Husted & Folger (2004) have recognized this research void and provide a research framework which supplements classical transaction cost economics by aspects of human psychology and organizational justice theory. More specifically, the authors present a model in which TCE is linked to interactional fairness, equity, and justice. They argue that aspects of fairness must be taken into account, even if only the transaction cost are subject to investigation. The reason for this is, and this is the point in which the research framework significantly differs from original TCE, that the negligence of fairness will, after all, lead to higher transaction cost because, if not considered in the first place, the perception of injustice and inequity among the partners will inevitably provoke ‘fairness-response’ transaction cost to establish perceived fairness. However, because the central objective of TCE, the minimization of transaction cost is significantly extended and modified, the question remains, whether this represents an extension of TCE or rather a new theoretical approach. However, to overcome the weaknesses of TCE as a framework for the analysis of cooperative inter-firm relationships and to meet the demand for a multidimensional and sophisticated approach to inter-firm alliances, a theoretical framework that rests on several theoretical columns is derived and presented for further analysis. All of them are well established in social science and can contribute to a more thorough understanding of inter-firm relationships.

In the following sections the concepts of the different theoretical approaches are introduced and important results of research based on the respective theoretical concept are provided. On the one hand, exchange theoretical aspects will play an important role in the research framework. On the other hand, individual aspects of personal attitude and user evaluation of OBA will be thoroughly considered.

2.2 Exchange Theoretical Aspects

Open book accounting as an inter-firm cost management tool, self-evidently, comprises the exchange of information and knowledge across independent entities (Kajüter & Kulmala, 2005).

Thus, the implementation process of open book accounting can be regarded as an exchange process between partners, in which important proprietary knowledge, that is cost information, is to be interchanged. In this section, the most important aspects are characterized and key constructs and variables of exchange theory are explained and introduced.

It needs to be pointed out that there is no such thing as one generic exchange theory, which comprises all aspects of exchange relations. The theoretical concept has a vast number of theoretical origins. Among the disciplines that have influenced exchange theoretical development are anthropology, sociology, social psychology, behavioral psychology, and economics (Griffith, Harvey, & Lusch, 2006). There are constructs and variables that have taken a strong stance and gained enormous acceptance in social science research literature. Figure 2.1 depicts the most important exchange theoretical relations as they are incorporated in the present study.

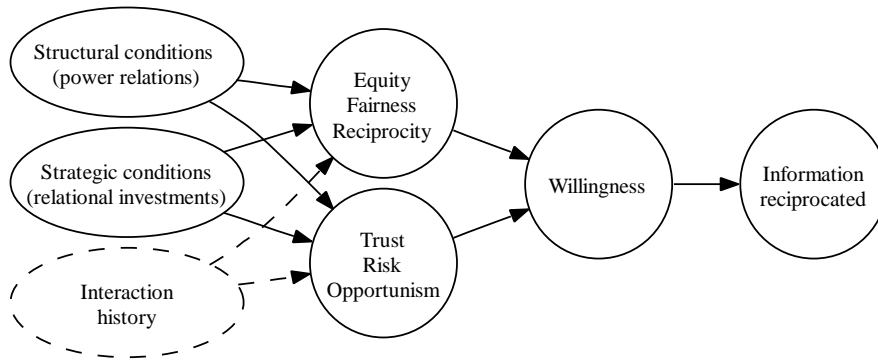


Figure 2.1: Interconnection of exchange theoretical aspects

Most popular and most influential for exchange theory are the approaches by Blau (1964), Homans (1974), and Thibaut & Kelley (1959). The general idea underlying these concepts postulates that individuals, groups, and organizations use certain principles when they engage in exchange processes. One of them is the basic assumption that people strive for rewards and avoid costs and punishments. The approach by Thibaut & Kelley (1959) is the one which is most behavior-oriented. Because it provides important aspects which are incorporated in the theoretical background of this thesis, further background on the theoretical approach is provided. The rather general concept of ‘Social Psychology of Groups’ (Thibaut & Kelley, 1959) was further refined by the Theory of Interdependence (Kelley & Thibaut, 1978), which describes relationships by means of interdependence matrices. These matrices denote the partners’ interdependence concerning the expected inputs and outcomes, or cost and rewards, of a respective relationship. Depending on the cost and rewards calculations, individuals assess

their relationship with the partner in different dimensions; satisfaction and stability. The indicator for the level of satisfaction or dissatisfaction concerning the exchange situation with their partner is referred to as the comparison level. It is defined as the ratio of outcomes (rewards) to inputs (cost). The comparison level for alternatives, that is the ratio of outcomes to inputs one could possibly achieve in other relationship, serves as an indicator for the stability of a relationship. The situation of an exchange relation is characterized by an initial exchange or interdependence matrix. However, this matrix can be influenced and modified by certain actions (Kelley & Thibaut, 1978, pp. 140–148). The authors propose different strategies: 1. Maximize other's outcomes, 2. Maximize both, own and other's outcomes, 3. Maximize own advantage, and 4. Minimize difference. The strategies comply to the individual aspects of 1. altruism, 2. cooperation, 3. competition ranging to opportunism, and 4. distributive justice. The authors amend that these *individual* strategies are supplemented by *joint* strategies which aim at achieving fairness and/or equity and/or equality.³ Closely related to the interdependence theory by Kelley & Thibaut (1978) is the investment model by Rusbult (1980). This theoretical model focuses on factors which determine the continuation or the break-up of personal relations. Originally developed for the description of close relationships, it has been applied to manifold research areas, among them job satisfaction (Farrell & Rusbult, 1981; Rusbult & Farrell, 1983), business-to-business relationships (Ping, 1993, 1997), channel member satisfaction (Geyskens & Steenkamp, 2000), and urban communities (Lyons & Lowery, 1989). Similar to the model by Kelley and Thibaut, the investment model stresses the relevance of comparison levels for the satisfaction with a relationship. The satisfaction is determined by the outcomes (rewards and costs) of a relationship and the outcomes of possible alternative relationships. However, Rusbult (1980) proposes that for determining the commitment of the partner, the size of the investment put into relationship needs to be considered as an additional factor. Hence, not only the outcomes of the current and the alternative relationship(s) determine the commitment of the partners, but also the resources already dedicated to the relation.

At first glance, concepts of TCE and exchange theory seem quite oppositional. For example concerning the treatment of opportunism as a constant or as a variable. However, there have been approaches and efforts to integrate elements of TCE and exchange theory. For example, Muthusamy, White, & Carr (2007) argue that commitment plays an important role in inter-firm interaction. To a certain extent, this corresponds to the proposition in a TCE framework that investing specifically can alleviate the tendency to deceive and to show op-

³Please note the important difference between equity and equality. Whereas equity is concerned with the output/input relation, equality aims at the absolute returns and rewards.

opportunistic behavior. Even though the authors go in the same direction, their argumentation slightly differs. Whereas in classical TCE, a specific asset serves as a device to prevent a negative—opportunistic—behavior, Muthusamy et al.'s argumentation stresses the positive aspects of fostering an inter-firm relationship by *mutual* and *reciprocal* commitment. Section 2.4 provides further insight on the role of specific assets in inter-organizational set-ups.

Even though exchange theoretical approaches are present in many social sciences and some areas of business administration (Muthusamy et al., 2007), for example applied in marketing research to explain business-to-business relations (Hallen, Johanson, & Seyed-Mohamed, 1991) or the abovementioned studies using the investment model, these approaches have not yet taken a great stance in management accounting literature (Lambe, Wittmann, & Spekman, 2001; Van den Abbeele, 2006). Drake & Haka (2008) used an experimental approach to analyze the effect of different levels of detailedness of cost information on the inter-organizational negotiation behavior. The authors manipulated the detailedness by either providing classical volume-based cost information (not detailed) or activity-based-cost information (detailed) to the pairs that were negotiating. In their results the authors indicate that even though the sharing of the detailed activity-based costs information (ABC) had a greater cost savings potential than the less detailed volume-based cost information (VBC), participants in the experiment were reluctant to share the more detailed ABC information. Drake and Haka suggest that concerns about inequity may evoke resistance to share more detailed ABC. People may strive for a situation in which they perceive the input and outcomes, i.e. number of shared cost information items and their rationalization potential, of both negotiating parties as fair. (Note: Further remarks concerning (in-)equity aversion theory are provided in the later part of this section). This leads to a counterintuitive situation in which under the VBC information condition more cost information items are shared among the participating parties than under the ABC information condition. Consequently, some of the optimization potential of the ABC information is lost. This may be due to the fact that the less detailed and less powerful VBC are perceived to be less valuable and hence, people are less reluctant to share them. As a second experimental variable, Drake and Haka investigated the influence the existence of market pressure exhibits on the negotiation behavior. The results clearly show that, in an environment with market pressure, that is, participants were facing losses in case they did not optimize through sharing cost information, under both types of cost information (ABC and VBC), persons were more willing to share cost information than in a scenario without market pressure (no facing of losses). Hence, under adverse conditions the participating persons are more inclined to abandon the competitive point of view and to adopt a new cooperative interaction style with their partner.

Similar to Drake & Haka (2008) Van den Abbeele (2006) used concepts from exchange theory to conduct a series of experimental investigations to analyze the role of information in inter-firm relations. In her first set of experiments the author investigated the role of two experimental variables. The first was the relative power structure between the firms involved and the second was the type of cost information available in an exchange relation. Noteworthy, the author found that less powerful firms can alleviate their disadvantageous position when faced with a more powerful buyer by making detailed total cost of ownership information available to the partner in the exchange process. Thus, the collection and provision of detailed cost information can, to a certain extent, be seen as a power-substitute for the less powerful exchange party. This becomes even more interesting, as the author reports that the more powerful buyer did not want to or was not able to take advantage of the disclosure of the detailed cost information. Van den Abbeele suggests that powerful buyers might not be able to take advantage of the more detailed cost information as their exchange strategy mainly concentrates on their power advantage and causes destructive behavior. This may leave them blind for additional rationalization potential that could be explored by mutual exchange of cost information to minimize the overall inter-firm cost level. In her second investigation Van den Abbeele (2006) used a 3×2 (no, weak, strong control system and traditional vs. total cost of ownership information) experimental design to conduct research on the question whether information and controls have an impact on the formation of trust, the joint profit level, and the problem solving behavior in inter-firm settings. In her findings for the early stage of an inter-firm relationship, Van den Abbeele indicates that persons facing a no control system/no total cost of ownership situation showed less problem solving behavior and less trust in their negotiating partner than in the other experimental conditions. The author provides evidence that, in an early phase of the relation, a control system and refined information have a positive effect on the building of trust. For later stages of the inter-firm relation the control system and the provision of information form substitutes. For the joint profit the results indicate that, as the relationship progresses, trust may replace the need for extensive information exchange. The subsequent sections of this thesis provide detailed insights into the theoretical background of this thesis. Next, details on the aspects of fairness and equity, which constitute central elements of exchange theory, are presented.

2.2.1 Fairness and Equity

The majority of the economic models assume that people seek only their own benefit and interest and do not consider social goals or norms (Fehr & Schmidt, 1999; Moser, 1998). As argued before, this behavioral assumption is one of the anchors of TCE and also builds one of

the sources of criticism. Kahneman, Knetsch, & Thaler (1986) suggest that certain standards of fairness influence the behavior of firms. In the same line of argumentation Fehr & Schmidt (1999) proclaim that there is thorough evidence that the self-interest seeking assumption might be not be valid for everybody in any situation. Rather, the authors argue that one must distinguish between bargaining situations in a competitive market environment and those in a bilateral bargaining surrounding. While in competitive markets people tend to exploit an advantageous position to their own benefit, in bilateral bargaining situations equity and fairness concerns play a role.

This brings forward an important implication for the analysis of an inter-firm cost data exchange process. Firms entangled in open book accounting activities have deliberately abandoned market pressure and market mechanisms as an optimization incentive and have chosen to engage in bilateral buyer-supplier interaction. Hence, the aspect of equity and fairness is essential for the analysis of inter-firm exchange processes. The crucial role (in-)equity and fairness play in an exchange situation of any kind was first recognized and cast into a theoretical framework by J. S. Adams (1965). Originally applied to the field of wage distribution and job promotion, the theoretical framework of ‘inequity in social exchange’ suggests that the perception of equity plays an important role in inter-personal interactions (J. S. Adams, 1965). The basic tenets of this theoretical approach proclaim that people will not behave invariably selfish but will be motivated to engage in social exchange depending on the degree to which distributive justice is achieved.

Ouchi (1980) points out that the aspects of equity and reciprocity play a major role for any kind of transaction. Individuals must perceive their outcomes of a transaction as equitable to their contribution and expect others to act according to the conditions of reciprocity and equity. Interestingly, drawing upon Gouldner (1960) the author points out that a norm of reciprocity is one of only two norms which are agreed upon unanimously among societies irrespective from time and culture. People feel that they deserve a certain level of rewards from an exchange situation and they will judge whether or not they perceive the expected outcomes and rewards as adequate and fair (Frazier, 1983a; Homans, 1974). These assumptions comply with the concept of the comparison levels by Thibaut and Kelley, which was introduced above. People will use the ratio of their outcome to their input as a measure of fairness and equity (J. S. Adams, 1965; Das & Teng, 1996; Fehr & Schmidt, 1999). They will compare their own ratio to those of others. Formula 2.1 represents the simple relation initially proposed by Adams for the evaluation of a relationship.

$$\frac{Outcomes_A}{Inputs_A} = \frac{Outcomes_B}{Inputs_B} \quad (2.1)$$

Formalization of equity following J. S. Adams (1965)

Walster, Berscheid, & Walster (1973) correctly indicate that this notation holds only for those relations in which the participants have positive inputs. Consequently, they adapted Adam's proposal and extended the range of validity to relations in which the inputs can be positive as well as negative. This adaptation does not change the general means of evaluating a relationship, but it extends the possible scope of application. Formula 2.2 presents this relation formally. In both figures the subscript A denotes the input or the outcome of the first individual or institution, whereas the subscript B denotes the input and the outcome of the comparative individual or institution.

$$\frac{Outcomes_A - Inputs_A}{|Inputs_A|} = \frac{Outcomes_B - Inputs_B}{|Inputs_B|} \quad (2.2)$$

Formalization of equity following Walster et al. (1973)

Interestingly, there are empirical findings that people exhibit not only an aversion against disadvantageous inequality, but also against advantageous inequality. However, this effect is weaker for advantageous situations than it is for disadvantageous situations (Fehr & Schmidt, 1999). According to inequity theory, if a partner, who is involved in an exchange relationship, perceives his or her ratio of outcome to input as inadequate or unjust, this might cause actions to reduce the perceived unfairness (J. S. Adams, 1965; Ghosh, 2000). J. S. Adams (1965) specifies some responsive actions that aim at reducing perceived inequity or unfairness. The first option for a person in order to reduce inequity is to alter his or her inputs. If the person perceives a situation to be disadvantageous and unfair, that is, the perceived ratio of outcome to input is lower compared to the one of another person, this person will reduce his or her input to that extent that matches the ratios of the parties involved. As mentioned before, people also react to inequity situations that favor them. Even though in this case the threshold for the perception of inequity is much higher and those effects will evoke much weaker reactions, a person will increase its inputs and, by that, lower its ratio of outcome to input (J. S. Adams, 1965).

A second way to cope with a situation that is perceived to be unfair or unjust is to alter the outcomes. In case of perceived disadvantage, that is, a low ratio of outcome to input, a

person will try to increase his or her outcomes to align his or her ratio to the one that serves as a reference. Vice versa, in the rare case of perceived advantage a person will lower his or her outcome. The input a person is willing to contribute to a social exchange situation can be altered relatively easily by the person her- or himself. Differently, the outcome of an exchange situation cannot be controlled as easily as it cannot be specified unilaterally but only bilaterally by all exchange parties. Accordingly, Thibaut (1950) in his experimental investigation on the cohesiveness of underprivileged groups, identified additional behavioral patterns which aim at influencing the input and outcome level of the exchange partner. When perceiving unfairness or inequity and the lowering of one's own input or the increase of the outcome is just not possible, not feasible, or simply not desired, persons might also display hostile or disturbing behavior in order to reduce the opposite's outcome. Examples for this destructive behavior are breaking the rules stipulated for the exchange situation or the complete breakup of the interchange.

Finally, what implications do the aspects of equity and fairness bring to the analysis of inter-organizational cost management and cost information disclosure? Open book accounting will unfold its true optimization potential only if cost information is shared mutually in order to identify interdependent cost structures that allow for win-win optimization. To foster the propensity to share private cost data with the supply chain partner, all involved parties must perceive the interaction, more specifically the input and the output of both parties, as fair. Because reciprocity plays an important role for the achievement of fairness in collaborative exchange situations such as in an open book framework, it is important to consider this aspect in the research framework for IOCM. Especially since open book accounting represents a cost management tool that is not yet very commonly used, most likely one of the exchange party will have to come forward and set an example, not knowing whether, when, or to what extent the other will reciprocate and whether fairness and equity can be accomplished (Molm, Peterson, & Takahashi, 2001).

Throughout, but especially at the beginning of an inter-firm relationship, questions and calculations about the rewards and outcomes relative to the input appear. It is thus of great importance that a partner, who is asked to engage in inter-organizational cost management, perceives the process as well as the distribution of the inputs and the distribution of the outcomes as fair and just. Otherwise, the partner, in the best case, might just refuse to engage in cooperative action (refuse to share relevant and adequate cost information), in the worst case, the opposite party might take harmful action such as sharing wrong cost information or using the cost information offered by the exchange partner opportunistically; for instance, by providing them to competitors of their exchange partner in return for better price conditions or

the acquisition of contracts or orders. Since open book accounting represents a stereotypical exchange situation, variables and constructs operationalizing the theoretical concept of equity and fairness will play an important role in the further analysis of the implementation of open book accounting.

Equity and fairness are suggested to promote the propensity and willingness to engage in inter-organizational cost management. To complement the theoretical framework, further aspects, which are presumed to influence the overall propensity, positively (trust) or negatively (risk and opportunism), are introduced.

2.2.2 Trust, Opportunism, and Risk

Trust Open book accounting can be categorized as a tool to supervise and enhance the performance of a supply chain. Based on Ouchi (1980), Dekker (2004) refers to this type of governance mechanisms as formal outcome control. This type of control is based on formal mechanism that shall enhance inter-organizational performance. As more and more firms establish very close partnerships with their supplying firms, mechanisms which do not rely on formalized arrangements, but on informal types of control and relational governance become increasingly important (Dekker, 2004). One of the most frequently mentioned informal and social control mechanisms in connection with open book accounting in inter-firm relations is trust (Dekker, 2003, 2004; Van den Abbeele, 2006).

It is now the question whether open book accounting can be looked at as an instrument to foster trust. Interestingly, the relation of the disclosure of cost information and the emergence of trust bears significant ambiguity. Some researchers argue that trust between the collaborating companies is a prerequisite for the disclosure of proprietary cost information

Open book accounting is an interdependent task and cannot be conducted by one of the parties alone. Hence, for the achievement of their personal and organizational goals, people depend on others (Mayer, Davis, & Schoorman, 1995). Even though there are control mechanisms, such as contracts and reward systems, to avoid self-serving, Mayer et al. (1995) point out that trust will play a more and more important role. Especially as teams, inter-organizational or intra-organizational, become diverse, interpersonal similarity or common background and experience can no longer be relied on as a promoter for the willingness to work together and to cooperate (Mayer et al., 1995; McKnight, Cummings, & Chervany, 1998). Nowadays, for successful, productive, and cooperative work some level of trust, personal or professional, is absolutely necessary (Mayer et al., 1995; McKnight et al., 1998). Consequently, trust has been one of the most thoroughly investigated concepts among researchers in social and organizational science (Ebert, 2007; Kim, 2000; Rousseau, Sitkin,

Burt, & Camerer, 1998). A considerable number of definitions and approaches to operationalize the trust concept have emerged over time (Bhattacharya & Devinney, 1998; Ebert, 2007). In their inter-disciplinary meta-analysis of the trust concept in different research streams, Ebert (2007) depicts the increased importance trust has played across numerous scientific disciplines over the last 60 years. However, the author stresses the need for a trust-theory and points out the reams of variables which are hypothesized to either influence the building of trust or are influenced by the level of trust.

In personality psychology trust has been regarded as an individual characteristic, whereas social psychologists approach the trust concept as an expectation about the conduct of transaction-partners, while paying special attention to factors that can foster or inhibit the formation and sustainment of trust (Bhattacharya & Devinney, 1998; Lewicki & Bunker, 1996; Zucker, 1986). Last but not least, sociologists and economists have taken a look at trust from the institution and incentive perspective. More specifically, they investigated the question how institutions and incentive schemes can help to foster exchange across groups boundaries by creating trust as well as formal and reliable structures which lay the foundation for prosperous transactions (Zucker, 1986). Though different in their approach, these various definitions have one crucial aspect in common. All concepts comprise the willingness to make oneself vulnerable to the action of others and at least the willingness to take risk (Bhattacharya & Devinney, 1998; Mayer et al., 1995). From an inter-firm perspective the definition by Das & Teng (1996) seems to be appropriate as they posit that trust in a collaborative inter-firm set-up can be described as the willingness and the decision to take relational risk.

Within inter-firm alliances different trust dimensions play a role. Most commonly accepted is the classification in contractual, competence, and goodwill trust, proposed by Sako (1992) (Van der Meer-Kooistra & Vosselman, 2000). The first, contractual trust, is based on the expectation that the partner will stick to the agreement and not break the rules committed to in the inter-firm alliance. The second type of trust, competence trust, refers to the expectation that the partner owns the necessary technical and intellectual know-how to achieve the desired goals. Thirdly, goodwill trust indicates that the parties have an open commitment towards each other and will do things that exceed the necessary.

For the present investigation, the operationalization focuses on the aspect of goodwill trust because goodwill trust is a suitable relational risk reduction approach Das & Teng (2001b) and further, open book accounting represents an innovative management tool to which all involved parties have to contribute exceptionally to be successful. Or, as Van der Meer-Kooistra & Vosselman (2000) point propose: 'What is needed is a norm of open commitment and reciprocity'. Das & Teng (1998) conducted research on trust and control in strategic alliances. The authors

analyzed how different trust building and control mechanisms affect the level of confidence in inter-firm alliances. In terms of trust building, the authors analyzed four different approaches:

Relational risk taking: The trustee perceives the truster to have taken considerable risk, the initial risk taking evokes reciprocity among the partner and leads to trust. One kind of initially signaling the willingness to take relational risk is the application of non-recoverable investments.

Equity preservation: Acknowledging the important role of fairness and equity for the commitment and motivation of alliance-members, the authors propose that equity must be ensured among the partners in order to build trust. The gains from the relationship should be distributed among the partners relative to their contributions.

Communication and proactive information exchange: Only if there is open and prompt communication among partners, possible disturbances and differences can be suffocated before fatal conflicts arise.

Inter-firm adaptation: To lay the basis for a trustful inter-firm relation, the firms involved must be willing and flexible enough to adapt when deviation from the original arrangement occur.

All four ways to induce inter-organizational trust and to foster a prosperous inter-firm relation build on basic theoretical constructs that either have already been covered or will be mentioned and explained in the subsequent sections. Lastly, it needs to be pointed out that, throughout the course of this study, an understanding of trust is followed which is in line with the definition proposed by Coletti, Sedatole, & Towry (2005). In this understanding trust is conceptualized as a perception that the partner will cooperate independent from economic incentives. That is, one party trusts the other party because she or he perceives the partner as trustworthy and not because she or he is aware of the partner's underlying incentive scheme. Coletti et al. (2005) vividly formulate: 'I trust you to do the right thing because you are a trustworthy person'. The authors continue to argue that this definition significantly differs from other understandings of trust in which trust only evolves when behavioral incentives favor collaboration. The authors summarize this approach, which is, among others, proposed by Williamson (1993a) as follows: 'I trust you to do the right thing because it is not in your best interest to do the wrong thing'.

Specifically for the area of management accounting, researchers have just started to analyze the important role of information, trust, and risk. The results of two exemplary studies shall be reported. Tomkins (2001) characterizes two information types which serve different tasks in an exchange situation. The first type of information is exchanged to create trust among

the partner and to foster the relationship in general. Examples of this type of information contain signs of confidentiality and development of project milestones. The second type of information serves to achieve the actual objective of the inter-firm cooperation; for example the exchange of information to jointly manage the supply chain inventory or the revelation of cost information as it is the case for open book accounting. For both types of information, the author suggest an inverted u-shaped relationship between information and the level of trust over time. The author argues that at the beginning of a relationship, when there is only weak commitment among the partners, less information and/or trust is needed. As the relationship progresses, more information is needed to establish trust among the partners. Finally, when the inter-firm relation has matured and the partner have a history of collaboration, less information is needed in order to sustain trust.

However, there is one important difference between the research design in the study by Tomkins and the present thesis. Whereas Tomkins analyzed to what extent the sharing of information is necessary dependent on the point in time in an inter-firm relation, the present study analyzes a field of application, in particular open book accounting, in which the sharing of information, more specifically the sharing of cost information, should not depend on the state of the relationship. Open book accounting requires the involved parties to share information about the cost structure throughout time to assure an optimal basis for cost optimization. Information exchange cannot be reduced as time progresses because cost structures can change any time.

Based on Tomkin's research Van den Abbeele (2006) analyzed the effect of information and controls on the formation of trust in inter-firm relations. Treating trust as a dependent variable, the author reports a positive relation between formal controls and trust for early stages of an inter-firm relationship. Further, a substitutive relation of information and controls for the forming of trust is reported. Finally for more matured relations, trust, once established, can replace the need for information exchange concerning the inter-firm negotiation outcomes. In the present study, the effect of different factors, such as the initially offered quantity of information, the offer of a specific asset, or power on trust in the initiating phase of an inter-firm relation is analyzed. The attention shall now be shifted from positive, presumable exchange enhancing aspects, such as trust, to aspects that may inhibit the exchange of cost information and the application of open book accounting. The next section covers the construct of opportunism and how it is defined in the present study.

Opportunism In general terms, opportunism is described as 'self-interest seeking with guile' (Williamson, 1975, p. 32). This exceeds the standard assumption in economics of

self-interest behavior by the aspect of guile (Wathne & Heide, 2000). This definition implies that people will maliciously deceive the partner or take action that harms the partner and brings advantage to oneself (Wathne & Heide, 2000). Hence, people cannot be relied on to comply with contracts or fixed rules of interaction ((Wathne & Heide, 2000) following John (1984) and Williamson (1993b)). Different from TCE opportunism or opportunistic behavior is not considered a constant underlying characteristic, but a dependent variable. This is based on the assumption that a person is not generally inclined to act opportunistically, but that the reaction pattern, opportunistic or not, is influenced by situational variables. An example for such a situational variable is the power relation between the exchange partners, which may increase the tendency to act opportunistically (Sheng, Brown, Nicholson, & Poppo, 2006). Different aspects of opportunism play a role for inter-firm relations. In their analysis of opportunism in inter-firm set-ups, Wathne & Heide (2000) classify opportunism in two categories: blatant and lawful.

Blatant, or the strong form of opportunism under relational contracting: This represents the classical understanding of opportunism as it was proposed by Williamson (1975). This strong form of opportunism implies the violation of an explicit (written) contractual agreement. In other words, one contractual party deliberately fails to comply with conditions fixed in a contract. There are a number of practical examples of buyer-supplier interaction which feature typical opportunistic behavior, either from the supplier or the buyer. Walton (1997) presents the example of Lear Corporation (the supplier) pretending to possess the engineering capacity which was needed to design the new seating system for the new Ford Taurus. In reality, Lear knew that it had neither the engineering talent nor the man power to fulfill the requirements of the outsourcing contract with Ford. Consequently, Ford incurred significant management cost and opportunity cost through delayed delivery and miserable product quality. In this special case, Lear Corporation kept back relevant information and intentionally lacked effort. This form of opportunism is also classified as passive opportunism or opportunism by omission (Wathne & Heide, 2000).

Active opportunism or opportunism by commission, however, is characterized by actively lying or deliberately misrepresenting material facts (Shell, 1991). For instance, a supplier could misuse the bids submitted by different possible suppliers to play different firms off against each other by using correct or incorrect information. K. Kelly & Kerwin (1993) reports the famous example of Jose Ignacio López de Arriortua who, when in charge of the purchasing department of General Motors, intentionally deceived supplier firms by exaggerating the bids of other suppliers. Even though there is empirical evidence that firms still heavily rely on very detailed written contracts (Wallenburg, 2003), these formal contracts between exchange

parties are oftentimes supported and supplemented by so-called relational (Macneil, 1978, 1980) or social contracts (John, 1984). These contracts consist of norms, unwritten rules, and informal agreements (Heide & John, 1992; John, 1984). Some authors even proclaim that formal contracts play a less important role for the quality of the inter-firm relationship than informal controls and relational contracts (Macaulay, 1963; Wathne & Heide, 2000). Means of relational contracting can be characterized as elements that establish the tone and the principles of the inter-firm relation. Because it is nearly impossible to anticipate all eventualities by designing complete contracts in general, not to mention prior to an inter-firm relationship, social contracts play an important role compensating for a lack of detail of the formal written contracts. Usually, the incompleteness of a contract puts at least one of the exchange partners in a position to be able to take advantage of contractual loopholes (Wathne & Heide, 2000). If the exchange parties are in a situation which has not completely been foreseen and arranged in advance in the contractual design, one of the firm could, even without actually breaking or violating a written agreement or contract (= strong opportunism), influence the terms of trade to its own favor. Relational or social contracts determine how the parties will handle such contractual loopholes. Whether the parties will take advantage of the situation and (actively or passively) exploit the non-fixed issues in the contract or whether they will find cooperative solutions.

Macneil (1978, 1980, 1981) has identified general contracting norms for inter-firm relations. Two of the most central ones are the expectations that (1) benefits and burdens will be shared equitably and that (2) restrictions will be imposed on the unilateral use of power. Heide & John (1992) complement these general expected rules by several examples of norms and behavior patterns that might foster the inter-firm relationship. The most important norms and behavioral expectations for inter-organizational cost management are: (1) The norm of flexibility which signals the willingness to adopt to requests for changes and to cope with unexpected situations. (2) The norm of information exchange means that helpful information, proprietary or not, will be provided to the partner and that the parties keep each other informed about events that might influence the partnership.

Lawful opportunism under relational contracting: This type of opportunism describes the fact that relationship-specific norms, behavioral patterns, or informal agreements are violated (Wathne & Heide, 2000). Heide & John (1992) add that partners, at the point of the engagement in an inter-firm relationship, need to have the same expectations about subsequent behavior. Or as Macneil (1981, p. 1024) formulates: An action qualifies as opportunistic if it is 'contrary to the principles of the relation in which it occurs'. Barrett (1992) provide a concise example of lawful opportunism under relational contracting. The author reports about

the interaction of Taco Bell and its franchisees. The franchisees had made significant idiosyncratic investment in relation-specific assets. Then, Taco Bell (headquarters) decided to launch Taco Bell Express; small restaurants without seating and a limited menu. With their range of products the new restaurants would at least partially overlap with the service of the classical franchisee-restaurants and cut into their business. The initiation of the new Taco Bell Express meant that profit would be reallocated in favor of Taco Bell headquarters. Anyhow, as the franchisees had invested specifically, they faced a lock-in situation and the next best opportunity, leaving the partnership with Taco Bell was still less lucrative than staying in the Taco Bell franchise (Wathne & Heide, 2000).

This little example illustrates quite vividly the concept of lawful opportunism under relational contracting. The contract between the franchisor and the franchisees did not feature an explicit clause that would prohibit Taco Bell from installing the additional restaurants. Thus, no legal clause was violated and the franchisees were not able (or did not want to?) take legal action. However, Taco Bell did not conform with the initial expectations established between the involved parties. Otherwise, there would not have been a willingness to invest specifically in this relationship by the franchisees (Wathne & Heide, 2000). This behavior shows a vivid example of active opportunism under relational contracting.

Analogously, there is also the chance of passive opportunism under relational contracting. Especially in a buyer-supplier relationship, not all changes and necessary adaptations can be foreseen and fixed in a contractual agreement. A supplier could then behave passively and refuse to adapt to changed requirements, which were not specified in the contractual agreement or the supplying company could exploit the situation by forcing the partner into re-negotiations to profit at the other's expense (Wathne & Heide, 2000). An practical example of an opportunistic violation of the 'norm of flexibility' is provided by Muris, Scheffman, & Spiller (1992). The authors describe that independent bottlers which worked for Coca-Cola and Pepsi-Cola intentionally refused to adapt to new strategic requirements in terms of packaging, promotional deals, and product introductions. The independent bottlers tried to force Coca-Cola and Pepsi-Cola into re-negotiations and were leering at extracting concessions for their participation. The two examples demonstrate that opportunism is not limited either in the direction, the position, or the size of a firm in the supply chain (Wathne & Heide, 2000). In the first example, the larger franchisor (Taco Bell) engaged in opportunism, whereas in the later example the significantly smaller bottling companies showed opportunistic behavior. Eventually, the fear of opportunism alone can have negative consequences. If one party senses the risk that its partner might show opportunistic behavior, substantial resources to control and monitor the partner might be occupied; resources which could be utilized more productively

(Wathne & Heide, 2000). In the worst case, the risk of opportunism can lead to even larger opportunity cost when per se 'valuable deals' will not be sealed (Calfée & Rubin, 1993).

Transferring the above insights to an inter-organizational cost management context seems obvious. Without a doubt, the exchange of cost information certainly provides the chance to act opportunistically. Cost data obtained from one firm could be used during the negotiation with other, potentially substitutive suppliers, to put pressure on the margins of the negotiation partner. In the opposite direction, suppliers could use cost data obtained from other firms to justify their prices when negotiating with third parties (Cooper & Slagmulder, 2004). The firms involved in an inter-firm cost management process certainly expect from each other that no proprietary information will be misused. Hence, a norm of collaboration and cooperation might be assumed. This investigation focuses on the aspect of active opportunism. In other words, the present study investigates the fear that the partner will actively behave opportunistically and misuse the cost information obtained during the cost exchange process.

In the following section the aspect of perceived risk, its definition and its relevance in inter-organizational relationships will be examined.

Risk The aspect of risk in inter-firm alliance structures has attracted significant interest among researchers (Das & Teng, 1996, 2001a,b; Dwyer, Schurr, & Oh, 1987). The engagement in inter-firm partnerships does not only offer the opportunity to generate significant competitive advantages (see Chapter 1), it can also comprise a significant amount of risk (Langfield-Smith, 2005). Even though, as a basic principle, risk denotes the possible variations of an outcome in general, researchers investigating inter-firm partnerships have focused their attention on negative variations (Das & Teng, 2001b). The focus on the possible losses or outcomes that are less than expected are referred to as the downside risk. The emphasis on the downside risk of inter-firm action is plausible because there is evidence that managers do not consider the comprehensive definition of risk, but solely account for the downside risk (Miller & Leiblein, 1996) or the risk of unfavorable outcomes (March & Shapira, 1987). Consequently, the items which constitute the risk construct in this analysis will focus on the aspect of downside risk or the risk that emanates from concerns of equity and fairness. Das & Teng (1996) and Das & Teng (2001a) divide the risk entailed in inter-firm relationship into two categories: *relational risk* and *performance risk*.

Relational risk refers to the possibility that one or more of the partners engaged in an inter-firm alliance do not fully commit themselves to the common goals and joint efforts of the inter-firm alliance (Das & Teng, 1996). The relational component of inter-firm risk can also be described as the risk-component which is inherent and therefore unique to the concrete

inter-firm set-up. Nooteboom (2004) indicates four kinds of relational risk for inter-firm collaborations: (1) Loss of resources, (2) hold-up risk, (3) spill-over risk, and (4) psychological/social risk.

Some authors suggest that concerns about (in)equity (see Section 2.2.1) can be a source of relational risk (Das & Teng, 1996, 2001a; Langfield-Smith, 2005). Das & Teng (1996, 2001a) propose that if at least one party in the inter-firm set-up expects the outcomes to be unfairly distributed, concerns about corrective actions might arise. Basically, it does not matter whether the party perceives the inequity in his or her favor or against him or her. All parties involved know that, sooner or later, the party which perceives a disadvantage will have a motivation to act discordantly and take harmful action or withdraw from the partnership. As the knowledge of the behavior pattern is common to all the parties involved, high relational risk might stem from equity concerns and be present, especially at the initial stage of cooperative management action.

Performance risk on the other hand corresponds to the possibility that, even though all parties involved in the inter-firm alliance completely cooperate, the objectives of the inter-firm cooperation are not achieved. It comprises all risk aspects that do not fall into the collaboration-specific relational risk. Typical factors determining the performance risk are the degree of competition or demand fluctuations in a specific market environment. These factors, and thus, performance risk, are not unique to inter-firm collaborations, but generally challenge all actors in a business environment (Coletti et al., 2005; Langfield-Smith, 2005). Because the present investigation analyzes the implementation of an inter-organizational cost management tool, no explicit attention is paid to environmental factors, such as the competitive environment or the demand characteristics. Thus, the main focus of the operationalization of the risk construct will be on the aspect of relational risk because open book accounting and the exchange of cost information is unique to one particular inter-firm relationship. In other words, the emergence of risk is examined. However, as mentioned above, risk is not solely a negative factor for inter-firm relations. Risk can also be applied strategically as a trust creating task (Das & Teng, 1998; Harnett, Cummings, & Hughes, 1968). For example, by engaging in cost information exchange and/or engaging in a specific investment a party makes her-/himself depended upon the activity of another party and signals her/his propensity to take relational risk. Further argumentation concerning risk will be provided during the development of the hypotheses in Section 3.1.

However, one aspect concerning the possible effect of relation-specific assets on performance risk needs to be taken into account. Used as pledges or commitment devices, relation-specific investments can prohibit the recovery and alternative use of invested capital, lead to

an increase in performance risk, and make the price of failure higher (Das & Teng, 1996). To account for any effect that the specific investment in the experimental scenarios could possibly have on the perceived level of performance risk, the relation-specific investment in the experiment was designed such that did not exhibit any performance risk. This leads to a situation in which only aspects of relational risk could have an influence on the evaluation of the inter-firm relationship.

2.3 User acceptance of open book accounting

The anticipated role of the theoretical construct user acceptance differs from the theoretical aspects introduced thus far. The subsequent theoretical considerations represent factors which are not expected to be influenced by the independent variables initially offered quantity of information, offer of a relation-specific asset, and, later on, the power structure. However, since attitudinal aspects, such as perceived ease of use and the usefulness, have been proven to play an important role for the decision to accept and to use any new technology or management tool, these aspects are expected to determine the propensity to use open book accounting as well (Pavlou & Fygenson, 2006; Venkatesh, Morris, Davis, & Davis, 2003). Hence, these concepts will be enclosed in the theoretical background. Even though these theoretical constructs are not expected to be influenced by the experimental manipulations, they will play an important role in the path modeling approach (see Chapter 6) which is presented after the analyses of the experimental investigations.

What are the factors which lead to a successful implementation of new management systems? There are several studies which tackle this question concerning the implementation of management information systems and management accounting systems within an organizational context. Whereas the implementation of activity based costing has drawn the attention of quite a number of researchers (Krumwiede, 1998; Maelah & Ibrahim, 2007; M. D. Shields & Young, 1989; M. D. Shields, 1995), with few exceptions the implementation of inter-organizational cost management techniques has been not subject to thorough investigations (Mouritsen et al., 2001). M. D. Shields & Young (1989) and M. D. Shields (1995) identify seven behavioral and organizational variables that determine the implementation of cost management systems. Briefly, these factors are:

1. Top management support
2. Linkage of the cost management system to competitive strategies
3. Linkage of the cost management system to performance evaluation and compensation

4. Sufficient internal resources
5. Training in designing, implementing and using cost management systems;
6. Non-accounting ownership
7. Consensus about and clarity of the objectives of the cost management systems.

All of the above research approaches investigate contextual and organizational variables which are said to have an influence on the successful implementation of a management technique that is assumed to be beneficial for the organization. It can be assumed that for the organizational implementation of open book accounting the same success factors hold true as for the implementation of activity based costing. For example, it is always recommended to involve top management when new cost management strategies are implemented. This will resolve all doubts among the employees concerning organizational support and sustainability. Individual variables, however, which might determine the user acceptance, and, in a second step, the actual use of the system, have been neglected in the research on management accounting systems. However, there will hardly be any successful implementation of any management or information technology without a general acceptance by the people who actually use it.

Open book accounting as an inter-organizational cost management device represents a rather new approach to management accounting. It is now the question whether open book accounting in general is accepted by the user as an (inter-organizational) cost management tool. In order to investigate the acceptance, the theoretical framework proposed by Davis (1986, 1989) and by Davis, Bagozzi, & Warshaw (1989) is adopted. In their work the authors merges theoretical approaches from several lines of research in order to derive a rigorous technology acceptance model (TAM) of user acceptance. Incorporating findings from self-efficacy theory (Bandura, 1982; Hill, Smith, & Mann, 1987), the cost-benefit paradigm from behavioral decision theory (Beach & Mitchell, 1978; E. J. Johnson & Payne, 1985; Payne, 1982), the adoption of innovations (Tornatzky & Klein, 1982), the evaluation and use of information reports (Larcker & Lessig, 1980; E. Swanson, 1982; E. B. Swanson, 1987), as well as the user perceptions of alternative communication technologies (Hauser & Simmie, 1981), the author thoroughly develops a model which explains user acceptance based on two major determinants: *Perceived usefulness* (PU) and *perceived ease of use* (PEOU). Originally designed to analyze the question what causes people to accept or reject information technology, this approach is used as a framing to investigate the general level of acceptance of open book accounting. In more detail Davis describes the two crucial factors as follows:

Perceived usefulness ‘The degree to which a person believes that using a particular system would enhance his or her job performance’ (Davis, 1989, p. 320). Usually, within an organization, an individual will be rewarded for a good job performance by some kind of award. If a device is associated with a high degree of perceived usefulness the user believes that there is a positive relationship between the use of the device and performance. In the present experimental study the construct of ‘perceived own benefit’ is operationalized such that it represents an instance or situational value of perceived usefulness. This means that the construct perceived own benefit assesses the utility that participants experience to get from the application of open book accounting in the explicit relationship with the partner firm. Perceived usefulness, however, measures the general attitude towards open book accounting in term of its ability to increase the individual’s performance as well as the performance of the firm.

Perceived ease of use This refers to a person’s belief to which extent the use of a certain device will be without effort (Davis, 1989, p. 320). Because a person’s effort is a restricted resource to be allocated to various task (Radner & Rothschild, 1975), Davis proposes that, *ceteris paribus*, a device which exhibits a high perceived ease of use is more likely to experience a higher degree of acceptance. In his second study Davis (1989) tests his theoretical framework in a laboratory environment by exposing participants to an application (in this case two graphics systems) they had little or no experience with. The participants were given a general brief introduction to the systems before they had to test them. Afterwards, they were asked to fill out a questionnaire that included items concerning the perceived ease of use, the perceived usefulness, and the prediction of the intended future use. The basic idea and the conduct of the experiment for the analysis of the cost exchange process resembles the one implemented by Davis quite a bit. In a nutshell, the aim of this particular part of the theoretical background is to analyze whether open book accounting, apart from aspects of the organizational implementation, is a cost management instrument which can achieve a high user acceptance and hence, lay the foundation for a successful implementation of IOCM.

Some of the theoretical tenets from which the concepts of perceived ease of use and perceived usefulness are derived, are also essential to other akin theoretical approaches. For instance, the well known Theory of Planned Behavior (TPB) by Ajzen (1991) aims at predicting people’s usage behavior. In this theoretical approach, the performance of a behavior is determined by several factors. 1. The attitude towards the behavior, which is influenced by the anticipated consequences and the proposed valenced outcomes of the behavior, 2. by subjective norms, that is the opinion and attitude of a reference group, 3. perceived behavioral

control, which reflects the extent to which a person believes she or he is capable of performing the behavior and to what extent she or her can cope with environmental factors. These three factors influence the intention to perform an action which in a last step determines the actual performance of an action. The similarity of the theories becomes apparent when one consid-

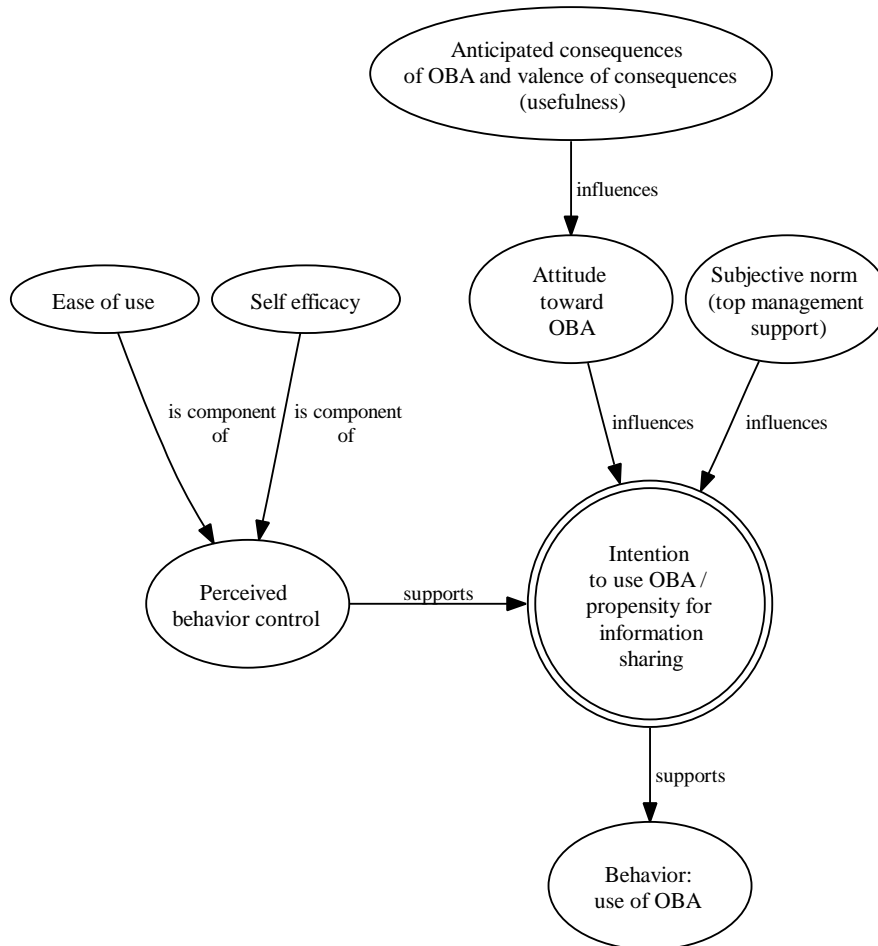


Figure 2.2: Interconnection of aspects of user acceptance

ers that the concept of self-efficacy (Bandura, 1982) provides a theoretical background to TPB as well as PU and PEOU. Ajzen himself points out that the concept of perceived behavioral control is most consistent with the one by Bandura (1982). Which in turn is acknowledged by Davis to be one of the theoretical anchors for PU and PEOU. In their extension of the classical Theory of Planned Behavior Pavlou & Fygenson (2006) even go as far as directly adopting PU as an influence on the attitude towards the behavior and PEOU as a determinant of self-efficacy, controllability, and attitude. Self-efficacy and controllability constitute perceived behavioral control. In the Technology Acceptance Model (Davis, 1986; Davis et al.,

1989) and its extension by Venkatesh & Davis (2000) the intention to use a device is influenced by PU and PEOU. However, in the original concept by Davis (1989) the aspect of subjective norms as a determinant of user acceptance and use is not taken into consideration. In the case of OBA, top management support could be considered a type of 'subjective norm'. It becomes clear that the concepts of PU and PEOU have influenced the general research on technology adaptation. Hence, it is an interesting perspective to use these theoretical aspects to investigate people's attitude towards a new management approach such as inter-organizational cost management and open book accounting in particular. Figure 2.2 shows the relationship between the different determinant of user acceptance. Finally, aspects of TPB and TAM will be reflected in the path modeling approach in Chapter 6. At this point, no further theoretical details on the constructs of PU and PEOU are necessary for the understanding of the subsequent experimental investigation. More specific theoretical background required for the development of the integrated path model of the propensity to apply open book accounting will be provided in Chapter 6. The next section provides theoretical background on the use of relation-specific asset in inter-firm relationships.

2.4 Specific assets in inter-firm relationships

Research on the role of specific assets in inter-firm relationships has been manifold (E. Anderson & Weitz, 1992; Bensaou & Anderson, 1999; Jap & Anderson, 2003). In an inter-organizational context, the specificity of an asset manifests itself in that manner that it is stamped for one special partner, that it hardly can be applied to alternative uses, and that it loses significant value if deployed second best (E. Anderson & Weitz, 1992; Klein, 1989). Specific investments can have different characteristics in an inter-firm set-up. Of course, sometimes these different applications are not perfectly separable as one asset might serve different objectives (Dyer, 1996b). Williamson (1979) identifies three types of specific assets: site, physical, and human assets. Site specificity occurs when production sites, which are connected by the same flow of materials, are built in close proximity in order to reduce coordination and transportation cost. When there is significant investment in customized capital, such as machinery and dies specifically developed for a customer this is referred to as physical asset specificity. Lastly, there is human asset specificity when partner-firms accumulate relation-specific know-how. This includes the mutual assignment of dedicated employees. For example, guest engineers, who learn the processes and systems of the partner firm (Dyer, 1996b,a).

E. Anderson & Weitz (1992), Cooper & Slagmulder (2004), and Ploetner & Ehret (2006) point out that the investment in assets which are specifically designed to produce services or products that strongly fit customer demand can be a source of competitive advantage and offer a chance to differentiate in terms of quality, time, and service and subsequently in customer satisfaction. Bensaou & Anderson (1999) amend that investing specifically does not only bound the firms together, it can also protect the buyer from technological uncertainty. Critical resources for a company might lie outside its own boundaries. The creation of specific investments with a supplier which has proprietary knowledge and/or access to crucial resources reduces the risk of being excluded from crucial production skills. In a market where there is scarce supply of a specific resource, this procedure also hedges against a shortage in supply.

After all, there are several examples in which the creation of a specific investment might have served all of the above purposes, but was mainly driven by the objective to lower production cost. Surprisingly, the origin of the discussion about specialized assets, Transaction Cost Economics, almost neglects the aspects that engaging in bilateral specific assets can bear significant cost savings or substantially increase revenues (Bensaou & Anderson, 1999; Wathne & Heide, 2000). Additionally, there is empirical evidence that, contrary to the expectation based on TCE, transaction cost do not necessarily increase as asset specificity increases (Dyer, 1997). Rather, specific assets in an inter-firm network are a possible source of performance improvement (Dyer, 1996b).

Interestingly, in his study on automotive transaction relationships Dyer (1997) reports that Toyota, whose suppliers engage in highly specialized inter-firm relationships with the car manufacturer, had the least transaction costs, while General Motors, as the automaker with the least specialized suppliers, incurred the highest transactions costs. Especially for automotive industry, there are further examples of bilateral specific investments which have lead to a cost reduction.

One example from the Japanese automotive industry will be explained in greater detail because it served as a blueprint to operationalize the specific investment in the experimental scenarios in this thesis. One supplier Nissan was sourcing seats from had built its plant on property adjacent to a Nissan assembly plant. To some extent, this already qualifies for a site-specific investment. However, the investment specificity is somewhat limited as, in the worst case—the abandonment of the partnership with Nissan—the production site could still be used to supply other manufacturers with seats, even though, with larger distances to bridge. After initially transporting the seats to the Nissan assembly plant by truck, the two partner firms discovered that the task could be accomplished more economically by installing a conveyor belt which connects the two production sites. Hence, the two transactional partners decided to

replace a non-specific transportation device (trucks) by a specific one (conveyor belt) (Dyer & Singh, 1998). The fact that both firms agreed to connect their production sites leads to another, but for the present investigation very important, domain of application for specific assets in a relational inter-firm context: Specific investments as (mutual) commitment devices.

In the literature this use of specific assets is also referred to as mutually offering pledges (E. Anderson & Weitz, 1992; Gundlach, Achrol, & Mentzer, 1995) or exchanging mutual 'hostages' (Kogut, 1988). It is important to point out that, in order to achieve a positive effect, theory as well as empirical findings propose that the partner firms engaged in the relationship need to invest *mutually*, such that both parties have assets at stake and face possible loss (Lui & Ngo, 2005). Schelling (2006) points out that the reciprocity of specialized assets can tie the hands of partner together. Gundlach et al. (1995) suggests that imbalanced contribution can evoke opportunism by the partner which is less committed to the relationship. Jap & Anderson (2003) support this result, as the authors point out that one-sided, unilateral investments increase the perception of possible exploiting and opportunistic behavior by the partner firm (Jap & Anderson, 2003). In summary, only if both parties contribute to the specific investment, it can serve as a pledge to the partnership and show credible commitment (E. Anderson & Weitz, 1992; Williamson, 1983b,a).

At first sight, it is paradox to deliberately engage in specific assets, as the TCE framework proposes that the creation of specificity will lead to a situation of small-number bargaining and increase the incentive for opportunism. Nonetheless, specific assets can be used to balance the exposure. In an ideal situation, the bilateral investment can achieve this by balancing what both sites have to lose (Bensaou & Anderson, 1999). Fein & Anderson (1997) provide thorough empirical evidence that a distributor, who exposes himself to risk by investing specifically in a relationship to a supplier, will demand from the supplier a pledge to balance the exposure. Especially researchers from the field of marketing and distribution channels have thoroughly analyzed the role of specific investments for the development of commitment among firms (Andaleeb, 1996; E. Anderson & Weitz, 1992; Artz & Brush, 2000; Fein & Anderson, 1997; Gundlach et al., 1995; Heide & John, 1990; Rokkan, Heide, & Wathne, 2003). In organizational science, using an example from automotive industry, Bensaou & Anderson (1999) treated specific investments as a dependent variable and analyzed potential factors that influence the motives to invest in supplier specific assets.

In their recent study on the influence of structural and process factors on partnership satisfaction in inter-firm relationships, Lui & Ngo (2005) identified specificity of the assets invested in a relationship and the partner's reputation as two important structural factors which positively influence the level of satisfaction within inter-firm alliances. From a supply chain

perspective, Kwon & Suh (2004, 2005), and Suh & Kwon (2006) have investigated the influence of specific assets on inter-firm relationships. In detail, Kwon & Suh (2004, 2005) analyzed how different factors, among them mutual specific investments, affect the level of commitment and trust within a supply chain. In a similar study, Suh & Kwon (2006) investigated the effect of bilateral specific assets and after-investing trust. All three studies found a positive relationship between mutual specific investments and the level of trust among the partners. In their study, which was based on a mail questionnaire, Kwon & Suh (2005) report findings which indicate a significant positive direct relationship between the partner's firm idiosyncratic investments and the trust in the partner firm. However, the average length of the partnerships which were analyzed in this sample was about eight years. Thus, it can be argued that in this case the inter-firm relationships were well established and beyond the starting phase. Further, Gundlach et al. (1995) found in their study of the role of commitment in exchange that credible commitments, in form of idiosyncratic investments, positively affect the long term commitment intentions. However, for successive periods, that is, for a short term perspective, the authors report mixed results regarding the relationship between credible commitments and commitment intentions.

As shown by the results of the latter studies, specific investments can serve as suitable instruments to foster inter-firm relationships in a long term perspective. Based on the mixed results by Gundlach et al. (1995) concerning the short term perspective, the question appears whether or not specific investments can serve as an relationship fostering device and hence increase the willingness to engage in inter-organizational cost management activities. As indicated, researchers from different field of research have investigated this question for other fields of research. The present study is now trying to adapt this question to the field of inter-organizational cost management.

2.5 Power and Dependence

In general terms power can be defined as the capacity to modify the conduct of others in a desired way (Blau, 1964). The power construct has received considerable attention among researchers from the field of management and organization and has been analyzed at different organizational aggregation levels (Shervani et al., 2007). Basically, the analysis of power in an organizational context can be divided into the aspects of the effect of power in an intra-organizational context and in an inter-organizational context. Because for the present investigation the inter-organizational aspect is by far the more important one, only a short overview of some representative studies dealing with the aspect of intra-organizational power is given.

Intra-organizational power Jensen & Zajac (2004) analyzed the power individual members in certain positions in the corporate elite (CEO, director etc.) can exert on an organization's strategy and how the individual characteristics imply the different preferences concerning the strategy. Extending the object of investigation to the subunit-level Medcof (2001) tackled the question of the power of subunits within an organization. Using a resource-based view and resource dependence theory, the author investigated the effect of offshoring of important technical resources on the intra-organizational power structure. In his findings the author reports that important subunits (f.e. R&D), which are shifted offshore, take the resource-based power with them. This needs to be taken into account when considering the management approach for this type of subunit. In summary, the author suggests that authoritarian approaches for managing strategically important units are certainly not the method of choice in this case, rather an inclusive management mode should be applied.

Inter-organizational power relations The aspect of relative dependence is an important aspect for the analysis of inter-firm relations (S. W. Anderson & Dekker, 2005; Buvik & Reve, 2002; Frazier, 1983b,a). Based on the concepts by Blau (1964), Emerson (1962), and Thibaut & Kelley (1959), relative dependence is determined by multiple factors (Molm et al., 2001): (1) The percentage of an exchange partner's business which he contracts with another member and the value of the benefits the exchange with a particular partner firm can bring. (2) The difficulty in effort and cost faced by an exchange partner in attempting to replace another firm as a supplier or as a customer. That is, the availability of alternatives to this partner and the benefits from alternative exchange relations (El-Ansary & Stern, 1972). Having an alternative partner firm at hand, for example an alternative supplier for a car component, reduces the dependence on the partner (Van den Abbeele, 2006). Thus, power can be considered the inverse of dependence (Burt, 1992; Emerson, 1962; Magee, Galinsky, & Gruenfeld, 2007).

J. C. Anderson & Narus (1990) point out that in an inter-firm context the dependence should not just be considered as an absolute indicator. That is, a firm's perceived dependence on a particular inter-firm relationship is not a good indicator for the dependence relations within the partnership. Rather, the perceived own dependence on the inter-firm relationship relative to the partner firm's dependence on the relationship is a measure which determines to what extent 'a firm will have influence over, and be influenced by, its partner' (J. C. Anderson & Narus, 1990, p. 43). As J. C. Anderson & Narus (1990) continue, relative dependence leads to relative or inter-firm power. Or vice versa, relative power and dependence can be referred to as counterparts (Andaleeb, 1996). Hence, for the inter-firm relation, the power a firm can exert does not solely depend on its buying power or on its size, but on the extent to which it is

dependent on the exchange relation compared to how dependent the partner is on the working relationship. Hence, many studies focusing on inter-organizational behavior have used the availability of alternatives to operationalize the concept of (relative) power (Van den Abbeele, 2006; Kale, 1986; Keith, Jackson Jr., & Crosby, 1990; Kim, 2000; Seal et al., 1999).

As highlighted before, Van den Abbeele (2006) experimentally analyzed the effect of relative power in a buyer-supplier cost management environment. The author found that, to a certain extent, the availability and provision of detailed and comprehensive total cost of ownership cost information can alleviate a power disadvantage of firms when faced with a more powerful buyer. Using the same concept of power-dependence Molm, Peterson, & Takahashi (1999) conducted research on the use of power in different types of exchange situations. The authors distinguish between negotiated and reciprocal exchange. In negotiated exchange actors reach an bilateral agreement whose terms and benefits are known in advance and constitute a discrete transaction. The terms of the exchange, and therefore the equality or inequality, are known to the parties when an agreement is reached. This means that benefits flow bilaterally and simultaneously.

In reciprocal exchange, an actor's contribution is performed separately and non-negotiated (Molm et al., 1999, 2001). One actor initiates the exchange and performs a beneficial act for the other or for the relationship itself, without exactly knowing if ever or to what extent the opposite party will reciprocate. In the present case, this act is represented by the initial revelation of cost information by one of the partner-firms. Reciprocal exchange situations are characterized by a series of sequentially performed actions. In contrast to negotiated exchange, reciprocal exchange establishes the aspects of equity or inequity over time as the actors reciprocate each other's actions or not (Molm et al., 1999, 2001).

In the case of the present research design, in the context of the exchange of cost information, individuals face a reciprocal exchange situation. Neither the final benefits nor the terms of the exchange relation with the partner firm are fixed in a contractual agreement and the actual merit of the inter-organizational cost management activities is not clear a priori. Therefore the successful implementation of OBA strongly depends on the willingness of the partners to reciprocate beneficial actions. Interestingly, Molm et al. (1999) found that the use of power tends to be less in reciprocal exchange than in negotiated exchange. The authors argue that this is due to the fact that, over multiple exchange steps, less powerful actors refrain from giving unilaterally in an reciprocal exchange and that less powerful will reduce their contributions to match that of their more powerful partner. Consequently, more powerful actors will be better off not exerting too much power in reciprocal exchange because overall, the contribution reciprocated by the less powerful party will be higher (Molm et al., 1999). At this point,

one shortcoming of traditional exchange theory for the analysis of inter-firm relations shall be pointed out. Exchange theory assumes that dependence is an outcome of interdependent interactions between the exchange partners. However, in a business context, it is more common that interactions occur in a pre-determined power and dependence relation.

The concept of relative power will play an important role in the second part of the experimental investigation (Chapter 4) in which the effect of different relative power settings and relation-specific assets on the use of open book accounting is analyzed. The next chapter shows the results of an experimental investigation which analyzed the effect of the initially offered quantity of cost information and the offer of a relation-specific asset on the propensity to engage in cost information exchange. Whereas the subsequent assumes power symmetry between the involved partner firms, Chapter 4 will investigate cost information exchange under asymmetric power settings.

3 The effect of specific assets and cost information disclosure on the propensity to engage in inter-organizational cost management processes

In this experimental study the effects of a specific investment and of the initial disclosure of cost information on the implementation of open book accounting are analyzed. The propensity to engage in inter-organizational cost information exchange has many facets. To account for these different aspects, the hypotheses for the experimental analyses are derived based on the substantial theoretical framework presented in Chapter 2.

3.1 Development of hypotheses

Willingness to use open book accounting The first set of variables deals with the propensity to engage in cost data exchange processes. In analogy to Zucker (1986), who describes trust as a result of process-based, characteristic-based, and institutional-based factors, the propensity to use open book accounting can be regarded as the result of the interaction of three factors: characteristics of the interacting persons, situational conditions, and the interaction process. For the present study, the interaction process-related aspect can be defined as the initial disclosure of cost information and the subsequent reaction to it. The situational conditions are determined by the constellation of the experimental variables and their manipulation (initially offered quantity of information small/large and offer of relation-specific asset no/yes). The personal characteristics of the partners, however, are not subject to investigation in this study.

Researcher from various scientific disciplines have confirmed the importance of the context or the situational variables for the quality and the functioning of inter-organizational exchange processes (Frazier & Rody, 1991). Specifically, the outcomes of the exchange process are measured as the willingness to further engage in cost exchange processes and apply open book accounting with this specific business partner in this situation. Following Gundlach et al. (1995), it can be argued that, additional to the commitment effect of a relation-specific asset, the disclosure of confidential and proprietary information and knowledge can be regarded as a signal of commitment, as well. Thus, it is argued that the initial offer of cost information can serve as a commitment device and foster the partner's readiness to engage in a reciprocal cost information exchange.

For the effect of the relation-specific asset, certain considerations must be made. As mentioned in the theoretical section, there are positive effects of specific assets as commitment device for the long term (Gundlach et al., 1995; Kwon & Suh, 2005). However, for the short term perspective and the establishment of new inter-firm relationships Gundlach et al. (1995) also report mixed results. Thus, it is considered whether proposing a relation-specific investment in an early stage of the inter-firm relationship can even evoke a negative reaction among the partners. Examples of such possible drawbacks are the level of perceived relational risk and opportunism and a decrease in the level of trust. These effects may occur, since individuals may not be willing to tie themselves to an interacting partner at such an early stage of the relationship. Partners could react negatively, if they feel their freedom of action may be restricted.

The theory of reactance describes people's behavior if their freedom is threatened or eliminated (Brehm, 1966). By engaging in open book accounting, individual freedom already becomes restricted such that the sharing of cost information represents a clear commitment towards one partner-firm and certainly exacerbates the risk of switching for the partner firm. Consequently, this may imply a threat to the freedom of choice of partners. If this situation now is supplemented by an offer of a specific asset, concerns about freedom may well prevail. Hence, as Clee & Wicklund (1980) vividly illustrate, for a 'bride' who ponders the reduction of freedom that 'marriage' will soon bring about, a supply chain partner may, all of a sudden, find an alternative partner more attractive or simply perceive the relationship to the partner firm as excessively close. Attempts to influence the partner to engage in open book accounting, by offering a specific investment, may provoke the partner to move in the opposite direction. The reactance effect, though, depends on the freedom of choice prior to the interaction. If there was no freedom of choice before, the partner firm will not perceive that a limit or threat is induced by the action in question. Because in the experimental design the buyer and supplier

firm did not have a relationship prior to the proposal to engage in open book accounting and there was no direct dependence between the two firms, a situation of freedom of choice could be assumed.

Taking these considerations into account together with the abovementioned aspects of reactance, no direct additive effect of the experimental variables on the willingness to disclose cost information is expected. Rather, it is anticipated that the relation-specific asset and the quantity of offered information will yield an interaction effect. Further, it is proposed that, under certain conditions, an idiosyncratic asset can have an effect similar to that of a large quantity of initially offered cost information. It is expected that it may compensate for a small quantity of initially offered cost information. Thus, besides the main effect of the initial offer of cost information an interaction effect of the two experimental variables is hypothesized as follows. Figure 3.1 presents the expected effect graphically:

Hypothesis 3.1. *Sharing a large amount of cost information increases the willingness to use open book accounting; a specific asset increases the willingness, only if a small amount of cost information is offered initially, but not if it is offered together with a large amount of cost information. Similar effects are expected for the perceived partner's willingness.*

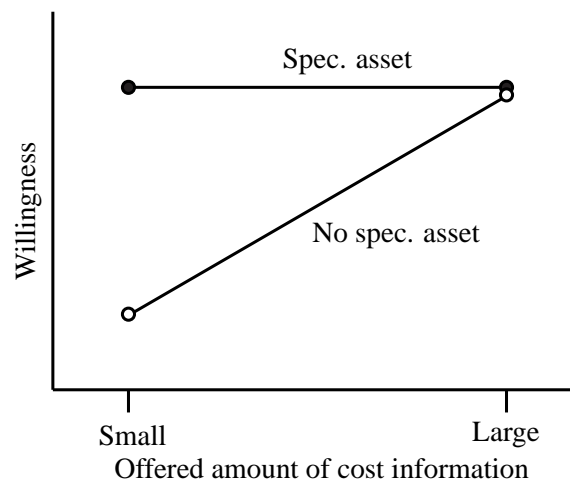


Figure 3.1: Hypothesized effects of information quantity and asset on willingness to use open book accounting – exp. 1

It shall be indicated that at the present point of the investigation the willingness to use open book accounting is treated at the same level as the other dependent variables. The question whether the willingness is mediated or moderated by other dependent variables and whether it occupies an exposed position in the context of the general propensity to use open book

accounting will be investigated later in this thesis by moderator and mediator analyses as well as in a path modeling approach using structural equation modeling (SEM) techniques. The results of the moderator and mediator analyses are reported in Chapter 5 and the configuration as well as the results of the model will be presented in Chapter 6.

Cost information disclosure Open book accounting as an inter-firm cost management tool requires the disclosure of relevant cost information between the involved parties (Kajüter & Kulmala, 2005). Hence, the application can be looked at as an exchange process between partners. As illustrated in the previous chapter exchange theoretical aspects have taken a great stance in social and organizational science, but have yet to enter research on management accounting. The important aspect of reciprocity has thoroughly been outlined in the previous chapter. However, any exchange between partners needs to be initiated in some way. This lead to the question about the role of the initial offer and revelation in exchange processes.

Since the beginning, research concerning the initial offer in negotiations was based on exchange and equity theory (Liebert, Smith, Hill, & Keiffer, 1968). Oesch & Galinsky (2006) report the current state of research concerning initial offers in exchange processes, while Krause, Terpend, & Petersen (2006) provide an overview regarding research on reference and anchor points as well as opening offers in buyer-supplier negotiations. Following a number of research findings, it is implied that the initial offer during an interaction process can be interpreted as a device that constitutes the framework for further interaction (Kahneman, 1992; Oesch & Galinsky, 2006). So far, initial offers have mainly been investigated in a context of purchasing and selling negotiations. For instance, Buelens & Van Poucke (2004) investigated factors that determine the initial offer in a negotiation process. Galinsky & Mussweiler (2001) examined the role of first offers as anchors. Up to this point, no research has tackled the issue of the first offer in an open book accounting/inter-firm cost information exchange environment.

The importance of equity and fairness for the development of inter-firm relationships has been sufficiently stressed. Fehr & Schmidt (1999) indicate that the perceived equity is important for the establishment of a prosperous exchange relationship. One behavioral pattern to achieve perceived fairness and equity is action reciprocity (Lui & Ngo, 2005). This means that one party answers the other party's action with the same category of action and to the same extent. A cooperation strategy that exhibits a close action reciprocity can be referred to as a tit-for-tat strategy (Axelrod, 1984). This behavior pattern comprises a cooperative behavior in the first action which is followed by mirroring the efforts the other party offered in the previous interaction (Lui & Ngo, 2005). Thus, the sequential exchange in a tit-for-

tit-for-tat strategy exposes the parties only to a limited threat of opportunism and hence, represents a mechanism against opportunistic behavior by stepwise ‘tying each other’s hands’ (Jap & Ganesan, 2000). Since the engagement in inter-firm cost management represents an exchange situation in which opportunistic behavior is possible, the participants may adopt a tit-for-tat strategy concerning the revelation of private cost information. Consequently, a large quantity of information initially offered to the partner firm is anticipated to increase the amount of cost information reciprocated by the participants. Hence it is proposed:

Hypothesis 3.2. *Under the conditions when a large quantity of information is offered a larger amount of cost information is reciprocated than under the conditions when a small amount of information is offered.*

Further, based on the core concepts of exchange theory, fairness and equity and own benefit (J. S. Adams, 1965; Blau, 1964; Moser, 1998), the assessment of the exchange process is expected to be influenced by the initially offered quantity of information. It is also expected that offering a relation-specific asset influences the abovementioned constructs. The expectations will be broken down in Hypotheses 3.3 and 3.4.

Fairness and equity As mentioned in the previous chapter, there are results in the literature which indicate a positive effect of relation-specific investments (as credible commitments) on inter-firm relationships in the long term perspective. Taking this into consideration, the idiosyncratic asset and the quantity of offered information are expected to show an interaction effect. The idiosyncratic asset is assumed to have a similar positive commitment effect as a large quantity of information and hence, foster perceived fairness and equity as well as perceived own benefit. For the aspect of fairness and equity in the initial phase of inter-organizational cost management the disclosure of cost information is expected to play the most important role. Once fairness and equity are achieved, the offering of a specific asset is primarily judged concerning economic aspects and the benefits it will bring. Aspects whether or not the relationship will be more equitable or fairer will then be considered to a lesser extent. In the present investigation a conveyor belt constitute the relation-specific investment between the buyer and the supplier. It enables the partners to lower the transportation cost between the two production sites (For further information on the experimental design, please refer to Section 3.2.2). As mentioned in the previous chapter, several authors indicate the economic potential of specific investments (E. Anderson & Weitz, 1992; Cooper & Slagmulder, 2004). Hence, the offer of a relation-specific asset is not anticipated to have an additional positive effect on perceived fairness and equity. However, for perceived own benefit an additional

positive effect is expected (The expected effect is depicted graphically in Figure 3.2.). Thus, it is stated:

Hypothesis 3.3. *Under the condition when a small quantity of information and no specific asset is offered, perceived fairness and equity is lower than under the other three conditions.*

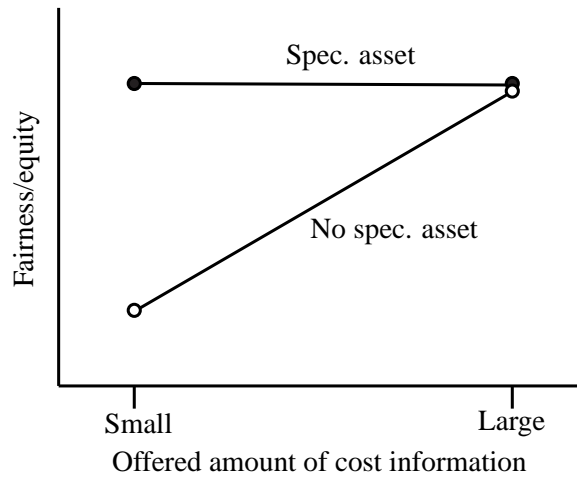


Figure 3.2: Hypothesized effects of information quantity and asset on perceived fairness/equity – exp. 1

Regarding the perceived own benefit, it is proposed that (See Figure 3.3):

Hypothesis 3.4. *Under the conditions when a large information quantity or when a specific asset is offered perceived own benefit is higher than under the condition when a small information quantity without a specific asset is offered. Perceived own benefit is highest when a large quantity of information is offered together with a specific asset.*

Trust, risk, and opportunism Generally, the formation of inter-firm relationships entails risk—more than ever does the disclosure of private cost information (Mintu-Wimsatt & Graham, 2004; Mintu-Wimsatt, Garci, & Calantone, 2005; Langfield-Smith, 2005). As pointed out in the chapter covering the theoretical aspects of the investigation, there are three types of trust relevant for inter-organizational collaboration. Contractual, competence, and goodwill trust. In this study, the operationalization of trust focuses on the aspect of goodwill trust. This type of trust can be regarded as the result of the initial step of the exchange process. Both, the exchange of cost information and a specific investment, bear significant risk. With the exchange of cost information the chance of opportunistic behavior and betrayal emerges

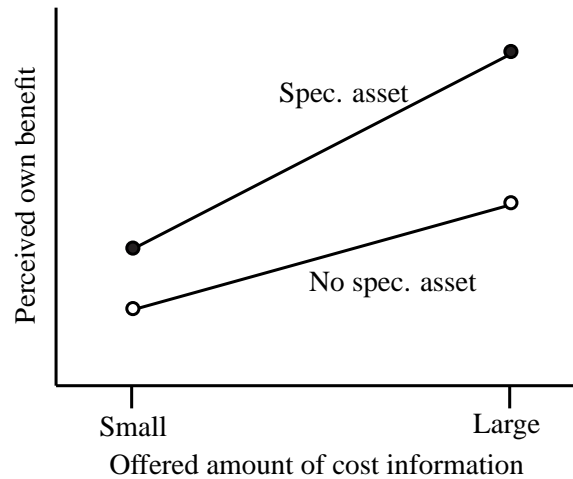


Figure 3.3: Hypothesized effects of information quantity and asset on perceived own benefit – exp. 1

(Williamson, 1975, p. 9). Additionally, in a setting in which the asset specificity of a joint investment between the two firms is significantly high, perceived relational risk is certainly an issue (Langfield-Smith, 2005).

On the one hand, it is investigated if this specific investment can serve as a signaling device that one party does not intend to act opportunistically—that is, if it is a suitable device to increase the level of trust and decrease the level of perceived risk. On the other hand, it shall be analyzed if the proposal of a specific investment in an early stage of the inter-firm relationship may even increase the level of perceived relational risk and decrease the trust level, because individuals may not be willing to tie themselves to an interacting partner in such an early stage of the relationship. Partners could produce reactance as their freedom is threatened or eliminated (Brehm, 1966). By engaging in open book accounting, the individual's freedom becomes restricted in that way that the sharing of cost information represents a clear commitment towards one partner-firm and certainly complicates the switch of the partner firm and consequently, the engagement in IOCM implies a threat to the freedom of choice of partners. Attempts to influence the partner to engage in inter-organizational cost management activities by offering a specific investment may provoke the addressee to move in the opposite direction. The reactance effect, though, depends upon the freedom of choice prior to the interaction. If no freedom of choice existed before, the partner firm will not perceive a limit or threat by the persuading action. As mentioned above, the implemented experimental scenarios implicate a situation of relative freedom.

Tomkins (2001) analyzed the interdependent relation between trust and information in firm alliances. The author concludes that it is likely that in an early stage of an inter-firm relationship there should be a positive connection between information and trust, whereas less information is needed to sustain an established relationship. Consequently, concerning the dependent variable dealing with the perception of risk and trust the following hypotheses are formulated.

Hypothesis 3.5. *When there is a large quantity of information, or when a specific asset is offered, trust is higher than when there is only a small quantity of information or no specific asset offered.*

Hypothesis 3.6. *When there is a large quantity of information, or when a specific asset is offered, fear of opportunism is lower than when there is only a small quantity of information or no specific asset offered.*

As indicated before, concerning the perceived riskiness of a situation two aspects are taken into account. On the one hand, a subject could perceive the fact that a large quantity of information is shared or a specific asset is offered as risk decreasing since the partner exposes her-/himself to a higher risk and thus, will be less likely to intentionally fail. In this case risk (taking) can be considered a trust creating task (Harnett et al., 1968; Das & Teng, 1998; Mintu-Wimsatt et al., 2005) On the other hand, the introduction of a large quantity of information in combination with a specific asset creates a situation in which more value is at risk and thus, the potential loss is greater than in a situation with only few shared information and/or no specific asset offered. Hence, for the variable ‘perceived riskiness’ no directed hypotheses is formulated.

Hypothesis 3.7. *Perceived riskiness will be affected by the quantity of information offered and/or the offering of a specific asset.*

3.2 Research method

3.2.1 Experimental design

An experimental approach using a 2×2 factorial design was applied to examine the effect of information quantity and the proposal of a specific asset on the implementation of open book accounting. The experimental approach was chosen for several reasons. Open book accounting is a rather new approach and thus can only sporadically be observed in the field and the

manipulation of the cost information would be impossible to conduct in field research. Thus, the effects could neither be observed nor isolated. Additionally, experimental approaches can pave the way for survey based field research as the effect of key variable in an open book accounting framework can be isolated and analyzed.

Two levels of information quantity (small and large) and the offering of a specific investment (no and yes) constitute the experimental variables. The study was designed as a one-move experiment. The sample consists of 85 participants recruited from two managerial accounting courses at a French university. 40 participants were students of the Master of Science in Business Administration program, 45 were students of the MBA program. All participants had attended a management accounting class in which the principles of open book accounting in an inter-organizational cost management framework had been taught. Participants were randomly assigned to the experimental conditions. The participation of the students was gained by granting the opportunity to receive credits for their course. Subjects were told that they took part in an investigation about cost accounting in inter-firm relationships. No specific reference was made to the term open book accounting. It was not explicitly explained what the understanding of open book accounting is. Because the participants were confronted with the suggestion by the supplier to interchange cost data in order to strive for joint optimization effort, the ultimate goal of the cost information exchange, and thus open book accounting was evident. Last but not least, the participants were told that the outcome of the investigation would not be graded and anonymity was guaranteed. On average, it took the participants 25–35 minutes to read through the material provided and complete the required tasks.

3.2.2 Experimental manipulations

Participants were provided a scenario dealing with the supplier-buyer relationship of two companies. The material was designed by adopting the approach presented by Drake & Haka (2008). The authors provide two sets of cost data which are interdependent in their structure, thereby making the exploitation of joint cost saving potentials possible, which is one of the main goals of open book accounting. A sample of the materials handed out to the participants is provided in Appendix A. All subjects received the same background information about the relationship between the supplier (Framing.Inc) and the buyer (nameless) whose perspective the participants were to take. In the experimental scenario the participants in the buyer perspective are faced with an initial offer of cost information and/or a relation-specific asset from Framing.Inc the ‘phantom’ supplier (meaning that no real person acts as the supplier, because the supplier only exists within the scenario).

Participants were told that their firm produces electronic devices for which casings, such as Framing.Inc, the supplier, produces, were needed. To control for influences of power between the two firms, it was indicated to the participating persons that both firms were comparable in size and power. In the scenario the beginning of a negotiation situation between the two firms was described in which the opportunity existed to exchange cost information. The cost structure of the two firms was interdependent, thus, both parties could jointly search for cost cutting potential by negotiating attributes and properties of the casings. For example, if the casing was delivered double-bagged, the cost incurred at the supplier would be higher, at the same time the buyer would incur less quality insurance cost. The participants' attention was drawn to the interdependent cost structure by asking them to calculate the total cost under different combinations of the properties of the casing.

Information quantity was manipulated by the number of cost information items Framing.Inc initially disclosed in its first move. In the conditions with a small quantity of initially offered information only one cost information item, which represents about 8% of the total cost information which could at maximum be shared, was provided. In the condition with a large quantity of initially offered cost information nine cost information items, which represent about 80% of the cost information, were revealed.

The offering of a specific asset was manipulated such that Framing.Inc either suggested the construction of a conveyor belt between the two adjacent production sites as a joint investment or not. The specificity of the investment was stressed by pointing out that the conveyor belt could actually only be used by the two companies. The joint investment could reduce the quality assurance cost, which was one of the cost categories, by 10–20%. The cost of the investment was to be shared equally between the two firms and it was indicated that the cost for the investment into this specific conveyor belt would account for about 2% of the revenue of the two companies each. This sharing of the cost assures the mutual character of the specific investment. As proposed in the previous chapter, the reciprocity of the investment is a crucial requirement in order to represent a credible commitment to the relationship for both parties.

The operationalization of the specific investment was implemented following an example described by Dyer & Singh (1998). The authors report on a practical example from the automotive industry. Nissan and a supplier, which had a production site adjacent to one of Nissan's assembly plants, jointly invested in a conveyor belt, which connects the supplier's production site with Nissan's assembly plant. Due to this conveyor belt, the transportation cost of the car seats could significantly be cut. Hence, the specific investment in this experimental investigation exhibits a strong sense of realism as it resembles quite well a real-world example of a joint buyer-supplier investment.

The participants were asked to indicate which of their own cost information (at maximum 12) items they were willing to share in response to the initial move of the supplier. All information that was at the participants' disposal was relevant and accurate and could not be manipulated. Hence, if exchanged with the partner, these cost information could be used to utilize the interdependent cost structure and to achieve a lower overall cost level. Finally, the participants were asked to answer a questionnaire comprising of several theoretical constructs (see next paragraph). The experimental material was pre-tested with several PhD-students, to clear out potential misunderstandings and to assure the successful experimental manipulation.

3.2.3 Dependent variables

All items representing the dependent variables (with exception of the variable information reciprocated) were answered by the participants on a 7-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

Willingness to disclose information The willingness to disclose cost information in possible further interaction with Framing.Inc, as well as the perceived willingness of Framing.Inc was measured. Participants were asked to indicate both, their own willingness to engage in further cost information exchange with Framing.Inc and their perceived willingness of Framing.Inc to do so, respectively (items adapted from Sarkar, Echambadi, Cavusgil, & Aulakh (2001)).

Number of information items reciprocated This variable indicates how many cost information items the participants revealed in their response to the initial offer by the partner firm in the scenario.

Fairness and equity The perceived fairness of the cost exchange process was measured using four items. The participants were asked to indicate whether they perceived the exchange of cost information in general as fair (following Grabner-Kräuter & Kaluscha (2003)) and whether there was a perceived spirit of fairness in the interaction with Framing.Inc (J. L. Johnson, 1999). Further, the participants were asked to state how they perceived the outcome for both, Framing.Inc and the own firm, relative to the respective contribution (items created following J. S. Adams (1965)).

Own benefit Three items were used to investigate as how beneficial the participants perceived open book accounting. The first item served as a general indicator of the advantages

of open book accounting. The second item indicated if, in the relationship with Framing.Inc, participants perceived the advantages of open book accounting to outweigh the disadvantages. Finally, the third items asked whether the use of open book accounting will lead to a situation from which both companies will benefit equitably (items inspired by Bock, Zmud, Kim, & Lee (2005), E. U. Weber, Blais, & Betz (2002), and White (2005)).

Trust The trust variable indicates the participants' trust in the information provided and in the information exchange process. Subjects were asked to indicate if they believed that in the future Framing.Inc will provide all information needed (following Kwon & Suh (2004)), if they had confidence in the information disclosed by Framing.Inc (adapted from Metcalf, Frear, & Krishnan (1992)), and if they perceived Framing.Inc to provide a truthful picture of their business (adapted from Ariño (2001) and Gundlach et al. (1995)).

Fear of opportunism This variable consisted of three items covering the aspects of opportunistic use of provided information, the provision of gathered information to competitors, and the fear that the partner may use opportunities that arise to profit at the own firm's expense (adapted from White & Lui (2005)).

Risk Using two items, which were inspired by Pavlou (2002), participants were requested to indicate the perceived risk for their firm and for Framing.Inc when using open book accounting.

3.3 Results

3.3.1 Preliminary checks

Even though, the relevant literature considers the dependent variables to represent different aspects, factor analysis was applied using orthogonal (varimax) rotation to proof the independence of the theoretical constructs. Determining the appropriate and most interpretable number of factors for a factor analysis is quite a challenging task. There have been different approaches in the literature to determine the optimal number of factors. Among those are: Maximum likelihood, eigenvalue greater than one, the comparison of the observed eigenvalues with those expected from random data, extracting factors until the chi square of the residual matrix is not significant, extracting factors until the change in chi square from factor n to factor $n + 1$ is not significant (Bortz, 1993, pp. 472–521). In this specific case, the Very Simple

Structure procedure (VSS) is applied, which was proposed by Revelle & Rocklin (1979) to determine the most suitable number of factors.

The results of the VSS-analysis reveal that 6 factors provide the most interpretable solution ($p = 0.002$), because the inclusion of the 7th factor does not provide a significant improvement of the overall explained variance ($p = 0.057$). Therefore six is the appropriate number of factors. Thus, the factor analysis was calculated using six factors. The solution explains 72.2% of the variance. The results of the factor analysis are displayed in Table 3.1.

Table 3.2 is more clearly arranged, because it does not display those factor loadings which are smaller than 0.35. The six factors reflect quite well the six theoretical constructs. Only two items seem ambiguous. 'Framing.Inc intentionally failed to provide proper information' (belonging to the fairness and equity construct) and 'Framing.Inc provides me with a truthful picture of their business' (belonging to the trust concept). The two ambiguous items were handled as follows. The first item 'Framing.Inc intentionally failed to provide proper information' was eliminated for two reasons. Its factor loading on the factor representing the fairness and equity construct (F5) was lower than on factor F1 which represents the perceived own benefit construct. Additionally, when the item was included in the fairness and equity construct Cronbach's Alpha dropped from 0.795 to 0.783. The second item 'Framing.Inc provides me with a truthful picture of their business' was included in the construct 'integrated trust', because it does not feature any higher factor loading than on the hypothesized factor trust (F6). Further the inclusion of the item increased Cronbach's Alpha of the trust construct from 0.614 to 0.680. Overall, the reliability scores of the theoretical constructs ranged from 0.680 to 0.807 (see Table 3.3). Table 3.4 presents the correlations of the mean values of the constructs.

3.3.2 Manipulation check

To check the success of the information quantity and the specific asset manipulation, participants were asked to indicate on a 7-point Likert scale whether the partner firm Framing.Inc had provided a large amount of cost information and whether Framing.Inc had suggested significant investments in resources dedicated to this relationship. Participants in the large information condition perceived the quantity of initially offered cost information to be significantly larger than participants in the small information condition ($M_{\text{large information}} = 4.80$, $SD = 1.38$; $M_{\text{small information}} = 1.91$, $SD = 0.95$; $p = 0.000$). Participants in the condition with the offer of a specific asset showed a significantly higher agreement on the statement that Framing.Inc has suggested significant investments in resources than participants in the condition without the specific asset ($M_{\text{with asset}} = 4.86$, $SD = 1.13$; $M_{\text{without asset}} = 4.05$, $SD = 1.40$; $p = 0.004$). Therefore, the manipulation of both independent variables was successful. Furthermore, the

| Dependent variable | F1 | F2 | F3 | F4 | F5 | F6 |
|---|-------|-------|-------|-------|-------|-------|
| I am willing to share whatever information it takes to make this project a success. <i>Own willingness</i> | 0.18 | -0.17 | 0.01 | 0.86 | 0.05 | 0.09 |
| Framing.Inc is willing to share whatever information it takes to make this project a success. <i>Perceived partner's willingness</i> | 0.10 | -0.09 | 0.01 | 0.71 | -0.14 | 0.19 |
| Using open book accounting in the interaction with Framing.Inc is advantageous for my firm. <i>Own benefit I</i> | 0.47 | -0.29 | 0.07 | 0.03 | -0.25 | 0.31 |
| In the relationship with Framing.Inc, for my firm the advantages of open book accounting will outweigh the disadvantages. <i>Own benefit II</i> | 0.77 | -0.27 | 0.00 | 0.24 | -0.12 | 0.08 |
| The use of Open book accounting will lead to a situation from which both companies will benefit equitably. <i>Own benefit III</i> | 0.59 | -0.11 | 0.08 | 0.14 | -0.12 | 0.25 |
| The exchange of cost information between Framing.Inc and my firm was fair. <i>Fairn. and equity I</i> | 0.17 | 0.06 | 0.11 | 0.19 | -0.77 | 0.28 |
| There was a strong spirit of fairness in the interaction with Framing.Inc. <i>Fairn. and equity II</i> | 0.19 | 0.06 | -0.04 | 0.09 | -0.63 | 0.25 |
| Framing.Inc intentionally failed to provide proper information. <i>Fairn. and equity III</i> | -0.40 | 0.27 | -0.25 | 0.01 | 0.35 | -0.09 |
| The outcome Framing.Inc received from this interaction process is adequate to its contribution. <i>Fairn. and equity IV</i> | -0.01 | -0.14 | -0.01 | -0.13 | -0.57 | 0.10 |
| The outcome my firm received from this interaction process is adequate to our contribution. <i>Fairn. and equity V</i> | 0.15 | -0.08 | 0.14 | 0.05 | -0.76 | -0.09 |
| In the future, I can count on Framing.Inc to provide us with all the information we need. <i>Trust I</i> | 0.15 | -0.20 | 0.11 | 0.21 | -0.09 | 0.63 |
| I have full confidence in the information Framing.Inc provided to my firm. <i>Trust II</i> | 0.31 | -0.05 | -0.06 | 0.06 | -0.19 | 0.53 |
| Framing.Inc provides me with a truthful picture of their business. <i>Trust III</i> | 0.09 | -0.22 | 0.03 | 0.17 | -0.44 | 0.49 |
| I am afraid that Framing.Inc will use the provided information opportunistically. <i>Opport. I</i> | -0.25 | 0.75 | 0.12 | 0.04 | 0.04 | -0.15 |
| I fear that Framing.Inc might provide the information to competitors of my firm. <i>Opport. II</i> | -0.16 | 0.83 | 0.01 | -0.24 | -0.01 | -0.01 |
| I fear that Framing.Inc may use opportunities that arise to profit at our expense. <i>Opport. III</i> | -0.13 | 0.57 | 0.00 | -0.21 | 0.20 | -0.31 |
| Using open book accounting involves a significant amount of risk for my firm. <i>Risk I</i> | -0.07 | 0.04 | 0.90 | 0.00 | -0.02 | -0.08 |
| Using open book accounting involves a significant amount of risk for Framing.Inc. <i>Risk II</i> | 0.22 | 0.07 | 0.80 | 0.02 | -0.13 | 0.18 |

Table 3.1: Results of factor analysis

| Dependent variable | F1 | F2 | F3 | F4 | F5 | F6 |
|---|-------|------|------|------|-------|------|
| I am willing to share whatever information it takes to make this project a success. <i>Own willingness</i> | | | | 0.86 | | |
| Framing.Inc is willing to share whatever information it takes to make this project a success. <i>Perceived partner's willingness</i> | | | | 0.71 | | |
| Using Open Book Accounting in the interaction with Framing.Inc is advantageous for my firm. <i>Own benefit I</i> | 0.47 | | | | | |
| In the relationship with Framing.Inc, for my firm the advantages of Open Book Accounting will outweigh the disadvantages. <i>Own benefit II</i> | 0.77 | | | | | |
| The use of Open Book Accounting will lead to a situation from which both companies will benefit equitably. <i>Own benefit III</i> | 0.59 | | | | | |
| The exchange of cost information between Framing.Inc and my firm was fair. <i>Fairn. and equity I</i> | | | | | -0.77 | |
| There was a strong spirit of fairness in the interaction with Framing.Inc. <i>Fairn. and equity II</i> | | | | | -0.63 | |
| Framing.Inc intentionally failed to provide proper information. <i>Fairn. and equity III</i> | -0.40 | | | | 0.35 | |
| The outcome Framing.Inc received from this interaction process is adequate to its contribution. <i>Fairn. and equity IV</i> | | | | | -0.57 | |
| The outcome my firm received from this interaction process is adequate to our contribution. <i>Fairn. and equity V</i> | | | | | -0.76 | |
| In the future, I can count on Framing.Inc to provide us with all the information we need. <i>Trust I</i> | | | | | | 0.63 |
| I have full confidence in the information Framing.Inc provided to my firm. <i>Trust II</i> | | | | | | 0.53 |
| Framing.Inc provides me with a truthful picture of their business. <i>Trust III</i> | | | | | -0.44 | 0.49 |
| I am afraid that Framing.Inc will use the provided information opportunistically. <i>Opport. I</i> | | 0.75 | | | | |
| I fear that Framing.Inc might provide the information to competitors of my firm. <i>Opport. II</i> | | 0.83 | | | | |
| I fear that Framing.Inc may use opportunities that arise to profit at our expense. <i>Opport. III</i> | | 0.57 | | | | |
| Using Open Book Accounting involves a significant amount of risk for my firm. <i>Risk I</i> | | | 0.90 | | | |
| Using Open Book Accounting involves a significant amount of risk for Framing.Inc. <i>Risk II</i> | | | 0.80 | | | |

Table 3.2: Reduced results of factor analysis

| Construct | Cronbach's Alpha |
|-----------------|------------------|
| Willingness | 0.799 |
| Fairness/equity | 0.795 |
| Own benefit | 0.743 |
| Trust | 0.680 |
| Opportunism | 0.807 |
| Risk | 0.802 |

Table 3.3: Reliability scores – exp. 1

| | Own willing. | Part. willing. | Fairn./equ. | Own benefit | Trust | Opport. | Risk |
|----------------|--------------|----------------|-------------|-------------|----------|---------|-------|
| Part. willing. | 0.67*** | | | | | | |
| Fairn./equity | 0.07 | 0.20. | | | | | |
| Own benefit | 0.34*** | 0.31** | 0.37*** | | | | |
| Trust | 0.29** | 0.36*** | 0.45*** | 0.51*** | | | |
| Opport. | -0.33** | -0.23* | -0.18 | -0.48*** | -0.39*** | | |
| Risk | 0.02 | 0.04 | 0.16 | 0.15 | 0.12 | 0.06 | |
| Info. recipr. | 0.28** | 0.33** | 0.24* | 0.21* | 0.16 | -0.15 | -0.03 |

*** Significant at the 0.001 level

** Significant at the 0.01 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 3.4: Correlation of mean values of constructs

precondition that the power relationship between the two firms was perceived as equal was examined. This was assessed by the item ‘I view Framing.Inc as less powerful than my firm’ (7-point answer scale). The results of an ANOVA (see Table 3.5) showed that participants in all four experimental conditions do not significantly differ in their ratings. The overall mean was $M = 3.48$, indicating that the two firms were perceived to be of equal power.

| Source of variation | Df | Mean sq | F | p |
|-------------------------------------|----|---------|------|-------|
| Info. quantity | 1 | 4.45 | 2.34 | 0.130 |
| Spec. asset | 1 | 0.48 | 0.25 | 0.617 |
| Info. quantity \times Spec. asset | 1 | 0.39 | 0.21 | 0.650 |
| Residuals | 81 | 1.90 | | |

Table 3.5: Perception of relative power – exp. 1

3.3.3 Hypotheses test

Following the procedure proposed by Bray & Maxwell (1982), first, an overall multivariate analysis of variance (MANOVA) is conducted. Since MANOVA assumes a multivariate normality for the error terms a chi-square plot was used to test for multivariate normality (following Everitt (2005, pp. 147–156)). There was no indication of a deviation from multivariate normality. Following this MANOVA, analyses of variances (ANOVA) on each dependent variable were conducted. The overall MANOVA test of significance (see Table 3.6) shows that there is a statistically significant interaction effect of the two experimental variables ($F = 2.52$, $p = 0.017$), a significant main effect of information quantity ($F = 4.81$, $p = 0.000$), and a tendency of an effect for the offer of a relation-specific asset ($F = 1.79$, $p = 0.092$). Table 3.7 presents the results of the ANOVAs.

Willingness to use open book accounting Even though the two items to measure the willingness to engage in further cost information exchange show a high reliability (see Table 3.3), the items are analyzed separately because they represent different aspects of willingness. The analysis of the perceived partner’s willingness, that is, the perceived willingness of the partner firm to exchange further cost information, yields a significant main effect of the quantity of initially offered cost information ($F = 10.35$, $p = 0.002$). Hence, if participants are initially confronted with more cost information, they perceive the partner as more willing to

| | Df | Pillai | F | num Df | den Df | p |
|----------------|----|--------|------|--------|--------|----------|
| Info. quantity | 1 | 0.34 | 4.81 | 8 | 74 | 0.000*** |
| Spec. asset | 1 | 0.16 | 1.79 | 8 | 74 | 0.092. |
| Interaction | 1 | 0.21 | 2.52 | 8 | 74 | 0.017* |

*** Significant at the 0.001 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 3.6: Results of MANOVA – exp. 1

collaborate ($M_{\text{large information}} = 3.63$ than in the scenarios when only a small amount of information was initially offered ($M_{\text{small information}} = 2.64$).¹ This result can be regarded as further confirmation of the successful manipulation of the amount of initially offered cost information. Further, a significant interaction effect ($F = 8.77$, $p = 0.004$) was found for the offer of a specific asset and the initially offered quantity of information. This indicates that offering a specific asset can, at least under the condition of a small amount of cost information offered, raise the perceived partner's willingness. However, no main effect of the relation-specific asset was found.

To display the results of the analysis of selected variables, a four-quadrant design is chosen. For the first appearance in the course of this thesis, a detailed explanation of the graphical illustration is provided. The upper right and the lower left quadrant display box-and-whisker plots. These plots are used to depict the *direct* effects of the experimental variables on the dependent variable. The black dots indicate the means of the respective dependent variable (perceived partner's willingness). The box indicates the 95%-confidence intervall for the dependent variable and the dashed line shows the range of the actual answers. The box-and-whisker diagrams indicate the *linear/additive* effects of the experimental variables. The remaining two quadrants are used to depict the *non-additive/non-linear* effects. The quadrant in the upper left shows the interaction of the independent variables on the dependent variable, in this case the perceived partner's willingness. The axis of abscissae indicates the amount of initially offered cost information. The drawn through and the dashed line indicate whether a relation-specific asset was offered or not. More specifically, in the upper left, the interaction of the cost information quantity and the offer a relation-specific asset is displayed. As to be seen in a moment, the sequence and the alignment of the independent variables play a role when it comes to inter-

¹Differences to summed means of the values in Table 3.8 are due to rounding.

| Dep. variable | Source of variation | Df | Mean Sq | F | p |
|---------------------------------|---------------------|----|---------|-------|----------|
| Own willingness | | | | | |
| | Info. quantity | 1 | 1.48 | 0.57 | 0.452 |
| | Spec. asset | 1 | 12.57 | 4.86 | 0.030* |
| | Interaction | 1 | 11.81 | 4.57 | 0.036* |
| | Residuals | 81 | 2.59 | | |
| Perceived partner's willingness | | | | | |
| | Info. quantity | 1 | 20.36 | 10.35 | 0.002** |
| | Spec. asset | 1 | 3.08 | 1.57 | 0.214 |
| | Interaction | 1 | 17.25 | 8.77 | 0.004** |
| | Residuals | 81 | 1.97 | | |
| Fairness/equity | | | | | |
| | Info. quantity | 1 | 6.15 | 4.42 | 0.039* |
| | Spec. asset | 1 | 9.01 | 6.48 | 0.013* |
| | Interaction | 1 | 6.53 | 4.70 | 0.033* |
| | Residuals | 81 | 1.39 | | |
| Own benefit | | | | | |
| | Info. quantity | 1 | 0.01 | 0.01 | 0.917 |
| | Spec. asset | 1 | 2.21 | 1.70 | 0.196 |
| | Interaction | 1 | 3.56 | 2.74 | 0.101 |
| | Residuals | 81 | 1.30 | | |
| Integrated trust | | | | | |
| | Info. quantity | 1 | 2.59 | 1.75 | 0.189 |
| | Spec. asset | 1 | 0.56 | 0.38 | 0.541 |
| | Interaction | 1 | 6.63 | 4.47 | 0.037* |
| | Residuals | 81 | 1.48 | | |
| Fear of opportunism | | | | | |
| | Info. quantity | 1 | 1.11 | 0.72 | 0.397 |
| | Spec. asset | 1 | 0.06 | 0.04 | 0.842 |
| | Interaction | 1 | 0.04 | 0.03 | 0.875 |
| | Residuals | 81 | 1.53 | | |
| Riskiness | | | | | |
| | Info. quantity | 1 | 1.84 | 1.07 | 0.305 |
| | Spec. asset | 1 | 0.00 | 0.00 | 0.984 |
| | Interaction | 1 | 4.27 | 2.48 | 0.119 |
| | Residuals | 81 | 1.72 | | |
| Info. reciprocated | | | | | |
| | Info. quantity | 1 | 123.96 | 20.58 | 0.000*** |
| | Spec. asset | 1 | 1.34 | 0.22 | 0.638 |
| | Interaction | 1 | 4.85 | 0.81 | 0.372 |
| | Residuals | 81 | 6.02 | | |

*** Significant at the 0.001 level

** Significant at the 0.010 level

* Significant at the 0.05 level

Table 3.7: Results of ANOVA – exp. 1

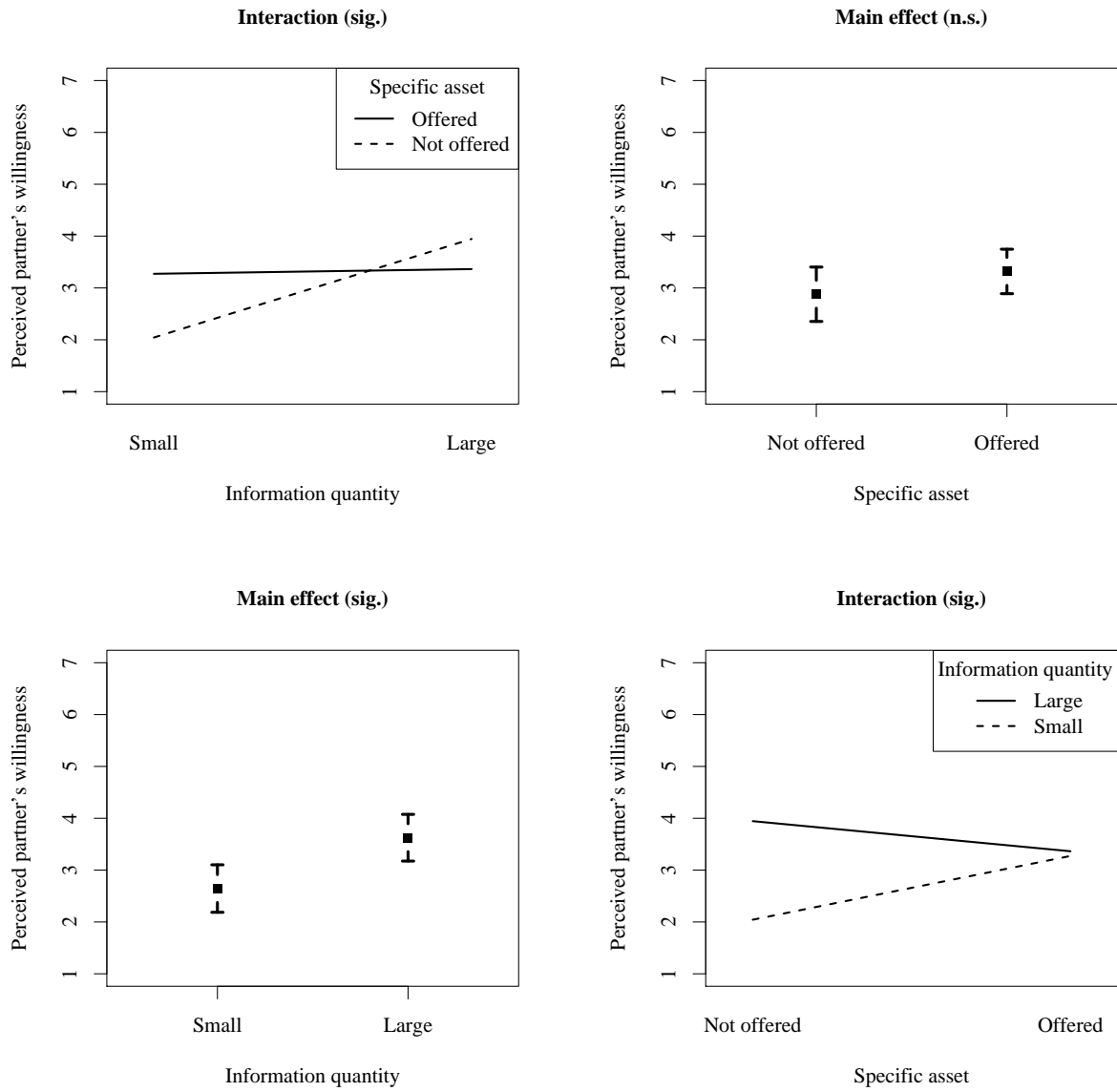


Figure 3.4: Effect of information quantity and specific asset on perceived partner's willingness – exp. 1

preting the effects. A similar type of graph is displayed in the lower right; except that the axis of abscissae and the axis of ordinates are switched. The lines now indicate the amount of cost information and the axis of abscissae depicts the offer of the asset. Consequently, the sequence of the interaction of the independent variables is changed. Whereas in the first graph (upper left) the perceived partner's willingness is shown as an effect of 'quantity of initially offered cost information \times offer of a relation-specific asset', in the lower right it is 'offer of a relation-specific asset \times quantity of initially offered cost information'. These different displays of the same interaction are needed for a further characterization of the effects of the two variables. The further specification of the interaction effect is done by interchanging the axis and comparing the course of the lines (Aiken & West, 1991; Jacobs, 2005; Lubin, 1961). Figure 3.4 shows for the perceived partner's willingness a hybrid or *semi-disordinal* interaction effect (Aiken & West, 1991; Jacobs, 2005; Lubin, 1961). This is the result of the combined appearance of a *direct* effect of the initially offered quantity of information and an *interaction* effect. More specifically, for the dependent variable, the participants who were confronted with a large initially offered amount of cost information generally perceive the partner firm to be more willing to earnestly engage in cost information exchange (main effect). This effect is even stronger when there is no specific asset offered simultaneously (interaction effect). Thus, the part of Hypothesis 3.1 concerning the perceived partner's willingness, which proposes that there is no direct additive effect of the two commitment devices, but that there is a substitutive interaction, is supported.

For 'own willingness', also a hybrid or semi-disordinal interaction effect of the two experimental variables was found ($F = 4.57$, $p = 0.036$). In particular, the results show that participants who were offered a relation-specific asset have a higher or equal to own willingness to engage further in cost information exchange compared to those who were not offered a specific asset (main effect, $F = 4.86$, $p = 0.030$). However, this effect is attenuated when a large quantity of cost information is initially offered (interaction effect). Hence, the hypothesis that there is an interaction effect between the information quantity and the specific asset on willingness to engage further in cost information exchange is supported. As shown in Table 3.7, the interaction effect is statistically significant. The interaction is a result of the fact that a specific asset increases the willingness when only a small quantity of information is initially offered. But the specific asset has no additional effect when a large amount of cost information is initially provided. Figure 3.5 illustrates this effect graphically. Mean values and standard deviations of all variables are listed in Table 3.8. The similarity of the reaction patterns of the two willingness items shows that, in an equal power situation, the exchange of cost information is a bilateral venture and cannot be forced by one of the parties alone.

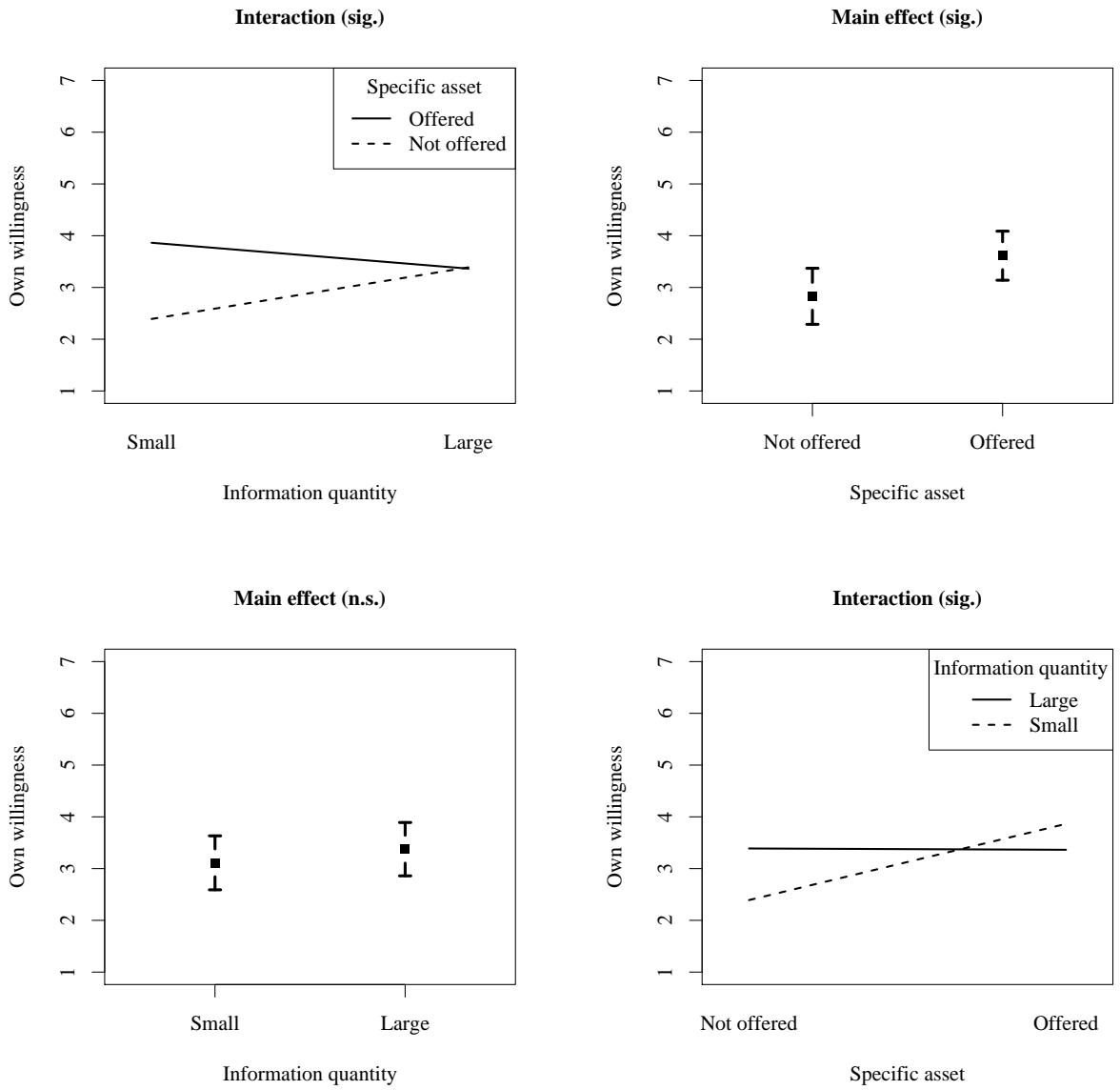


Figure 3.5: Effect of information quantity and specific asset on own willingness – exp. 1

| Dependent Variable | Initially offered quantity of cost information | | | | | | | |
|---------------------------------|--|--------|---------|--------|-------------------------|------|---------|------|
| | small | | | | large | | | |
| | Relation-specific asset | | | | Relation-specific asset | | | |
| | not offered | | offered | | not offered | | offered | |
| | M | SD | M | SD | M | SD | M | SD |
| | (n=23) | (n=22) | | (n=18) | (n=22) | | | |
| Own willingness | 2.39 | 1.62 | 3.86 | 1.55 | 3.39 | 1.72 | 3.36 | 1.56 |
| Perceived partner's willingness | 2.04 | 1.15 | 3.27 | 1.64 | 3.94 | 1.63 | 3.36 | 1.18 |
| Fairness/equity | 3.34 | 1.43 | 4.51 | 1.09 | 4.42 | 1.09 | 4.48 | 1.03 |
| Own benefit | 4.25 | 1.28 | 4.95 | 1.08 | 4.63 | 1.21 | 4.52 | 0.96 |
| Trust | 3.13 | 1.27 | 3.82 | 1.18 | 4.06 | 1.17 | 3.62 | 1.24 |
| Fear of opportunism | 4.61 | 1.30 | 4.52 | 1.13 | 4.80 | 1.30 | 4.79 | 1.22 |
| Riskiness | 4.65 | 1.40 | 5.07 | 1.42 | 5.42 | 0.79 | 4.93 | 1.44 |
| Cost information reciprocated | 5.65 | 2.27 | 5.45 | 3.16 | 7.56 | 2.28 | 8.32 | 1.91 |

Note. The scale for cost information reciprocated is 0–12; for all other variable it is 1–7.

Table 3.8: Means and standard deviations – exp. 1

Cost information disclosure Hypothesis 3.2 states that the disclosure of information follows a reciprocity pattern. I.e., if the initial offer contains large amount of information, participants would reciprocate a large quantity of information and if a small quantity of information is offered they would respond by revealing less information. The results of the ANOVA support this assumption. As shown in Figure 3.6, under the conditions of large information quantity, significantly more information items were reciprocated by the participants ($M = 7.98$, $SD = 2.09$) than under the conditions in which only a small information quantity was offered ($M = 5.66$, $SD = 2.71$).

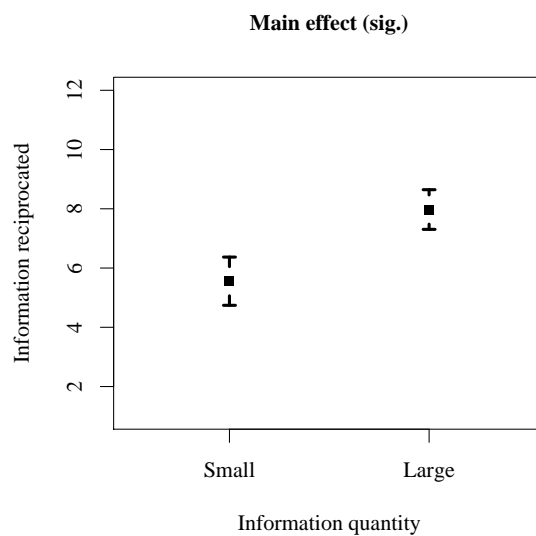


Figure 3.6: Effect of information quantity information reciprocated – exp. 1

Fairness and equity Hypothesis 3.3 expected less perceived fairness and equity under the condition when neither a large amount of information nor a specific asset was offered. This hypothesis is supported by the results of the ANOVA. A closer analysis of the interaction effect using Tukey's HSD revealed that the condition small information quantity/no specific asset offered distinguishes itself from the other three conditions ($p < 0.01$), whereas the other three conditions do not differ from each other. In the conditions with small information and no specific asset considerably less fairness and equity is perceived than in the other conditions. Besides the interaction effect, main effects were found for information quantity ($F = 4.42$, $p = 0.039$) and for the specific asset ($F = 6.48$, $p = 0.013$). In summary, this constitutes an ordinal interaction (Aiken & West, 1991; Jacobs, 2005; Lubin, 1961) and vividly illustrates the non-

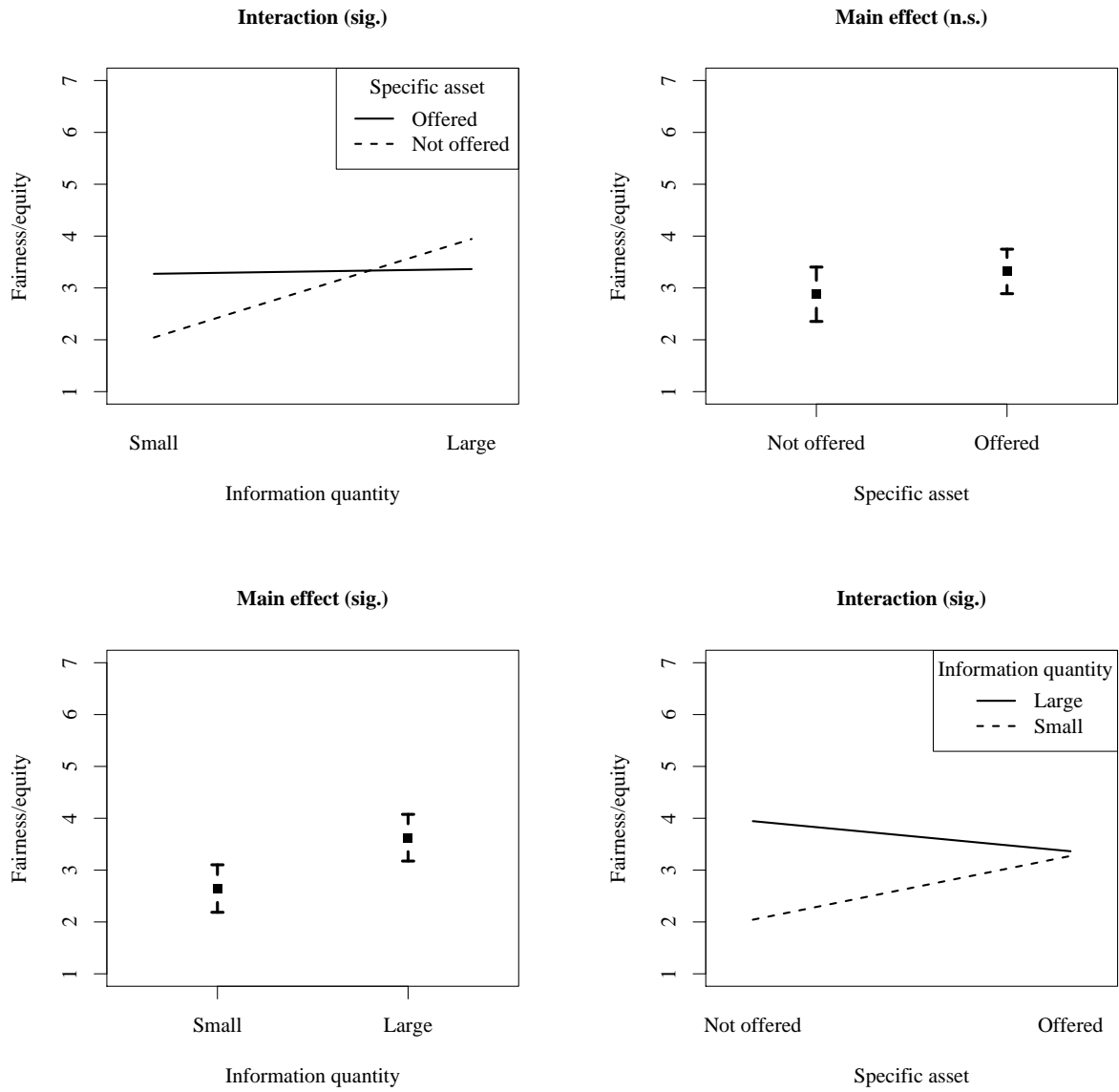


Figure 3.7: Effect of information quantity and specific asset on perceived fairness and equity – exp. 1

additive effect of the commitment by sharing cost information and investing idiosyncratically. Figure 3.7 shows the results for perceived fairness and equity. Even though both variables have a positive effect when considered separately (main effect), participants who were offered much information and the specific asset did not perceive the situation to be more fair and equitable than when only one of the devices was offered. Further, this illustrates that the information quantity can unfold a positive influence anyway, whereas the effect of the specific asset is conditional on the small initial information quantity. Because the conditions large quantity of information offered/no specific asset offered and large quantity of information offered/specific asset offered do not differ, it can be proposed that when a large quantity of information is offered, additional offer of a relation-specific asset as an additional commitment device does not further enhance perceived fairness and equity.

Perceived own benefit Hypothesis 3.4 proposes that under the conditions when a large quantity of information or when a specific asset is offered, perceived own benefit is higher than under the condition when a small information quantity without a specific asset is offered. This hypothesis was not supported. Likewise, the assumption that perceived own benefit is highest when a large quantity of information is offered together with a specific asset was not supported. Results show that there was neither an interaction nor a main effect (see Table 3.7).

Trust, risk, and opportunism As stated in Hypothesis 3.5 the initial offer of a large quantity of information as well as the offering of a specific asset are expected to foster trust.

Results of the ANOVA did not show a main effect for information quantity nor for the specific asset. Therefore, Hypothesis 3.5 is not supported. However an unexpected interaction effect of the experimental variables on trust was found ($F = 4.47, p = 0.037$) (see Figure 3.8). The effect shows that the offer of a relation-specific asset enhances the level of trust when there is only a small quantity of initially offered cost information. Under the condition of a large initially offered quantity of cost information, however, the offer of a relation-specific asset actually lowered the trust level. This represents the classical disordinal interaction effect in which the independent variables show no *main* effect, but have an effect on the dependent variable which depends on the value of the other independent variable.

Hypothesis 3.6 expected large information quantity and the specific asset to lower the fear of opportunism. These assumptions were not supported by the results of the ANOVA. For neither of the two independent variables a significant main effect was found.

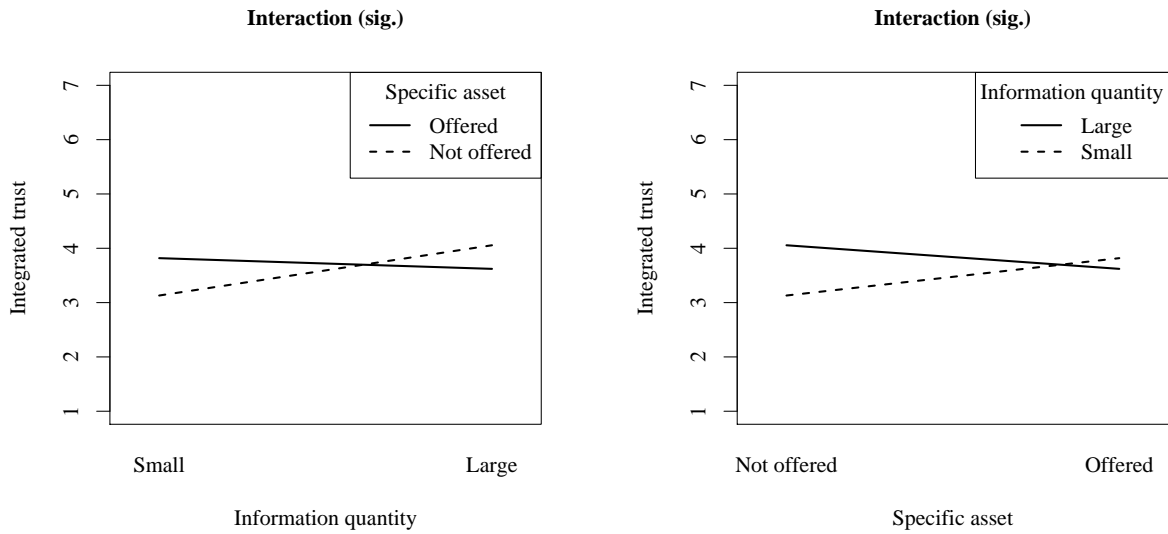


Figure 3.8: Effect of information quantity and specific asset on trust – exp. 1

The undirected Hypothesis 3.7 proposed that the two experimental variables will have an effect on the level of the perceived risk in the interaction of the two firms. However, no effect of the independent variables on the dependent risk variable was found.

3.4 Discussion

Based on ambiguous findings in the literature on the effect of a specific-asset in inter-firm relationships, the question was raised whether an asset has an influence at all, and if so, whether the influence is positive or negative. As often, the solution cannot be given straight forward and certain conditions must be taken into consideration to provide answers to this question. In general, the proposition that signs of commitment do not simply exhibit a plain additive effect is supported by the findings of the study. Both, the offering of a specific asset as well as the amount of disclosed cost information turned out to be important influencing factors for the propensity to engage further in a cost information exchange process. However, the effects must be scrutinized thoroughly. The own willingness is influenced that way that an offer of a relation-specific asset by the partner fosters the own willingness only when there is a small initially offered quantity of cost information. The combination of a large quantity of cost information and an offer of a relation-specific asset, however, seems to evoke reactance. This

interpretation is supported by the findings for the perceived partner's willingness. When the partner firm initially offers a large quantity of cost information together with a relation-specific asset, the partner's intention to earnestly engage in cost information exchange is perceived to be lower than when the large quantity of cost information is the only element of the initiative. Hence, the additional offer to engage in a mutual investment does not only have no positive effect, it even has a negative effect. Obviously, when both, a large amount of cost information and the asset are offered, participants evaluate the scale of the initiation as inappropriate.

Interestingly, the results for the actual behavior, i.e. the amount of reciprocated information, were rather distinct. Only the initially revealed cost information (positively) influences the amount of reciprocated cost information, independently from the condition of the specific asset. This means that, even though there are other situational variables which can be positively influenced, this positive manipulation in return is not directly transferred into a larger amount of shared information. This implies that the assumption that the amount of initially offered cost information is an important determining factor is supported because a tit-for-tat strategy is chosen as a predominant reaction to the initial offer.

Furthermore, perceived fairness and equity are influenced by both experimental variables, the offer of a relation-specific asset and the initially offered quantity of information. This aspect is very important as it demonstrates that open book accounting is a bilateral venture. The findings for fairness and equity confirm the effects described before for the willingness. Though there are main effects for the asset and the information quantity, the strongest effect of the specific asset is found when there is a small amount of cost information. A possible explanation for this reaction pattern could be that fairness and equity is evaluated in a cost information exchange context. Hence, just as for the amount of cost information the emphasis lies on the information not on a domain-unspecific commitment device, such as the asset.

Opposing to previous studies, no influence on perceived risk and fear of opportunism was found. However, the level of trust is influenced by an interaction effect of the experimental variables. The effect runs in the same direction as the one for own willingness. Hence, the same argumentation holds for the trust aspect of inter-organizational cost information exchange. That is, together with a small quantity of initially offered information, the offer of a relation-specific asset leads to higher trust. This is not the case if the specific asset is offered together with a large quantity of information. Hence, no additional positive effect emanates from offering a relation-specific asset, if a large quantity of information is already offered.

Risk and fear of opportunism yield high values across all experimental groups. Generally, the participants seem to evaluate the situation as risky. The proposal of a specific asset does not trigger the perception that the other party is less inclined to behave opportunistically. Instead,

it causes the feeling that overall, an even larger amount of value—proprietary cost information *and* a specific asset—is at stake and thus the overall risk is greater than without the asset. The same argumentation holds for the quantity of information as more information can on the one hand, signal commitment, on the other hand, it can evoke the feeling that, over all, the chance for opportunistic behavior is larger. It can be suspected that in an initial phase when no history of conduct of the partner is available, those variables are strongly influenced by structural factors such as personal or professional attitudes or the power relations.

The present study was conducted under circumstances in which the two interacting firms had equal power. In such a situation, managers should use the compensation effects of the information quantity and the specific asset to seek for the best constellation to hedge themselves against the high risk that is entailed in the offering of a large quantity of information and the engagement in a specific asset. Furthermore, decision makers should be aware of the fact that, especially in a confidential area such as cost accounting information, an initial offer going too far evokes reactance as the partners may look for the catch in it. A first move not only has an anchoring function for interactions such as buying, auction or negotiation setups, but it also sets a cognitive anchor for complex inter-firm exchange. Just as negotiations outcomes are strongly influenced by anchoring effects (Galinsky & Mussweiler, 2001), the initial move creates an important cognitive frame for complex interdependent inter-firm relationships. It creates rules concerning the commitment and veracity of the exchange and helps to form expectations. Not surprisingly, results show that the cost information is regarded to be the crucial element of the open book accounting process. Participants who were confronted with a larger amount of initially revealed information reciprocated by disclosing more cost information themselves. People's reluctant and reactant reaction when initially confronted with a large information quantity, combined with the specific asset may also be caused by the fact that a typical tit for tat strategy cannot be applied to the situation. Because when both commitment devices are offered simultaneously, participants may feel uncomfortable to apply a tit for tat strategy, which is a common indication for fairness in exchange processes (Axelrod, 1984; Lui & Ngo, 2005). By following this strategy the interacting partners would have to reveal much information themselves and engage in the specific investment. This may represent an unacceptable risk, which they may not be willing to take, especially at the beginning stage of an inter-firm relationship.

Even though an engagement in idiosyncratic investments, such as the one used in this experiment is not always possible, there are other assets that can take on the role of commitment devices. Geyskens et al. (2006) mention, for instance, human asset specificity and idiosyncratic investments in joint brand name capital as potential commitment alternatives. Open

book accounting represents not only an instrument to optimize the supply chain cost structure but the necessary disclosure of cost information can also be a proof of trust and the will to cooperate. This study seeks to contribute to the research concerning alliance management and the formation of inter-firm partnerships in the context of inter-organizational cost management. Using an open book accounting framework the present thesis examines the disclosure of cost information and the application of a commitment device in the formation stage of an inter-firm relationship. Open book accounting can on the one hand be used as an instrument to optimize inter-firm costs, on the other hand at the same time it can serve as a commitment device by revealing private cost information.

The relevance of this research question can be derived from the fact that hybrid inter-firm relationships can be governed using manifold mechanisms. One goal of these governing mechanisms will always be the prevention of risk and opportunism. Contracts are one possible approach which does not entail a high risk. However, contracted agreements can never cover all possible aspects of a complex inter-firm cooperation. Another possibility of inter-firm relationship development consists of specific assets as commitment devices. Jointly investing specifically exposes both partners to a significant amount of risk in case the other party fails. Hence, this mechanism ties the interacting partners to this inter-firm relationship (Williamson, 1975). However, the results of the present study advice caution. Less is sometimes more because the combination of information revelation and the offer of a specific asset does not necessarily evoke a positive effect. For example, results for the willingness to engage further in cost information exchange with the partner indicate a negative reaction pattern. The domain-specific device (offer of cost information) exceeds a non-domain-specific sign of commitment (offer of specific asset) concerning the propensity to use OBA.

Based on the research thus far (for example Geyskens et al. (2006) and Gundlach et al. (1995)), different research desiderata can be identified: For instance, the question concerning the intensiveness of the use of the devices or, of particular interest, the interaction of different types of commitment devices. Both aspects are taken into account in the present study. It could be assumed that an additive relationship exists for the interaction of different kinds of commitments. As the results indicate, in an early stage of an inter-firm relationship, commitment devices encounter a ceiling effect, i.e. commitment devices can, to a certain extend compensate each other but the positive effects do not linearly aggravate each other. Actually, under some conditions they even obstruct each other as extensive offers in the first move of an interaction may evoke reactance among the partners.

Extension of the research question The investigation has shown that under certain conditions the offering of a relation-specific asset and/or the offering of a large quantity of cost information can significantly influence the initial arrangement of inter-organizational cost management activities. A large quantity of initially offered cost information is reciprocated by the partner using a larger amount of cost information. The specific asset however does not impose an additional positive effect concerning the sharing of cost information or the willingness to share further cost information with the partner. However, if only a small quantity of information is initially offered, it can, to a certain extent, compensate for a lack of initially offered cost information.

The results of this first study were obtained in an experimental environment. Hence, it was possible to exactly analyze the effect of the experimental variables by controlling for other variables and extract cause-and-effect relationships. Contrariwise, effects of other, possibly important, variables may have been neglected. As Sheng et al. (2006) indicates, there are quite a few examples which show that the effects of specific assets are dependent on some other contextual variables. The present findings were generated under conditions in which the partner firms were of equal power and no direct dependence existed among them. The effect of power was intentionally neutralized to investigate the effect of the two experimental variables isolated from relative power structures. It is now the question what effect the abolishment of the assumption of equal power among the partner firms will bring. Will the relative power difference plaster everything and bury all constructive efforts? Or will the less powerful partner feel obliged to share more cost information in order to attenuate his or her high dependence on the other firm and therefore his or her power disadvantage (Van den Abbeele, 2006). The subsequent chapter extends the research framework by aspects of relative power and analyzes whether or not the relative dependence on the partner firm will affect the behavioral pattern of the exchange partner.

4 Relation-specific assets, cost information disclosure, and the relative power structure

4.1 Relative power and relation-specific asset

4.1.1 Relative power in inter-firm relations

The experimental research approach will be extended by manipulating the relative power structure between the two firms. It is to be analyzed whether the effects identified thus far can be reconstructed and confirmed in an asymmetrical power setting. In the present investigation the relative power structure is operationalized by manipulating the relative dependence of the supply chain partners on each other. Table 4.1 illustrates how the experimental variables are covered in the respective experiments. Section 2.2 introduced the basic tenets of exchange

| Information quantity | Power | | | Specific asset |
|----------------------|--------------|--------------|--------------|----------------|
| | Equal | Low | High | |
| Small | Experiment 1 | Experiment 2 | Experiment 2 | Not offered |
| Large | Experiment 1 | Experiment 3 | Experiment 3 | |
| Small | Experiment 1 | Experiment 2 | Experiment 2 | Offered |
| Large | Experiment 1 | — | — | |

Table 4.1: Experimental design

theoretical aspects. This theoretical approach will be perpetuated to analyze effects of power and dependence. In exchange theory, the dependence of an individual or an institution on a relationship is conceptualized using the construct of comparison levels (J. C. Anderson & Narus, 1990). The comparison level (CL) represents the quantity and quality of outcomes an individual feels he or she deserves (Kelley & Thibaut, 1978). The CL is determined by the knowledge of the outcomes of others (either by experience or by observation). Further CL_{alt} can be regarded as the 'lowest level of outcomes an individual is willing to accept in the light of available alternatives in other relationships' (Kelley & Thibaut, 1978, p. 9). On the one hand, an individual will leave a relationship if the outcomes gained from it will drop below CL_{alt} . On the other hand, if outcomes of a relationship exceed CL_{alt} to an increasing extent, the individual becomes more and more dependent on the relationship as either the number of alternatives that show comparable outcomes decreases or the difference of the outcomes of the current relationship and the next best alternative increases. In order to determine the relative power relations within an inter-firm set-up, it is necessary to compare the dependence of both partners on the relationship.

Following aspects of exchange theory, J. C. Anderson & Narus (1990) present a research framework for inter-firm working partnerships that is based on the straight forward assumption that a less dependent firm can, and in case of doubt will, use its more powerful position to influence its partner and to provoke the desired action. In the same direction, the authors propose that the partner who is more dependent on the relationship has a greater interest to sustain the relationship and is more inclined to make sacrifices. Further, the more dependent party is more receptive and amenable to suggestions by the partner firm. However, there is also criticism and the pledge for the extension of this theoretical framework because it neglects certain aspects of social interaction. Additionally, certain situational variables, which may lead to different effects, are neglected. Bonoma (1976) provides a substantiated and thorough analysis of the relative power and dependence structure in social science. The author goes beyond the straight forward approaches proposed by exchange theorists and proposes that the influence of power on variables such as trust or cooperation highly depends on contextual variables. In his study the author analyzes three different power contexts: The unilateral power system, the mixed power system, and the bilateral power system.

In the unilateral power system, one partner is significantly less dependent on the other partner and will try to influence the more dependent partner using some influence stimulus. The more powerful will try to change the less powerful to his favor. Bonoma (1976) characterizes the interaction process following the classical learning paradigm. Cooperation is oftentimes

achieved if the less powerful party complies and follows the propositions made by the more powerful.

The mixed power system is characterized by an exchange paradigm. In general, there is an increased mutuality in the interaction because the involved parties will alternately state their preferred positions striving for a joint utility exchange. Typically, classical bargaining situations are a good example for this. This means that, even though the partners are both able to make suggestions and offers, there is no sense of a 'common goal' to strive for. Both partners have solely their individual advantage in mind when they engage in interaction with the other party. Aspects of collaborative behavior, which may be suited to increase the overall level of welfare, are not considered.

Lastly, Bonoma (1976) indicates that the bilateral power system contains the unit action paradigm. Both partners will jointly determine individual and group action. The interacting parties will determine the joint policy considering each partner's preference constraints. The main focus lies on the maximization of the group's utility and not on the achievement of the individual's best. This requires that the firms develop a strong sense of a unit with their partner firm and that they take actions to retain the partnership. It must be clear to them that the functioning partnership and the achievement of mutual goals is the key variable to the fulfillment of individual plans (Bonoma, 1976). Consequently, the effect of power asymmetry becomes significantly less important because neither of the parties tries to achieve compliance by the other party (unilateral power system) nor play individual positions a dominant role (mixed power system).

Generally, different influences and reaction patterns are imaginable when power asymmetry appears in a dyad. On the one hand, the less powerful party could feel the pressure to cooperate with the more powerful partner. On the other hand, a less powerful firm may be frightened to share important information with a partner firm, which has several sourcing alternatives and could easily use the obtained cost information opportunistically. In summary of numerous studies, which have investigated the effect of power and dependence asymmetry, it can be stated that the results have been very ambiguous and no clear tendency of the effect of asymmetric power and dependence structures can be identified. For example, Kumar, Scheer, & Steenkamp (1995) point out that there are studies indicating that a firm's dependence on its partner-firm increases conflict and the use of coercive strategies. However, Brown, Lusch, & Muehling (1983) suggest the opposite, that is, if a firm is highly dependent on another, it will try to avoid conflicting strategies to minimize the likelihood of retaliation by the more powerful party (see also Frazier & Rody (1991)). Confirming the multi-directional results concerning the influence of power and dependence asymmetry, Kim (2000) cites numerous

studies which come to the conclusion that inter-firm power asymmetry has positive (Dwyer & Walker, 1981; Frazier, Gill, & Kale, 1989; Roering, 1977), negative (J. C. Anderson & Narus, 1984; Boyle & Dwyer, 1995; Frazier & Summers, 1984), or no (Ganesan, 1993) effect on the use of coercive influence strategies.

Directly dealing with research from the area of cost management Van den Abbeele (2006) reports that less powerful buyers can use detailed cost information to alleviate the disadvantages of their less powerful position. They use a different negotiation strategy as they show a higher problem solving behavior and are more willing to share important (cost) information. In contrary, the more powerful buyers choose an aggressive bargaining technique relying on their position of greater power. Interestingly, the author reports that the aggressive and inconsiderate bargaining strategy of the more powerful buyers did not succeed. By adopting to the power-asymmetrical situation and by creating a more cooperative and coordinated relationship the less powerful buyers' profits did not significantly differ from those of the more powerful buyers.

Because open book accounting aims at the optimization of the overall supply chain cost structure, another result seems to be of at least equal importance. Using a cooperative problem solving behavior, the less powerful buyers were not only able to capture a more profitable position for themselves, but the constructive behavior led to increased joint profits for the dyads compared to those exchange situations in which the buyers obtained the high power position. Hence, the pie was extended by improving the situation for both partners. These results are in line with the theoretical framework of Bonoma (1976) for the unilateral power system. There are further empirical results by Frazier et al. (1989) and Frazier & Rody (1991), which also indicate that the encounter of a powerful and a less powerful party can produce a prosperous inter-firm relationship. Because the less powerful firm will have a higher tolerance toward coercive strategies by the more powerful firm, it will not (cannot) respond by using an imperative strategy itself, but will show a non-coercive behavior which then will be returned in equal measure by the more powerful party creating a more supportive exchange atmosphere. Bonoma (1976) characterizes the cooperative behavior of the less powerful party by referring to it as cooperation under unilateral power or simply as compliance.

Based on these different aspects and the mixed empirical findings, Kim (2000) generally suggests that the link between inter-firm power asymmetry and, in this case, inter-firm influence strategies, may be contingent on additional variables. The author identifies the channel climate, more specifically the dyadic trust and the dyadic relationship continuity to moderate the use of influence strategies in an inter-firm set-up. There is also evidence that a power gap does not necessarily lead to egocentric behavior, but that it can be suitable for achieving certain

objectives, even the achievement of common goals. For example, Giebels, De Dreu, & Van de Vliert (2000) analyzed the bargaining behavior of business students and gave them different targets to strive for; either to maximize their own outcomes or maximize the overall, that is the own and the partner's, outcome. The results indicate that an unequal power distribution between the partners is obstructive if the individuals are urged to follow egocentric objectives. However, an asymmetric power relation leads to a higher joint profit level if the dyad is instructed to optimize the overall profit level (prosocial motive). Hence, in the study by Giebels et al. (2000), the social motive, either egocentric or prosocial, takes up the role of a classical moderating influence for the effect of a relative power difference. Hence, the ambiguous research results concerning dependence and power in prior studies may be caused by the very special circumstances under which the studies were conducted. As a consequence, generalizable results were hardly to obtain. For example Frazier et al. (1989) conducted their research in a seller market in developing countries in which manufactured products are a scarce resource per se (Frazier et al., 1989). Another reason can be traced back as far as Bonoma (1976), who criticizes that the effects of power have been investigated in a context-nonspecific research framework. As an example he criticizes that even advanced bargaining and exchange interactions are investigated by simply imposing the theoretical conceptualization of unilateral power relations on a new context and assuming that it may be just as applicable in the new context. As a consequence, Bonoma (1976) states that certain dyadic exchange and interaction situations have been analyzed using a non-viable research framework, leading to erroneous insights that cannot be used to satisfactorily model exchange in interaction situations. Sheng et al. (2006) indicate that, thus far, research has failed to correctly include the relative power structure of the interacting firms. This is even more surprising as some inter-firm relations exhibit high levels of power asymmetry. These are important objections, which make the deduction of generalizable effects of situational variables rather difficult. Taking this aspect into account, a protected experimental environment is used to analyze the validity of established theoretical concepts from exchange theory in combination with the theory of specific assets to investigate whether idiosyncratic assets belong to the category of variables which interplay with the effects of asymmetric power and dependence relations.

4.1.2 The effect of relation-specific assets in inter-firm relations

For the subsequent study the process-related aspect, namely the initial disclosure of cost information is not varied. Further, the personal characteristics of the interacting person are not manipulated in this experiment, either. However, the situational conditions differ. In this second experiment, the initially offered quantity of information is not an experimental variable.

Rather, the effect of relative power differences between the exchange partners and the offer of a relation-specific asset are manipulated.

As indicated before, the situational conditions are very important determinants of the functioning of inter-organizational exchange relationships (Frazier & Rody, 1991). Specifically, in this experiment the analysis concentrates on the effects of a relation-specific investment under different power settings on the implementation of open book accounting. Based on the provided theoretical background in Chapter 2 and the first experimental investigation, hypotheses for the second investigation are derived. In the first experiment it was observed that the disclosure of a large quantity of information has an effect on several of the dependent variables. Among them the amount of reciprocated cost information. The offer of a relation-specific asset, however, had a positive and compensative effect only when a small quantity of cost information was offered initially. Hence, in the subsequent analysis a situation of a small initially offered quantity of information will be used. This assures that the relation-specific asset can unfold its effect independently from the offered quantity of cost information.

Next, some additional theoretical background combined with an overview over important empirical studies and their findings are provided. Tailored especially to the research question investigated in this part of the study, this supplements the universally valid background already provided in Chapter 2.

Research on the application and the effects of specific assets in relational inter-firm settings has been manifold. However, the results have been diverse as well. Drawing on a normative TCE framework, Heide & John (1990) investigated key determinants of joint action in buyer-supplier relationships. Among these factors were specific investments. The authors report a positive relation between specific investments and the level of joint action of original equipment manufacturers (OEM) and suppliers. In their results the authors claim that specific investments in either direction have a beneficial effect on the joint action of a supplier and an OEM. Further they propose that a relation-specific investment does not necessarily need to be carried by both partners. Interestingly, instead of proposing that both partners have to mutually invest in the relation-specific asset, the authors argue that not the specific investment directly, but the joint action serves as a safeguard against opportunistic behavior. The authors further argue that the partners will exhibit joint action to restrict opportunistic tendencies. In this point the authors contradict Williamson (1985) who claims that the mutual investment in specific assets can serve as a reciprocal exchange of hostages and directly serve as a safeguard against uncooperative behavior. Nonetheless, the authors indicate that there are effects of control variables which may not be neglected. For example, joint action of the supplier and the OEM also increases as the value of the components, which are exchanged between

the supplier and the OEM, increases. That is, joint action also increases when more critical components are involved. Unfortunately, the study does not analyze the precise role of the importance of the components. It could be supposed that the importance of the components exchanged between the supplier and the OEM mediated or moderated the positive effect of the specific asset.

Using the proposal by Williamson (1985) to use specific investments as commitment devices in inter-firm relationships, E. Anderson & Weitz (1992) found a positive relationship between the use of pledges (specific or idiosyncratic assets) and the commitment firms show concerning a relationship. In detail, the authors found that, consistent with the TCE framework (Williamson, 1983b), the level of the distributor's perception of the manufacturer's commitment was directly and positively related to the extent to which the manufacturer had made non-redeployable investments. Interestingly, this finding is also consistent with the exchange-theory based investment model by Rusbult, which suggests that the higher the investment the larger the commitment (Rusbult, 1980). Among other variables, Ganesan (1994) analyzed the effect of specific investments on the relational governance and the long term orientation of a partnership. In his study, the author included specific assets and dependence as variables that influence the long term orientation. However, the two variables were not treated as two independent variables. Rather, the research framework suggests that the independent variable 'specific investment by retailer' influences the variable 'dependence of the retailer on a vendor'. Even though this is certainly an aspect of interest, oftentimes, it does not need a specific investment and/or an asymmetric power structure between two firms to create dependence because supply- or revenue-dependence alone can already create significant dependence. As pointed out in the theoretical section, relative power and dependence are often the result of an unequal number of alternatives or disproportional shares of business with each other. The relative power structure or the relative dependence of the partner firms plays a major role in inter-firm relationships. Just as for the effects of power asymmetry, the research on the application of inter-firm specific investments is yet to produce a generally accepted set of results. Rokkan et al. (2003) shall be mentioned as an example. In their results, the authors state that, depending on the relational context, specific assets can have a positive, opportunism reducing, or a negative, opportunism promoting, effect. This example illustrates one reason for the rather ambiguous research results. A possible explanation may be the previous negligence of important contingent, moderating, or mediating influences.

Bonoma (1976) points out that those interactions in which commitment plays a role can be seen as interactions on the border between unilateral and mixed power setting. The less powerful partner can try to convince his opposite that he actually has at least some stance by

making clear that he, however showing his commitment in the exchange relation, will inflict damage on himself (the more powerful party), if the more powerful party will further use his power and pressure the weaker partner. In case the weaker party is successful in convincing the more powerful party of his commitment, there is good chance that the situation will, at least to some extent, shift away from the unilateral power interaction toward a mixed power interaction which comprises a more social and rule-concerned interaction scheme (Bonoma, 1976). The shift from a unilateral power system to a mixed power system is the prerequisite to establish a bilateral system with common and mutual goal setting.

Hence, the less powerful partner, who has less alternatives and is more dependent on the partnership, needs a way to seriously show his commitment to the relationship. As indicated in the general theoretical framework and in the first experiment, one possible way is to use relation-specific assets as commitment devices. Based on the theoretical construct by Bonoma (1976) and the findings in the first experiment it is analyzed whether the specific asset can serve as a feasible commitment device.

Heide & John (1988) point at an interesting relation between specific investments and the relative power structure in buyer-supplier relationship. In their study the authors analyze the relationship of a manufacturer and its comparably small agencies. The manufacturer was significantly less dependent on the relationship with the agencies and therefore occupied the more powerful site in the dyad. There was a considerable amount of specific investment in the manufacturer-agency relationship. However, the agencies did not perceive the relation-specific investments as a pledge for a high relationship quality. Rather, they felt obliged to look for offsetting countermeasures to balance the dependence relation. The agencies did so by trying to engage in offsetting investments in the relationships with their customers. The authors report that the more this strategy is successful, the more the agencies became independent from the manufacturer and were able to improve their relative power structure. This example illustrates that simply engaging in relation-specific investments does not necessarily imply a positive effect on the relationship. Especially when there is power asymmetry, the more dependent party of a dyad may perceive the need to take dependence reducing actions.

In the first experimental investigation, under a symmetric power setting, the offer of a specific asset did not exert a positive effect additional to the effect of a large initially offered quantity of cost information. However, when only a small quantity of information was initially revealed, the specific asset could, to a certain extent, compensate for the absence of the large quantity of cost information. The next section investigates whether the effect of the specific asset, which appeared under a small initially offered quantity of information, will also be present in an asymmetric power and dependence setting.

4.1.3 Development of hypotheses

Willingness to use open book accounting and cost information disclosure Subsequently, based on the theory provided in Chapter 2 and the more specific arguments provided in Section 4.1.2, the hypotheses for the subsequent analysis are derived. In general, it is investigated whether the positive effect of a specific asset on certain aspects of the propensity to use open book accounting, is influenced by the asymmetry of relative power. In her study on the role of information in different inter-firm power settings Van den Abbeele (2006) found out that less powerful buyers can compensate their performance disadvantage by using detailed cost information to engage in an integrative problem solving behavior. Similarly, it is expected that a less powerful buyer will feel obliged to show compliance and hence, not only exhibit a higher willingness to share cost information with the more powerful partner, but actually will reciprocate a larger quantity of cost information than a powerful buyer. This assumption is stated in the subsequent hypotheses (see Figure 4.1).

Hypothesis 4.1. *A less powerful buyer will (a) exhibit a higher own willingness to engage in cost data exchange and (b) actually reciprocate a larger quantity of cost information than a buyer with high relative power. Furthermore, (c) it is expected that a specific asset offered by a more powerful supplier will even further increase the less powerful buyer's own willingness to use OBA and increase the perceived partner's willingness to use OBA.*

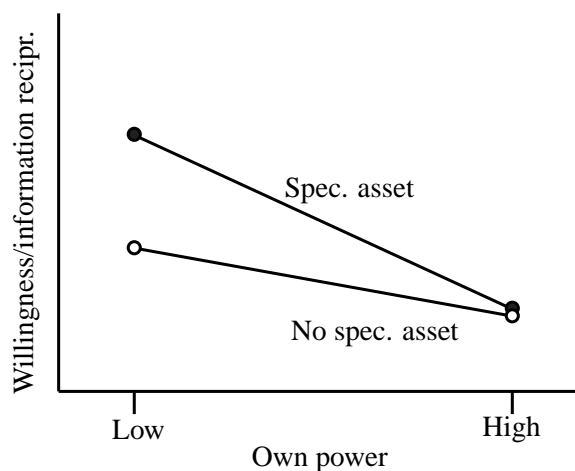


Figure 4.1: Hypothesized effects of power and asset on willingness and information reciprocated – exp. 2

Fairness and equity In the first experiment, the exchange-theoretical variables fairness and equity and perceived own benefit were influenced by both experimental variables (of-

fering of a relation-specific asset and initially offered quantity of information). The relative power structure is not expected to have an effect, neither on perceived fairness and equity nor on perceived own benefit. Hence, hypotheses will solely be proposed for an effect of the specific asset. For deriving hypotheses about possible effects of the experimental variables, several aspects must be taken into account. In case of the specific asset, the aspect whether the relation-specific asset is offered by a more or by a less powerful partner plays an important role. More specifically, for perceived fairness and equity, it is proposed that the offer of the relation-specific asset will have a positive effect only if offered from the more powerful to the less powerful party as a signal for good intentions. Hence, concerning perceived fairness and equity, the following hypothesis is proposed:

Hypothesis 4.2. *When a relation-specific asset is offered to a less powerful buyer (by a more powerful supplier), perceived fairness and equity will be higher than when there is no specific asset offered.*

Own benefit In this specific experimental scenario, the relation-specific investment, the construction of a conveyor belt, yields a reduction of the quality insurance cost for the transportation and is very likely to yield a positive margin. Hence, the buyer, independent from its relative power status, is expected to evaluate the offer of the specific asset as beneficial. Further, installing the conveyor belt will trigger a positive evaluation of the inter-firm relationship and cause a cooperative, benefit increasing assessment of the supplier-buyer partnership.

Hypothesis 4.3. *When a relation-specific asset is offered to the buyer, perceived own benefit will be higher than when there is no offer of a relation-specific asset.*

Trust, fear of opportunism, and risk Trust and the relative dependence or power structure have been identified to play a crucial role in inter-firm relationships. As Andaleeb (1995, 1996) points out, in many studies on inter-organizational dependence relations, trust has not been valued accordingly. Oftentimes, it has not been treated as a dependent variable, but it has either been neglected or it has been treated as a hidden factor that fosters the relationship (Etgar, 1976; Kale, 1986). Few researchers have broadened their scientific approach towards the trust construct. Van den Abbeele (2006) used trust as a dependent variable and found that in an early stage of an inter-firm relation information and controls constitute substitutes concerning the formation of trust. Further, Kim (2000) investigated the use of coercive influence strategies between firms in a power-asymmetric environment. The author found that trust moderates the usage of coercive influence strategies in that way that, as inter-firm trust increases, the power

asymmetry between the firms has a negative effect on the use of coercive influence strategies. That is, trust represses the application of coercive strategies in an asymmetric relative power relation.

Tomkins (2001) analyzed the necessity to provide information in inter-firm relation and the evolvement of trust over time. In his paper, the author proposes a non-linear functional relation between trust and information as time progresses. That is, as the inter-firm relationship matures and a higher trust intensity has been established by other means, less information is required to sustain the inter-firm relationship. Also from an inter-organizational management accounting perspective Dekker (2004) analyzed the role formal and informal control mechanisms can play for the management of appropriation concerns, which may result from a partner's opportunistic behavior. Possible ways to create trust among partners, which have been reported in the literature, are information sharing (Tomkins, 2001), dependable behavior (Swan & Nolan, 1985; Swan & Trawick, 1987), or repeated interaction as time elapses (Tomkins, 2001). As Tomkins (2001), following Luhmann (1979) and his remarks on trust, risk, and information, points out, the sharing of (cost) information can serve two purposes. First, the (cost) information can be used to solve problems or for the 'mastery of events'. Second, (cost) information, as a proprietary asset, can be used to build trust by showing one's good intentions. In the present study, cost information can clearly serve both purposes. However, since the analysis is situated in a cost-optimization scenario, the first purpose (mastery of events) is probably more prominent. Both, Tomkins and Dekker, treated information as a means to influence and/or foster the relationship quality. Especially the proposal of Tomkins concerning the decreasing need for information sharing to sustain trust as the relationship matures will not hold for the application of open book accounting. Since its efficiency and effectiveness strongly depends on the quality and the quantity of the shared information, the reduction of the amount of exchanged information over time is not a suitable option, because less shared information will inevitably lead to a smaller over-all cost saving potential.

However, research is yet to analyze the role of a relation-specific asset in asymmetric power structures. If a specific asset can serve as a commitment device, as Williamson (1985) argues, the offer of such a pledge should be perceived as a confidence-building action. However, following the same argumentation as for the negatively associated dependent variables risk and fear of opportunism, it will be differentiated between the expected effects of the specific asset depending on the circumstances under which it is offered. As argued before, if a less powerful partner offers a relation-specific asset, this may have negative consequences concerning the perceived relationship quality. The more powerful partner may interpret the offer as an attempt by the less powerful partner to strengthen its own position. Contrary, for the case that the more

powerful firm offers a specific investment, the less powerful firm may perceive this as a sign that the other firm does not intend to follow a coercive strategy as it deliberately abandons some of its independence in favor of the inter-firm relationship. Hence, it is proposed (see Figure 4.2):

Hypothesis 4.4. *When the buyer is in a less powerful position, the proposal of a relation-specific asset by a more powerful supplier will increase the buyer's trust. In contrast, when the buyer is in a more powerful position, the proposal of a relation-specific asset by a less powerful supplier will decrease the buyer's trust.*

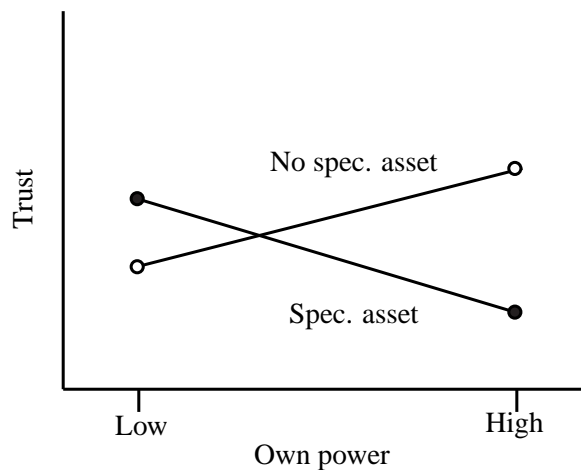


Figure 4.2: Hypothesised effects of power and asset on trust – exp. 2

For fear of opportunism and risk the following considerations are made. In case a less powerful supplier-firm offers a mutual specific investment, this may have the effect that more powerful buyer will perceive this strategy as if the less powerful partner is trying to reduce the power asymmetry and change the interaction situation from a unilateral power system toward a mixed power system (Bonoma, 1976). If the relation-specific investment was realized between the two firms, a bilateral bond, which creates interdependence, is established. This interdependence is in the interest of the less powerful partner but not necessarily in the interest of the more powerful partner, particularly not in the beginning of a buyer-supplier relationship. In case the more powerful firm agrees to jointly invest in an asset, it is the creation of (inter-)dependence that first opens up the chance—independent from the actual intention to do so—for the less powerful party to act opportunistically at all. Especially in the beginning of an inter-firm relation, the more powerful partner may consider this as a threat to his superior position and assess the offer as a risk increasing action. He will be careful and cautious not

to put his position at risk. The reverse picture can be drawn for the case of a less powerful partner. Thus, if the specific asset is proposed by the more powerful firm, it may serve as a sign that the more powerful firm does not intent to exploit the power asymmetry, but is interested in establishing a cooperative relationship. Therefore, the asset will reduce the less powerful partner's fear of being exploited.

For well established inter-firm relationship, the opposite may be true. In a matured inter-firm relation, in which a significant level of trust has already been established, even the more powerful of the partners may be up to jointly investing in relation-specific assets. However, in this case, trust will have been created by some other means and before the partners agree to invest in a specific asset. Hence, the willingness to engage in such a joint investment no longer solely is a sign of commitment, but it is the result of inter-organizational trust. However, in this study the very beginning of an inter-firm relationship is analyzed. Consequently, the mutual specific asset is not the result of trust but its influence on trust is analyzed. Based on the consideration above, the following effects of the experimental variables are proposed (see Figure 4.3).

Hypothesis 4.5. *If the buyer is in a powerful position, the proposal by a less powerful supplier to invest specifically increases (a) the perceived risk and (b) fear of opportunism on the buyer's side. Contrary, if the buyer is in a less powerful position, the proposal by a more powerful supplier will decrease the level of perceived risk and fear of opportunism.*

Additionally, it is expected that the difference in relative power will have a direct impact on the evaluation of the perceived risk. As the more powerful buyer has more sourcing alternatives, he or she is not as dependent on the relationship and, in case of a failure of the partnership, can more easily switch to another supplying firm.

Hypothesis 4.6. *In a situation in which the buyer is in a less powerful position the perceived risk will be greater than in a situation in which the buyer is in a more powerful position.*

4.1.4 Research method

4.1.4.1 Experimental design

An experimental approach using a 2×2 factorial design was applied to examine the effects of different relative power settings and the proposal of a relation-specific asset on the implementation of open book accounting. Two levels of relative power setting (high and low) and the offer of a relation-specific investment (yes and no) were used to constitute the experimental environment. The sample consisted of 44 participants recruited from a Diploma-Class

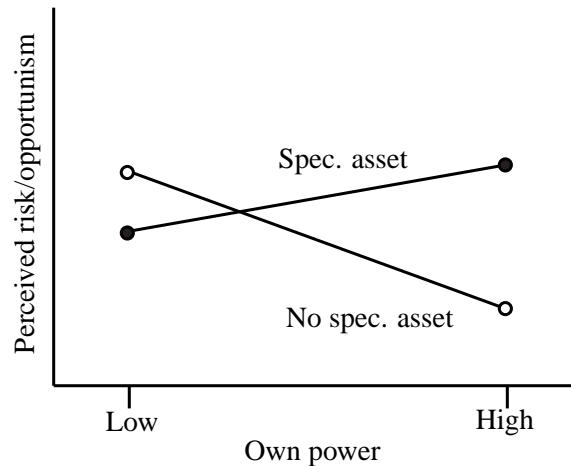


Figure 4.3: Hypothesized effects of power and asset on risk and fear of opportunism – exp. 2

at a German University. All participants were attendants of a management accounting class in which the principles of open book accounting in an inter-organizational cost management framework had been taught and explained. Participants were randomly assigned to the four experimental conditions. The participation of the students was gained by granting the opportunity to receive credits for their course.

Subjects were told that they took part in an investigation about cost accounting in inter-firm relationships. No specific reference was made to the term open book accounting. It was not explicitly explained what the understanding of open book accounting is. As the participants were confronted with the suggestion by the supplier to interchange cost data in order to strive for joint optimization effort, the ultimate goal of the cost information exchange, and thus open book accounting was evident. Last but not least, the participants were told that the outcome of the investigation would not be graded and anonymity was guaranteed. On average, it took the participants 25–35 minutes to read through the material provided and complete the required tasks.

As before, the material was designed adopting the approach presented by Drake & Haka (2008). Different from the first experiment, in which the quantity of initially revealed cost information was manipulated as an independent variable, in the second experiment the quantity of initially offered cost information was not varied, because the effect of the initially offered information quantity was not subject to investigation at this point in time. Because it was the goal to control for the effect of the initially offered cost information quantity on the propensity to engage in inter-organizational cost management, a small quantity of cost information was offered across all experimental cells.

Similar to the first experimental study, subjects received the same background information about the relationship between the supplier (Framing.Inc) and the buyer (nameless) whose perspective the participants were to take. Participants were told that their firm produces electronic devices for which casings, such as Framing.Inc produces, were needed. In the scenario, the beginning of a negotiation situation between the two firms was described. The cost structure of the two firms was interdependent, such that both parties could jointly search for cost cutting potential by negotiating attributes and properties of the casings. To do so, relevant cost information was a component of the material which was handed out. For example, if the casing was delivered double-bagged, the cost incurred at the supplier would be higher, at the same time the buyer would incur less quality insurance cost. The participants' attention was called to the interdependent cost structure by asking them to calculate the total cost under different combinations of the properties of the casing.

Different levels of relative power were implemented using the concept of relative dependence (El-Ansary & Stern, 1972; El-Ansary, 1975) as described before. The two levels of relative power were operationalized by manipulating the number of alternative sourcing options available to the participant's firm (the buyer firm). Those in the high relative power scenario were given the information that there were at least five alternative sourcing options which could all produce and provide the required product in sufficient quantity and quality. Participants in the low relative power condition were told that Framing.Inc was the only firm that could produce the required product and consequently, there were no other sourcing options.

As in the first experiment, the operationalization of the specific investment was inspired by the example of a joint buyer-supplier investment provided by Dyer & Singh (1998). The offer of a specific asset was manipulated such that Framing.Inc either suggested the construction of a conveyor belt between the two adjacent production sites as a joint investment or not. The specificity of the investment was stressed by pointing out that the conveyor belt could actually only be used by the two companies. The joint investment could reduce the quality assurance cost, which was one of the cost categories, by 10–20%. The cost of the investment was to be shared equally between the two firms and it was indicated that the cost for the investment into this specific conveyor belt would account for about 2% of the revenue of the two companies each. This sharing of the cost assures the mutual character of the specific investment. As highlighted before, the reciprocity of the investment is a crucial requirement in order to represent a credible commitment to the relationship for both parties.

Further, the participants were asked to indicate which of their own cost information (at maximum 12) items they were willing to share as a response to the initial move of the supplier.

All information that was at the participants' disposal was relevant and accurate and could not be manipulated. Hence, if exchanged with the partner, these cost information could be used to utilize the interdependent cost structure and to achieve a lower overall cost level. Finally, the participants were asked to answer a questionnaire comprising of several theoretical constructs.

4.1.4.2 Dependent variables

The operationalization of the dependent variables resembles the one in the first experimental study. Therefore, only a brief description is provided below.

Willingness to disclose information The willingness to disclose cost information in possible further interaction with Framing.Inc as well as the perceived willingness of Framing.Inc was measured. Subjects indicated their willingness and the perceived willingness regarding Framing.Inc on two items (items adapted from Sarkar et al. (2001)).

Number of information items reciprocated This variable indicates how many cost information items the participants revealed in their response to the scenario.

Fairness and equity The perceived fairness of the cost exchange process was measured using three items. The participants were asked to indicate whether they perceived the exchange of cost information in general as fair (following Grabner-Kräuter & Kaluscha (2003)), whether there was a spirit of fairness in the interaction with Framing.Inc (J. L. Johnson, 1999), and whether they had the impression that Framing.Inc intentionally failed to provide proper information (following Jap & Anderson (2003)). Further, the participants were asked to state how they perceived the outcome of the interaction process relative to the contribution of both, Framing.Inc and their own firm (items created following J. S. Adams (1965)).

Own benefit Three items were used to investigate as how beneficial the participants perceived open book accounting for them. The first item served as a general indicator of the advantages of open book accounting. The second item indicated if, in the relationship with Framing.Inc, participants perceived the advantages of open book accounting to outweigh the disadvantages. Finally, the third item asked whether the use of open book accounting will lead to a situation from which both companies will benefit equitably.

Trust The trust variable indicates the participants' trust in the provided information and in the information exchange process. Subjects were asked to indicate if they believed that, in the

future, Framing.Inc will provide all information needed (following Kwon & Suh (2004)), and if they had confidence in the information disclosed by Framing.Inc (adapted from Metcalf et al. (1992)). Further, participants were asked to indicate whether they perceived Framing.Inc to provide a truthful picture of their business (adapted from Ariño (2001) and Gundlach et al. (1995)).

Fear of opportunism This variable consisted of three items covering the aspects of opportunistic use of provided information, the provision of gathered information to competitors, and the fear that the partner may use opportunities that arise to profit at the own firm's expense (adapted from White & Lui (2005)).

Risk Using two items which were inspired by Pavlou (2002), participants were requested to indicate the perceived risk for their firm and for Framing.Inc when using open book accounting.

4.1.5 Results

4.1.5.1 Aspects of cross-validation

As evident, the theoretical constructs used in the second investigation resemble the ones used in the first investigation. In principle, this represents the application of the theoretical framework of the first experimental investigation under different situational circumstances to this study in which the relative power structure between the two firms has been manipulated. The transfer and application of the theoretical model from the first experimental analysis to the second investigation leads to the problem of cross-validation (Browne & Cudeck, 1989; Cudeck & Browne, 1983). Generally, cross-validation is concerned with the degree to which a theoretical model fitted to a certain group or population will fit an independent sample from the same group of population (MacCallum, Roznowski, Mar, & Reith, 1994). The modification of a model specifically for one sample or one analysis can lead to significant over-fitting to one individual sample and to an enormous deficit in generalizability.

In general, the issue of cross-validation has received little attention among researchers. One reason for this may be the aspiration for the top tier journals. In their study on scientific testing for validity, generalizability, and usefulness, Hubbard, Vetter, & Little (1998) point out that the publication mode of scientific top tier journals is somewhat counterproductive to scientific results with high generalizability. The pressure to present publishable results leads to models fitted specifically to a data sample which, in the worst case, has been subject to intense data

mining, that is, the analysis of selective data in order to achieve reportable results. In the worst case, this can lead to ‘management folklore’, that is, empirical findings which are true for special circumstances but lack confirmation (Hubbard et al., 1998).

Cudeck & Browne (1983) stresses that it is optimal to first derive relationships among the variables from theory and then to test these relationships empirically in order to draw conclusions about the adequacy of the theoretic framework. Especially experimental research is always claimed to have a soft spot concerning the generalizability of its findings. To dispel this criticism to the highest possible degree, the theoretical constructs of the first investigation, which in general have shown a high reliability, are used and cross-validated in the second part of this investigation to achieve an as high as possible degree of generalizability.

To do so, it is necessary to confirm the construct reliability of the theoretical constructs for the subsequent studies as well. Hence, the Cronbach’s Alpha values were re-calculated for the following (two) experimental investigations and compared to the values of the first investigation. Table 4.2 presents the alpha values of the theoretical constructs for the next two experimental investigations.

| Construct | Cronbach’s Alpha |
|-----------------|------------------|
| Willingness | 0.636 |
| Fairness/equity | 0.797 |
| Own benefit | 0.659 |
| Trust | 0.331 |
| Opportunism | 0.798 |
| Risk | 0.312 |

Table 4.2: Reliability scores – exp. 2 and exp. 3

Inspecting the Cronbach Alpha values of the theoretical constructs, it becomes apparent that they tend to be lower for this second experimental investigation than they were in the first investigation. It is now the question whether the differences in the Cronbach values are significant and whether there is a non-random, systematic difference between the first and the second experimental study. Such a difference could for instance be due to the changed situational context of the scenarios since in the second investigation the aspect of power is no longer excluded. This would mean that the validity of the construct is moderated by one of the experimental variables.

To test for the significance of the difference in the Cronbach's Alpha value, a bootstrapping approach to determine confidence intervals, which was proposed by DiCiccio & Tibshirani (1987), was chosen. Since the true underlying distribution of the variable and the actual underlying model is unknown, it was chosen to apply this algorithm. When neither the actual mathematical model nor the distribution of the estimation function is known, bootstrapping is a feasible approach to estimate statistical parameters from a single sample by using re-sampling (Efron, 1987). First, the two-sided bootstrapped 95%-confidence interval of the Cronbach's Alpha of the first investigation is determined. Thereafter, the two-sided bootstrapped 95% confidence interval for the second Cronbach's Alpha is calculated. If the actual Alpha value of the first group falls into the confidence interval of the second Alpha value and the second actual Alpha value falls into the confidence interval of the first Alpha value, the null-hypothesis that the two Alpha values do not significantly differ cannot be rejected.

The test of the perceived own benefit construct will illustrate the process. The Cronbach Alpha in the first investigation (α_1) (see Section 3.3.1) was 0.743 and in the second investigation (α_2) it was 0.659. The two-sided 95% confidence interval for α_1 spans from 0.615 to 0.833. The one for α_2 spans from 0.487 to 0.771. Because α_1 is in the span of the confidence interval of α_2 and α_2 is in the span of the confidence interval of α_1 , the null hypothesis that α_1 and α_2 are equal cannot be rejected. Table 4.3 summarizes the results for all of the

| Construct | Conf. Interval α_1 | Conf. Interval α_2 |
|-----------------|---------------------------|---------------------------|
| Willingness | 0.676 – 0.884 | 0.433 – 0.783 |
| Fairness/equity | 0.688 – 0.864 | 0.656 – 0.877 |
| Own benefit | 0.607 – 0.832 | 0.478 – 0.765 |
| Trust | 0.523 – 0.786 | –0.077 – 0.596 |
| Risk | 0.664 – 0.886 | –0.174 – 0.601 |
| Opportunism | 0.715 – 0.878 | 0.691 – 0.883 |

Table 4.3: Confidence intervals of Cronbach's Alpha

theoretical constructs.

For fear of opportunism, perceived own benefit, and fairness and equity the null hypothesis is not rejected. That is, the Cronbach values of the first and the second study do not significantly differ. The theoretical construct of willingness to use open book accounting represents a marginal case. In case of the 95% confidence interval, the alpha values lay marginally outside the respective interval. For the 99% confidence interval, however, the null hypothesis cannot

be rejected. The analysis is conducted as it was shown in the first experimental investigation. This means that, even though the two willingness items combine for a rather satisfying Cronbach value, the two items are analyzed separately because of their different aspects. For the constructs perceived risk and trust, the results are unambiguous. For these constructs both Alpha values are clearly outside the respective confidence interval. Consequently, these constructs are analyzed on an item level. For the risk construct this means that the perceived risk for the own firm and for the partner firm (Framing.Inc) are analyzed. For the trust aspect, the trust in the partner firm's further conduct (conduct-based trust), the trust in the information provided (information-based trust), and the perceived truthfulness are evaluated. Prior to the analysis of the effects of the experimental variables on the dependent variables, the success of the manipulation of the experimental variables across the different cells is tested. Results are reported in the following section.

4.1.5.2 Manipulation check

To prove whether the implementation of the experimental variables relative power asymmetry and offering of a relation-specific asset was successful, manipulation checks were conducted. Concerning the specific investment, participants were asked to indicate on a 7-point Likert scale whether Framing.Inc had suggested significant investment in resources dedicated to its relationship with my firm. Participants who were offered a relation-specific asset showed a significantly higher score on this item than those who were offered no specific asset ($M_{\text{with asset}} = 4.85$, $SD = 1.60$; $M_{\text{without asset}} = 3.04$, $SD = 1.43$; $F = 15.69$, $p = 0.000$). The manipulation of the relative power structure was checked by asking the participants to indicate whether they perceived Framing.Inc as less powerful, whether their own firm had alternative sourcing options to Framing.Inc, and whether they perceived their firm to be independent from Framing.Inc. Table 4.4 summarizes the results of the power manipulation check. The results are reported from the participants' point of view, that is, whether they perceived themselves as having high or low relative power. The manipulation of the relative power can be regarded as successful.

4.1.5.3 Hypotheses test

As a consequence of the validation results, the subsequent analysis will slightly differ from the previous course of analysis. A MANOVA was conducted using those variables that showed a satisfactory cross validity level (own benefit, opportunism, and fairness and equity) at the construct level and those with low cross validity scores (risk, trust, as well as willingness) at

| | High power | Low power | Df | Mean sq | F | p |
|-------------------------------|----------------|----------------|----|---------|--------|----------|
| Framing.Inc less powerful | 4.14 (1.75) | 1.86 (1.32) | 1 | 56.82 | 23.59 | 0.000*** |
| Alternative sourcing options | 6.09 (0.81) | 1.36 (0.58) | 1 | 245.82 | 493.77 | 0.000*** |
| Independence from Framing.Inc | 4.73 (2.08) | 2.86 (1.49) | 1 | 38.21 | 11.72 | 0.001*** |

*** Significant at the 0.001 level

Table 4.4: Manipulation check power – exp. 2

the item level. Following the MANOVA, ANOVAs on the construct or on the single item level, respectively, were computed. Table 4.5 summarizes the results of the MANOVA. The results of the subsequent ANOVA are shown in Table 4.6.

| | Df | Pillai | F | num Df | den Df | p |
|-------------|----|--------|------|--------|--------|--------|
| Power | 1 | 0.44 | 2.10 | 11 | 30 | 0.052. |
| Spec. asset | 1 | 0.18 | 0.59 | 11 | 30 | 0.823 |
| Interaction | 1 | 0.33 | 1.35 | 11 | 30 | 0.246 |

. Significant at the 0.1 level

Table 4.5: Results of MANOVA – exp. 2

Willingness to use open book accounting and cost information disclosure The results of the ANOVA show that there is a tendency for an interaction effect of the relative power structure and the offer of a specific asset on the perceived partner's willingness to engage in cost information ($F = 3.30$, $p = 0.077$). Even though the results indicate only a tendency for an interaction effect, the results will at least be shortly outlined. An inspection of the means (see Table 4.7) shows that the group of participants which takes up the less powerful position and is offered a specific asset clearly distinguishes itself from the other three groups. Hence, the effect represents an ordinal interaction of the two variables. This means that participants in the less powerful position do not perceive a partner-firm which offers a relation-specific asset as more willing to engage in inter-organizational cost management. As a matter of fact, the offer

4.1. RELATIVE POWER AND RELATION-SPECIFIC ASSET

| Dep. variable | Source of variation | Df | Mean Sq | F | p |
|---------------------------------|---------------------|----|---------|------|--------|
| Own willingness | Power | 1 | 1.11 | 0.32 | 0.573 |
| | Spec. asset | 1 | 0.01 | 0.00 | 0.953 |
| | Interaction | 1 | 1.60 | 0.46 | 0.500 |
| | Residuals | 40 | 3.45 | | |
| Perceived partner's willingness | Power | 1 | 2.27 | 1.47 | 0.232 |
| | Spec. asset | 1 | 0.51 | 0.33 | 0.568 |
| | Interaction | 1 | 5.09 | 3.30 | 0.077. |
| | Residuals | 40 | 1.54 | | |
| Fairness/equity | Power | 1 | 0.05 | 0.03 | 0.859 |
| | Spec. asset | 1 | 0.75 | 0.47 | 0.498 |
| | Interaction | 1 | 2.13 | 1.32 | 0.257 |
| | Residuals | 40 | 1.61 | | |
| Own benefit | Power | 1 | 0.04 | 0.04 | 0.848 |
| | Spec. asset | 1 | 3.10 | 2.85 | 0.099. |
| | Interaction | 1 | 0.98 | 0.90 | 0.348 |
| | Residuals | 40 | 1.09 | | |
| Conduct-based trust | Power | 1 | 0.20 | 0.09 | 0.765 |
| | Spec. asset | 1 | 0.22 | 0.10 | 0.757 |
| | Interaction | 1 | 0.04 | 0.02 | 0.899 |
| | Residuals | 40 | 2.26 | | |
| Information-based trust | Power | 1 | 6.57 | 3.13 | 0.085. |
| | Spec. asset | 1 | 0.33 | 0.16 | 0.692 |
| | Interaction | 1 | 0.27 | 0.13 | 0.720 |
| | Residuals | 40 | 2.10 | | |
| Perceived truthfulness | Power | 1 | 5.11 | 2.95 | 0.094. |
| | Spec. asset | 1 | 0.93 | 0.54 | 0.469 |
| | Interaction | 1 | 2.46 | 1.42 | 0.241 |
| | Residuals | 40 | 1.73 | | |
| Fear of opportunism | Power | 1 | 0.04 | 0.03 | 0.860 |
| | Spec. asset | 1 | 0.13 | 0.10 | 0.748 |
| | Interaction | 1 | 5.96 | 4.62 | 0.038* |
| | Residuals | 40 | 1.29 | | |
| Risk for own firm | Power | 1 | 3.84 | 3.42 | 0.072. |
| | Spec. asset | 1 | 0.03 | 0.02 | 0.877 |
| | Interaction | 1 | 2.21 | 1.97 | 0.168 |
| | Residuals | 40 | 1.12 | | |
| Perceived risk for partner firm | Power | 1 | 12.02 | 5.08 | 0.030* |
| | Spec. asset | 1 | 1.34 | 0.57 | 0.457 |
| | Interaction | 1 | 3.93 | 1.66 | 0.205 |
| | Residuals | 40 | 2.37 | | |
| Info. reciprocated | Power | 1 | 1.45 | 0.23 | 0.637 |
| | Spec. asset | 1 | 7.43 | 1.15 | 0.289 |
| | Interaction | 1 | 0.64 | 0.10 | 0.755 |
| | Residuals | 40 | 6.44 | | |

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 4.6: Results of ANOVA – exp. 2

is even counterproductive as it induces a lower perceived partner's willingness. This manifests the results found in the first experimental investigation that a relation-specific asset can negatively influence the inter-firm relation, when the target firm does not perceive the offering partner to have honest intentions. Therefore, concerning the aspect of the perceived partner's willingness, Hypothesis 4.1 is not supported.

| Dependent Variable | Power | | | | | | | |
|---------------------------------|-------------------------|--------|---------|--------|-------------------------|------|---------|------|
| | low | | | | high | | | |
| | Relation-specific asset | | | | Relation-specific asset | | | |
| | not offered | | offered | | not offered | | offered | |
| | M | SD | M | SD | M | SD | M | SD |
| | (n=12) | (n=12) | | (n=10) | (n=10) | | (n=10) | |
| Own willingness | 3.42 | 1.93 | 3.00 | 1.94 | 2.75 | 1.71 | 3.10 | 1.85 |
| Perceived partner's willingness | 2.50 | 1.45 | 1.60 | 0.97 | 2.33 | 1.15 | 2.80 | 1.32 |
| Fairness/equity | 3.73 | 1.22 | 3.55 | 1.51 | 3.40 | 1.30 | 4.10 | 0.99 |
| Own benefit | 4.83 | 0.93 | 4.60 | 1.12 | 5.17 | 0.94 | 4.33 | 1.21 |
| Conduct-based trust | 3.50 | 1.62 | 3.30 | 1.49 | 3.58 | 1.68 | 3.50 | 1.08 |
| Information-based trust | 4.33 | 1.15 | 4.00 | 2.00 | 3.42 | 1.44 | 3.40 | 1.07 |
| Perceived truthfulness | 3.17 | 1.40 | 2.40 | 1.26 | 3.42 | 1.08 | 3.60 | 1.51 |
| Fear of opportunism | 4.69 | 1.08 | 4.07 | 1.17 | 4.08 | 1.27 | 4.93 | 0.98 |
| Risk for own firm | 6.00 | 1.21 | 5.50 | 0.97 | 5.00 | 1.13 | 5.40 | 0.84 |
| Perceived risk for partner firm | 3.75 | 1.76 | 3.50 | 1.78 | 4.25 | 1.48 | 5.20 | 0.92 |
| Cost information reciprocated | 5.58 | 2.94 | 5.00 | 2.26 | 6.17 | 1.11 | 5.10 | 3.38 |

Note. The scale for cost information reciprocated is 0–12; for all other variables it is 1–7.

Table 4.7: Means and standard deviations – exp. 2

For the aspect of own willingness Hypothesis 4.1, which, at least when a less powerful position is obtained, expected a positive effect of the offer of a relation-specific asset, is not supported. The results of the variance analysis show that the own willingness is not influenced by the experimental variables. Contrary to the hypothesis, which proposed that a less powerful buyer will show a higher willingness to share information and to engage in exchange, for the aspect of own willingness, there is no significant difference between a powerful and a less powerful buyer.

For the last aspect of Hypothesis 4.1, the quantity of actually reciprocated cost information, there is no difference between a powerful and a less powerful buyer. Therefore, Hypotheses 4.1a and 4.1b are not supported. Furthermore, Hypothesis 4.1c proposed that a specific asset offered by a more powerful supplier will further increase the less powerful buyer's willingness to engage in cost data exchange. This part of the hypothesis was also not supported.

Fairness and equity For perceived fairness and equity no main or interaction effects were found. Neither of the experimental variables influences the perceived fairness and equity. Hence, Hypothesis 4.2 that the proposal of a relation-specific investment by a more powerful supplier will increase perceived fairness and equity on the less powerful buyer's side is not supported.

Own benefit Hypothesis 4.3 expected the offer of a relation-specific asset to have a positive and increasing effect on perceived own benefit, independently from the relative power structure. However, no significant effect was found for the offer of the inter-firm asset.

Trust Hypothesis 4.4 covered the trust aspect. Based on the results of the cross validation (see Section 4.1.5.1), this concept is sub-divided and analyzed on item level. The first item refers to the trust that Framing.Inc will provide the necessary information. The next trust aspect refers to the current state of the inter-firm relationship and evaluates the confidence the buyer has in the cost information items provided by its partner Framing.Inc. The last item covered the aspect if Framing.Inc provides a truthful picture of their business. No significant effects of the experimental variables were found on the different trust items.

Fear of opportunism As Table 4.6 shows, there is a significant interaction effect of the two experimental variables on fear of opportunism ($F = 4.62$, $p = 0.038$). Table 4.7 and Figure 4.4 illustrate that fear of opportunism is significantly higher under two conditions. 1. If the buyer is more powerful and the less powerful suggest a joint relation-specific investment. 2. If the buyer is less powerful and the more powerful partner does not offer a specific investment. Fear of opportunism is considerably lower in the other two experimental cells, that is, if the buyer is in the more powerful position and no specific asset is offered and if the buyer is less powerful and the more powerful supplier offers a joint specific investment. This kind of effect can be described as a classical disordinal interaction effect (For further details on the different types on interaction effects, please refer to Section 3.3.3.). Figure 4.4 illustrates the effect. Hence, for fear of opportunism, the interaction effect proposed in Hypothesis 4.5 is supported.

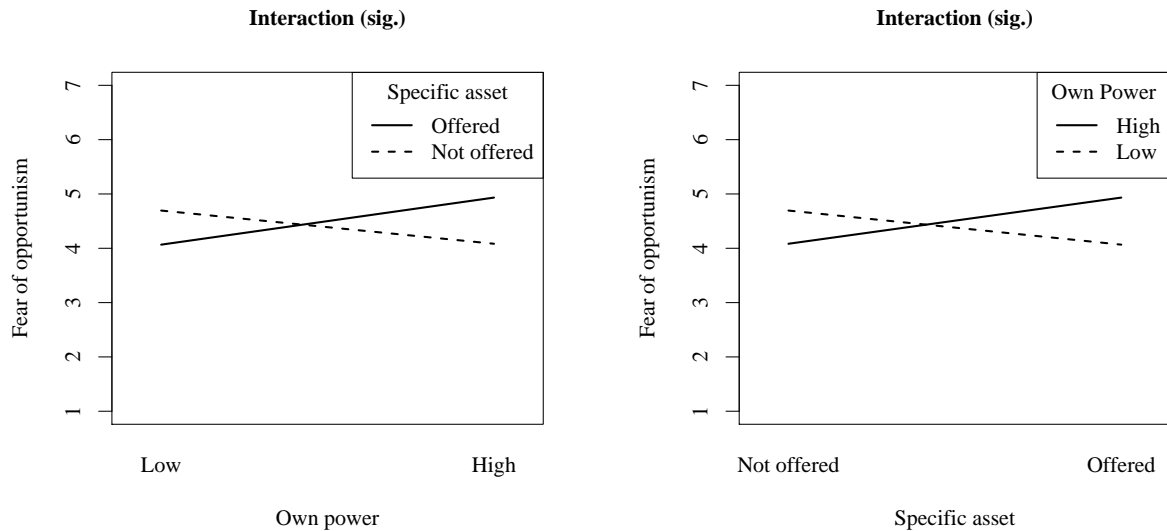


Figure 4.4: Effect of power and asset on fear of opportunism – exp. 2

Risk Due to the low cross validity of the risk construct, it is sub-divided into its two constituting items. The first item measures the perceived own risk, that is, the risk the participants in the buyer role perceived for their firm. The second item covers the perceived risk for the partner firm Framing.Inc. In Hypothesis 4.5 an interaction of the two experimental variables, relative power and offer of a relation-specific asset, is proposed. It is expected that the specific asset has a risk-decreasing effect when it is offered from the more powerful party to the less powerful party. And it was expected that the asset increases the risk, when it is offered from the less powerful to the more powerful party. However, no significant interaction effect was found. Consequently, different from the opportunism aspect, for the risk aspect Hypothesis 4.5 is not supported.

Hypothesis 4.6 expected a main effect of power on risk. It is expected that, when the buyer is in the less powerful position, he/she perceives a higher risk than when he/she is in the more powerful position. As Figure 4.5 shows, both aspects run in the expected direction. When the buyer finds him-/herself in a more powerful position, she or he assesses her/his own risk to be lower ($M_{\text{high power}} = 5.18, SD = 1.01$)¹ than when she or he is the less powerful one ($M_{\text{low power}} = 5.77, SD = 1.11$). A corresponding picture can be drawn for the perceived risk for the partner firm. The risk is perceived to be higher for the less powerful of the two exchange parties. If a

¹Differences to summed means of the values in Table 4.7 are due to rounding.

buyer is in a more powerful position, she or he judges the risk for the partner firm to be higher ($M_{\text{high power}} = 4.68, SD = 1.32$) than when she or he is in a less powerful position ($M_{\text{high power}} = 3.64, SD = 1.73$). Table 4.8 provides an overview of the results of the second experimental investigation.

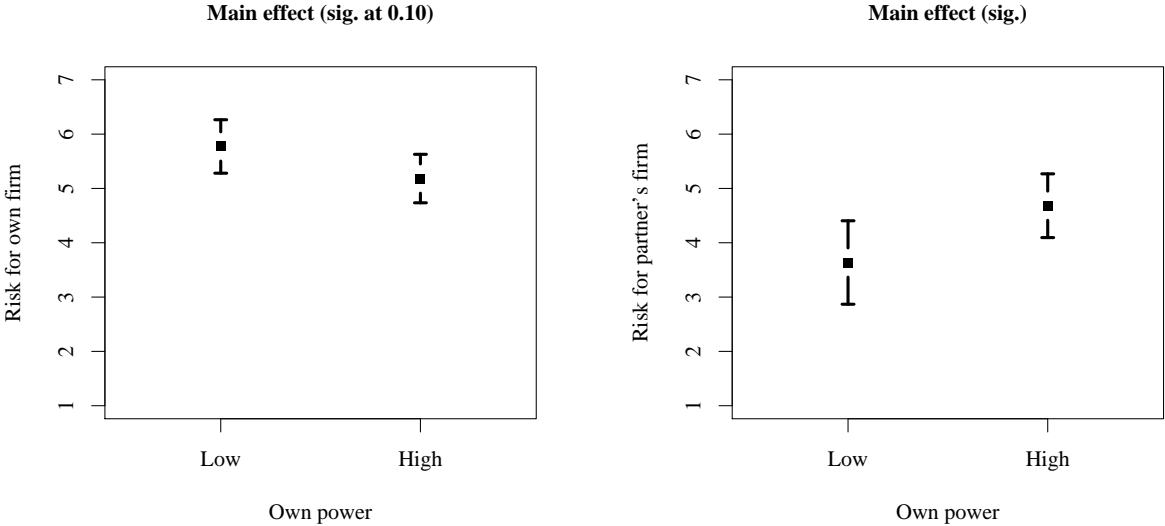


Figure 4.5: Effect of power on own and partner's risk – exp. 2

| Hyp. no. | Independent variable <i>Under the condition of a small information quantity ...</i> | Relationship | Dependent variable | Empirical result |
|----------------|--|--------------|---------------------------|------------------|
| Hypothesis 4.1 | | | | |
| (a) | Low own power | increases | Own willingness | not supp. |
| (b) | Low own power | increases | Information reciprocated | not supp. |
| (c) | Low own power + asset offered | increases | Own willingness | not supp. |
| | Low own power + asset offered | increases | Perc. partner's willingn. | not supp. |
| Hypothesis 4.2 | | | | |
| | Low own power + asset offered | increases | Perceived fairness/equity | not supp. |
| Hypothesis 4.3 | | | | |
| | Asset offered | increases | Own benefit | not supp. |
| Hypothesis 4.4 | | | | |
| | Low own power + asset offered | increases | Own trust | not supp. |
| | High own power + asset offered | decreases | Own trust | not supp. |
| Hypothesis 4.5 | | | | |
| (a) | High own power + asset offered | increases | Perceived risk | not supp. |
| | Low own power + asset offered | decreases | Perceived risk | not supp. |
| (b) | High own power + asset offered | increases | Fear of opportunism | supported |
| | Low own power + asset offered | decreases | Fear of opportunism | supported |
| Hypothesis 4.6 | | | | |
| | Low own power | increases | Perceived risk | supported |

Hyp. No.: Hypothesis number

Not supp.: Not supported

Table 4.8: Summary of results – exp. 2

4.2 Relative power and information quantity

4.2.1 Information quantity under asymmetric relative power settings

The role of cost information quantity in inter-firm exchange situations has recently provoked quite a lot of attention among researchers in management accounting (Baiman & Rajan, 2002; Drake & Haka, 2008; Van den Abbeele, 2006). However, research has only partially accounted for the role of power relations between the interacting firms in an IOCM context. For instance, Drake & Haka (2008), whose investigation of the role of detailed ABC cost information in buyer-supplier relationships served as a guide for the design of the present investigation, implemented competitiveness and market pressure as a variable to explain the information exchange behavior of firms. However, the dependence relation of the two firms or the relative power position was not manipulated. In their study the authors show that concerns about inequity can cause reluctance among the exchange partners to share important and detailed ABC cost information. It is the question, whether effects identified in one research context are transferable to another. More specifically, it is the question, whether the abandonment of the equal power assumption and the consideration of the power distribution between exchange partner will yield results comparable to the ones under power symmetry.

For example, Van den Abbeele (2006) in her extensive research on the role of information in inter-firm relations found that the availability of detailed cost information can alleviate power and dependence disadvantages. Further, the author reports that less powerful partners can make up for their inferior position by gathering detailed cost information and making those available during the interaction with the partner firm. By doing so, the less powerful party can counterbalance the aggressive bargaining strategy by the powerful partner and create a collaborative inter-firm relation. This leads to an increase in the profit level of those less powerful firms which not only had the option to make detailed cost information available in the interaction but actually exchanged them with the partner firm.

Thus far, the effect of relative power (low vs. high) and the effect of the offer of a specific asset were analyzed under the condition that a small quantity of information was offered by the initiating partner. This was based on the observation during the first experiment that the specific asset only shows an effect under the conditions in which a small quantity of cost information was offered. The question yet to be answered is whether the power structure in combination with an initially offered large amount of cost information will significantly affect the propensity to use open book accounting and/or those dependent variables which refer to the relationship. Therefore, the previous experiments are supplemented and additional data is

collected from a set-up in which the participants, under a *large* initially offered information quantity and no specific asset, are subject to a manipulation of the relative power (low vs. high).

4.2.2 Development of hypotheses

In the preceding analysis the effect of the power structure under the condition of a small initially offered quantity of cost information was examined. It is now the question whether the effects of the power structure, identified for a situation with a small amount of initially offered cost information, hold for a situation in which a large quantity of cost information is initially offered. The subsequent derivation of the hypothesis is guided by and restricted to those aspects which were shown to be sensitive to power asymmetry. The question whether the power structure interacts with the initially offered quantity of cost information—and vice versa—will be discussed in a synoptical analysis of the three experiments in Chapter 5.

Risk The results of the previous experiment revealed an effect of the relational power position on the perception of risk. The less powerful exchange partner was assessed to be in a riskier position. This was found for the manipulation of the relative power structure in a small information quantity scenario. The relative power structure is expected to affect the perceived risk in a large information scenario as well. Since the more powerful firm has alternative sourcing options, it is less dependent on the relationship with a particular buyer or supplier. Hence, she or he will evaluate the situation as less risky than a less powerful firm, which is heavily dependent on the relationship. Thus, it is proposed:

Hypothesis 4.7. *Perceived risk will be higher for a firm in a less powerful position than for a firm in a more powerful position.*

Fear of opportunism Analogously to the effect on perceived risk, one could propose that a buyer will show less fear of opportunism when he is in the more powerful position than when he is in the less powerful position. A more powerful buyer, who knows about the dependence of his partner on the relationship, will not expect any harmful action but compliance by the partner. However, findings have shown that more powerful firms were concerned about the assimilation of the power positions between the firms when commitment devices such as a relation-specific asset or a significant amount of cost information tied the partners together. Based on these considerations, one could also argue that the more powerful party will experience a greater fear of opportunistic behavior because the less powerful party may try to

improve its power position by exploiting the commitment devices opportunistically. Because of the ambiguous argumentation, an undirected hypothesis is formulated.

Hypothesis 4.8. *The relational power position affects the level of fear of opportunism.*

Trust The expectations concerning the level of trust follow the argumentation for perceived risk. However, the effect should run in the opposite direction. If a buyer is in a more powerful position, he does not expect the less powerful and dependent partner to show deceitful behavior. He will expect that his partner will do everything to maintain and support the relationship.

Hypothesis 4.9. *If the buyer is in a more powerful position, trust will be higher than if the buyer is in a less powerful position.*

4.2.3 Research method

4.2.3.1 Experimental design

Freezing the effect of the initially offered cost information quantity, a 2×1 experimental design was used. Two levels of relative power (high vs. low) and one level of initially offered cost information (large) were applied. The sample consisted of 21 participants of a PhD class of a German university. All participants held a business degree and, on average, there was a working experience of about 2 years. Participants were randomly distributed to the two experimental cells. For their participation in the experiment, the participants were given a small gratification. Open book accounting was not further explained to the attendees in order to avoid prejudice. However, the collaborative purpose of the cost information disclosure, that is, the striving for joint optimization, was made evident in the material handed out. Self-evidently, anonymity was guaranteed and a time frame between 25 and 40 minutes was indicated.

4.2.3.2 Experimental manipulations

Analogously to the previous investigations, the material for this experimental investigation was also based on Drake & Haka (2008). Since it is the goal of this third experimental study to investigate the effect of power asymmetry under an initially offered large amount of cost information, a large quantity of information across both experimental cells was chosen and the relative power (low vs. high) position was varied. Participants were provided the same background information about the relationship between the supplier (Framing.Inc) and the buyer (nameless) as in the previous experiments. The different levels of relative inter-firm power were implemented just as in the preceding investigation by manipulating the number of

alternatives available to any of the two partner firms. As indicated, all participants were initially offered a large quantity of cost information by the supplier Framing.Inc. The amount of information revealed corresponds to the amount that was revealed under the large information conditions in the first experiment. This means that 9 information items, which represent about 80% of the available information items, were initially revealed. Finally, a questionnaire including the indication of the amount of information reciprocated by the participants resemble the configuration of the preceding experimental set-ups.

4.2.3.3 Dependent variables

The analysis of the cross validity revealed that a number of theoretical constructs lose some of their reliability as they are transferred from a symmetric to an asymmetric relative power setting. For these constructs an analysis on item level is conducted. For a detailed analysis of the reliabilities of the different constructs, please refer to Section 4.1.5.1. As indicated, the reliabilities which are shown in Table 4.2 were calculated based on the data for the second and third experimental study.

Willingness to disclose information The willingness to disclose cost information in possible further interaction with Framing.Inc as well as the perceived willingness of Framing.Inc was measured. Subjects indicated their willingness and the perceived willingness regarding Framing.Inc on two items (items adapted from Sarkar et al. (2001)). (Treated on item level)

Number of information items reciprocated This variable indicates how many cost information items the participants revealed in their response to the scenario.

Fairness and equity The perceived fairness of the cost exchange process was measured using three items. The participants were asked to indicate whether they perceived the exchange of cost information in general as fair (following Grabner-Kräuter & Kaluscha (2003)), whether there was a spirit of fairness in the interaction with Framing.Inc (J. L. Johnson, 1999) and whether they had the impression that Framing.Inc intentionally failed to provide proper information (following Jap & Anderson (2003)). Further, the participants were asked to state how they perceived the outcome of the interaction process relative to the contribution of both, Framing.Inc and their own firm (items created following J. S. Adams (1965)). (Treated on construct-level)

Own benefit Three items were used to investigate as how beneficial the participants perceived open book accounting for them. The first item served as a general indicator of the advantages of open book accounting. The second item indicated if, in the relationship with Framing.Inc, participants perceived the advantages of open book accounting to outweigh the disadvantages. Finally, the third items asked whether the use of open book accounting will lead to a situation from which both companies will benefit equitably. (Treated on construct-level)

Trust The trust variable indicates the participants' trust in the information provided and in the information exchange process, as well as the perceived truthfulness of the partner firm Framing.Inc. Subjects were asked to indicate whether they believed that in the future Framing.Inc will provide all information needed (following Kwon & Suh (2004)), whether they had confidence in the information disclosed by Framing.Inc (items adapted from Metcalf et al. (1992)), and whether they believed that Framing.Inc provides them with a truthful picture of their business (adapted from Ariño (2001) and Gundlach et al. (1995)). (Treated on item level)

Fear of opportunism This construct consisted of three items covering the aspects of opportunistic use of provided cost information, the provision of gathered information to competitors, and the fear that the partner may use opportunities that arise to profit at the firm's expense (items adapted from White & Lui (2005)). (Treated on construct-level)

Perceived risk Using two items, which were inspired by Pavlou (2002), participants were requested to indicate the perceived risk for their firm and for Framing.Inc when using open book accounting (analyzed on single item basis). (Treated on item level)

4.2.4 Results

4.2.4.1 Manipulation check

The manipulation of the relative power structure was tested by using the same items as explained in the previous analysis (see Section 4.1.5.2). Overall the participants in the high power scenario perceived their firm to be more independent and more powerful than Framing.Inc than those in the low power scenario. Table 4.9 summarizes the results of the manipulation check. Even though there is one item which shows only a tendency, the manipulation can still be considered as successful.

| | High power | Low power | Df | Mean Sq | F | p |
|-------------------------------|----------------|----------------|----|---------|-------|----------|
| Framing.Inc less powerful | 4.20 (1.69) | 2.91 (1.70) | 1 | 8.73 | 3.04 | 0.097. |
| Alternative sourcing options | 6.10 (1.60) | 2.27 (1.85) | 1 | 76.73 | 25.54 | 0.000*** |
| Independence from Framing.Inc | 5.10 (1.60) | 2.82 (2.18) | 1 | 27.27 | 7.34 | 0.014* |

*** Significant at the 0.001 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 4.9: Manipulation check power – exp. 3

4.2.4.2 Hypotheses test

A MANOVA with successive ANOVAS for the different constructs and single items were conducted. The results show no general effect of power on the dependent variables (see Table 4.10). A closer look at the results of the ANOVA (see Table 4.11) reveals a significant effect for power on the confidence participants have in the information initially provided by Framing.Inc (see Figure 4.6). Participants in the high power scenario show a higher level of trust and confidence in the information provided by the partner firm ($M_{\text{high power}} = 3.80$, $SD = 1.32$) than those in the low power scenario ($M_{\text{low power}} = 2.64$, $SD = 0.92$, $p = 0.03$). Even though participants in the high power scenario exhibit a higher level of trust toward the information provided by Framing.Inc, which supports Hypothesis 4.9, the general level of trust is on a low level. Both means, the one of the more powerful scenario as well as the one of the less powerful scenario, are below the mean of the 7-point scale, which is 4. Table 4.12 shows the means and standard deviation of the different dependent variables.

Unexpectedly, under an extensive initial offer of cost information, no effects on the perceived risk or the fear of opportunism were found. A possible explanation might be the increased information at stake in the exchange situation which somewhat attenuates the power difference between the involved partners.

4.3 Discussion of the results under power asymmetry

The situation of equal power between the supply chain partner was changed to power asymmetry and two studies were conducted. The first experiment described in this chapter investigated

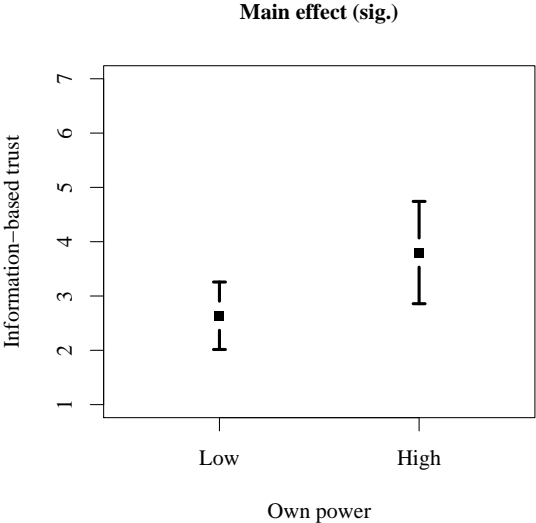


Figure 4.6: Effect of power on information-based trust – exp. 3

| | Df | Pillai | approx F | num Df | den Df | p |
|-----------|----|--------|----------|--------|--------|-------|
| Power | 1 | 0.59 | 1.18 | 11 | 9 | 0.408 |
| Residuals | 19 | | | | | |

Table 4.10: Results of MANOVA – exp. 3

| Dep. variable | Source of variation | Df | Mean Sq | F | p |
|---------------------------------|---------------------|----|---------|------|--------|
| Own Willingness | Power | 1 | 4.07 | 1.85 | 0.189 |
| | Residuals | 19 | 2.20 | | |
| Perceived partner's willingness | Power | 1 | 0.04 | 0.02 | 0.883 |
| | Residuals | 19 | 1.94 | | |
| Fairness/equity | Power | 1 | 0.06 | 0.07 | 0.793 |
| | Residuals | 19 | 0.84 | | |
| Own benefit | Power | 1 | 0.94 | 1.92 | 0.182 |
| | Residuals | 19 | 0.49 | | |
| Conduct-based trust | Power | 1 | 1.77 | 0.70 | 0.413 |
| | Residuals | 19 | 2.53 | | |
| Information-based trust | Power | 1 | 7.09 | 5.58 | 0.029* |
| | Residuals | 19 | | 1.27 | |
| Perceived truthfulness | Power | 1 | 0.88 | 0.86 | 0.366 |
| | Residuals | 19 | 1.02 | | |
| Fear of opportunism | Power | 1 | 1.39 | 0.90 | 0.354 |
| | Residuals | 19 | 1.54 | | |
| Perceived risk for own firm | Power | 1 | 0.02 | 0.02 | 0.878 |
| | Residuals | 19 | 0.876 | | |
| Perceived risk for partner firm | Power | 1 | 0.34 | 0.13 | 0.724 |
| | Residuals | 19 | 2.65 | | |
| Info. reciprocated | Power | 1 | 3.74 | 0.82 | 0.377 |
| | Residuals | 19 | 4.57 | | |

* Significant at the 0.05 level

Table 4.11: Results of ANOVA – exp. 3

| Dependent Variable | Power | | | |
|---------------------------------|--------|------|--------|------|
| | low | | high | |
| | M | SD | M | SD |
| | (n=11) | | (n=10) | |
| Own willingness | 3.18 | 1.66 | 2.30 | 1.25 |
| Perceived partner's willingness | 2.91 | 1.30 | 3.00 | 1.49 |
| Fairness/equity | 4.18 | 0.96 | 4.08 | 0.87 |
| Own benefit | 4.76 | 0.75 | 4.33 | 0.65 |
| Conduct-based trust | 3.82 | 1.89 | 4.40 | 1.17 |
| Information-based trust | 2.64 | 0.92 | 3.80 | 1.32 |
| Perceived truthfulness | 4.09 | 1.14 | 4.50 | 0.85 |
| Fear of opportunism | 4.85 | 1.34 | 4.33 | 1.12 |
| Risk for own firm | 5.64 | 1.03 | 5.70 | 0.82 |
| Perceived risk for partner firm | 4.55 | 1.92 | 4.80 | 1.23 |
| Cost information reciprocated | 6.45 | 1.97 | 7.30 | 2.31 |

Note. The scale for cost information reciprocated is 0–12; for all other variables it is 1–7.

Table 4.12: Means and standard deviations – exp. 3

the question whether the effect of an offered relation-specific asset can also be observed in a power-asymmetrical supply chain set-up. The effects of the relational power and the idiosyncratic asset were analyzed in a situation in which a small amount of cost information was offered by the initiating partner firm. The small amount of cost information was chosen because the first experiment identified this condition to be most suitable for a positive effect of a relation-specific asset.

The second experiment of this chapter complements the experimental series of the present thesis by taking on the question whether the effects of the power asymmetry also appear in a scenario which features an initial move with an extensive revelation of cost information by the partner firm.

The abandonment of the equal power condition between the partner firms bears some interesting results. The effect of the offer of a relation-specific asset depends on the offering party's relative power position. This becomes obvious when the results for fear of opportunism are analyzed. When the participants are in the more powerful position and are confronted with the suggestion by the less powerful partner to invest idiosyncratically, the offer of a specific asset increases the fear of opportunism. More specifically, it evokes the fear that the less powerful partner will use the asset to lock-in the relationship and to improve its relative (power) position (to shift it in her or his favor from a unilateral or mixed to a bilateral power system). A contrary picture can be drawn for the situation in which the participants obtain the less powerful position themselves and are offered a relation-specific asset by a more powerful supplier-firm. It seems as if in this case the offer of a relation-specific asset by the more powerful partner is actually perceived as a sign of commitment and good intentions and therefore lowers the fear of opportunistic behavior.

The relation-specific asset as it is operationalized in this study, a conveyor belt which would be a tying but reasonable investment between the firms, represents a domain-*unspecific* investment because the domain of interaction is clearly the inter-organizational management of cost. Even though the signal of the propensity to invest specifically with a less powerful buyer can attenuate the fear of opportunism, this domain-*unspecific* commitment does not foster the domain-*specific* aspect of the propensity to exchange cost information. That is, the target firm perceives that the powerful partner suggests an idiosyncratic investment, which, under certain circumstance, is able to lower the fear of opportunism, but the non-domain specificity of the signal of commitment does not carry over to the domain of interest, the cost management and does not lead to more shared cost information.

In summary, in an power-asymmetrical inter-firm setting the range of the positive effect of a relation-specific asset is very limited. Only if the offer of a specific asset is directed from

the more powerful firm to the less powerful firm, it can have a general positive effect on the relationship climate, as it lowers the fear that the stronger partner firm will opportunistically take advantage of the situation. Hence, for a cost optimizing environment, the offer of any non-domain specific (intended) commitment device needs to be thoroughly scrutinized, especially as non-domain specific signs of commitments do not always have the desired effect.

The implication that a first sign of commitment should emanate from the more powerful supply chain partner is suggested by the results for risk. For the perceived own risk, as well as for the assessment of the partner's risk, effects were found that allow for a congruent interpretation. Whichever firm is in the less powerful position takes up the riskier part. Hence, it is the stronger partner's turn to signal that he or she is willing to foster the relationship and to limit negative aspects, such as the relational risk or the fear of opportunistic behavior. A notable result appeared even prior to the actual variance analytic results. The reliability of the risk construct, which under power symmetry exhibited a fairly high Cronbach Alpha value, decreases significantly when it is applied to a situation of power asymmetry. Interestingly, under *power symmetry* open book accounting is obviously referred to as a *mutual* venture as the assessment of the own risk and the partner's risk show concordance. This changes when one of the supply chain partners is more powerful than the other. Asymmetric power destroys the perception of the unit paradigm and shifts the focus to the evaluation of the individual risk. Even though it is not possible to analyze a 'general riskiness of IOCM' the results for the different aspects of risk show a clear tendency. The more dependent party not only experiences a higher risk, but, reversely, a more powerful party also judges the less powerful party to be in the riskier position. This means that there is accordance concerning the judgment of the mutual risk positions. This may be an important hindering factor to the successful implementation of mutual cost information exchange. This finding is in line with the case-based findings by Kulmala (2004) who indicates that the use of cost information in a customer-supplier relationship depends on the balance of power between the firms, and that a prosperous transfer and utilization of cost information will occur only under balanced power.

The last experiment was conducted in a situation in which the initiating supply chain partner sends a favorable signal for the propensity to engage in cost information exchange by initially disclosing a large quantity of cost information. By doing so the initiating partner stresses the significance of the exchange of cost information as a central theme. This is reflected in the findings for the information-based trust aspect. When the target firm is more powerful than the initiating partner, it exhibits more trust in the provided information than when the target firm is less powerful than the initiating firm. A similar effect was identified by Van den Abbeele (2006) who found that less powerful firms can attenuate their disadvantageous

position by generously revealing cost information to their powerful partner-firm. Further, the author points out that this course of action did not harm the less powerful firm, rather the extensive cost information exchange led to an 'extension of the pie', that is, an optimization of the overall cost level. These results are also in line with the results of other social science studies which have sufficiently identified the beneficial effects an extensive first offer can have on the climate and the outcome of a mutual interaction (Magee et al., 2007).

Comparing the results for the other constructs with those obtained in a power asymmetrical situation in which *less* cost information was initially revealed, it is evident that the initial disclosure of *much* information attenuates the effects of a power difference between the supply partners. The power asymmetry does not influence the perception neither of the own nor of the partner's risk anymore, because the revelation of extensive information, from whichever position, seems to equalize the the risk for both parties. A possible explanation for this lies in the behavioral pattern to a answer the initial offer alike. When there is much information initially revealed a person tends to reveal more information her-/himself. This, however, leads to a situation in which risk appears not only on the side of the first mover, but also on the target's side, on the side of the responding firm.

Research on the use and implementation of (management) information systems has shown that under certain conditions, there are additional factors that determine the scope of validity of the empirical findings and the factors identified to influence the application of a new system (Robey, 1979). One needs to consider that, in general, attitudes and experience can have a moderating influence on the behavior shown in a certain domain and/or on the use of management systems (Robey, 1979). Relating to the present investigation, the participants' attitude towards the sharing of confidential information in an inter-organizational cost management framework and her or his experience may be linked to some dependent variables in such a way that they serve as moderators or mediators which influence and/or determine the strength and/or the relation between an (experimental) predictor variable and a dependent variable (Baron & Kenny, 1986). The remainder of this thesis will tackle such questions. It is organized as follows. The next chapter covers aspects of generalizability. First in Section 5.1 the experimental data collected thus far, including the supplementary data set of the last experiment will be used to investigate the effect-validity. The robustness of the positive effect of the initially offered quantity of information under different relative power structures is analyzed. Additionally, selected data sets are re-combined to conduct further analyses on the robustness of the effect of the offer of a relation-specific asset. Section 5.2 investigates the external validity of the findings and draws conclusion on the extent to which the study yields results transferable to other general populations. The abovementioned aspects of attitu-

dinal influences are incorporated in Chapter 6, which applies structural equation modeling to consider these aspects for the propensity to use open book accounting and to map the (inter-)relations of the various variables analyzed in the course of this work. The thesis concludes by providing theoretical and practical implications in Chapter 7.

5 Generalizability

5.1 Effect-robustness

5.1.1 General aspects of robustness

Aspects of robustness of experimental effects must be distinguished from general aspects of external validity. In general, external validity describes the extent to which implications can be drawn from the results of an experimental environment to generality. The first aspect of external validity, generalizability, deals with the question whether the experimental population allows for conclusions on the behavior of a more widely spread, general population. The second aspect, mundane realism, is concerned with the degree to which the experimental set-up resembles a real-world scenario. The latter aspect indicates whether the experimental scenario can be considered equivalent to the real-world setting of interest (Schulz, 1999). That is, does the experimental setting resemble the real world? Section 5.2 will cover the topic of external validity at length and explain how it is handled and taken care of in the present experimental investigation.

Different from external validity which is concerned with the transfer of research results to a more general environment, *robustness* is about the resilience of an observed phenomenon under changed experimental conditions (Guala & Mittone, 2005). If an effect is also observable under a changed experimental environment, this effect exhibits a high robustness. Guala & Mittone (2005) provide a vivid example of a robust effect: the general research objective of the study was to analyze people's tax paying behavior in different scenarios. The authors report that, no matter which way of informing the participating persons of the probability of an (randomly determined!) audition, the irrational behavior of evading taxes directly after an audition remained. This is due to the false assessment of individuals that, directly after a random audition, it is less likely to be audited again in the subsequent period ('bomb crater effect'—derived from the irrational believe that a bomb will not fall in the exact same spot within a short period of time (Guala & Mittone, 2005)). This instance of irrational behavior persisted changes in the nature of the fiscal audit system and the tax yield redistribution. Be-

cause the phenomenon could be observed throughout different experiments, it yielded a rather high robustness.

The analysis of the effect-robustness is transferred to the present study. More specifically, the effects on three variables are scrutinized. The own willingness to engage further in cost information exchange with the partner firm, the perceived partner's willingness, and the amount of actually reciprocated cost information. These variables are selected because they are essential to the study, as they represent the result of the cognitive processes (willingness aspects) and the actual behavior (information revealed in response).

To investigate the robustness, for instance of the positive effect of the initially offered quantity of cost information on the amount of cost information reciprocated, certain experimental groups are merged and re-combined. Subsequently, the robustness of the behavioral pattern caused by the manipulation of the initially offered information quantity under different power settings is analyzed. Thereafter, in Section 5.1.3 the interplay of the specific asset and the relative power setting is further analyzed.

5.1.2 Information quantity and relative power

As mentioned in the above section, further analysis is conducted by merging and re-combining existing data sets.

In a first step, those data-sets are combined which do not feature the offer of a relation-specific asset. In particular, the data described in Section 4.2 (large quantity of initially offered cost information and relative power low vs. high) is combined with selected data from the first experiment (Chapter 3, initially offered quantity of cost information small vs. large and no relation-specific asset offered—under equal power of the partners), and with data from the second experiment (Section 4.1, small initially offered quantity of cost information and relative power low vs. high). Table 5.1 illustrates the selected experimental data from the different experiments. Doing so, a data set is created in which the power relation and the initially offered information quantity constitute the independent variables and the condition that no specific asset is offered is kept constant across all cells. This eliminates influences of the specific asset and leaves for the analysis the effect of the initially offered quantity of information (small vs. large) under three different power settings (equal, low, and high relative power).

Forming a new data set by re-combining selected experimental cells from different investigations abandons one condition of experimental research, which is randomization. Within each experiment, data was collected while carefully randomizing the distribution of the different experimental scenarios among the participants. The re-combination of the experimental

cells for a new 2×3 (initially offered information quantity small vs. large and low, equal, high relational power) experimental design somewhat attenuates the randomization across the groups. However, this step is justifiable because an ad-hoc analysis of the reaction pattern of participants who differed in the work experience revealed no significant differences concerning the effects on those variables. (Further remarks on the effect of work experience and external validity will be provided in section 5.2.2.)

| Information quantity | Power | | | Specific asset |
|----------------------|--------------|--------------|--------------|----------------|
| | Equal | Low | High | |
| Small | Experiment 1 | Experiment 2 | Experiment 2 | Not offered |
| Large | Experiment 1 | Experiment 3 | Experiment 3 | |
| Small | Experiment 1 | Experiment 2 | Experiment 2 | offered |
| Large | Experiment 1 | — | — | |

Table 5.1: Selected experimental data for robustness check information and power

The robustness of the effects of the experimental variables is checked by means of three selected dependent constructs. The first is the own willingness aspect, the second is the perceived partner's willingness, and the third is the actually reciprocated amount of cost information. These variables were chosen because they are essential to the general aspect of the propensity to engage in inter-organizational cost management and they will also be among the central dependent variables in the moderator and mediator analysis in the subsequent section. After creating the new 2×3 data set, ANOVAs for the three dependent variables were calculated. This is done to check whether effects of the independent variables carry across the entire data set. Next, the results for the robustness check on these selected variables are reported.

Own willingness to engage further in cost information disclosure The ANOVA for the own willingness to engage further in cost information exchange revealed neither a main effect of the initially offered quantity of information nor of the relative power structure. Further, no interaction effect of the two variables was found (see Table 5.2).

| Source of variation | Df | Mean sq | F | p |
|-------------------------------|----|---------|------|-------|
| Info. quantity | 1 | 2.00 | 0.72 | 0.399 |
| Power | 2 | 3.28 | 1.18 | 0.314 |
| Info. quantity \times Power | 2 | 4.81 | 1.73 | 0.184 |
| Residuals | 80 | 2.78 | | |

Table 5.2: ANOVA for the robustness of the effect of information quantity on own willingness under different power settings

Perceived partner's willingness The results of the ANOVA show an effect of the amount of initially offered cost information ($F = 15.89$, $p = 0.000$). Participants who faced an extensive initial offer of cost information assessed the partner's willingness to engage in open book accounting to be higher ($M_{\text{large information}} = 3.41$, $SD = 1.55$) than those who initially faced only a small amount of cost information ($M_{\text{small information}} = 2.23$, $SD = 1.22$). No effect of power, but a tendency for an interaction of power and the initially offered information quantity was found ($F = 2.72$, $p = 0.072$). Table 5.3 summarizes the results of the ANOVA.

| Source of variation | Df | Mean sq | F | p |
|-------------------------------|----|---------|-------|----------|
| Info. quantity | 1 | 29.49 | 15.89 | 0.000*** |
| Power | 2 | 0.64 | 0.35 | 0.708 |
| Info. quantity \times Power | 2 | 5.05 | 2.72 | 0.072. |
| Residuals | 80 | 1.86 | | |

*** Significant at the 0.001 level

. Significant at the 0.1 level

Table 5.3: ANOVA for the robustness of the effect of information quantity on perceived partner's willingness under different power settings

Amount of cost information reciprocated The variance analytic results for the amount of cost information reciprocated by the participants show a main effect of the initially offered quantity of cost information ($F = 8.58$, $p = 0.004$). Participants confronted with more cost information ($M_{\text{large information}} = 7.18$, $SD = 2.20$) revealed more cost information themselves than those confronted with less cost information ($M_{\text{large information}} = 5.77$, $SD = 2.21$). Neither

an effect of the relational power nor an interaction effect of the two variables (power and quantity of initially offered cost information) was found (see Table 5.4).

| Source of variation | Df | Mean sq | F | p |
|-------------------------------|----|---------|------|---------|
| Info. quantity | 1 | 42.59 | 8.58 | 0.004** |
| Power | 2 | 3.28 | 0.66 | 0.519 |
| Info. quantity \times Power | 2 | 2.27 | 0.46 | 0.635 |
| Residuals | 80 | 4.96 | | |

** Significant at the 0.01 level

Table 5.4: ANOVA for the robustness of the effect of information quantity on information reciprocated under different power settings

The results of the robustness check show that the main effect of the initially quantity of information is valid throughout the different power settings. This means that in the experimental scenarios the participants react to the offered amount of cost information by following a norm of reciprocity. When faced with a more generous offer, they reciprocate more information than in a situation when the offer comprises only few cost information. This reaction pattern reflects quite well the results of other exchange theoretical investigations. Especially when no specific exchange frame or behavior pattern has been established in the past, the interacting parties are very likely to apply a tit-for-tat strategy (Van Lange, Ouwerkerk, & Tazelaar, 2002). This strategy is thought off as a suitable way to achieve fairness among exchange partners (Axelrod, 1984; Pruitt & Kimmel, 1977). This effect has been found to be valid and robust for different power relations as well (Van den Abbeele, 2006). Interestingly, the own willingness to engage further in cost information is not affected by the amount of initially revealed cost information by the partner. However, the assessment of the partner's willingness strongly depends on the amount of revealed information. This shows that the own willingness is determined by further factors and that the target firm determines its own propensity by considering additional factors.

Next, the same analytic procedure is applied to check the robustness of the effects of the offer of a relation-specific asset.

5.1.3 Relation-specific assets and relative power

Similar to the procedure for the first robustness check, a new 2×3 (specific asset offered yes vs. no and relative power low, equal, high) data set is created to investigate the robustness of the effect of the relation-specific asset. Table 5.5 shows the selected experimental subsets. All six data cells feature a small initially offered quantity of information because the effect of the relation-specific asset was most evident for this condition. Because a quasi-experimental design for this analysis is used as well, the limitations concerning the randomization which were indicated for the preceding analysis apply as well for this part. The results for the effect of the offer of a relation-specific asset on the two main dependent variable are as follows.

| Information quantity | Power | | | Specific asset |
|----------------------|--------------|--------------|--------------|----------------|
| | Equal | Low | High | |
| Small | Experiment 1 | Experiment 2 | Experiment 2 | Not offered |
| Large | Experiment 1 | Experiment 3 | Experiment 3 | |
| Small | Experiment 1 | Experiment 2 | Experiment 2 | offered |
| Large | Experiment 1 | — | — | |

Table 5.5: Selected experimental data for robustness check asset and power

Own willingness to engage further in cost information disclosure Table 5.6 shows a main effect of the offer of a relation-specific asset on the participants' own willingness to engage in further cost information exchange with the partner firm ($F = 4.00$, $p = 0.049$). This means that participants who are offered a specific asset ($M_{\text{with asset}} = 3.48$, $SD = 1.73$) show a higher own willingness to engage in further cost information exchange than those who are not offered a specific asset ($M_{\text{without asset}} = 2.74$, $SD = 1.74$). Further, there is a light tendency for an interaction effect of the specific asset and the relative power structure ($F = 2.39$, $p = 0.098$).

Perceived partner's willingness As Table 5.7 shows, there was an interaction effect of the two variables on the perceived partner's willingness ($F = 4.71$, $p = 0.012$). The interpretation of

| Source of variation | Df | Mean sq | F | p |
|----------------------------|----|---------|------|--------|
| Spec. asset | 1 | 11.87 | 4.00 | 0.049* |
| Power | 2 | 0.56 | 0.19 | 0.828 |
| Spec. asset \times Power | 2 | 7.08 | 2.39 | 0.098. |
| Residuals | 83 | 2.97 | | |

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 5.6: ANOVA for the robustness of the effect of a relation-specific asset on own willingness under different power settings

this effect implies that only under equal power the relation-specific asset has an unambiguous positive effect on the perceived partner's willingness to engage in IOCM. Table 5.8 shows the corresponding means and standard deviations. Further, a tendency for a main effect of the offer of a relation-specific asset was found ($F = 3.49$, $p = 0.065$).

| Source of variation | Df | Mean sq | F | p |
|----------------------------|----|---------|------|--------|
| Spec. asset | 1 | 6.18 | 3.49 | 0.065. |
| Power | 2 | 2.19 | 1.24 | 0.295 |
| Spec. asset \times Power | 2 | 8.34 | 4.71 | 0.012* |
| Residuals | 83 | 1.77 | | |

* Significant at the 0.01 level

. Significant at the 0.01 level

Table 5.7: ANOVA for the robustness of the effect of a relation-specific asset on perceived partner's willingness under different power settings

Amount of cost information reciprocated For the quantity of reciprocated information neither a main effect of the relation-specific asset or the three power settings nor an interaction effect between these two variables, which would be valid across all experimental studies, was found (see Table 5.9). This means that the reciprocation of information mainly focuses on the initial offer of *information* and is insusceptible to domain-unspecific devices or the relative power position.

| Dependent Variable | Power | | | | | | | | | | | |
|---------------------------------|-------------------------|---------|-------------------------|---------|-------------------------|---------|-------------------------|---------|-------------------------|---------|-------------------------|---------|
| | low | | | | equal | | | | high | | | |
| | Relation-specific asset | | Relation-specific asset | | Relation-specific asset | | Relation-specific asset | | Relation-specific asset | | Relation-specific asset | |
| | not offered | offered | not offered | offered | not offered | offered | not offered | offered | not offered | offered | not offered | offered |
| M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | |
| | (n=12) | (n=10) | (n=23) | (n=22) | (n=12) | (n=10) | | | | | | |
| Perceived partner's willingness | 2.50 | 1.45 | 1.60 | 0.97 | 2.04 | 1.15 | 3.27 | 1.64 | 2.33 | 1.15 | 2.80 | 1.32 |

Table 5.8: Means and standard deviations of perceived partner's willingness under different power settings

| Source of variation | Df | Mean sq | F | p |
|----------------------------|----|---------|------|-------|
| Spec. asset | 1 | 5.64 | 0.81 | 0.372 |
| Power | 2 | 0.79 | 0.11 | 0.894 |
| Spec. asset \times Power | 2 | 1.41 | 0.20 | 0.818 |
| Residuals | 83 | 6.99 | | |

Table 5.9: ANOVA for the robustness of the effect of a relation-specific asset on information reciprocated under different power settings

In summary, the effect that a relation-specific asset can positively influence the propensity to engage further in cost information exchange shows robustness. However, the effect is dependent on the power relation between the partner firms. Only under power symmetry there is an unambiguous positive effect of the offer of a relation-specific asset. Once there is a power gap between the two partners, the effect becomes more complex, such that the offer of the asset does not always have a positive effect. Because the above analysis was conducted with experimental cells that feature a small amount of initially offered information, this supports findings, which were reported for a power-asymmetrical scenario in Section 4.1.1.

5.1.4 Synopsis of inter-experimental robustness

The previous sections analyzed the effect-robustness by comparing subsets of the experimental sample. For a final synopsis, an analysis using the entire experimental data across all cells is conducted. To investigate whether the effects of the three experimental variables carry across all scenarios three further ANOVAs are conducted. The results shall indicate whether the effects identified thus far are still observable when all experimental variables are incorporated in the explanatory model. For this final robustness-analysis all ten experimental cells are used.

| Source of variation | Df | Mean sq | F | p |
|-------------------------------------|-----|---------|------|--------|
| Info. quantity | 1 | 0.20 | 0.07 | 0.790 |
| Spec. asset | 1 | 11.73 | 4.22 | 0.042* |
| Power | 2 | 2.32 | 0.83 | 0.437 |
| Info. quantity \times Spec. asset | 1 | 2.15 | 0.77 | 0.381 |
| Info. quantity \times Power | 2 | 1.86 | 0.67 | 0.513 |
| Spec. asset \times Power | 2 | 7.08 | 2.55 | 0.082. |
| Residuals | 140 | 2.78 | | |

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 5.10: Synoptical ANOVA for the effects on own willingness

Table 5.10 illustrates the synoptical results for the own willingness. The positive effect of the offer to jointly invest in an idiosyncratic asset positively influences the target firm's own willingness to engage further in IOCM. This is also supported by a comparison of the means ($M_{\text{with asset}} = 3.44$, $SD = 1.66$ vs. $M_{\text{without asset}} = 2.88$, $SD = 1.68$). This means that the results

and conclusions derived in in Chapters 3 and 4 yield a rather high robustness to changes in the experimental set-up.

| Source of variation | Df | Mean sq | F | p |
|-------------------------------------|-----|---------|-------|----------|
| Info. quantity | 1 | 29.99 | 16.28 | 0.000*** |
| Spec. asset | 1 | 3.37 | 1.83 | 0.178 |
| Power | 2 | 3.80 | 2.06 | 0.131 |
| Info. quantity \times Spec. asset | 1 | 5.65 | 3.07 | 0.082. |
| Info. quantity \times Power | 2 | 1.77 | 0.96 | 0.384 |
| Spec. asset \times Power | 2 | 8.34 | 4.52 | 0.012* |
| Residuals | 140 | 1.84 | | |

*** Significant at the 0.001 level

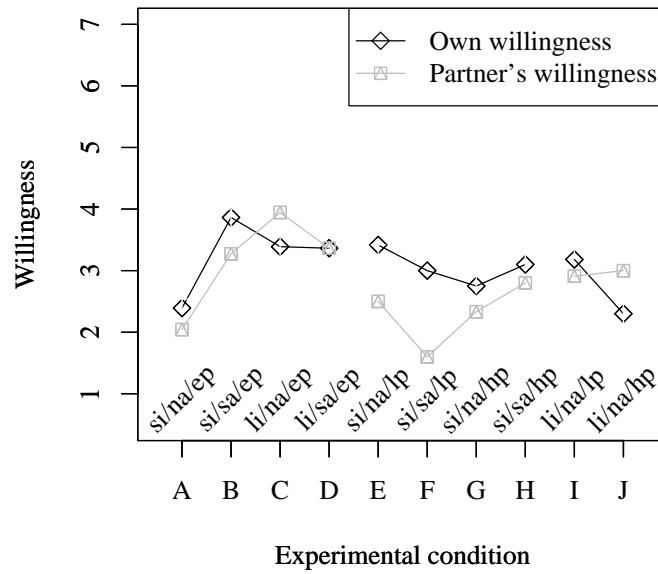
* Significant at the 0.05 level

. Significant at the 0.1 level

Table 5.11: Synoptical ANOVA for the effects on perceived partner's willingness

For the perceived partner's willingness the important effect of the initially offered quantity of cost information was confirmed ($M_{\text{large information}} = 3.39$, $SD = 1.42$ vs. $M_{\text{small information}} = 2.48$, $SD = 1.41$). This means that for the assessment whether a partner firm is truly willing to engage in inter-organizational cost management the domain-*specific* commitment of revealing cost information is of decisive importance and the domain-*unspecific* specific asset cannot directly foster the perceived willingness. The interaction effect identified in the first experiment that an idiosyncratic investment can, at least under a low initially offered cost information quantity, partially substitute an extensive offer of information is attenuated when the entire data set is considered. However, a tendency remains. The interaction effect of the specific asset and the relative power position was already discussed in Section 5.1.3. The results of the synoptical ANOVA for the perceived partner's willingness are shown in Table 5.11. Figure 5.1 shows a graphical synopsis.

Finally, the further analysis of the effects on the amount of reciprocated information show that the positive relation between the initially offered quantity of cost information and the amount of reciprocated cost information shows robustness across all experimental scenarios ($M_{\text{large information}} = 7.59$, $SD = 2.16$ vs. $M_{\text{small information}} = 5.53$, $SD = 2.59$). This means that the 'norm of reciprocity' prevails, even in situations in which there is asymmetrical power.



si/li: small/large information quantity
na/sa: relation-specific asset offered no/yes
ep/lp/hp: low, equal, high power

Figure 5.1: Synopsis of the values of willingness across all experimental cells

| Source of variation | Df | Mean sq | F | p |
|------------------------------|-----|---------|-------|----------|
| Info. quantity | 1 | 153.90 | 25.89 | 0.000*** |
| Spec. asset | 1 | 0.65 | 0.11 | 0.742 |
| Power | 2 | 5.83 | 0.98 | 0.378 |
| Info. quantity × Spec. asset | 1 | 18.25 | 3.07 | 0.082. |
| Info. quantity × Power | 2 | 1.68 | 0.28 | 0.754 |
| Spec. asset × Power | 2 | 1.41 | 0.24 | 0.789 |
| Residuals | 140 | 5.94 | | |

*** Significant at the 0.001 level

. Significant at the 0.1 level

Table 5.12: Synoptical ANOVA for the effects on information reciprocated

Table 5.12 shows the ANOVA across all experimental cells. Figure 5.2 graphically illustrates the amount of cost information reciprocated in the the 10 experimental cells.

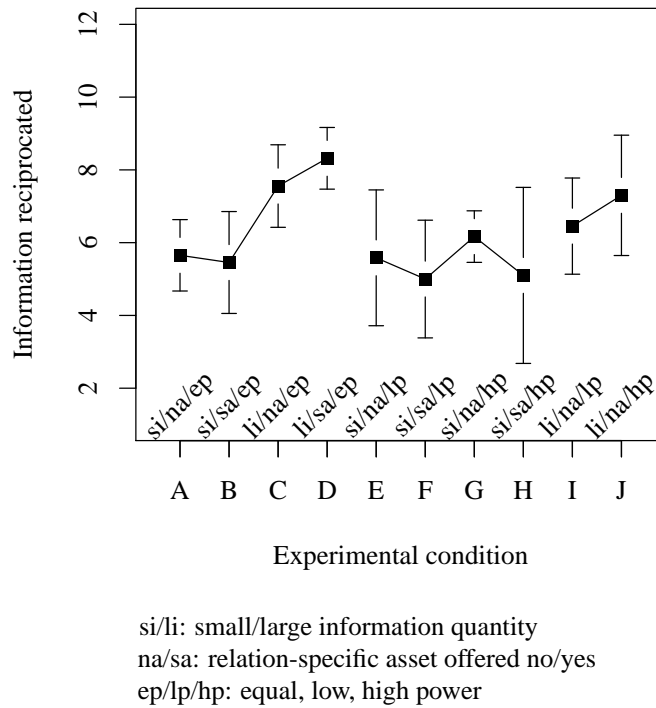


Figure 5.2: Synopsis of the values of information reciprocated across all experimental cells

5.2 External validity

In Section 5.1.1 external validity was specified as the extent to which conclusions can be drawn from research results to a more general population. External validity will be covered in two aspects. First, the aspect of mundane realism is discussed, which is, especially for experimental research, a very important aspect of external validity. Second, it is investigated whether there is an influence of work experience on the answering behavior, which is the most prominent distinguishing characteristic between students and professionals.

5.2.1 Mundane realism

Researchers in general and experimenters in particular always need to be concerned about generalizing their results. Experimental research is almost always conducted in an artificial

and controlled environment. On the one hand, this enables the researcher to control for disturbing influences and to derive causal relations. On the other hand, the possible lack of mundane realism challenges the ability to draw generalizable conclusions, which hold for the real world (Schulz, 1999). Defined as the ‘correctness of inferences about the generalizability of a study’s results to and across populations of settings, subjects, and time periods’ (Stone-Romero, 2002, p. 81), external validity as an important aspect of generalizability is probably the most frequently issued concern about experimental research (Abernethy, Chua, Luckett, & Selto, 1999; Guala & Mittone, 2005; Stone-Romero, 2002). In particular, for experimental research in an economic framework different issues concerning the external validity are mentioned (Abernethy et al., 1999; Schulz, 1999).

The first issue refers to a possible lack of mundane realism of the experimental scenarios. Mundane realism refers to the ability of the experimental set-up to resemble a real-world setting (Schulz, 1999; Stone-Romero, 2002). Only if the material provided to the participants quite exactly mirrors the real-world decision-making situation, it is possible and feasible to transfer the behavioral patterns identified in the experiments to a real-world scenario. Experimental investigations in management accounting are very unlikely to exactly match the complexity of a real decision-making situation. In addition, the fact that the participants are usually aware of the fact that they are undergoing an experiment, there is always the risk of atypical behavior. This leads to a reduced possibility to generalize results of an experimental investigation.

To reduce the effect of unrealistic scenarios, the experimental material must be designed and implemented with great care to achieve as much mundane realism as possible. In the present series of experimental investigations, the objective of mundane realism was accomplished by developing the experimental scenarios based on a real-world example of a buyer-supplier interaction. The example was introduced and described by Dyer & Singh (1998) in their work on inter-organizational collaboration efforts. The construction of a conveyor belt which connects the buyer’s and the supplier’s construction site exactly meets the requirements of the research design because it is a prime example of a relation-specific, hardly to recover, investment. The adaptation of a realistic scenario ensures that behavioral patterns, which are observed in the experimental set-up, will not significantly differ from those in a real-world setting. That is, mundane realism aims at eliminating the influence caused by perceptual differences between the experimental and the real-world environment. Because of the adaptation of a real-world example for the design of the materials for the experiment, negative effects for the present thesis due to a possible lack of mundane realism were attenuated and, as far as possible, prevented.

5.2.2 Effects of work experience

Another, frequently issued, threat to generalizability and external validity of experimental research is the question concerning the representativeness of the sample. There is a discussion among researchers whether results from a study with a student population can be transferred to a general population of managers. In other words, are students, even though they lack job experience, a qualified surrogate for a group of managers (Schulz, 1999)? This is an important question because a considerable part of the experimental research conducted today is done so by recruiting students for the investigation. Several reasons make the recruitment of students more convenient than the addressing of professionals. Students are better available for several reasons. For instance, they can be addressed in sufficient number at the institution where the research takes place (the university). Also, students usually are not subject to time restrictions.

Some authors argue that, even though professionals outperform students, for example in negotiation tasks, the general behavioral patterns are very similar (Northcraft & Neale, 1987). Ashton & Kramer (1980) and Min & LaTour (1995) found no evidence for a significant difference between a group of students and a group of professional buyers in their negotiation studies. However, there are also researchers who claim that conclusions derived from studies with a student population must be handled with great care before transferred to a non-student population. For example, in his meta-analysis Peterson (2001) recommends replicating research with non-student participants before drawing generalizable conclusions. The author argues that this is necessary because the meta-analysis of different research results revealed that effects found in studies with students significantly differ from those with an adult population. This alone would not be a significant issue to generalizability if there was a constant and systematic deviation between the results of a student population and those obtained from a sample of professionals. However, the cross-examination of the results of different studies revealed unsystematic deviations in the effect direction and in the effect size (Peterson, 2001). Hence, following Peterson's argumentation, no general 'rule of transformation' can be derived for the transmission of results of one population to another. A comparison of the effect sizes and directions within groups of professionals and students, respectively, showed that responses of different groups of students were more homogeneous than response of different groups of professionals (Peterson, 2001).

In summary, there is contradictory evidence concerning the portability of scientific results from student populations to professionals and vice versa. As mentioned in Chapter 3, half of the participants in the first experiment were regular students of a Master of Science in Business Administration class, who had no working experience. The other half consisted of participants of an MBA class, who had between 6 and 8 years of working experience. Transferred to the

generalizability, this means that the identified effects and relations already have quite a strong external validity because the effects were found to be strong enough to be significant across heterogeneous groups of students and professionals.

However, because there has been empirical evidence that, even though not systematically, professionals deviate from students in their reaction, the first data set is used to compare the behavioral pattern of the first group, consisting of Master of Science in Business Administration students with no job experience, to the second group, consisting of MBA students with job experience. To do so, a dummy variable (group affiliation) is introduced, which indicates the affiliation to either the participants with work experience or to those without work experience. Together with the two experimental variables, initially offered quantity of information and offer of a relation-specific asset, a MANOVA using the dependent variables as they were used before in the previous studies was computed. Table 5.13 shows the results of the MANOVA.

| | Df | Pillai | F | num Df | den Df | p |
|--|----|--------|------|--------|--------|----------|
| Info. quantity | 1 | 0.35 | 4.80 | 8 | 70 | 0.000*** |
| Spec. asset | 1 | 0.16 | 1.72 | 8 | 70 | 0.110 |
| Group affiliation | 1 | 0.07 | 0.69 | 8 | 70 | 0.700 |
| Info. quantity \times Spec. asset | 1 | 0.23 | 2.62 | 8 | 70 | 0.014* |
| Info. quantity \times Group affiliation | 1 | 0.09 | 0.82 | 8 | 70 | 0.591 |
| Spec. asset \times Group affiliation | 1 | 0.09 | 0.92 | 8 | 70 | 0.508 |
| Info. quantity \times Spec. asset \times Group affiliation | 1 | 0.09 | 0.85 | 8 | 70 | 0.566 |
| Residuals | 77 | | | | | |

*** Significant at the 0.001 level

* Significant at the 0.05 level

Table 5.13: Results of MANOVA with group affiliation

If the work experience does not influence the reaction pattern, there should be no effect of the group affiliation variable on the dependent variables. Neither should there be a direct, nor an interaction effect with any of the experimental variables. Besides the earlier recognized and discussed effects of the quantity of initially offered cost information and the interaction effect of the information quantity and the offer of a relation-specific asset, the results indicate that the group affiliation variable, and therefore the work experience, does not significantly influence the answering behavior of the participants. Further analyses were conducted by calculating ANOVAs for each of the dependent variables. For reasons of parsimony, not the entire ANOVA results are reported at this point, but are provided in Appendix B. At this point, only one dependent variable, trust, which shows a significant influence of the work experience,

is examined more closely. Table 5.14 shows the results of the ANOVA for the trust variable.¹ This means that the trust variable may obtain a different role in the process of the evolvement

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|------|--------|
| Info. quantity | 1 | 2.59 | 1.92 | 0.170 |
| Spec. asset | 1 | 0.56 | 0.41 | 0.522 |
| Group affiliation | 1 | 4.11 | 3.04 | 0.085. |
| Info. quantity × Spec. asset | 1 | 6.99 | 5.18 | 0.026* |
| Info. quantity × Group affiliation | 1 | 6.94 | 5.14 | 0.026* |
| Spec. asset × Group affiliation | 1 | 4.26 | 3.16 | 0.080. |
| Info. quantity × Spec. asset × Group affiliation | 1 | 0.42 | 0.31 | 0.577 |
| Residuals | 77 | 1.35 | | |

* Significant at the 0.05 level

. Significant at the 0.10 level

Table 5.14: ANOVA for dependent variable integrated trust

of the propensity to share cost information. However, because the present investigation does not analyze multiple interactions between the exchange partners, the subsequent analysis can serve only as an initiation for further research on the role of trust and similar types of variables in IOCM. In Section 5.3.2 further analysis considering the special role of trust in this specific situation is conducted.

5.3 Moderator and mediator analysis

5.3.1 Own benefit as a moderator variable

The results of the prior empirical analyses revealed that the collaborative exchange of cost information between a buyer and a supplier can be established under certain circumstances. For example, a positive effect of the initially offered cost information quantity on the perceived willingness to share information as well as on the amount of cost information reciprocated was identified. However, it is now the question, whether there are certain factors and conditions, other than the independent experimental variables, that determine the scope of validity of the

¹The concept of integrated trust is used here because, for the first study, the reliability was sufficiently high. Therefore no analysis on the item level is necessary.

empirical results. To gain further insight, first a moderator analysis is conducted. Then, in Section 5.3.2, possible mediating influences will be considered.

In general terms, factors that determine the scope of validity of a relation between an independent and a dependent variable are referred to as moderator variables (Baron & Kenny, 1986; Luft & Shields, 2003). Similarly, Aguinis (2002) expresses that the phrase ‘it depends’, which is frequently used by researchers to provide answers to questions, is simply the colloquial expression of a moderating effect. This means that the effect of one variable on another variable is contingent on the value of additional variable(s). The most influential piece of research concerning the analysis of moderating variables in social science was published by Reuben M. Baron and David A. Kenny (Baron & Kenny, 1986). Their work was among the first to provide a clear distinction between moderator and mediator variables. The authors not only present a theoretical foundation, they also provide methodological advice on how to test for moderator and mediator variables under different measurement scales. In a nutshell, Baron and Kenny propose that a moderator variable indicates when (under which contingencies) an effect will hold. A mediating variable, will explain how or why certain effects will occur. The procedure proposed by Baron and Kenny has been widely used and tested among researchers in various disciplines. The concept has proven its reliability for the analysis of empirical data in numerous studies. Examples are Sarkar et al. (2001) in marketing or Coletti et al. (2005) and Van den Abbeele (2006) in management accounting research. Because of its widespread use and its proven quality, this proposed ‘modus operandi’ is chosen to go about the identification and the analysis of moderating variables.

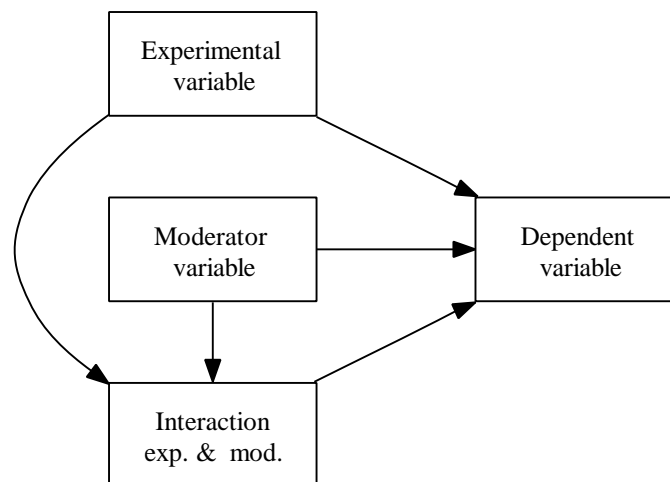


Figure 5.3: Stylized moderation

Moderation takes place if the relation between the experimental variable and the dependent variable changes as a function of another (moderating) variable (Baron & Kenny, 1986). Following the argumentation by Arnold (1982) and Baron & Kenny (1986), it can be assumed that a variable serves as a moderator if certain conditions are fulfilled. First of all, the possible moderator variable should not significantly be influenced by the experimental (predictor) variable, whose effect it is supposed to moderate. Second, there should also be an interaction effect between the (independent) predictor variable and the proposed moderator variable on the dependent outcome variable. Figure 5.3 shows a formalized moderation effect.

The first condition constitutes a main difference between a moderator and a mediator variable. In contrast to a moderator, a variable that serves as a mediator is influenced by the independent predictor variable and also influences the dependent variable itself. Contingent on the measurement scale, Baron and Kenny propose different methods to identify moderating variables. For the present investigation, in which interval scales were used, the moderator analysis will be conducted following Baron and Kenny's example in which the independent variable is a dichotomy and the moderator is a continuous variable. In their specific example the independent variable is operationalized by a rational vs. fear-arousing attitude change message and the moderator variable is represented by the intelligence measured by an IQ test. The example is transferred to the present study as follows.

Moderating effects on the propensity to engage in inter-organizational cost information exchange Based on the example of a moderator analysis provided by Baron & Kenny (1986), the following procedure is chosen: The experimental variables used in the present investigation already are dichotomous variables. This means that no transformation prior to the actual analysis is necessary in order to apply the proposed procedure. The dichotomous criteria are the offer of a relation-specific asset yes vs. no, the initial revelation of a large vs. the initial revelation of a small quantity of cost information, and high relative power position vs. low relative power position. In a next step, the dependent variable on which the effect of the experimental variable is to be moderated needs to be selected. The aspects of willingness to further engage in cost information exchange and the amount of cost information items actually reciprocated as the dependent variables of the moderator analysis are selected. The own willingness as well as the perceived partner's willingness represent the result of the cognitive process that leads to the constitution of a behavioral disposition to collaborate or not. The quantity of reciprocated information, however, indicates whether the willingness was actually transformed into the actual collaborative behavior (Pavlou & Fygenson, 2006). At this point of the analysis, no further elaboration on possible further relationships between the

other variables is provided. This aspect will be covered more thoroughly in the subsequent chapter in which a path model will be applied to map relationships between dependent and independent variables.

As indicated in the abovementioned criteria, a possible moderator variable should not be affected by the independent experimental variables. To identify those variables that fulfill the

| Dependent variable | First study | | | Second study | | | Third study |
|--|-------------|-------|-------------|--------------|-------|-------------|-------------|
| | Info quant. | Asset | Interaction | Asset | Power | Interaction | Power |
| Willingness | | | | | | | |
| <i>Own willingness</i> | | * | * | | | | |
| <i>Perceived partner's willingness</i> | ** | | ** | | | . | |
| Fairness/equity | * | * | * | | | | |
| Own benefit | | | | | | | |
| Trust | | | * | | | | |
| <i>Conduct-based trust</i> | | | | | | | |
| <i>Information-based trust</i> | | | | | | | * |
| <i>Perceived truthfulness</i> | | | | | | | |
| Fear of opportunism | | | | | | * | |
| Risk | | | | | | | |
| <i>Perceived own risk</i> | | | | | | . | |
| <i>Perceived risk for partner</i> | | | | | * | | |
| Info reciprocated | *** | | | | | | |

*** Significant at the 0.001 level

** Significant at the 0.01 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 5.15: Effect of independent on dependent variables

independence criteria, Table 5.15 presents a summary of the results of the different experimental investigations and gives an indication for possible moderator variables because it separates variables that were influenced by the experimental variable from those that were not. The inspection of the statistical results for the different dependent variables reveals that perceived own benefit is the only theoretical construct which is not significantly ($p \leq 0.05$) influenced by any of the experimental variables. As a consequence, perceived own benefit complies with the first requirement of a moderator variable because it is independent from the experimental manipulations of the investigation.

Continuing, it is now analyzed whether the perceived own benefit meets the second criterion of a moderating influence, which is an interaction with the independent experimental variable(s). Hence, further analyses are conducted to explore the relation between the variable perceived own benefit and the experimental variables, respectively. For the analysis linear modeling is applied. The generalized linear model (GLM) represents a generalization of variance analytic and regression analytic measures because it combines and integrates both methods (J. Cohen, Cohen, West, & Aiken, 2003, pp. 497–535). By this means, it offers a very parsimonious way to investigate the direct as well as the interaction effects of perceived own benefit, the proposed moderator variable, and the experimental variables. As mentioned before, the moderator analysis is conducted on three central dependent variables: the own willingness to engage in further cost information exchange, the perceived partner's willingness, and the actual number of reciprocated cost information items. The procedure is akin to the procedure chosen for the analysis of the experimental data. First, the interaction analysis is conducted for the experimental data set, which was gathered in a scenario of equal power. After the results are reported, the robustness will be investigated by conducting the analysis on the entire data set across all power scenarios. Please note that some of the results, which do not concern main or interaction effects of own benefit, were already identified in previous sections (see Section 3.3.3). Those effects will not be further elaborated on because they are not essential to the tenets of the moderator analysis.

Moderator analysis for the effects on the own willingness to engage in cost information exchange Analyzing the data from the first experiment, the results of the GLM show an interaction effect of perceived own benefit (the proposed moderator variable) and the quantity of initially offered cost information on the own willingness to further exchange cost information with the partner firm ($F = 3.83$, $p = 0.054$). Under the condition of an extensive offer of cost information, the participants' willingness to further exchange cost information depends on the degree to which they perceive the situation to be beneficial for them. Further, a main effect of perceived own benefit ($F = 10.02$, $p = 0.002$) and of the offer of a relation-specific asset (already identified in prior analysis) were found. Table 5.16 shows the results of the ANOVA.

When the same analysis is conducted for the whole data set (see Table 5.17), the results show that the interaction effect of the information quantity and the perceived own benefit does not carry across. However, the main effect of perceived own benefit is confirmed ($F = 20.88$, $p = 0.000$) and stresses the importance of the perception of an own benefit when engaging in collaborative cost information exchange.

| Source of variation | Df | Mean Sq | F | p |
|---|----|---------|-------|---------|
| Info. quantity | 1 | 1.47 | 0.63 | 0.431 |
| Spec. asset | 1 | 12.57 | 5.35 | 0.023* |
| Own benefit | 1 | 23.56 | 10.02 | 0.002** |
| Info. quantity. × Spec. asset | 1 | 6.76 | 2.88 | 0.094. |
| Info. quantity × Own benefit | 1 | 9.00 | 3.83 | 0.054. |
| Spec. asset × Own benefit | 1 | 0.42 | 0.18 | 0.674 |
| Info. quantity. × Spec. asset × Own benefit | 1 | 0.40 | 0.17 | 0.682 |
| Residuals | 77 | 2.35 | | |

** Significant at the 0.01 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 5.16: ANOVA moderator analysis for dependent variable own willingness – exp. 1

| Source of variation | Df | Mean Sq | F | p |
|--|-----|---------|-------|----------|
| Info. quantity | 1 | 0.20 | 0.08 | 0.779 |
| Spec. asset | 1 | 11.73 | 4.69 | 0.032* |
| Own benefit | 1 | 52.26 | 20.88 | 0.000*** |
| Info. quantity × Spec. asset | 1 | 0.92 | 0.37 | 0.545 |
| Info. quantity × Own benefit | 1 | 3.35 | 1.34 | 0.249 |
| Spec. asset × Own benefit | 1 | 0.29 | 0.12 | 0.733 |
| Info. quantity × Spec. asset × Own benefit | 1 | 1.77 | 0.71 | 0.402 |
| Residuals | 142 | 2.50 | | |

*** Significant at the 0.001 level

* Significant at the 0.05 level

Table 5.17: ANOVA moderator analysis for dependent variable own willingness – all experiments

Moderator analysis for the effects on the perceived partner's willingness to engage in cost information exchange For the second aspect of willingness, the perceived partner's willingness to engage further in cost information exchange, the following results were found (see Table 5.18). There is a direct effect of the perceived own benefit ($F = 11.29$, $p = 0.001$) and an interaction effect of perceived own benefit and the initially offered information quantity on the perceived partner's willingness ($F = 13.30$, $p = 0.001$). Further, and already identified earlier, there is an interaction effect of the initially offered information quantity and the offer of a relation-specific asset as well as a main effect of the initially offered quantity of cost information. To illustrate the effect of the moderating influence on the dependent variable perceived partner's willingness, Figure 5.4 depicts the courses of the graphs of the perceived willingness under different information offers—dependent on the moderator own benefit. When there is much information included in the initial offer, participants who expect higher own benefits through the OBA-process assess the partner firm that offered the information to be more inclined to earnestly engage in IOCM than those participants with lower expectations. This interaction is not given, when the initial move comprises only a small amount of information.

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|-------|----------|
| Info. quantity | 1 | 20.36 | 13.08 | 0.001*** |
| Spec. asset | 1 | 3.08 | 1.98 | 0.163 |
| Own benefit | 1 | 17.57 | 11.29 | 0.001*** |
| Info. quantity \times Spec. asset | 1 | 11.91 | 7.65 | 0.007** |
| Info. quantity \times Own benefit | 1 | 20.70 | 13.30 | 0.001*** |
| Spec. asset \times Own benefit | 1 | 0.01 | 0.00 | 0.954 |
| Info. quantity \times Spec. asset \times Own benefit | 1 | 6.57 | 4.22 | 0.043* |
| Residuals | 77 | 119.84 | 1.56 | |

*** Significant at the 0.001 level

** Significant at the 0.01 level

* Significant at the 0.05 level

Table 5.18: ANOVA moderator analysis for dependent variable perceived partner's willingness – exp. 1

Extended to the entire data set, the ANOVA shows that the interaction effect of own benefit and the offered cost information quantity diminishes, but is still existent throughout all exper-

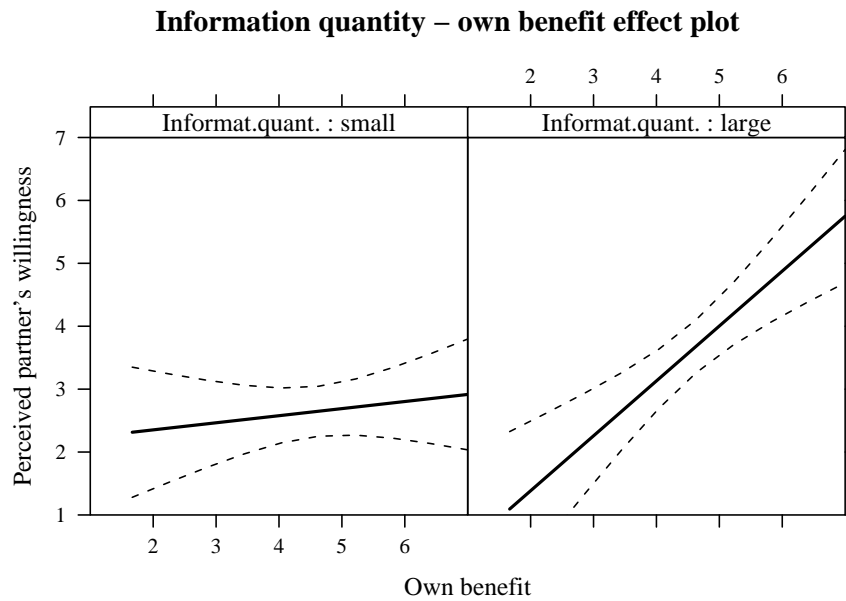


Figure 5.4: Moderation effect of own benefit in perceived partner's willingness – exp.1

iments ($F = 3.22$, $p = 0.075$). Additionally, the main effect of perceived own benefit proved to be robust ($F = 12.48$, $p = 0.001$). Table 5.19 displays the results of the ANOVA of the entire data sample.

Moderation effects on the amount of cost information reciprocated Table 5.20 shows a main effect of perceived own benefit on the amount of reciprocated cost information as a reaction to the initial offer ($F = 4.87$, $p = 0.030$).

As Table 5.21 illustrates, the extension of the moderator analysis to the larger data sample reveals that the main effect of the perceived own benefit prevails ($F = 9.66$, $p = 0.002$).

To summarize, *perceived own benefit*, as it is operationalized in the present study, represents a situational evaluation and assessment of the specific inter-firm relation with the partner-firm (Framing.Inc). The analyses reveal that the conversion of an initially offered large quantity of information into an increased willingness to further engage in the exchange of cost information is moderated by the participants' perceived own benefit of the exchange situation. Going back

| Source of variation | Df | Mean Sq | F | p |
|--|-----|---------|-------|----------|
| Info. quantity | 1 | 29.99 | 16.56 | 0.000*** |
| Spec. asset | 1 | 3.37 | 1.86 | 0.175 |
| Own benefit | 1 | 22.60 | 12.48 | 0.001*** |
| Info. quantity × Spec. asset | 1 | 2.28 | 1.26 | 0.264 |
| Info. quantity × Own benefit | 1 | 5.84 | 3.22 | 0.075. |
| Spec. asset × Own benefit | 1 | 1.36 | 0.75 | 0.387 |
| Info. quantity × Spec. asset × Own benefit | 1 | 2.18 | 1.20 | 0.275 |
| Residuals | 142 | 1.81 | | |

*** Significant at the 0.001 level

. Significant at the 0.1 level

Table 5.19: ANOVA moderator analysis for dependent variable perceived partner's willingness – all experiments

| Source of variation | Df | Mean sq | F | p |
|--|----|---------|-------|----------|
| Info. quantity | 1 | 123.96 | 21.15 | 0.000*** |
| Spec. asset | 1 | 1.34 | 0.23 | 0.634 |
| Own benefit | 1 | 28.54 | 4.87 | 0.030* |
| Info. quantity × Spec. asset | 1 | 10.39 | 1.77 | 0.187 |
| Info. quantity × Own benefit | 1 | 0.13 | 0.02 | 0.882 |
| Spec. asset × Own benefit | 1 | 2.38 | 0.41 | 0.526 |
| Info. quantity × Spec. asset × Own benefit | 1 | 0.05 | 0.01 | 0.926 |
| Residuals | 77 | 5.86 | | |

*** Significant at the 0.001 level

* Significant at the 0.05 level

Table 5.20: ANOVA moderator analysis for dependent variable information reciprocated – exp. 1

| Source of variation | Df | Mean Sq | F | p |
|--|-----|---------|-------|----------|
| Info. quantity | 1 | 153.90 | 27.76 | 0.000*** |
| Spec. asset | 1 | 0.65 | 0.12 | 0.734 |
| Own benefit | 1 | 53.56 | 9.66 | 0.002** |
| Info. quantity \times Spec. asset | 1 | 25.97 | 4.68 | 0.032* |
| Info. quantity \times Own benefit | 1 | 0.29 | 0.05 | 0.819 |
| Spec. asset \times Own benefit | 1 | 0.13 | 0.02 | 0.879 |
| Info. quantity \times Spec. asset \times Own benefit | 1 | 1.02 | 0.18 | 0.669 |
| Residuals | 142 | 5.54 | | |

*** Significant at the 0.001 level

** Significant at the 0.01 level

* Significant at the 0.05 level

Table 5.21: ANOVA moderator analysis for dependent variable information reciprocated – all experiments

to the basic definition that a moderator variable indicates the scope of validity of an identified effect of an experimental variable, the following conclusion can be drawn.

Perceived own benefit was identified as a moderator for the effect of an initially offered large quantity of cost information on the own willingness to engage in OBA. An extensive offer of cost information is transferred to an increased willingness to collaborate, only if the target firm perceives significant benefits of the mutual information disclosure. This effect does not hold for situations with less cost information initially made available. This moderation, however, was not robust against changes in the experimental design, more specifically, in a situation of power asymmetry.

Further a robust main effect of own benefit on the willingness to engage in further OBA-activities was found. This emphasizes the important role of the perceived own benefit in information exchange situations.

For the perception of the partner firm's willingness to truly engage in collaborative open book accounting, the positive effect that an initially offered large quantity of information has on the perceived partner's willingness is contingent on the perception of the perceived benefit. This moderating effect is robust across the entire data sample. In other words, when the target firm experiences a significant benefit for itself, it believes in the true intention of the initiating partner firm and perceives it to be earnestly up to collaboratively exchange cost information for

managing the inter-firm cost level. In a nutshell, when there is no perceived benefit for oneself, a target has a hard time trusting in the true and honest intentions of the partner firm. Just as for the preceding willingness variable, the direct influence of own benefit in the perception of the partner's true intentions indicates the central role of this factor.

Finally, conclusion shall be drawn on the last dependent variable within this moderator analysis. The actual behavior, that is the revelation of own cost information to the partner firm is not moderated by the perceived own benefit; neither in the sub-sample from the first data set nor in the entire sample. Though, the main effect of the own benefit which was also found for this dependent variable completes the exposed position of own benefit. Interpreting the results for the actual behavior, the information reciprocation, implies that the revelation of information is not moderated, but to a large extent directly determined by two factors which superpose other possible influences. The initially disclosed amount of information by the partner firm and the anticipated benefit of the cooperation with the other firm. The first aspect confirms the results of prior robustness checks that the 'norm of reciprocity' prevails as it was identified in Section 5.1.

The perception of the own benefit is not influenced or manipulated in the present investigation. As Table 5.15 has shown, the experimental variables, which are under investigation in the present study, do not affect the level of perceived own benefit. Hence, the experimental variables, at least in this specific experiment, are not suitable for manipulating the perceived own benefit. Rather, perceived own benefit can be interpreted as an instantiated attitude which people activate as a reaction to the situational scenario they are confronted with. Further interest lays in the question what factors determine the forming of this instantiated attitude. This question will be answered using path modeling approaches, which will be developed in Chapter 6.

5.3.2 Trust as a mediator variable

The results in Section 5.2.2 indicated that trust can possibly obtain an important role in an inter-firm exchange situation because it was the only variable to show a difference in the answering pattern between students and professionals. However, because no hypotheses have been proposed concerning a possible effect of trust as an *influencing* variable on dependent variables in the interaction between the exchange partner, the following analysis has an explorative character and serves as an example of what could be the starting point for further research, which could analyze the role of possible process variables on the outcomes of exchange situations.

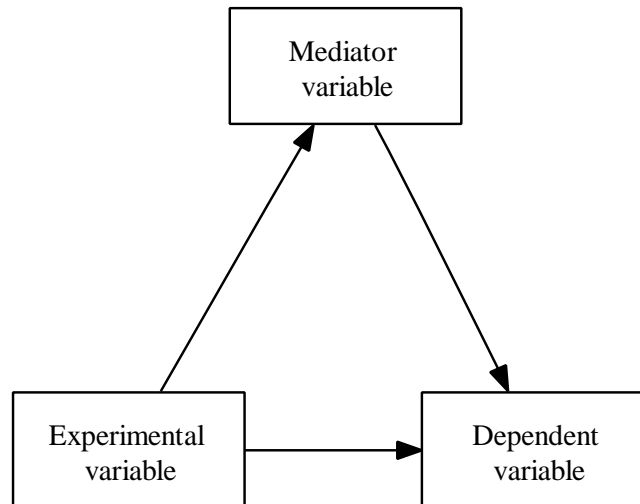


Figure 5.5: Stylized mediation

Variables can obtain a moderating or a mediating position for effects of independent on dependent variables. Prior analyses have revealed that trust is significantly influenced by the interaction effect of the experimental variables initially offered quantity of information and the offer of a relation-specific asset (see Section 3.3.3 and Tables 3.7 and 5.15). According to the theoretical background on moderator and mediator variables in Section 5.3.1, this means that a moderating function is not possible for trust because a moderator variable is not significantly influenced by the manipulation of the independent variables. However, the variable can still obtain a mediating position. Therefore, it is analyzed whether trust mediates the effects of the experimental variables. Similar to the moderator analysis in Section 5.3.1, the analysis focuses on aspects of willingness to engage in further cost information exchange and the actually reciprocated amount of cost information.

Section 5.3.1 introduced the concept by Baron & Kenny (1986) for the identification of moderator and mediator variables. In their definition the authors propose that a mediator is a variable which further determines why and how a specific effect occurs. As mentioned, one of the major differences between a moderator and a mediator is the fact that the mediator is influenced by the independent variables *and* influences the dependent variable. More specifically, Baron & Kenny (1986) propose that a variable has a mediating function (1) when the independent variable influences the level of the presumed mediator, (2) when the mediator variable influences the dependent variables, and (3) when a significant effect of the independent variable on the dependent variable turns to insignificance when the mediator is controlled

for. Figure 5.5 illustrates a typical mediation relationship between independent variable(s), the mediator variable, and the dependent variable. Following the proposed procedure by Baron & Kenny (1986), successively, trust is tested for its mediating influence.

For completeness, the effects trust is assumed to mediate are re-stated. For the aspects of willingness (own and the perceived partner's willingness), trust is proposed to mediate not a main effect by a single variable, but an interaction effect of the two experimental variables, initially offered quantity of information and offer of a relation-specific asset. However, this is not a restricting fact for a mediator analysis. For the variable amount of cost information reciprocated, a main effect of the initially offered cost information quantity was found, thus, it is investigated whether trust mediates this main effect.

The first criterion for a mediator variable, the influence of the experimental variables on the mediator, has already been met in the variance analyses (see Section 3.3.3). The second step investigates whether the proposed mediator influences the dependent variable. Because the analysis focuses on aspects of willingness and cost information reciprocation, three ANOVAs are conducted; for the effect of trust on the three dependent variables own willingness, perceived partner's willingness, and cost information reciprocated.

| Source of variation | Df | Mean sq | F | p |
|---------------------|----|---------|------|---------|
| Trust | 1 | 19.55 | 7.52 | 0.008** |
| Residuals | 83 | 2.60 | | |

** Significant at the 0.01 level

Table 5.22: ANOVA influence of trust on own willingness – exp. 1

Table 5.22 shows the analysis for the own willingness. The results for perceived partner's

| Source of variation | Df | Mean sq | F | p |
|---------------------|----|---------|-------|----------|
| Trust | 1 | 26.51 | 12.68 | 0.001*** |
| Residuals | 83 | 2.09 | | |

*** Significant at the 0.001 level

Table 5.23: ANOVA influence of trust on perceived partner's willingness – exp. 1

willingness are shown in Table 5.23. Finally, Table 5.24 illustrates the ANOVA results for the amount of cost information reciprocated.

| Source of variation | Df | Mean sq | F | p |
|---------------------|----|---------|------|-------|
| Trust | 1 | 15.66 | 2.16 | 0.146 |
| Residuals | 83 | 7.26 | | |

Table 5.24: ANOVA influence of trust on cost information reciprocated – exp. 1

For both willingness variables there is an influence of trust. The amount of cost information reciprocated, however, is not influenced by trust. Thus, for information reciprocation trust does not serve as a mediating influence because the essential condition that it influences the dependent variable is not fulfilled. Therefore, further analysis on this dependent variable (information reciprocated) is not necessary.

For the last step in the mediator analysis, it must be tested whether the effect of the experimental variables becomes insignificant when the proposed mediator is controlled for, that is, when it is included in the model as an explaining variable. To do so, analyses of variance were calculated, using the remaining two dependent variables and including trust in the independent (explaining) variables. Because the initial analysis in Chapter 3 revealed interaction effects for the aspects of willingness, this type of effect is further tested for mediation. Tables 5.25 and 5.26, show the results of the remaining two ANOVAs.

As a last step in the mediator analysis, the previous analysis is supplemented by a Sobel-test for mediation (Sobel, 1982). The test is conducted using the procedure proposed by MacKinnon, Lockwood, Hoffman, West, & Sheets (2002), which is implemented in the statistical software package ‘R’. The test estimates the magnitude of an indirect (mediating) effect. The output provides an estimation of the standard error for the proposed indirect effect by estimating the corresponding z-value. Table 5.27 displays the results of Sobel’s test for mediation, including the z-values and the corresponding p-values.

The results show that the interaction effect of the offer of a relation-specific asset and the initially offered quantity of information on the own willingness to exchange further cost information and on the perceived partner’s willingness is mediated by trust.

The last section of this chapter will commemorate the different aspects covered in this complex chapter and point out the most important results.

| Source of variation | Df | Mean sq | F | p |
|--|----|---------|------|--------|
| Info. quantity | 1 | 1.47 | 0.61 | 0.438 |
| Spec. asset | 1 | 12.57 | 5.18 | 0.026* |
| Trust | 1 | 16.54 | 6.82 | 0.011* |
| Info. quantity \times Spec. asset | 1 | 6.63 | 2.73 | 0.103 |
| Info. quantity \times Trust | 1 | 3.75 | 1.55 | 0.217 |
| Spec. asset \times Trust | 1 | 0.85 | 0.35 | 0.556 |
| Info. quantity \times Spec. asset \times Trust | 1 | 6.67 | 2.75 | 0.101 |
| Residuals | 77 | 2.43 | | |

* Significant at the 0.05 level

Table 5.25: ANOVA for the influence on own willingness when trust is controlled for – exp. 1

| Source of variation | Df | Mean sq | F | p |
|--|----|---------|-------|----------|
| Info. quantity | 1 | 20.36 | 11.47 | 0.001*** |
| Spec. asset | 1 | 3.08 | 1.74 | 0.192 |
| Trust | 1 | 19.80 | 11.16 | 0.001*** |
| Info. quantity \times Spec. asset | 1 | 10.37 | 5.84 | 0.018* |
| Info. quantity \times Trust | 1 | 5.28 | 2.98 | 0.089. |
| Spec. asset \times Trust | 1 | 2.47 | 1.39 | 0.241 |
| Info. quantity \times Spec. asset \times Trust | 1 | 2.01 | 1.13 | 0.291 |
| Residuals | 77 | 1.77 | | |

*** Significant at the 0.001 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 5.26: ANOVA for the influence on perceived partner's willingness when trust is controlled for – exp. 1

| Dependent variable of variation | Type of effect | z | p |
|---------------------------------|----------------|--------|--------|
| Own willingness | Interaction | -1.556 | 0.060. |
| Perceived partner's willingness | Interaction | -1.730 | 0.042* |

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 5.27: Results of Sobel's test for mediation

5.4 Discussion

The synoptical chapter served different purposes. First, the robustness of the effects to changes in the experimental environment was analyzed. Second, aspects of external validity, such as mundane realism and generalizability, were addressed and hints how these issues were taken care of were provided. To handle the aspect of generalizability, a comparison of the student population with the population with work experience was conducted. The answering schemes did not differ except for one dependent variable, trust. A moderator analysis was conducted to gain further insight concerning interconnections of the dependent and independent variables. Finally, specific aspects of mediation were investigated as the role of trust was investigated more closely. More specific details on the results of this synopsis are provided below.

Though already discussed in Section 5.1, in a nutshell, the most important findings regarding the effect-robustness shall be commemorated. The analysis showed that there are effects which persist throughout different scenarios and yield a rather high robustness. The norm of reciprocity prevails. That is, across the different power constellations, an extensive offer of cost information is answered by an extensive amount of reciprocated cost information. An increased initially revealed amount of cost information also fosters the target firm's perception that the initiating party is earnestly striving for a collaborative exchange. Further, the offer of a relation-specific asset by the supply chain partner can increase the own willingness to engage in OBA. Even though this effect is rather robust, it is most apparent and strong in a situation in which there is equal power between the supply chain partners.

The moderator analysis was conducted to gain more information about the contingency under which the empirical results hold. A moderating influence of perceived own benefit on the effects of the independent variables was found for the research setting. That is, perceived own benefit represents a contingency for the effects of the experimental variables in this study. This means that the propensity to exchange cost information can only be enhanced when the

target individual or the target firm perceives the engagement as an action that increases the perceived own benefit. The role of the perceived own benefit is even more important because individuals who experience only a small benefit of the usage of open book accounting not only show a lower own willingness, but they also perceive the initiating partner firm as less willing to truly engage in collaborative manner. This is a logical consequence because when participants are asked to share information with their partner firm, but do not perceive it as beneficial, they will inevitably doubt the true reasons for their partner's action. Last but not least, perceived own benefit was identified to be a relevant parameter under power asymmetry. As the moderator analysis has shown, even a significantly more powerful firm can be persuaded to respond to an extensive offer in a cooperative manner if his or her perceived own benefit is high enough. Hence, the accentuation of possible benefits that emerge from an inter-organizational cost management seems to be a suitable strategy for initiating a collaborative exchange situation. Most likely, a more powerful firm is less inclined to exploit its superior position, if it is convinced of the benefit a concerted interaction will bring.

Certain conclusions can be drawn from the analysis of the external validity and the generalizability. Generally, the results of the study exhibit a considerable degree of external validity. For the vast majority of the dependent variables, the professional and the student population show comparable reaction patterns. Concerning aspects of willingness to engage in further cost information exchange, the amount of actually reciprocated information, the aspect of equity and fairness, the perceived own benefit, the perceived riskiness, and fear of opportunism no significant effect of the group affiliation, that is whether an individual had work experience or not, was found. A difference between the professional and the student population was found only for the trust variable.

The different reactions regarding trust among students and professionals follows a systematic pattern. The observed difference can be summarized as follows. Concerning trust, students show a more positive reaction to a collaborative first move by the partner-firm, be it the offer of a relation-specific asset, be it the initial revelation of a large quantity of cost information. This means that only students are receptive for a manipulation of the trust level with these specific experimental variables. Professionals, however, prove to be immune to externally influencing their trust level.

What might cause this different reaction pattern for students and professionals? Different reasons are imaginable. First, students do not have such a wealth of (positive or negative) experience of real-world interaction which may cause more experienced managers to react more reserved and hinder them to directly develop a degree of trust comparable to the one of the students population. In their development of trust, participants with work experience

seem to focus more on the actual behavior of the partner and judge the behavior of the partner in a more rational manner by the action and less by perceptions, such as trust. This is apparent because there is no significant difference in the reciprocation pattern to the initially offered quantity of cost information. Another reason may be a recency-effect of the education of the participants. The student population was recruited from a Master of Science in Business Administration class. The concept of specific assets used as commitment devices, as proposed by Williamson (1983a), is one of the most popular theoretical approaches taught in the introductory study period. As already pointed out in the theoretical background for this thesis, the TCE proposes that an institution, which engages in relation-specific investments, is less inclined to show opportunistic and harmful behavior. It is the question whether MBA students, who come from all various fields of specialization, such as engineering or law and whose studies are generally more hands-on and practical oriented and less theory based, are as aware of the theoretically expected effects of a commitment device such as the conveyor belt or even the initially offered amount of cost information. Of course, this interpretation implies that the theoretical education influences the later behavior of the individuals and, to a certain extent, denies that TCE is really suitable to explain and predict human behavior.

Aspects of the theoretical background of the participants lead to another possible reason for the deviating answering schemes. Students in general, might experience the phenomenon of the desired answer. This means that they try to figure out the purpose of an investigation and adjust their answers accordingly. However, this is an issue for any empirical investigation, no matter whether data is gathered by survey or experimental research is conducted. There is always the danger of individuals adjusting their answering scheme to what they think is the desired answer (Arnold & Feldman, 1981; Arnold, Feldman, & Purbhoo, 1985; Ganster, Hennessey, & Luthans, 1983). Specifically for the present investigation, this means that if the students identified the joint investment in a conveyor belt, which was described in the scenario, as a commitment device in the form of a specific asset, they might feel obliged to provide answers which comply with what they assume is the hypothetical goal of the investigation. The professional participants, either because of a greater personal independence or a lack of theoretical background, may be less inclined to obey a notional research objective.

The fact that there was a difference in the trust variable between the students and the professionals was the reason for further analysis on the role of trust in the present context. A mediating influence of trust on the (previously identified) interaction effect of the offer of a specific asset and the initially offered quantity of information on the willingness to engage in further cost information sharing was found. Interestingly, the trust level, which was found to be higher among the student population, mediates the formation of the results of the cognitive

evaluation of the situation, more specifically, the own and the perceived partner's willingness to collaboratively exchange cost information. However, the main effect of the initially offered information quantity on the reciprocation, that is the actual reaction to the initial offer is not mediated by trust. This means that trust does influence the result of the attitudinal and cognitive process (willingness), but it does not influence the actual behavior. Assumably, when it comes to the actual decision to share information with the partner firm, the 'norm of reciprocity', which suggests applying a tit-for-tat strategy as a response mechanism, outweighs other cognitive considerations, and leads to an 'un-mediated' effect of the initially offered quantity of cost information. Assumably, there are other, user-oriented factors, which have not yet been taken into consideration in the analysis thus far, but nonetheless may very well determine the propensity and the usage of a management device such as open book accounting. In the next chapter, a path modeling approach is used to incorporate different theoretical aspects. Amongst others, perceived own benefit, as an important influence, will be supplemented by variables from the field of user acceptance to establish an integrative model of the propensity to use open book accounting.

6 An integrative model of the propensity to use open book accounting

In this chapter, a model of the general propensity to engage in inter-organizational cost management is developed, tested, and refined. The model integrates different groups of variables. On the one hand, there are theoretical constructs which have proven to play an important role in the prior experimental research, on the other hand, there are aspects of user acceptance which were not expected to be influenced by the experimental variables. Nonetheless, this latter category of variables is expected to determine the propensity to accept and use open book accounting, as well. Before the model is introduced, a brief introduction to causal modeling in general is given. Then, an overview is provided over the very scarce management-accounting-specific literature that has used causal modeling thus far. Finally, further details on user acceptance are elaborated, before the model is derived, then tested, and finally improved. The section concludes by pointing out important implications drawn from the model.

6.1 Causal analysis

Compared to other, more traditional, multivariate instruments, there is substantial progress and extension provided by structural modeling concerning the possibility to analyze empirical data. Compared to multiple regression, which has been the preferred method for empirical analysis in management accounting research for years (Smith & Langfield-Smith, 2004), structural modeling offers several advantages. Whereas multiple regression is used to analyze the relationship between one dependent variable and a number of independent (predictor) variables, multiple relations can only be represented by running several regressions models with different constellations of independent and dependent variables. Usually each of these multiple regression models is run in isolation from the other regression models and the shared variance between the different independent variables is neglected (Tomarken & Waller, 2005).

This can result in a false estimation of the coefficients (Smith & Langfield-Smith, 2004). It is here that covariance-based models exhibit an important advantage because they simultaneously take into account the (co)variance matrix of the different variables. For multiple regression, the proposed direction of the effects of the independent variables on the dependent variables is unidirectional. This means that it is expected that there is only an effect from the independent variables on the dependent variables. Even though this still enables the researcher to analyze the data concerning moderator effects (refer to J. F. Shields & Shields (1998) for a good example of a thorough multiple regression analysis, which includes moderator analyses), this implicates another drawback: Possible effects of the independent variables on each other, and therefore the interrelation between the independent variables, which may be dependent upon each other to a certain extent, are neglected.

Path analysis or recursive structural modeling attenuates some of the drawback because it accounts for interrelations between variables (Kline, 2005; Smith & Langfield-Smith, 2004). With this more sophisticated tool, relations between variables can be analyzed in a way that a certain variable may act as an independent variable in one equation of the model but at the same time may take the position of a dependent variable in another equation. Even though this represents an important step towards a comprehensive analysis of the numerous relations between the variables in a model, path analysis still uses unidirectional relations in its analysis (Kline, 2005; Smith & Langfield-Smith, 2004). It is finally structural equation modeling (SEM) which relaxes this last major restraint in causal modeling. It allows for the testing and development of recursive (unidirectional flow of causal effects) as well as non-recursive (relation between the variables are not necessarily unidirectional and can have feedback loops) relations (Kline, 2005).

SEM represents the next step on the journey to increasingly powerful, general statistical models and methodological approaches. It represents the logical extension of the generalized linear models (GLM) which were developed in the 1970s and 1980s to integrate different statistical approaches, such as linear regression, logistic regression, or Poisson regression. SEM is quite a general term. It represents the next step and a methodological extension which integrates numerous methodological approaches, such as multiple regression, path analysis, and confirmatory factor analysis. Hence, these methodological approaches represent special instances of a SEM. The most common understanding of SEM refers to a combination of the latter two methods, i.e. path analysis and confirmatory factor analysis (Tomarken & Waller, 2005). The significant progress in SEM software has made this rather complex methodological approach readily available for a greater audience of researchers who, in case of doubt, have not experienced a sophisticated and specialized statistical education (Steiger, 2001). Whereas this

increased ease of use implies a positive trend in which SEM is applied by an increasing number of researchers, Tomarken & Waller (2005) also point out that misconceptions and a lack of knowledge concerning the limitations and constraints of SEM may threaten the scientific rigor of the results.

AMOS, one of the software packages designed for SEM, is powerful enough to provide the option to map non-unidirectional (reciprocal) relations between the variables. The model proposed in the following sections includes only unidirectional flows of causal effects. As to be seen in the hypotheses, no reciprocal relations will be proposed. AMOS is used to map a path model and to take advantage of the progress in methodological power of the SEM software. The use of structural equation modeling software not only provides the user with the opportunity to take advantage of state of the art methodological procedures, it also provides more sophisticated goodness of fit indices to assess the quality of the model. Multiple quality indicators must be applied since there is no such thing as one single dominating quality indicator for structural equation modeling (Smith & Langfield-Smith, 2004). Rather, different fit indices are available for different quality aspects of the model. In general, three different aspects of model quality can be distinguished (Smith & Langfield-Smith, 2004): Absolute fit, incremental fit, and model parsimony. The first type of indicator measures the total fit of the model, i.e. the extent to which a model is able to explain the variance of the dependent variables. The second measure compares the fit of the SEM to a baseline model. The last type of quality indicator considers the parsimony of the model. It evaluates the model fit relative to the number of variables used in the model. Further elaboration on and evaluation of the different quality measures will be provided after the implementation of the model and the reporting of the results (see Section 6.3.4.1).

Causal and structural (path) modeling has increasingly been used in diverse areas of business research (Backhaus & Ebers, 2006; Smith & Langfield-Smith, 2004). Generally, different approaches for the estimation of the parameters of a causal model can be distinguished (Homburg & Klarmann, 2006): Covariance- and variance-based approaches. The former approach estimates the model parameter simultaneously over the entire model and aims at minimizing the difference between the empirical and the implied covariance matrix. The latter model type, the variance-based approach, pursues the objective to maximize the explained variance of the dependent variables in the structural model (Homburg & Klarmann, 2006). The model parameter are estimated and optimized for a partial model, based on the assumption that all other model parameters are known. The most common example for a variance-based modeling approach is the PLS-approach. LISREL and AMOS are considered to be best known as examples of the covariance-based approaches (Homburg & Klarmann, 2006). It is now the

question which of the two approaches is most suited for the requirements of the present study. Homburg & Klarmann (2006) provide a thorough analysis of the advantages and disadvantages of the two approaches. Based on their work, a brief analysis of the two methodological approaches is provided and a reasoned decision for the development of the main model is made.

Variance-based approaches do not have as high of requirements concerning the quality and the quantity of the data basis as covariance approaches. For instance, Homburg & Klarmann (2006) state that variance-based models can even be applied to samples which consist of $n < 100$. This would be very critical for covariance-based approaches, which require a critical sample size of $n \gg 100$. An advantage of variance-based approaches over covariance-based approaches is the ability to prognosticate the value of a dependent variable. Whereas the variance-based approach optimizes the model parameters for the prognosis of dependent variable, covariance-based approaches do not optimize the parameter value for prognostication. One of the most important functions of contemporary management accounting research is the development and examination of research models. For this task a clear priority of the different model approaches is apparent. Covariance-based approaches are better suited than variance-based models for the confirmatory examination of a theory as well as for the development of new theoretical approaches. This is due to two facts which are somewhat interrelated. Variance-based approaches optimize partial models and neglect global optimization of the model parameters. Consequently, there is a lack of indicators which reflect the goodness of global fit of a variance-based model. Covariance-based models, however, offer a plurality of indicators for the global fit of a model. In summary, Homburg & Klarmann (2006) clearly favor covariance-based approaches over variance-based approaches. The authors advocate the covariance-based causal analysis as the normal case for empirical business research. At this point only argumentation for the thorough choice between a variance and a covariance-based modeling approach is given. General criticism on the methodological approach itself will be part of the critical reflections in the last chapter. The present study shall not judge about the advantages and disadvantages of the structural modeling in general. Following the recommendation by Homburg & Klarmann (2006), a covariance-based approach is applied for mapping interrelation between different variables. Further, the software package AMOS, which represents an instance of a covariance-based modeling software, is applied to path-model the relationship between the various variables. The subsequent section provides an overview over the current state of research approaches in management accounting, which have used causal modeling.

6.2 Causal modeling in management accounting

Emanating from marketing research, which certainly has led the way for the application of this multivariate method, into other streams of business research, causal modeling has proven to be a powerful instrument to examine the quality of measurement for complex and comprehensive constructs on the one hand, and to determine the relation of different theoretical constructs and to assess the quality of hypotheses on the other hand (Backhaus & Ebers, 2006). Even though Homburg & Klarmann (2006) point out that structural equation modeling has taken an increasingly important stance among business research from various disciplines, in a management accounting context causal modeling approaches have yet to take a strong position among the commonly used methods. In their analysis of the use of SEM in top journal of management accounting research Smith & Langfield-Smith (2004) point out the very small number of studies that have used this methodological approach. For the period from 1980 to 2001 only 20 papers using SEM were identified. This is not only a small number in total, but is also relatively low compared to the frequency of use in other business research disciplines such as organizational science or marketing. These results are even more surprising because there are definite advantages of the application of causal modeling (Homburg & Klarmann, 2006). Further, there is unanimity among researchers that these modeling approaches can be used to overcome certain drawbacks and flaws of less sophisticated methods of statistical analysis. Interestingly, even though structural modeling has become somewhat en vogue among empirical researchers, no universal understanding of what causal or structural equation modeling represents has been established. The question whether it consists of classical econometric modeling extended by path analysis or whether it represents a comprehensive family of statistical methods such as path analysis, partial least square models, and latent variables, remains somewhat unclear. In the course of the subsequent analysis, it will become apparent that, especially in the context of today's very powerful statistical software packages, the second definition is more applicable.

6.3 A model of the propensity to use open book accounting

6.3.1 Variables of the model

The proposed model will integrate different aspects and factors that influence the propensity to engage in inter-organizational cost management, more specifically, open book accounting.

Further, it is meant to serve numerous purposes. It shall confirm the results of the variance-based analyses in the prior chapters of the thesis. It shall supplement the variance analyses because the path model will go one step further and also reflect aspects of user acceptance. Using the path model, relations between variables which were exclusively considered dependent variables in the variance analytic framework can now be investigated more closely. That is, by using the path model, it can be investigated whether one dependent variable exerts an influence on another dependent variable. The path model is a suitable way for this, since it accounts for possible covariances of the examined variables. Overall, the model consists of three groups of variables, which stem from different theoretical backgrounds.

The first group of variables consists of the three experimental variables amount of cost information initially offered, offer of a relation-specific asset, and the relative power structure¹, which were manipulated across the different experimental conditions.

The second group of variables in the path model refers to those variables which are essential for the concept of OBA: the own and the perceived partner's willingness to engage in cost information exchange and the amount of cost information actually reciprocated. These are the central indicators for OBA used in the study. The model aims at extending the scope of investigation beyond the situational assessment by predicting the long term propensity to use open book accounting. Therefore, the long term intention to use open book accounting in inter-organizational cost management is added to the set of dependent variables. The long term intention was assessed by two items. The first item indicated whether individuals would use open book accounting in further interactions with Framing.Inc. The second item asked whether participants would use open book accounting when faced with a similar issue in another inter-firm relation. Because Cronbach's Alpha was 0.79 for these items, they are treated at the construct level.

Since perceived own benefit was identified as a moderating influence for the effects of different experimental variables, this is included in the path model. In the course of the moderator analysis, it was shown that perceived own benefit is not influenced by the experimental variables, but affects the dependent variables itself or shows interaction effects with independent variables. All other dependent variables from the prior analyses were omitted because they either yield no further theoretical insight or they were influenced by the experimental variables. To commemorate, it is the goal of the model to extend the scope of analysis to attitudinal variables which were not affected by the independent variables, but still are assumed to contribute to the understanding of OBA.

¹For reasons of parsimony, power is modeled as the most interesting contrast of low relative power vs. equal or high relative power.

Finally, the third group of variables is derived from concepts of user acceptance. This theoretical background has already been introduced in the chapter on the theoretical background of this thesis (see Section 2.3). User acceptance is constituted by the concepts of ease of use and usefulness. Since these theoretical constructs have not been analyzed in the course of this analysis thus far, subsequently, further information on the Technology Acceptance Model (TAM), which constitutes the theoretical starting point for aspects of user acceptance, is provided (Davis, 1989). Additional information on and results of prior research in the area of user acceptance of management technology are provided.

Perceived ease of use and perceived usefulness as determinants of user acceptance Supplementing the theoretical aspects covered by the dependent variables in the prior experimental investigations, the proposed path model incorporates variables that cover the user's acceptance of a management device and the attitude towards open book accounting. These aspects are not expected to be directly affected by the experimental variables. Nonetheless, they are expected to have an effect on the general propensity to use open book accounting. Derived from the Technology Acceptance Model, two variables play a role in the proposed research model: Perceived ease of use and perceived usefulness. As mentioned above, the two variables are not expected to be affected by the experimental variables, which were used in this specific investigation. To test this assumption, ANOVAs were calculated for the different experimental set-ups. The results indicate that neither perceived ease of use nor perceived usefulness is affected by the experimental variables in this study (For the results of the ANOVA, please refer to Appendix C). Considering these variables expands the research model by aspects of attitudinal variables not influenceable by the present experimental variables.

Open book accounting represents a relatively new management tool. Quite an extensive stream of research has tackled the question which factors lead to the diffusion, acceptance, implementation, and application of new management systems (Davis, 1989; Davis et al., 1989; Pavlou & Fygenson, 2006; Rogers, 2003; Venkatesh & Davis, 2000; Venkatesh et al., 2003). In their work Venkatesh et al. (2003) provide a thorough review of the eight most widely used theoretical approaches to explain and predict user acceptance of new technologies and the diffusion of innovations. The authors integrate these eight approaches to formulate the Unified Theory of Acceptance and Use of Technology. Interestingly, there is great concordance among the integrated theories about certain determinants of user acceptance. The authors agree that the aspects of performance expectancy and effort expectancy need to be considered in a user acceptance model. The first aspect refers to expectations of the potential user that a use of the technology or tool will foster his or her own individual and/or the performance of his firm or

association. The latter aspect is concerned with the perceived effort required to use the new system and with the perceived difficulty to understand the principles of the new system (Davis, 1989; Davis et al., 1989). In other words, the attitude towards a new system is determined by two main factors: (1) the utility one can obtain by using the new instrument and (2) the evaluation of the user friendliness of the instrument.

The two aspects are included in the model of open book accounting as follows: Similar to the comprehensive model by Venkatesh et al. (2003), performance expectancy and effort expectancy are operationalized following Davis (1989). As indicated in the chapter on the theoretical background, the concepts of perceived usefulness and perceived ease of use are applied to operationalize performance expectancy and effort expectancy, respectively. Most of the variables along with the items used for the operationalization have been mentioned and explained along the course of this thesis. Since the variables perceived usefulness and perceived ease of use have not yet been used, the items used for the operationalization of these constructs are introduced in the next paragraphs.

Perceived usefulness Participants were asked to evaluate open book accounting as a cost management tool regarding the perceived usefulness. The following four items were used: 1. Using open book accounting improves my performance as a manager, 2. Using open book accounting increases the productivity of my firm, 3. Using open book accounting enhances the establishment of an effective inter-firm relation, 4. I find open book accounting to be useful in the relationship between Framing.Inc and my firm (all items adapted from Davis (1989); Davis et al. (1989)). Cronbach's alpha was 0.75 for the four items.

Perceived ease of use Participants evaluated the effort expectancy by answering the following two items: 1. Open book accounting requires a lot of effort, 2. I perceive the principles of open book accounting as easy to use. Items were adapted from Davis (1989) and Davis et al. (1989) and showed a Cronbach alpha of 0.60.

6.3.2 The model

The general attitude towards OBA may be influenced by the knowledge of the instrument. However, one of the main determinants of the propensity to use a management instrument will still be the aspect of manageability and usefulness. As pointed out, these aspects were not included in prior analyses because there is no theory-based explanation why these variables should be influenced by aspects such as a specific asset, the information quantity, or the relative power structure. Manageability and usefulness should not only influence the willingness to use

open book accounting in the scenario with Framing.Inc, they should also be elementary for the long term propensity to accept this management tool. Hence, it is the goal to integrate in the model the effects of the attitudinal aspects and the effects of the experimental variables offering of a relation-specific asset, initially offered information quantity, and relative power structure on the situational and long term propensity to use open book accounting.

The application of causal modeling techniques enables the researcher to extend his or her research beyond the analysis of simple effects directed from the independent variables towards the dependent variables. It provides the opportunity to model effects between the independent variables, as well. Even though this represents a clear extension of the research context, the model still needs to cut the connections to the external world at some point, since a modeling along the timeline from the big bang to the application of open book accounting would ask too much of the model, of the data processor, and maybe even of the researcher. Based on this, different types of variables need to be distinguished in a causal modeling context. A model is constituted by *exogenous* and *endogenous* variables.

Exogenous variables are variables whose causes are unknown and not represented in the model (Kline, 2005, p. 67). However, exogenous variables act as causes of other variables. In experimental research, the independent variables per se act as *exogenous* variables. Hence, the model does not speculate on possible causes of the initially offered information quantity, which was manipulated through the different experimental scenarios. Further, the relative power structure of the two firms in the scenario is considered given. For the path model relative power is used as a dichotomous variable. On the one hand, those participants who were either in an equal power setting or held the high power position were in one group, on the other hand, those participants who were in the low power position formed the second group. The procedure was chosen to differentiate between participants operating at least at eye level (equal or high power position) and those occupying a supposedly subordinate position (low power position). To commemorate, factors which could have lead to the different relative power settings between the two parties are not under investigation. Similarly, for the offering of a specific asset, it is not further questioned which motives or reasons may have caused Framing.Inc to offer such a relation-specific asset to its partner firm.

In the proposed model, the three experimental variables are supplemented by one further exogenous variable whose causes will not be further analyzed—perceived ease of use. It will also be treated as an exogenous variable because reasons why participants perceive open book accounting as easy to use or not are not further analyzed. Hence, the evaluation whether open book accounting can be used effortlessly or not is considered solely as an influencing factor and not as a factor that can be influenced in the present environment. Self-evidently, in a

different research design, depending on the research objective, ease of use could constitute an endogenous variable. For example, if a study aims to analyze different types of management information system interfaces. Even though the present study does not aim at investigating possible antecedents of ease of use, the study by Venkatesh & Davis (1996) shall be mentioned, which tackles the question what factors lead to perceived ease of use. The authors state that for information technology perceived ease of use is determined, in general, by the individual's computer self-efficacy and also impacted by the objective usability after actual experience with the system has been made.

Endogenous variables differ from exogenous variables such that their causes are explicitly represented in the model. However, they can still be causes of other variables. This means that endogenous variables can take a dual role, both as an independent and as a dependent (criterion) variable (Kline, 2005, pp. 68–69). In the present model, perceived own benefit, perceived usefulness, the own willingness to engage further in cost data exchange, the perceived partner's willingness to reveal cost information, the quantity of reciprocated cost information, and the long term intention to use open book accounting serve as endogenous variables.

The important position of the perceived own benefit for the application of inter-organizational cost management was identified in the previous chapter. The variable served as a moderating influence, which revealed further information on the scope of validity for certain effects. Consequently, the model will contain this variable as one of the central endogenous variables. However, the mapping of moderating and/or nonlinear effects in structural equation modeling has been subject to quite a discussion. As Tomarken & Waller (2005) point out, it is no trivial task to correctly model moderating effects in causal modeling. The bulk of literature, in which moderating effects have appeared, deals with interaction effects as a constituting element of a moderating effect between a categorical and a continuous variable (Tomarken & Waller, 2005). For example, researchers would assess whether the gender has a moderating influence on certain dependent variables. However, for a non-dichotomous variable, such as the perceived own benefit in the present study, no standard analysis for moderating effects has been developed thus far. There are promising approaches for the modeling of nonlinear moderating effects. However, this topic still represents a very active area of research. As a consequence, these promising methods are not yet implemented, and thus, not available in conventional standard causal modeling software packages (Tomarken & Waller, 2005). As a consequence of this limitation, the model concentrates on the direct and linear effects of perceived own benefit on other variables.

The original Technology Acceptance Model by Davis et al. (1989); Davis (1989) proposes perceived usefulness as a central determinant of the intention and the actual use of a new de-

vice. The importance of this variable was stressed by Venkatesh & Davis (2000) who extended the Technology Acceptance Model by aspects of social influences and empirically confirmed the crucial role of perceived usefulness for the adaptation process.

Similar to the previous analyses, the willingness to exchange further cost information and engage in inter-organizational cost management with the specific partner firm plays an important role. In the original TAM, the usage intention strongly determines the actual usage of a device (Davis et al., 1989; Davis, 1989). In their later study, Venkatesh & Davis (2000) confirmed this strong relation. Transferred to the present study, the concept indicates the long term general intention to use open book accounting as an instrument to manage cost across firm borders. Different from the willingness concept, which measures the propensity to further engage in the exchange of cost information in this particular situation with this particular partner firm, the intention evaluates whether the participants in general intend to use open book accounting as a means to manage an inter-firm relationship. Since the experimental set-up contained only a single task with a single supplying firm, the intention is treated as a pure response variable, which is influenced by certain variables, but does not affect any further variables.

Finally, the variables own willingness to further exchange cost information with the partner firm and the quantity of cost information actually reciprocated as the central aspects of OBA supplement the group of endogenous variables. Since these variables have been explained and the operationalizations have been stated, no further detailed annotation will be given.

The proposed model, which can be characterized as a straight forward recursive path model (Kline, 2005) to explain and predict the propensity to use OBA, is depicted in Figure 6.1.

6.3.3 Hypotheses

To begin with, the anticipated effects of the experimental variables are stated. The hypotheses are formulated based on the prior (variance-based) results of this study. The experimental variable initially offered amount of cost information refers to the present actual conduct of the partner firm in the starting phase of an inter-firm relationship. Previously, the information quantity was identified to play a role in the development of the propensity to use OBA by exerting moderated and unmoderated effects. Consequently, this variable is expected to have an effect on those variables in the path model which relate to the direct inter-firm relationship with Framing.Inc, as well. The experimental variable initially offered quantity of cost information is proposed to have an effect on two endogenous variables. The perceived partner's willingness to engage in OBA and the amount of cost information actually reciprocated by the participants. For both variables a positive effect is expected. That is, if the participants are

faced with an extensive initial offer of cost information, they will perceive the partner firm to be more willing to truly cooperate (**Hypothesis 6.1a**) and they will actually reciprocate more cost information items (**Hypothesis 6.1b**).

The second experimental variable, the offer of a relation specific asset, is proposed to have a direct effect on the willingness to further reveal cost information. As reasoned before, the offer of a relation specific asset is intended to show commitment to the inter-firm relationship and convince the partner of one own's good intentions. However, the proposal to invest in a joint conveyor belt represents an extra-domain act of commitment. It is not directly associated with the domain of inter-organizational cost management. Thus, also considering the findings of the first experiment, it is proposed that the willingness to further engage is positively influenced by the specific asset (**Hypothesis 6.2**). Though, the idiosyncratic investment is not expected to have a direct effect on the amount of cost information reciprocated by the participants. The reason for this assumption is that the participants will tend to return alike (as in a tit-for-tat strategy) and it is questionable whether they will transform the perceived commitment by the other party into a greater amount of reciprocated information.

For the third experimental variable, the relative power structure, three effects are expected. As mentioned above, for the path model, the power variable was used as a dichotomous variable. Following the results by Van den Abbeele (2006), it is expected that participants who were in the less powerful position and hence, more dependent on the relationship with the partner firm, will show a higher willingness to engage further in cost information exchange. This is anticipated because engaging in inter-organizational cost management provides the less powerful party with a means to entangle the more powerful party in a cooperative environment and to improve the own relative position (Bonoma, 1976). Hence, it is expected that power will be negatively related to the willingness to engage in inter-organizational cost information exchange (**Hypothesis 6.3a**). However, power should be positively related to the perceived partner's willingness. It is expected that a buying firm will perceive the partner to be more willing to earnestly exchange cost information when it is in the more powerful position than when it is in the less powerful position (**Hypothesis 6.3b**). The third dependent variable anticipated to be influenced by the relative power structure is the general long term intention to use open book accounting as a management tool. In this particular case, it is expected that the same consideration holds as for the aspect of the willingness. It is anticipated that participants in the powerful position oppose using open book accounting. Vice versa, participants in the less powerful position will more strongly intent to use OBA because they may perceive it as a chance to improve their relative position against the more powerful partner firm. There-

fore, it is expected that power will negatively relate to the long term intention to use OBA (**Hypothesis 6.3c**).

For the non-experimental variables, the following assumptions are made:

Following the propositions of the TAM (Davis et al., 1989; Davis, 1989) and its extension by Venkatesh & Davis (2000), it is suggested that perceived ease of use will have a positive influence on perceived usefulness and that the higher the perceived ease of use, the higher the perceived usefulness (**Hypothesis 6.4**). This is proposed following the findings by Venkatesh & Davis (2000) who indicate that the less effort the usage of a tool requires the more it can enhance the job performance.

The perceived usefulness evaluates to what extent open book accounting is, in general, perceived to be an applicable instrument to achieve individual as well as corporate objectives. In other words, the perceived usefulness analyzes whether open book accounting is perceived to support a person in the tasks which emerge in an inter-firm interaction. Venkatesh & Davis (2000) mention this aspect as the 'job relevance of a target system', which has a positive influence on the perceived usefulness of a system. Following the TAM, it is proposed that, if an individual finds open book accounting useful to achieve her or his goals, she or he is more inclined to using this instrument. In the present model, it is assumed that perceived usefulness will positively influence both, the own willingness to further exchange cost information within this particular inter-firm relation (**Hypothesis 6.5a**) and the general (long term) intention to use open book accounting in an inter-firm context (**Hypothesis 6.5b**). Both propositions are conform with the effects implied by the TAM, which suggests that the higher the perceived usefulness, the higher the tendency to use a device or a system. Further, the perceived usefulness is proposed to influence the perceived own benefit. The effect is expected in that way, that the higher perceived usefulness, the higher perceived own benefit will be (**Hypothesis 6.5c**). There is a difference in the operationalization of perceived own benefit and the perceived usefulness. Perceived own benefit can be regarded as an evaluation of the ability of open book accounting to increase the own performance as well as the performance of the own firm in the present inter-firm relationship. Perceived usefulness, in turn, represents a general evaluation of the instrument open book accounting and its ability to foster the achievement of individual and corporate objectives.

In the proposed model, perceived own benefit is considered as a variable which has one main influencing factor (perceived usefulness), but has several effects, which are explicitly mapped in the model and which are proposed to cause other variables to change. Just as for perceived usefulness, it is expected that perceived own benefit of open book accounting in the situation with Framing.Inc will increase the own willingness to further exchange cost infor-

mation with the partner (**Hypothesis 6.6a**). The preceding findings revealed that those target firms which perceive a higher own benefit of OBA, are more likely to assess the initiating partner firm as truly willing to share information because they recognize that the exchange situation will not only yield a positive effect for the initiator, but also for themselves. Therefore, perceived own benefit is expected to positively influence the perceived partner's willingness (**Hypothesis 6.6b**). Further it can be argued that, if OBA is perceived to be own benefit increasing in the management of inter-firm relation, the intention for the long term application also increases (**Hypothesis 6.6c**). Different from perceived usefulness, perceived own benefit evaluates an aspect of the relationship with the actual partner in the present scenario. Hence, participants who experience a high perceived own benefit through the collaborative exchange of cost information with the partner firm are assumed to actually show a positive reaction towards the partner firm. They are expected to do this by reciprocating more cost information than participants with a lower perceived own benefit. Thus, a positive influence of perceived own benefit on the amount of cost information reciprocated by the participants (**Hypothesis 6.6d**) is expected.

The willingness to further exchange cost information with the partner firm was thus far proposed to be influenced by the perceived usefulness, the perceived own benefit and the two experimental variables offer of a relation-specific asset and the relative power structure. The willingness to engage in further information exchange processes is presumed to influence the amount of cost information reciprocated as a reaction to the initial offer by the supplier. Since both variables evaluate the present inter-firm exchange situation, the amount of cost information reciprocated is likely to tend in the same direction as the willingness. Hence, the own willingness to engage in cost information exchange is posited to positively influence the amount of cost information actually returned in response to the initial offer (**Hypothesis 6.7**).

The perception of the partner's willingness is proposed to be influenced by the amount of offered cost information, the relative power position, and the perceived own benefit. The perceived partner's willingness in turn is expected to influence the own willingness (**Hypothesis 6.8**). Figure 6.1 depicts the structure of the proposed model.

6.3.4 Evaluation of the model

6.3.4.1 Goodness of fit indicators

The analysis of the path model will be conducted as follows. In a first step, the overall fit of the model will be evaluated and, if necessary, the model will be adjusted. In a second step, based on a then optimized model, the proposed hypotheses will be tested.

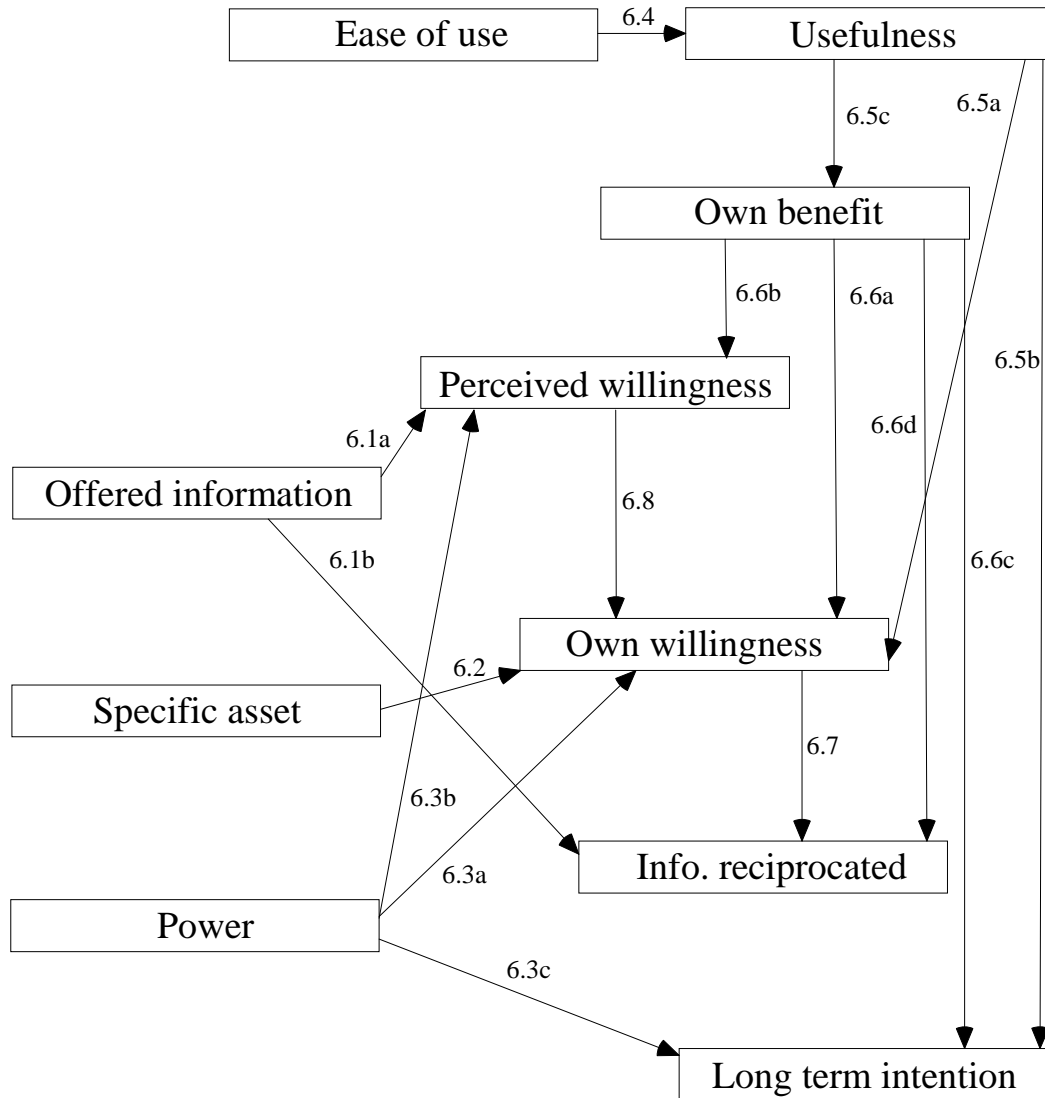


Figure 6.1: Proposed path model with hypotheses

With the increased use of causal modeling and especially structural equation modeling, there has been discussion about how to measure the quality of causal models. The work of Hu & Bentler (1998, 1999) presents the current status of the scientific considerations concerning model evaluations. In general, an indicator of the model fit specifies to what extent a model can explain the empirical data. In social science research—and probably in science in general—the design of a model does not strive for perfectly resembling reality. Rather, a model aims at reducing the complexity and simplifying the reality (Orth, 2004). Scientific models should map reality, but at the same time, they should be parsimonious concerning the number of variables, factors, and relations used. Hence, when evaluating a proposed model, one must not only take into account the overall explanatory power of the model, but also the number of variables implemented in the model. The application of classical criteria, such as the chi-squared test, can be problematic for the test of causal models. The power of the chi-squared test depends on the sample size it is applied to. For example, Orth (2004) points out that even a correlation with $r = 0.01$ will become significant if the size of the sample is large enough. To obtain a parsimonious model, such a low correlation should be regarded as a null correlation. In a causal modeling context, this could imply, given that the sample size is large enough, that a small deviation of the model from the reality can lead to a situation in which the model is rejected. This is even more problematic because the rejection of the model could be caused by factors which do not significantly increase the covariance accounted for by the model. This can cause the rejection of good models, based on the significant difference between the model and the reality in one *unimportant* factor. Hence, there is agreement that the classical chi-squared test should not be applied for the evaluation of the goodness of fit of a causal model. To overcome some of the weaknesses of the classical chi-square, it has been proposed to divide its value by the degrees of freedom to calculate the normed chi-square. Kline (2005) states that there is no common agreement to which value the normed chi-square indicates a good fit. However, cutoff values ranging from 2.0 to 5.0 have been proposed in the literature, while smaller values indicate a better fit. However, the value of this particular indicator is rather irrelevant because there are more powerful goodness-of-fit indicators, which compensate the drawbacks of chi-square estimates and measure the degree to which a model explains the observed variances and covariances of an empirical data matrix, while simultaneously accounting for aspects of parsimony.

Incremental or comparative fit indices originally stem from equation based language (EQS) (Bentler, 1983). This class of fit statistics has become one of the most widely used in causal modeling. All indices of this type are based on the idea to assess a research model by comparing it with a baseline model. The baseline model is also called the independence or the

null model. The baseline model assumes that there is zero covariance among the observed variables. Hence, the only parameter of the baseline model, beside the means of the variables, is the variance of the variables within a population. Since the baseline model assumes that there is no covariance between the variables, the chi-square value will oftentimes be larger than the chi-squared value of the research model to be evaluated. The difference between the chi-squared of the baseline model and the chi-squared of the evaluated model indicates the extent to which the proposed research model is an improvement compared to the baseline model (Kline, 2005, pp. 140–141).

The first index of this kind is the normed fit index (NFI). It simply compares the chi-squared values of the baseline model with the chi-squared value of the proposed causal model. The values of the index are normalized and its value range between 0 and 1. Larger values indicate a better fit. The comparative fit index (CFI) is based on the NFI, but accounts for the sample size (Bentler, 1990). Hu & Bentler (1999) propose that values larger than 0.95 indicate an acceptable model fit. The last index of this category is the Tucker-Lewis index (TLI) (Tucker & Lewis, 1973) which is also called the non-normed fit index (NNFI) (Bentler & Bonett, 1980). This index accounts for model parsimony. This means that, *ceteris paribus*, the less complex model receives higher values. The index also ranges from 0 to 1 and Hu & Bentler (1999) propose values greater than 0.95 as acceptable.

The next group of indices is represented by the goodness of fit index (GFI) and the adjusted goodness of fit index (AGFI) (Jöreskog & Sörbom, 1981, 1982). The GFI indicates to what extent the model can explain the empirically observed variance and covariance. The AGFI, which has the same functionality, goes one step further by accounting for model parsimony. *Ceteris paribus*, the inclusion of additional parameters, which implies the reduction of the number of degrees of freedom, reduces the value of the model-specific AGFI. Both indices range from 0 to 1, where larger values indicate a better model fit. A value of 0.90 is proposed as acceptable for the GFI and the AGFI (Hox, 2002).

The second type of indicator is the root mean square residual (RMR). The RMR measures the average residual between the covariance matrix implied by the model and the one of the empirical data. However, the absolute values of covariance residuals cannot be compared across different empirical studies. To solve this issue, it is feasible to calculate the standardized root mean square residual (SRMR). The empirical values are converted to z-values by the standard procedure for normalizing any values (Kline, 2005, pp. 20–21). For the SRMR, Hu & Bentler (1999) propose 0.08 as an acceptable value for a good model fit.

To supplement the list of goodness of fit indices, Hu & Bentler (1998) recommend calculating the root mean square error of approximation (RMSEA) (Browne & Cudeck, 1992). This

comparatively new index is a parsimony-adjusted indicator (Kline, 2005, pp. 133–140). This means that out of two models with the same explanatory power for the identical data the less complex model will obtain the *lower* value, which represents a *better* model fit. Additionally, standard software used to implement causal modeling, such as AMOS, calculate a 90% confidence interval to indicate the degree of uncertainty associated with the RMSEA. The output for the confidence interval consists of an upper and a lower bound for the RMSEA. The combination of the RMSEA value and the confidence interval provides the possibility to judge the quality of the model while simultaneously accounting for the uncertainty of the model evaluation. For a model to be acceptable, two conditions must be met. First, the RMSEA must be below a certain cutoff value. Second, the actual RMSEA value must fall within the borders of the upper and the lower bound of the confidence interval (Kline, 2005, pp. 133–140). Hence, for a good fit, it is not sufficient for RMSEA to be small enough, further the uncertainty associated with the RMSEA value must also be at an acceptable low level. If the lower bound of the RMSEA confidence interval is lower than the selected cutoff value, this means that the null hypothesis, that the model has a good approximate fit, is not rejected. Additionally, if the upper bound does not exceed the selected cutoff value, it can be assumed that the model will show a similar goodness of fit for another sample out of the same population (Orth, 2004). If it is also the case that the upper bound of the confidence interval does not exceed the selected cutoff value, the assumption of a good model fit cannot be rejected. Acceptable values for the RMSEA range from 0.06 (Hu & Bentler, 1999) to 0.05 (Hox, 2002, p. 239). As pointed out, the actual value of the RMSEA must also fall within the confidence interval between the lower and the upper bound.

6.3.4.2 Improvement of the model

Figure 6.2 shows the solution for the proposed model. As Table 6.1 shows, the different goodness-of-fit indicators of the model show acceptable values. The NFI of the proposed model is 0.92 and the CFI is 1.00. Please note that, because of several weaknesses, for example the negligence of the degrees of freedom or its dependence on the sample size, researchers have suggested to substitute the NFI by other, more powerful indicators of the model fit (Hu & Bentler, 1998; La Du & Tanaka, 1989). For completeness, the NFI will be reported among other, more sophisticated goodness of fit measures, but no recommendation for a cutoff is proposed. The TLI or NNFI is 1.00. Adopting a cutoff value of 0.95 for the CFI and the TLI (Hu & Bentler, 1999), this value is acceptable. The GFI is 0.96 and the AGFI is 0.93. Since these indicators range from 0 to 1, both values are acceptable. For the next indicator, the SRMR, a value of 0.06 is obtained, respectively. Since low values indicate a better model fit

and the SRMR value is below the cutoff value of 0.08 for poor model fit (Hu & Bentler, 1999), the assumption of a good approximation by the model is not rejected. The RMSEA for the model is 0.00 and the lower bound of the 90% confidence interval is 0.00. This represents the optimal case for the lower bound (Kline, 2005, p. 139). The upper bound of the confidence interval is 0.06. These three values indicate that not only the RMSEA has an acceptable value, but at the same time, neither the value of the lower bound, nor the one of the upper bound of the confidence interval exceeds the cutoff value. In summary, the different goodness of fit indicators show a very good fit of the proposed research model.

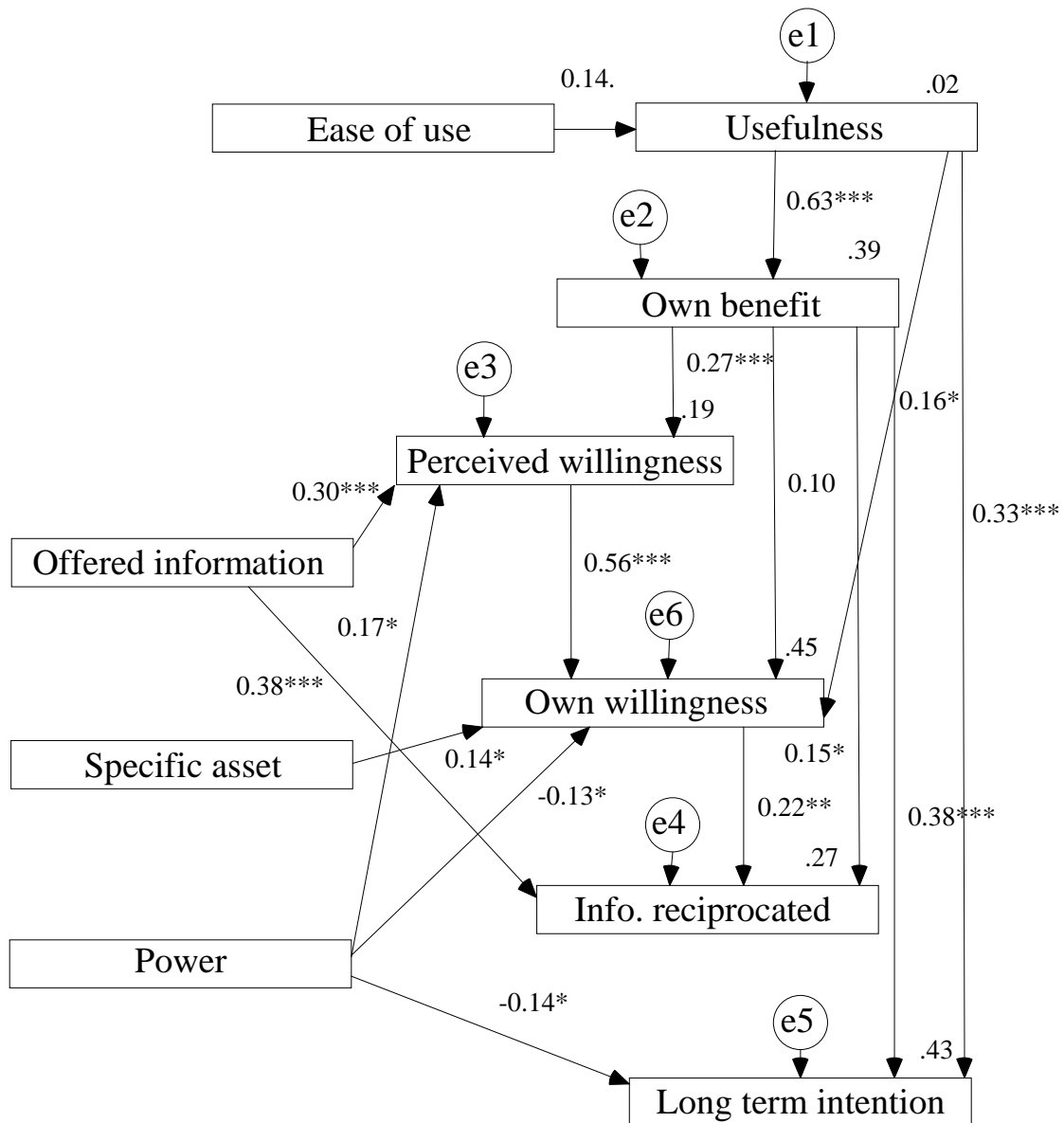
| | p | χ^2/df | NFI | RMSEA | GFI | AGFI | CFI | TLI | SRMR |
|-----------------|------|-------------|------|--------|--------|--------|--------|--------|--------|
| Model value | 0.51 | 0.97 | 0.92 | 0.00 | 0.96 | 0.93 | 1.00 | 1.00 | 0.06 |
| Proposed cutoff | | << 2 | – | < 0.06 | > 0.90 | > 0.90 | > 0.95 | > 0.95 | < 0.08 |

Table 6.1: Goodness of fit indicators model 1

After the overall model fit has been evaluated, next, the different paths, which represent the hypothesized effects in the model, are analyzed. The hypotheses are tested and it is analyzed whether the proposed effects hold. Table 6.2 shows the statistics of the hypotheses test for the research model. It is apparent that one of the seventeen paths is not significant. The critical relation is the assumed positive relation between perceived own benefit and the own willingness to engage further in cost information exchange ($cr = 1.22$, $p = 0.221$).² Thus, Hypothesis 6.6a is not supported.

As mentioned before, it is always one of the goals for researchers to design models which are as parsimonious as possible. A causal model can be altered in different ways. Causal connections can either be removed or they can be added to the model. The former procedure will, *ceteris paribus*, enhance the parsimony of the model, because fewer connections of relationships among the variables are proclaimed. The latter is a chance to improve the overall model fit, since new causal paths can lead to higher goodness-of-fit values. The proposed model already shows an acceptable goodness-of-fit to the empirical data. So, the primary objective of the model adaptation is the improvement of the parsimony of the model by reducing the number of causal paths. Self evidently, anticipated causal connection which turned out to be non-significant are most likely to be scrutinized. Hence, the model is recalculated without the insignificant path. Figure 6.3 shows the modified model and Table 6.4 displays the correla-

²The AMOS output contains an indicator, the critical ratio (cr), which describes a z-value as an indication of the significance



*** Significant at the 0.001 level
 ** Significant at the 0.01 level
 * Significant at the 0.05 level
 . Significant at the 0.1 level

Figure 6.2: Results path model 1 (Amos output)

| Hypothesis | Path | cr | p |
|------------|---|--------|----------|
| 6.1a | Info. quantity → Perceived partner's willingness | 4.12 | 0.000*** |
| 6.1b | Info. quantity → Info. reciprocated | 5.49 | 0.000*** |
| 6.2 | Spec. asset → Own willingness | 2.29 | 0.022* |
| 6.3a | Power → Own willingness | -2.145 | 0.032* |
| 6.3b | Power → Perceived partner's willingness | 2.26 | 0.024* |
| 6.3c | Power → Long term intention to use OBA | -2.22 | 0.026* |
| 6.4 | Ease of use → Usefulness | 1.74 | 0.082. |
| 6.5a | Usefulness → Own willingness | 2.10 | 0.035* |
| 6.5b | Usefulness → Long term intention to use OBA | 4.18 | 0.000*** |
| 6.5c | Usefulness → Own benefit | 9.79 | 0.000*** |
| 6.6a | Own benefit → Own willingness | 1.22 | 0.22 |
| 6.6b | Own benefit → Perceived partner's willingness | 3.70 | 0.000*** |
| 6.6c | Own benefit → Long term intention to use OBA | 4.85 | 0.000*** |
| 6.6d | Own benefit → Info. reciprocated | 1.97 | 0.049* |
| 6.7 | Own Willingness → Info reciprocated | 2.98 | 0.003** |
| 6.8 | Perceived partner's willingness → Own willingness | 8.71 | 0.000*** |

*** Significant at the 0.001 level

** Significant at the 0.010 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 6.2: Statistics of SEM – model 1

tions of the different variables of the path model. The goodness-of-fit indices for the modified model are shown in Table 6.3. It shows that the fit indicators remain on a high level. Therefore, the more parsimonious model, i.e. the model with a smaller number of explaining paths and elements, is preferred. In this case, it is the second model. At this point, some remarks on the relation between the correlation matrix and the paths included in the model shall be given. At first sight, it might be remarkable that some of the significant correlations (please refer to Table 6.4) do not enter the path model. One reason for this is the fact that the hypothesized paths were derived based on theoretical considerations or were selected based on prior empirical findings in the study. The success of this procedure is documented by the different goodness of fit indicators, which were presented above. An ex-post examination of a path model in which the correlations of perceived partner's willingness with information reciprocated as well as with long term intention of use and the correlations of own willingness with information reciprocated and with long term intention of use were incorporated, showed that these paths turn to insignificance. This, once again, affirms the adequateness of the proposed model.

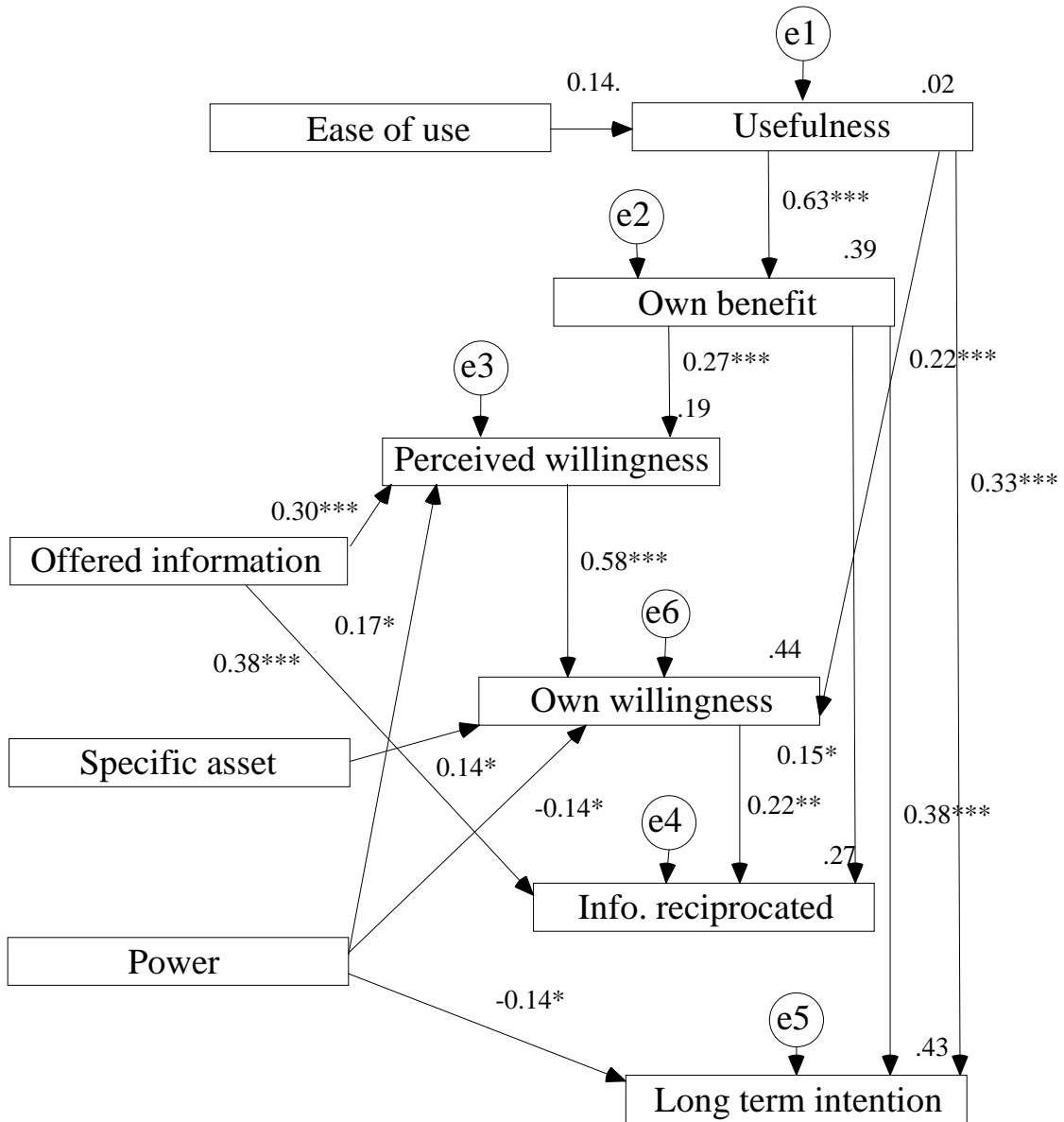
| | p | χ^2/df | NFI | RMSEA | GFI | AGFI | CFI | TLI | SRMR |
|-----------------|------|-------------|------|--------|--------|--------|--------|--------|--------|
| Model value | 0.48 | 0.99 | 0.92 | 0.00 | 0.96 | 0.93 | 1.000 | 1.00 | 0.06 |
| Proposed cutoff | | << 2 | – | < 0.06 | > 0.90 | > 0.90 | > 0.95 | > 0.95 | < 0.08 |

Table 6.3: Goodness of fit indicators model 2

6.3.5 Results

With the exception of one variable, the proposed hypotheses were supported. Finally, based on the adapted model, the proposed hypotheses are analyzed and the main results are stated. Hypothesis 6.1a, which states that the amount of initially offered cost information influences the perceived partner's willingness to use OBA, is supported ($cr = 4.12$, $p = 0.000$). The anticipated effect of the initially offered information quantity on the amount of reciprocated cost information was significant ($cr = 5.486$, $p = 0.000$). Therefore, Hypothesis 6.1b is supported.

As expected, there is a significant effect of the offer of a relation-specific asset on the own willingness to engage further in cost information exchange ($cr = 2.30$, $p = 0.021$). Thus, Hypothesis 6.2 is supported.



*** Significant at the 0.001 level
 ** Significant at the 0.01 level
 * Significant at the 0.05 level
 . Significant at the 0.1 level

Figure 6.3: Results path model 2 (Amos output)

| | Info. quant. | Asset | Power | Own will. | Part. will. | Info. recip. | Own benefit | EOU | Useful. |
|----------------|--------------|-------|--------|-----------|-------------|--------------|-------------|-------|---------|
| Asset | -0.11 | | | | | | | | |
| Power | 0.08 | 0.13. | | | | | | | |
| Own willing. | 0.02 | 0.16* | -0.03 | | | | | | |
| Part. willing. | 0.30*** | 0.07 | 0.18* | 0.59*** | | | | | |
| Info. recip. | 0.39*** | -0.02 | 0.14. | 0.29*** | 0.30*** | | | | |
| Own benefit | -0.05 | 0.02 | -0.05 | 0.35*** | 0.25** | 0.21* | | | |
| Ease of use | -0.12 | -0.06 | -0.07 | 0.05 | -0.05 | 0.00 | 0.11 | | |
| Usefulness | -0.03 | 0.00 | -0.04 | 0.31*** | 0.14. | 0.20* | 0.63*** | 0.14. | |
| Intention | -0.06 | 0.04 | -0.17* | 0.35*** | 0.22** | 0.22** | 0.60** | 0.17* | 0.57*** |

*** Significant at the 0.001 level

** Significant at the 0.01 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 6.4: Correlation of the constructs in path model

Hypothesis 6.3a proposed that the party in the less powerful position is more willing to engage in OBA activities. That is, power is negatively related to the own willingness to use OBA. This assumption is supported by the results ($cr = -2.24$, $p = 0.025$). The expected effect that a more powerful firm perceives the less powerful partner as more willing to engage in IOCM was found and Hypothesis 6.3b was supported ($cr = 2.26$, $p = 0.024$). Last but not least, the power structure is assumed to influence the long term intention to use OBA in (similar) inter-firm set-ups. Hypothesis 6.3c, which states that power goes along with less intention to use open book accounting is supported ($cr = -2.22$, $p = 0.026$).

Perceived ease of use shows a tendency to positively influence the perceived usefulness of open book accounting ($cr = 1.740$, $p = 0.082$). Hence, Hypothesis 6.4, which was derived from considerations based on the TAM, tends to be supported.

As expected, the perceived usefulness of OBA as a management device positively influences the own willingness to engage in cost information exchange and supports Hypothesis 6.5a ($cr = 3.60$, $p = 0.000$). The direct and positive effect of the perceived usefulness on the intention to use open book accounting as a management device ($cr = 4.18$, $p = 0.000$) supports Hypothesis 6.5b. The assumption that the perceived usefulness positively influences the perceived own benefit (Hypothesis 6.5c) is also supported ($cr = 9.79$, $p = 0.000$).

Regarding the expected effect of perceived own benefit, three anticipated effects are found: (1) Perceived own benefit positively influences the perceived partner's willingness to further exchange information ($cr = 3.70$, $p = 0.000$), which supports Hypothesis 6.6b. (2) There is

a significant effect of perceived own benefit on the long term intention to use open book accounting ($cr = 4.85$, $p = 0.000$). This supports Hypothesis 6.6c. (3) Perceived own benefit positively influences the amount of cost information items the participants revealed as a reaction to the initial offer. This was anticipated in Hypothesis 6.6d, which is therefore supported ($cr = 1.97$, $p = 0.049$).

Hypothesis 6.7 suggests that the own willingness to further engage in cost information exchange has a positive effect on the amount of reciprocated cost information by the participant. A significant effect was found and Hypothesis 6.7 was supported ($cr = 2.98$, $p = 0.003$). There was also a positive effect of the perceived partner's willingness on the own willingness, which supports Hypothesis 6.8 ($cr = 9.16$, $p = 0.000$). Table 6.5 shows a summary of the statistics of the improved path model.

| Hypothesis | Path | cr | p |
|------------|---|-------|----------|
| 6.1a | Info. quantity → Perceived partner's willingness | 4.12 | 0.000*** |
| 6.1b | Info. quantity → Info. reciprocated | 5.49 | 0.000*** |
| 6.2 | Spec. asset → Own willingness | 2.30 | 0.021* |
| 6.3a | Power → Own willingness | -2.24 | 0.025* |
| 6.3b | Power → Perceived partner's willingness | 2.26 | 0.024* |
| 6.3c | Power → Long term intention to use OBA | -2.22 | 0.026* |
| 6.4 | Ease of use → Usefulness | 1.74 | 0.082. |
| 6.5a | Usefulness → Own willingness | 3.60 | 0.000*** |
| 6.5b | Usefulness → Long term intention to use OBA | 4.18 | 0.000*** |
| 6.5c | Usefulness → Own benefit | 9.79 | 0.000*** |
| 6.6b | Own benefit → Perceived partner's willingness | 3.70 | 0.000*** |
| 6.6c | Own benefit → Long term intention to use OBA | 4.85 | 0.000*** |
| 6.6d | Own benefit → Info. reciprocated | 1.97 | 0.049* |
| 6.7 | Own Willingness → Info reciprocated | 2.98 | 0.003** |
| 6.8 | Perceived partner's willingness → Own willingness | 9.16 | 0.000*** |

*** Significant at the 0.001 level

** Significant at the 0.010 level

* Significant at the 0.05 level

. Significant at the 0.1 level

Table 6.5: Statistics of SEM – model 2

6.3.6 Summary and conclusions

The path model extends the scope of the investigation from situational manipulable variables to attitudinal aspects. The latter were derived from the TAM (Davis et al., 1989). Even though these aspects, at least in this specific research design, were not expected to be, and actually are not, influenced through the experimental variables, they play an important role in the propensity to engage in cost information exchange. These attitudinal aspects cannot be influenced in an ad-hoc experimental investigation, which manipulates the situational conditions. Rather, these attitudes are based on long term considerations by the respective person or institution.

Participants, and therefore the users of a management device are influenced in their choice by the perceived ease of use of the instrument, but even stronger by the extent to which open book accounting can help them to achieve their goals (perceived usefulness). Further, the important role of perceived own benefit as a determining influence was confirmed. Directly influenced by the perceived usefulness, it plays an important role in the development of the propensity to use open book accounting.

Perceived own benefit exerts a positive influence on key (dependent) variables of the path model. If a target firm sees a chance that the proposal to jointly manage the cost structure of the supply chain by exchanging cost information will have beneficial consequences not only for the initiating party, it does not look for the catch in the proposal, but assesses the partner to have proper and earnest intentions. An increased own benefit not only has a positive effect on the cognitive process (perception of willingness), it also fosters the reciprocal sharing of cost information as a reaction to the initial offer by the partner firm. Own benefit as a key determinant is even more consequent because it enhances the disposedness and intention to use open book accounting as a management device not only in the present inter-firm scenario, but to extend it to other buyer-supplier relationships.

In general, aspects of user acceptance prove to be important determinants of the propensity. The perceived ease of use shows the expected positive influence on perceived usefulness. The effect was highly significant. However, the effect is not as strong as, for example, the one of perceived usefulness on the general intention to use open book accounting. This result is in line with findings by D. A. Adams, Nelson, & Todd (1992), Venkatesh & Davis (2000), and Venkatesh et al. (2003), who all indicate that perceived usefulness is the stronger determinant of usage intention and actual usage of a system. The authors propose that the perceived ease of use plays a role in the initial choice to adopt a system, but generally, the intensiveness of use will be determined by the perceived usefulness of a device. For example, Venkatesh et al. (2003) report results from a longitudinal study in which perceived ease of use was initially a significant determinant of system use, but became non-significant over time. In other words,

once familiar with a management system, aspects of effortless use become less important to the system user and aspects of perceived benefits, usefulness, and performance enhancement prevail.

The effects of the experimental variables, were confirmed. First, the positive effect of the offer of a relation-specific asset on the own willingness to engage further in collaborative cost information exchange is confirmed. Second, the amount of cost information plays a crucial role for the participants' behavior. They positively react to a larger initially offered quantity of cost information by reciprocating more information themselves. Thirdly, the results found for power (less powerful vs. equal or more powerful position) show that the power position is negatively related to the intention of usage of OBA. Participants show a lower intention to use open book accounting in an inter-firm relation when they are in a powerful position than when they are in a less powerful position. One possible reason for this behavior is that the less powerful firm tries to attenuate the disadvantages of its position by showing collaborative behavior. This confirms results found by Van den Abbeele (2006). More precisely, as a less powerful party perceives itself to be more dependent on the inter-firm relation than its partner firm, it takes open book accounting as a means of convincing the partner firm of the benefit of the inter-firm relation. Another reason, which however causes an effect in the same direction, may be that participants perceive engaging in inter-organizational cost management as a chance to improve the situation for them and shift the exchange relation towards a mixed power system in which both parties have some value at stake in the relationship (Bonoma, 1976).

In the last chapter of this thesis, conclusions for theory and practical applications are drawn, critical issues of the research design are discussed, and an outlook for further directions of research is provided.

7 Conclusions

This concluding Chapter presents a critical appraisal of the research results. The findings are presented by re-sketching the main results of the research in Section 7.1. Section 7.2 sketches advantages and limitations of the present research design. In Section 7.3 implications for the applied theories are derived and the feasibility of the theoretical backgrounds is reviewed. Section 7.4 transfers the results from the theoretical to a managerial point of view and proposes managerial action based on the research results. The thesis concludes by identifying research voids in the area of IOCM, which need to be filled in the future (Section 7.5).

7.1 Main Results

Referring to the central research questions of this thesis, which were formulated in Section 1.4, the main results are reported.

The first main research question covered the role of relation-specific assets in inter-firm relationships. More specifically, the role of relation-specific investments in the initiation phase of IOCM was analyzed. The results for the effects of a relation-specific asset were rather specific. In a situation in which the supply chain partners were of equal power, the offer to invest specifically could enhance the target firm's willingness to engage further in cost information exchange. However, since an interaction effect of the two experimental variables was identified, this is only valid when there is a small quantity of initially offered cost information. When there is a large quantity of initially offered cost information, the offer of a specific asset does not positively affect the target's willingness. Not only that the information quantity and the offering of an asset do not show an additive effect, there was indication of reactance or an obstructive effect when a large amount of cost information was offered and a specific asset was proposed simultaneously. The comprehensive offer unsettles the partner firm because the offer is perceived as overwhelming and inappropriate for the beginning stage of collaborative inter-firm efforts.

However, after abandoning the equal power assumption and confronting participants either with a high or with a low relative power position, the identified effects somewhat changed.

Generally, power asymmetry affects the perceived riskiness. A target firm perceives its own risk as higher when it is in the less powerful position than when it is in the more powerful position. Analogically, the assessment of the partner's risk shows that the risk for a more powerful partner is judged to be lower than the one for a less powerful partner. The effect of power seems to plaster the positive effects, which were identified for an equal power setting. The dominance of one party over the other seems to be of primary concern in the initiation phase of an inter-firm relationship. Therefore, commitment devices used to signal good intentions are not suitable to lower the overall level of perceived risk.

However, one very specific cause-and-effect relationship was found for the specific asset under asymmetric power conditions. The fear of opportunistic behavior by the partner was dependent on who offered to jointly invest in an asset. The direction of the offer plays a crucial role for the interpretation of the partner's true objectives. It decides whether the specific asset has a positive or even a negative influence. More specifically, if offered by the more powerful partner to the less powerful partner, the fear of opportunism at the less powerful party's side is attenuated. However, if offered in the opposite direction, from the less powerful to the more powerful, it evokes reactance because the more powerful partner perceives the proposal of a specific asset as an attempt to assimilate the power relation.

A second major aspect of this research was concerned with the question how the initially offered cost information quantity influences the exchange process. Under equal power, the targeted persons reacted positively to the revelation of a large cost information quantity. As a reaction to a more generous initial offer comprising more cost information they reciprocated more cost information. Different from the results for the relation-specific asset, the analyses of the effects of the offered information quantity (Section 5.1.2) revealed a high robustness against changes in the experimental manipulation. Even when there was asymmetric power between the partner firms, more initially offered cost information was answered by the revelation of more private cost information.

Clearly, the persons in the experiment showed a tendency to apply a tit-for-tat strategy, which is considered a way of achieving fairness and equity. A further reason for the very specific, non-additive interaction effect of the information quantity and the specific asset, additional to the ones already mentioned above, may be the impracticality of a tit-for-tat strategy in a situation in which the partner firm comes up with a relation-specific investment, additionally to the cost information. The simultaneous offer puts the partner firm in a situation in which it can hardly answer the initial offer by applying a tit-for-tat strategy. While it can still reply by revealing much information, it would, at the same time, have to engage in the joint investment, even though this does not exactly resemble the original process of a tit-for-tat

strategy. Hence, for an exchange situation it is of great importance that the target partner is actually given the chance to reciprocate on the same level and in the same domain. Otherwise, concerns about the equitable contribution, in whatever direction, may evolve.

Intended persuasive strategies, such as the offer of a specific asset or the offer of cost information, seem to work differently under power asymmetry than under power symmetry. Supportive evidence for this proposition was provided by the results of the cross-validity check in Section 4.1.5.1. The Cronbach values for some of the theoretical constructs fell off from the first (equal power) to the subsequent experimental investigations under asymmetrical power. For example, the Cronbach values for aspects of a (joint) willingness, and the ones for the perceived risk and the trust aspect differed significantly from the ones in the first study (under equal power). A possible reason for this could be that, when the interacting partners face each other at the ‘same level’, that is under equal power conditions, a feeling of ‘we are all in the same boat’ emerges—equally dependent and equally vulnerable. This is congruent with the findings of prior research on IOCM, which showed power to be an important determinant of an inter-firm relation. Further, this indicates that when the partners are of equal power a strong feeling of group cohesion exists and open book accounting is better understood as a truly bilateral venture of two partners of equal power. Partners understand that they are ‘in this together’. Further prove for this suggestion is provided by the fact that the risk construct, which consisted of aspects of the risk for the own firm and for the partner firm showed high reliability for the initial investigation under equal power settings. Hence, this supports the proposition that open book accounting under equal power relations is more likely to be perceived as an interdependent activity than under power asymmetry in which appropriation concerns may emerge.

The post-hoc moderator analysis revealed that perceived own benefit moderates the positive effect of the initially offered information quantity. A large quantity of cost information offered by the initiator of open book accounting can only be transferred into a (high) propensity on the supply chain partner’s side if the target firm perceives the exchange of cost information as useful and beneficial to achieve his or her goals and consequently as benefit increasing. This complies with an important result reported by Kajüter & Kulmala (2005) who identify the absence of a perceived additional benefit of using open book accounting among the main reasons for the failure of open book accounting.

The role of perceived own benefit could be described as a ‘catalytic converter’. This means that the more the targeted partner perceives the own benefit of the application of OBA the more likely he or she is to presume earnest intention by the initiating party in the form of perceived partner’s willingness. Further, the findings of the present study supplement and extend prior

findings in that way that not only influences of the perceived own benefit on the acceptance of open book accounting are reported, but the mode of the relationship is also specified. Perceived own benefit has a moderating influence on the propensity to use open book accounting. The absence of perceived own benefit can nullify the acceptance of inter-organizational cost information sharing and the perceived benefit serves as a contingency factor that determines the validity of other factors, such as the initial offer of cost information, that influence the forming of the propensity to collaborate and manage the cost inter-organizationally.

One may argue that the offering of a specific investment in an early stage of an inter-firm relation is too early as trust has not evolved over time. But in that case the specific investment will not serve as a commitment device in its original sense. If trust has already been established in an inter-firm relationship, no commitment is needed to further increase the mutual confidence in the partnership. It was the question whether time and experience as trust producing factors can be substituted or supported by specific investments. If this is not the case, the decision about a joint investment of partner firms melts down to the economic, fact-based investment decision, just as for other non-specific investments.

As a last step in the present thesis, aspects of user acceptance were integrated by implementing a path modeling approach, which integrates central aspects of the propensity to use OBA and basic tenets of user acceptance. Results make clear that determinants of user acceptance play an important role in the determination of the behavior and of the long term intention to use the instrument. The results support empirical findings that the perceived ease of use determines the assessment of the usefulness (Venkatesh & Davis, 2000). However, the stronger determinants of the propensity to use OBA were found in perceived usefulness and the instantiated own benefit. The perceived usefulness strongly determines the attitude towards accepting OBA and towards the long term intention to apply it in inter-firm relationships. This shows that effortless use can only be the initiation point for the adoption of a management device. The actual acceptance, however, is most strongly determined by the extent to which an instrument is suitable for achieving personal and corporate goals. This means that considerations regarding the effortless use diminish and performance aspects prevail (Venkatesh et al., 2003).

7.2 Advantages and limitations of the empirical design

An experimental approach was chosen for collecting the empirical data because of its suitability to deliver precise conclusions. Moreover, because data is collected in a controlled environment, experimental empirics do not feature as much noise as data collected in the field and/or by survey (Kerlinger & Lee, 2000, pp. 575–597). Participants are in a controlled environment when reading the scenario or when answering the questionnaire. Further, experiments put the researcher in the position to systematically manipulate and control certain influences. As an example shall be provided the manipulation of the relative power position, for which it is of significant importance that all participants, for example in an equal power scenario, do actually judge the relative power situation to be balanced. Contrary to field data in which the judgment of the relative power situation is completely based on subjective assessments (person A may feel a strong dependence in a situation in which person B does not), in experimental research manipulation checks can indicate whether the prerequisites of the investigation are met throughout and across the investigated group(s). The virtue of controlling for the unwanted gives experimental research a significant edge over other research approaches in terms of isolating causal relations between variables.

Nonetheless, experimental research in general is subject to certain types of criticism. Among the most frequently expressed issues is the lack of external validity in general, and, more specifically, the lack of generalizability and mundane realism. Because of the importance of these issues, they were addressed in a separate section of this thesis (see Section 5.2). Even though, experimental set-ups can never provide an environment as complex as the real world, which can be seen as an advantage or a disadvantage, the drawbacks of this methodological approach were attenuated as far as possible by using a real world example of a specific investment between a buyer and a supplier to achieve a high degree of mundane realism. Further, to account for aspects of generalizability, research was not only conducted with a group which consisted of student participants and of persons with work experience, but the reaction patterns of the two sub-groups were also compared with each other. The results did not show any prevailing difference in the behavior. However, even with greatest effort, there is no research design without drawbacks.

The present thesis investigates the behavior of the participants in a one-move experiment. That is, the initial move and the reaction to it are analyzed. However, the analysis neglects possible effects which can emanate from multiple steps of interaction. For example, a history

of (other, non IOCM-specific) collaborative and reliable interactions between the partner firms can pave the way for the introduction of a joint cost management.

For any empirical investigation the aspect of a possible answering bias, due to the presence of social desirability, must be taken into account (Arnold & Feldman, 1981; Arnold et al., 1985; Ganster et al., 1983; Pavlou & Fygenson, 2006; Podsakoff & Organ, 1986). In the case of an investigation on inter-organizational cooperation and collaboration, it might be possible that the participants indicate a higher propensity to share information and to collaborate than they actually have. The reason for this sort of behavior lays in the fact that people might be influenced by thoughts about what may be socially desirable, that is, which conduct is expected of them in a certain situation.

In addition to the variance analytic approach, a path model supplemented the course of analysis. Even though path modeling represents a powerful tool for analyzing empirical data, there are still certain issues concerning the use of causal modeling by applying path modeling as it was conducted in Chapter 6. The proposed model exhibited rather high goodness of fit indicators. However, this does not mean that a claim for completeness could be made. The proposed relations, which integrate attitudinal variables in the theoretic framework, constitute *one* possible model for explaining the evolvement of open book accounting. It cannot be ruled out that there are approaches based on other theoretical constructs, for example the influence of different cultural aspects, which could also provide a well founded explanation.

Even though path models are commonly considered as means for identifying causal relations, strictly speaking, this assumption can be misleading. When interpreting the results, one should always keep in mind that no statistical analysis which is based upon correlative/covariance analysis is able to identify true causal relations. Only true experimental, variance-based analyses can provide evidence for causal relations. Therefore, the classification of path models as causal models is common, but to a certain extent, misleading. The present approach intends to attenuate this issue as far as possible by basing the hypotheses for the path model on the results obtained in the preceding variance analyses. However, certain paths in the model, such as for the aspects of user acceptance, were not analyzed experimentally, but derived only by theoretical considerations. Thus, these variables and the respective relations between them comply with the requirements for the design of path models, but for their interpretation, the abovementioned issues regarding the causal interpretation always need to be considered.

7.3 Theoretical implications

The present study followed the plea for a theory pluralism in the research area of inter-organizational buyer-supplier relationships (Daniel, 2007; Dekker, 2004; Osborn & Hagedoorn, 1997). The application of numerous theoretical approaches to the area of inter-organizational cost management yielded fruitful insights and confirmed the projection that there is no single theory approach to cover the multiple facets of inter-firm interaction. Subsequently, a review of the applied theoretical approaches is provided and conclusion on their usage are drawn.

Transactions cost economics and exchange theory The discussion among researchers advocating either TCE or exchange theory as the ‘correct’ theoretical background against which inter-firm relationships should be modeled has persisted a long time (Lado, Dant, & Tekleab, 2007). Academics from either ‘camp’ have presented evidence for their point of view, promoting TCE (Heide & John, 1992; Rindfleisch & Heide, 1997; Walker & Weber, 1984) or exchange theoretical approaches (Lewicki & Bunker, 1996; Uzzi, 1997; Van den Abbeele, 2006; Zaheer & Venkatraman, 1995). The differences regarding some of the assumptions underlying the respective theories were pointed out at length in Chapter 2. For commemoration, only the different presumptions concerning the role of opportunism as a constant behavioral assumption versus a behavioral variable shall be reminded of.

Since there are empirical hints of support for both ‘theoretical camps’, the question emerges whether TCE and exchange theory form antipodes or supplements for the description of inter-firm relations. Because of the different empirical results, the suggestion that the selection of the ‘correct’ theory depends on further circumstances of the inter-firm relation is evident. Therefore, the subsequent explanations present implications concerning the relevance and the suitability of the different theoretical streams for the area of inter-firm relations and IOCM.

Open book accounting is about the establishment of collaborative inter-firm relationships to manage the inter-firm cost level. Most likely, this instrument will be applied in relationships which are either of strategic importance or are intended to take up an exposed position in the entirety of the inter-firm relations of a particular firm. One of the main foci of the study was to determine the effect of different signs of commitment on the propensity to engage in open book accounting. On the one hand, there was the proposal to invest specifically into the inter-firm relationship, on the other hand, there was the initial exchange of private cost information, which, at least from an exchange theoretical perspective can also be seen as a sign of commitment, even though the exchange does not contain a relation-specific component because the utility of the exchanged cost information is not limited to the respective relationship.

TCE implies that relation-specific assets can take up the position of pledges and serve as a sign of commitment to the partner. Based on this, one central question of this research was whether relation-specific assets can foster inter-organizational cost management activities. As in many cases the answer is: it depends on the circumstances. There were mixed results concerning the influence of the offer of an idiosyncratic investment between the two firms. No general positive effect of the relation specific-asset could be identified across all experimental scenarios. More specifically, situations of power symmetry and power asymmetry need to be distinguished from each other.

In an equal power setting the specific asset can contribute to an increased propensity of the partner firm to engage in further cost information exchange. This effect is observable only when there is a small amount of initially offered cost information. When the initially offered amount of cost information is large, no extra beneficial effect was observed. Hence, under equal power, the proposal to invest specifically is very likely to be perceived as a non-domain specific signaling device that shows one's good intentions. Thus, under these very specific circumstances, it can be suggested that the specific asset represents an instrument to improve the general inter-firm climate. However, this holds only for equal power. Once power symmetry is removed, the effect becomes more complex because then the direction the proposal comes from plays an important role.

Generally, the participants perceive the more powerful party to encounter less risk in the interaction with its partner. This judgment is independent from whether there is a specific asset or not. Further, for aspects of opportunism there is a positive and a negative effect depending on the relative power position. When a less powerful supply chain member is offered a specific investment by a partner firm which is more powerful, fear of opportunistic behavior is reduced. Vice versa, if the less powerful offers a specific investment, the more powerful firm shows an increased fear of opportunistic behavior.

The differing effects show that no clear-cut, universally valid proposition of a positive effect of relation-specific assets could be derived. This supports earlier findings regarding the effect of credible commitments in strategic alliances (Das, 2005). The present research approach analyzes the effect of specific assets in the early stages of an inter-firm relationship. There is evidence, especially from marketing literature, that specific investments have a general positive influence on an inter-firm relationship. However, most of these examples covered firm dyads which had already reached a rather mature state. Therefore, the specific assets did not serve as much as a commitment device to foster the relation in its initial stages, as they did as a fortification of good intention. In this case however, the joint investment does not serve the originally intended purpose—as proposed by TCE—of showing commitment, but it falls

into a situation in which both partners already have a history of interaction and hence, aspects of expected uncooperative behavior and/or opportunism, which the specific asset is originally intended to attenuate, either do not play a role anymore or are already plastered by the good experiences with the partner.

If the partner firms are in a situation in which both have proven to be a reliable partner, both might be more willing to take the additional risk which the engagement in a specific asset entails. This would thwart the desired effect of a commitment device, such that the partners have to reach a sound basis in the inter-firm relation before they can ‘take the risk of a commitment device’.

The ambiguous role of relation-specific assets in inter-firm relations has also been identified in other areas of research. Wallenburg (2004) analyzed different factors of customer retention in logistics. Among other factors, the author analyzed whether specific investments in the relationship between a logistics service provider and the customer influence the (re-)acquisition of mandates. The author reports that no significant effect emanated from specific assets between the two partner firms. The asset specificity was clearly dominated by directly domain-specific aspects such as service quality, customer satisfaction, or trust and fairness between the firms.

Together with the results of this study, these findings lead to the conclusion that it is questionable whether specific assets can actually serve as the proposed generally accepted commitment devices and whether they can actually pave the way for a prosperous collaboration. The aspect that, in many cases, idiosyncratic assets have the potential to cause competitive advantage remains unquestioned. However, regarding the reasonability and the generation of competitive advantage, specific assets compete against non-specific assets. It is very likely that in many of the examples of successfully installed inter-firm investments, the assets yielded either a competitive advantage and/or a significant economic progress, which, in case of doubt, will always tip the scales in an investment decision process.

TCE in general can be regarded a *prevention-oriented* approach for explaining governance decisions. It aims at preventing unwanted behavior by the partner, *intra-* and *inter-*organizationally. TCE provides a theoretical toolkit for explaining (and designing?—how normative is TCE really?) organizational interactions. Besides the general criticism that the governance modes proposed by TCE might actually evoke what they are trying to prevent—opportunistic behavior—and the questionable assumptions concerning the behavioral assumptions (see Section 2.1.2), it is doubtful whether such a prevention-oriented approach offers the chance for further insightful research on *constructive* and *collaborative* organizational, but in particular, *inter-*organizational issues.

However, the question which theoretical approach is most suitable cannot be unambiguously answered because there is empirical evidence for both the tenets of TCE and for those of exchange theory. Recent research indicates that the inclusion of the temporal horizon might provide further insight to the appropriate choice of theory. Lately the discussion on the establishment of inter-firm relations has increasingly acknowledged the importance of the horizon of the inter-firm relation (Das, 2004, 2006). For example, the author argues that, depending on the intended time horizon, a prevention oriented strategy, such as proposed by TCE may very well be necessary. Such a focus might be more suitable for exploring transactional, short term inter-firm relations in which there is no direct chance of later, successive interaction, and in which it is important to prevent opportunistic behavior for a single interaction. However, even when commitment devices are chosen for the prevention of opportunistic behavior, it is recommended to prefer domain-specific signs of commitment over general non-domain specific signs of commitment as results of the present study hint at the sometimes counterproductive effect of domain-unspecific signs of commitment.

Transactional relationships must be distinguished from those with a strategic emphasis. Most likely open book accounting will be used in those partnerships which are intended to be of strategic relevance (and long term oriented). As Das & Teng (2004) point out, the market serves as a selection mechanism which in the long term excludes those players who have repeatedly shown destructive behavior. The authors continue that firms will usually be aware of this and, hence, will not find opportunistic behavior a practicable option. Given that the involved firms are aware of the strategic and long term orientation of inter-organizational cost management activities, a theoretical approach featuring a *promotional* focus seems to be better suited for explaining the initiation of collaborative inter-firm activities, such as open book accounting.

Integrating this argumentation Dwyer et al. (1987) and Lambe, Spekman, & Hunt (2000) present approaches which account for the different nature of exchange relationships depending on their time horizon. Lambe et al. (2000) model exchange relations using a continuum ranging from the simplest discrete transactional exchange relation over repeated transactional exchange to interimistic relational and finally enduring relational exchange relationships. The authors argue that in short-term discrete transactional exchange situations important explanatory mechanisms of social exchange theory, such as trust, relational norms, and interdependence, cannot develop because of the limited time and/or the concentration on a short transaction. Further, the authors propose that trust is an important factor in any type of exchange situation. However, the authors argue that, because of the limited time horizon and/or the reduced number of interactions, aspects of reputation and other trust substituting elements such

as relation-specific investments play a more important role in short term oriented exchange situation than in long term oriented relationships. However, as the results of the present study indicate, if chosen to be applied as a trust substituting element, signs of commitment are more effective stemming from the same domain than when they originate from a domain-unspecific context.

In terms of relational norms, the present findings showed that individuals involved in an exchange situation seem to attach great importance to aspects of fairness and equity. The norm of reciprocity seems to be a value to strive for. To achieve this, individuals tend to apply a tit-for-tat strategy for the exchange of cost information. That is, when much information is initially offered, they answer by reciprocating more information, while when there is less information offered, they reveal less information. This reaction pattern shows the anxiousness to determine an adequate input/output ratio, but by no means is close to destructive behavior, which should even be prevented.

In summary, it is questionable whether a universally valid recommendation regarding the correct application of a prevention or a promotion focused aspect to the area of IOCM can be provided. In order to take the next step towards the development of a suitable theoretical framework for IOCM analysis, further details and implications of the distinction between promotion and prevention focus will be provided in the subsequent paragraph which deals with the regulatory focus concept. Based on the regulatory focus theory, the section presents for discussion an alternative research framework that abandons the inflexible assumption of—exaggerated—the heroic versus the economic man, which already Boulding (1969) identified to be rather caricaturing descriptions of human nature.

Regulatory focus How do we achieve goals and master events against the background of different theoretical approaches? Which strategies can individuals apply to achieve what they are striving for? This very general question is of particular interest in a situation in which one party seeks to convince the other party of the benefits of inter-organizational cost management activities. Recently, the aspect of the regulatory focus (Higgins, Shah, & Friedman, 1997; Higgins, 1998) has attracted quite a lot attention among researchers in social science (Crowe & Higgins, 1997; Werth, Mayer, & Mussweiler, 2006). Because of its sophisticated explanatory framework, this approach is likely to become more popular for the analysis of decision-making situation. The theoretical approach assumes that, at the beginning of an interaction process, individuals produce cognitive projections of possible end-states of the social interaction. These end-states are determined by making certain decisions along the timeline. Depending on the desirability of the projected end-state, the individuals' action will resem-

ble a prevention or a promotion oriented strategy to achieve or to prevent a certain end-state (Crowe & Higgins, 1997; Florea, 2003; Werth et al., 2006). As mentioned, the regulatory focus theory (Higgins et al., 1997; Higgins, 1998) distinguishes between a promotion focus and a prevention focus. Werth & Förster (2007) characterize these two foci as emphasizing ideals and profit (promotion focus) and as stressing responsibilities and duties (prevention focus).

Activities with promotion focus aim at achieving the ideal or the maximum¹. Contrary, following a prevention focus implies that minimum goals are to be achieved. The different aspects of the regulatory focus also become apparent in the characterization of a missed target. In a promotional focus a no-gain is considered a missed target, whereas in the prevention focus a loss is considered a missed target. Success triggers a feeling of joy for the former focus and a feeling of sedation for an individual with a prevention focus. The respective reaction in the case of failure are disappointment and tension. Described by eager behavioral pattern, individuals following a promotion focus show a sensitivity for the presence/absence of positive and successful events and are more eager to take risks. In contrast, individuals with a prevention focus are sensitive for the presence/absence of negative events and are more reluctant to take risks. The above listing of the different characteristics can only summarize the basic tenets in a nutshell. A detailed analysis of the present status of the research regarding the regulatory focus is provided by Werth & Förster (2007).

The question is now what are the implications regarding research in inter-organizational cost management and the theories that have been applied in the past and/or will be applied to it in the future?

Without exactly matching the respective characterization, the assumptions of transaction cost economics features more attributes of a prevention focus oriented framework. Or as McCarter & Northcraft (2007) put it: 'TCE concerns itself with the possibility of exchange hazards' (p. 500). Contrary, exchange theoretical approaches stronger reflect on the possibility of negative *as well as* positive outcomes of exchange situations. The consideration of possible negative and positive outcomes provides the basis for well-founded implications concerning the research on inter-organizational management in general and OBA in specific. By integrating safety-oriented and promotional activities and, even more importantly, making the preferences of interacting partners subject to personal preferences instead of assuming a fixed behavioral pattern for all persons, the regulatory focus theory transforms behavioral assumptions (opportunism, reciprocity) into variables whose value depends on personal characteristics and abandons the sometimes rather extensive and constricting assumptions of some of the classical theoretical approaches, which were thus far used for the analysis of inter-firm and

¹Note: This is not necessarily the profit maximum, but the maximum of any respective target value.

inter-personal relations. Further, the regulatory focus approach provides some relief regarding the dispute between exchange theory and transaction cost economics about the ‘correct’ behavioral assumptions. The regulatory focus concept shifts away from an either–or relation concerning the personal attributes of the interaction parties. Rather, it takes into account that the suitability of a promotion or a prevention focus depends on the subject of the interaction and the personal preferences regarding the regulatory strategy.

For the further development of the theory applied in the IOCM context the regulatory focus theory offers two promising implications. The first is the match of the content and the regulatory focus. That is, if a negotiation topic has a promotion focus (for example advertising budget), a person is more successful when she or he obtains a promotion focus and the partner is in a prevention focus. Vice versa, when the general negotiation topic is prevention focused (for instance negotiating an insurance budget), the prevention focus tends to be more successful (Galinsky, Leonardelli, Okhuysen, & Mussweiler, 2005; Werth et al., 2006).

The regulatory focus theory should extend the existing ‘theoretical toolkit’ for the analysis of inter-firm relation because there is inevitable evidence that an encounter of matching regulatory foci produces more prosperous outcomes. It is therefore not anymore the question of the correct assumption and proposition of behavioral patterns, but it is the question of the most suitable fit of promotion and prevention strategies for the achievement of an (individual or organizational) goal. Implications for both the managerial implications as well as for future directions of research are presented in Sections 7.4 and 7.5, respectively.

One of the central tenets of TCE, the application of commitment devices to foster positive intention by the partner (or is it rather inhibiting malicious tendencies?), shows only a very limited scope of validity. Even though originally intended to convince the partner of one own’s good intention, the relation-specific asset may even have an inhibiting effect when offered together with a large amount of cost information. By offering both, the cost information and the asset, simultaneously, the partner firm is put into a position in which it can hardly reciprocate the offer in an equal manner, unless it reveals more cost information than the initiating partner. However, it might be reluctant to balance an unspecific sign of commitment by an enhanced specific sign of commitment. Hence, the target firm is brought into a situation in which it realizes that the partner has offered significant assets in advance and has created a situation of unequal input. However, the firm is not able and/or not willing to match the level of revelation. Following the argumentation that also unequal input, which is favorable for oneself, can provoke negative reactions as well, this might be an inhibiting factor for the initialization of a collaborative inter-firm action. This illustrative example quite vividly shows inter-firm interaction in its extended complexity and the need to supplement the—especially in

the area of management accounting—prevalent theoretical approaches, such as TCE or even the principal agent approach, by *promotional* and attitudinal aspects.

User acceptance In a first step towards the integration of different theoretical direction on management accounting, the present study reflects aspects of user acceptance, as an instance of attitudinal aspects. Transferred from the area of information systems adoption, user acceptance with its different aspects ease of use and perceived usefulness has proven its importance for the adoption process of new management techniques. In general, the propositions made by D. A. Adams et al. (1992), Venkatesh & Davis (2000), and Venkatesh et al. (2003) hold. Especially the theoretical constructs of perceived usefulness and perceived own benefit, which represents the instantiated operationalization of usefulness, were identified to be strong determinants of the general propensity to apply inter-organizational cost management and its actual usage. Hence, concerns about user acceptance must accompany the classical requirements for a successful implementation, such as authority, top management support, and training.

The last issues lead to certain determinants of user acceptance that are only insufficiently accounted for in the classical Technology Acceptance Model. In general TAM concentrates on internal influences that determine the acceptance of a technology. The theory asks whether the prospective user experiences effortless use and/or an enhancement in the ability to achieve whatever objective. However, external influences are almost completely factored out (Bhattacharjee & Sanford, 2006).²

A reasonable extension to explaining user acceptance by considering external influences is the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986; Petty & Wegener, 1999). This approach accounts for external influences that affect the attitude towards a target device. The theory proposes that an attitude change (in favor or against something) can be accomplished either by peripheral or central information processing. An example of a factor that supports a change via the peripheral route is source credibility. For an IOCM context, this would mean that the extent to which an initiating party achieves reputation and credibility among the target firm's members, plays an important role for the determination of the targets' attitude and the propensity to use IOCM. This route is of exposed importance in situations in which there is only limited time and/or motivation to conduct a thorough analysis of the situation.

In case there is sufficient time and motivation to elaborate on the pros and cons of a proposed system, the second, the central, route is of importance. In this case, the argument quality is

²In the original TAM by Davis (1989), 'social norms' as an instance of an external influence were excluded because of its empirical insignificance (Bhattacharjee & Sanford, 2006). Later, however, this determinant was added back to the model (Venkatesh et al., 2003).

the decisive factor of the usage intention. However, this is not a one-way effect because insufficient argument quality can just as well cause a negative attitude towards the object.

Because open book accounting presents an instrument to be used by individuals within and between organizations, acceptance on an institutional level also plays a role. In the case of OBA as an innovative management approach, considerations on the acceptance by the user must always be accompanied by thoughts on the innovation in organizations (Rogers, 2003, pp. 402–435). For example, for a sustainable anchoring of a new (cost) management approach, the organization must determine its way of coping with informal patterns which are essential to collaboration with a partner firm. Further, but going in the same direction the adopting organizations must decide on the extent to which formal rules and regulation shall frame the IOCM efforts.

In summary, because of their effects on attitudinal aspects and the determination of the intention to use a device in the long run, user acceptance in some theoretical approach should obtain a central part of any analysis of management accounting instruments, just as it is in other areas of research, such as information technology. The present thesis provides only two examples for a possible theoretical background (The Technology Acceptance and the Elaboration Likelihood Model).

Inter- and intra-firm information processing Researchers must always ask the question to which degree the findings in a very specific analysis yield results that emanate implications for adjacent streams of research. For the present study, the results regarding the application of commitment devices yield promising results. Findings indicate that collaboration cannot be forced by simply combining and adding signs of commitment. This study has shown that, for sure, there is no additive effect of the commitment devices. More specifically, the domain-unspecific commitment device does not yield an additional beneficial effect when there is already a cost management/domain-specific sign of commitment, in this case the initial revelation of relevant cost information. The findings in this study also impact negotiation analysis as it has shown that the correct magnitude of the first offer matters. Overwhelming, hardly to reciprocate first offers intimidate and might even evoke a negative reaction when people show reactance.

This study seeks to contribute to the literature on the exchange of information, specifically cost information, in supply chains. Overall, the value of information sharing within a supply chain is incontestable and has been confirmed by numerous studies (Cachon & Fisher, 2000; Zhu & Thonemann, 2004). However the bulk of the supply chain management research has concentrated on the effects of exchanging demand and/or inventory information (Li, Yan,

Wang, & Xia, 2005) and only a small portion has dealt with the exchange of cost information. One reason for this might be the importance of information about the cost structure. Cost information can directly shed light on the cost-effects of the underlying processes and products. Demand and inventory information as they are exchanged between supply chain members to an increasing extent are fruitful for the coordination and the improvement of supply processes, but only indirectly provide an indication of the actual cost structure. This could be a reason why the exchange of cost information experiences even greater resistance than the exchange of forecast, demand, and inventory information.

Information disclosure is not only an essential part of an inter-firm set-up, also on an intra-firm level the correct allocation of information and managerial information processing plays an important role. Frequently, different departments of an enterprise work together on a joint project. Even though in an intra-organizational context, there is always the chance to resolve diverging opinions by fiat, this is certainly not the best basis for collaborative intra-firm efforts. The inter-firm and the intra-firm aspect of information disclosure share quite a few common characteristics, which can be described as a mixed motive situation. In general in a mixed motive situation interacting parties might both collaborate to accomplish joint goals, such as improving the supply chain cost level, and compete to enforce individual goals (Edmondson, Roberto, & Watkins, 2002). This tension between joint and individual or corporate and private goals brings about a plea to further include cognitive aspects into frameworks chosen for the analysis of (inter-) organizational (cost-)management processes. Already Ungson, Braunstein, & Hall (1981) point out that research on managerial information processing needs to include account for individuals' cognitive processes. Even though recent research on management accounting has started to incorporate these aspects (J. Weber et al., 2005; Zayer, 2007), Birnberg et al. (2007) pinpoint several further interesting aspects and research questions derived from cognitive, motivation, and social psychology. Among those question are the quest for explaining motivation sources or the identification of areas in management accounting in which psychological theory is best applied alone and areas in which integrating different theoretical aspects (economics, sociology) improves explaining power.

The preceding section provided theoretical implication for the research on inter-firm relations in general and for specific research on inter-organizational cost management. Partly concluding on the suitability of different—established—theoretical approaches, partly pointing at new promising directions to extend the existing theoretical approaches, this section intended to provide a comprehensive synopsis and evaluation on theory. Based on the research results and the implication drawn thus far, the next section will draw conclusions from a managerial point of view and provide distinct directions regarding recommended course of action.

7.4 Managerial implications

Already in prior research pitfalls and inhibitors of IOCM have been identified (Bastl, Brubic, & Templar, 2007; Kajüter & Kulmala, 2005; Kulmala, 2004). In the following section conclusions from a managerial point of view for a successful initiation of open book accounting (the dos and don'ts) are provided. It shall serve as a guideline to avoid the pitfalls and inhibitors of prosperous inter-firm cost management. Of course, without a claim to be complete, it provides hints from the areas covered in this specific IOCM-research approach and serves as a guideline for establishing an collaborative inter-firm cost management environment.

Consider the state of the relationship and be patient in the development of IOCM!

Managers must consider the time aspect. The partner firm may just approach the interchange of cost information more gradually. It might very well be that a transformation of the willingness to use OBA into an actual interaction and exchange of relevant information takes time and cannot always be initiated by one isolated interaction. The importance of the appropriateness of the signs which, when neglected, can harm the development of a prosperous relationship, has been indicated well enough.

In the context of the discussion concerning the freedom of co-evolution, a plea for the avoidance of overload is given. The partner could perceive a feeling of constriction when confronted with an extensive offer in the first place and the doubts whether own plans and intentions can still be achieved once such a close partnership with another firm is initiated. Especially in a scenario, such as it was used in the present study, which featured a predetermined, particular joint investment as an intended sign of commitment, this could lead to a feeling of constriction by the targeted partner. In the course of the study, the different effects of domain-*specific* and domain-*unspecific* signs of commitment were discussed. Managers should be aware that the proposal of domain-unspecific signs of commitment not necessarily exhibit an additional positive effect, but might also evoke irritations among the partner.

The question to which extend agreements should feature odds and ends of every imaginable eventuality or should intentionally be designed with slackened reins, has kept busy cohorts of researchers (Lui & Ngo, 2004; Vlaar, Bosch, & Volberda, 2007). Contingent on the individual's preferred regulatory focus, the design of a rather loose contract that only features the essentials, such as the compliance not to misuse exchanged data, can be recommended, if not already covered by collaborative norms. Otherwise, the strongly reduced degrees of freedom can lead to reactance, for instance when one of the firms would prefer a promotion focus approach, but a prevention focus is used and every odds is accounted in the contractual agreement.

Acknowledging the importance of the aspects of time and commitment, the approach by Dwyer et al. (1987) to apply a phase-based framework for developing buyer-seller relationships is supported. Interestingly, in their five-phases model, the authors already identify the perceived willingness as a key determinant of a later flourishing inter-firm relation. However, in their model, the authors also propose the willingness and the signs of commitment as subsequent elements. More specifically, signs of commitment (phase 5) succeed the mutual perception of willingness (phase 3/4).

Evaluate the power relation!

Already Bonoma (1976) indicated that a bilateral power set-up provides the most suitable conditions for a prosperous inter-firm relation. This assumption is supported by the findings of this study as the relative power structure was found to change things. Whereas under equal power a feeling of mutuality and unity is very likely to evolve, under power asymmetry perceived risk for the more and the less powerful drift apart, indicating a separated evaluation of the particular position.

Further, under power asymmetric conditions, the application of commitment devices needs to be thoroughly reconsidered. Already Rokkan et al. (2003) identified that the effects of relation-specific assets can have ambiguous effects which depend on the relational context in which they are applied. Combining results of prior research with the findings of the present study, it is rather questionable whether general valid conclusions on the effects of a specific assets in inter-firm set-ups can be drawn. However, it is obvious that special care must be taken when applying idiosyncratic assets to inter-organizational relationships because the consequences are far from unambiguously determinable. If at all, relation-specific assets in the initiation phase of an inter-firm partnership need to be carefully applied. Relation-specific assets can lower the fear of opportunistic behavior by the partner if, and only if, offered by the more powerful position. In an inter-firm relationship, very frequently, one of the involved parties will perceive her-/himself to be more/less powerful than the partner. If this is the case, the application of a specific asset becomes rather critical, as has been elaborated at length.

Anticipate possible concerns!

Proactively anticipating possible concerns the partner might have during the establishment of an inter-firm relationship is a relevant aspect of inter-organizational alliance forming. Thus, providing the necessary information and, if applicable, the required management capacity, are important issues for inter-firm alliances forming (M. J. Kelly, Schaan, & Joncas, 2002). This will not only increase perceived willingness to make the inter-firm cooperation work, but, at the same time, it will put the manager in a position to exert a stronger influence on the inter-firm alliance (Mjoen & Tallman, 1997; Muthusamy & White, 2005, 2006). This is especially

important in situations similar to the one depicted in the scenario of the present study in which one partner is persuading the other to engage in OBA. In such situations, there is increased danger that either resistance evolves among the persuaded party or, even though agreeing on the principles of OBA, the targeted organization lacks firm determination to the project. This means that the situational pressure results in a pseudo-accordance, which is not supported by true conviction. Therefore, pushy persuading strategies are to be avoided because they will only evoke reactance. Instead, the managers should count on long term commitment and compliance. This recommendation follows the empirical findings of Gundlach et al. (1995) who proposes that signs of commitment must be proportionate and credible in order to provoke a positive effect for long term relationships. The important role of the awareness of the partner's true motives becomes apparent when one brings to mind the role the perceived partner's willingness has in the determination of the own willingness. The provision of further information can help to attenuate concerns or doubts about the partner's true intentions.

Against this background, decision makers should make their expectations and future plans explicit and should incorporate in their suggestions the specific expectations of the IOCM-process. For example, Ungson et al. (1981) propose 'think-aloud protocols' to provide such a type of supplementary information. Such additional information would resemble the information type 1 as it was identified by Tomkins (2001) (refer to Section 2.2.2) for an inter-organizational accounting context. Explicitly stating expectations, especially under power asymmetric circumstances, takes away some of the uncertainty about the partner's true motives. It will attenuate the uncertainty of a less powerful partner whether the other will utilize his superior position, and vice versa, the more powerful's concerns about whether the less powerful will use the joint engagement to improve its relative power position.

Pay attention to signals—the own and the other's!

For the successful implementation of a prosperous inter-firm relationship, signaling takes up a crucial role. When receiving a response from the supply chain partner, who is targeted for the joint application of open book accounting, different aspects must be taken into account to avoid unnecessary pitfalls and misunderstandings. Managers need to be aware of the fact that there is no such thing as the one generic, universally valid propensity. Rather, the interpretation of the behavioral pattern exhibited by the partner is rather complex because the present study shows that the partner's propensity features multiple layers.

Most intuitively and most obvious because immediately observable, there is the amount of disclosed information. When a partner firm reacts to the initiation of an open book accounting process by disclosing much cost information, a first most evident step is taken on the road to joint value maximation. However, this reaction does not reveal insight to further motives of

the revealing party; whether information is shared because the party feels obliged to do so or to entangle a more powerful party in dependence.

This leads to another important implication of the present research concerning the interpretation of the partner's reaction. Even though latent and not directly observable, the willingness aspects also constitute propensity. The results have shown that the general willingness of a target firm is not influenced by the amount of initially offered cost information. Rather, aspects of perceived own benefit and the judgment of the initiating partner's earnest willingness determine the own willingness. In turn, this means that even if a partner reciprocates only a small amount of cost information, maybe as a response to an initially offered small amount of cost information—and the robustness checks have demonstrated the powerful norm of reciprocity—nonetheless, she or he might still be willing to engage further in IOCM activities.

In a nutshell, managers must be aware of the complex cognitive relations which, without making a claim to be complete, were identified in this study. Simply judging the apparent outcome, that is, the reciprocated information, falls short of the opportunities that arise when the partner is convinced of the potential benefits a collaboration in the area of cost management will bring about for both parties. The initiating party and its managing squad should always consider whether the partner will most likely perceive the overall situation to be fair and equitable. The findings in this study suggest that for achieving this, more is not always better. Especially when the domain-specific sharing of cost information is supplemented by a, even though well-intentioned, domain-unspecific sign of commitment, this may not always yield an additive positive effect. A possible reason for this might be the resentment of interacting partners against inequity. When there is an overwhelming offer, participants who are asked to answer an initial bid, cannot answer by suggesting their own specific investment, and hence cannot apply a tit-for-tat strategy in this particular field. However, they also refuse a transfer from one domain to another by reciprocating more cost information. Obviously, the assessment whether fairness and equity is achieved is a crucial determinant of the general propensity to use OBA.

The dos and don'ts concerning the interpretation of the partner's signals directly lead to recommendations regarding the *own* conduct. An aspect that must be assured in any interpersonal as well as in inter-organizational alliances is the opportunity of co-evolution for the partners (Koza & Lewin, 1998). Recommendable for any interactive engagement, this issue becomes even more important when proprietary knowledge or goods are exchanged. In an open book accounting context, co-evolution assures that, even though partners strive for joint goals and optimization, a certain level of self-determination is maintained. More specifically,

the findings of this study have shown that under power-asymmetry, the inferior party perceives significant risk and fear of opportunism, a possible indication that one perceives its own independence at jeopardy.

When interpreting the reaction of a supply chain partner, one must keep in mind that the extension of the cost management scope beyond the own corporate borders presents a rather new and innovative management approach. A reserved reaction by the partner does not necessarily mean that she or he is rejecting the collaboration in general or shows an exceptional extend of risk or mistrust. A reluctant reaction can also be caused by a general reluctance to adopt innovations. This is especially true for an approach such as open book accounting with its rather innovative character (Wagner, 2008) because cost information are still expected to be kept in-house and not to be shared with partner firms (Kajüter & Kulmala, 2005). Hence, an approach for convincing the partner to exchange cost information must be found. Concerning this goal, two important influences, which imply a certain strategy for the initiation process, were identified in the present study. To overcome the resistance to adopt new, unconventional management approaches the aspects of the perceived usefulness and the perceived own benefit play an important role in persuading the partner. The attitudinal aspect of perceived usefulness influences the willingness and the intention to use OBA. This supports numerous studies, which have identified the usefulness of a device to be an important determinant of the actual usage (D. A. Adams et al., 1992; Venkatesh & Davis, 2000; Venkatesh et al., 2003). The role of perceived own benefit has been pointed out at length. However, it not only moderates the formation of the propensity it also has a direct influence on key variables, such as the actual information reciprocation or the intention to use OBA. Thus, possible persuasion strategies should address these two central aspects. The provision of successful examples of IOCM or advantages gained from inter-organizational collaboration can serve as a means to dispel possible reservation. However, as long as the other party is not convinced of the prosperous effects the provision of further information and pushing and pressurizing the partner will most likely evoke contrary effects, even to the point of reactance.

Recalling some of the theoretical implications pointed out in Section 7.3, the initiator must be aware that, independently from the present collaborative set-up, the targeted individuals may prefer a prevention focus over a promotion focus or vice versa. In other words, when installing inter-organizational collaboration, the initiator must be ready to face either of the two characteristics. Further, to be able to adapt to all possibilities, managers must be ready, if necessary, to overcome their own regulatory focus, when an alternative focus yields more promising results because it is a better match for the negotiating partner or the negotiating topic, or even both. This is especially important because there is empirical evidence that

the interaction fit (Galinsky et al., 2005; Werth et al., 2006), which describes the interacting partners' match of the regulatory focus, is a crucial determinant of the prosperity of social interaction. Tying up to the suggestion to make expectations of the inter-firm relation explicit, the regulatory focus can, explicitly or implicitly, be made a topic in the negotiation. The supply chain partners must figure out whether they prefer a regulatory strategy that is promotion oriented or whether they chose to apply a prevention focus in the interaction.

Consider incentives and compensation!

The analyses in the course of this thesis have pinpointed the important role of the perceived own benefit of open book accounting as a management technique. That is, open book accounting will only be accepted if the individuals will perceive the collaborative exchange of cost information as beneficial for the firm as an organization, but also for themselves. The identified effect of perceived own benefit is consistent with past research which has shown that users value a management system more and take it more seriously if their own evaluation and compensation is linked to it (M. D. Shields & Young, 1989; M. D. Shields, 1995). Traditionally, procurement managers were compensated on the basis of the purchase price which the company had to pay for a certain part. Frequently, this leads to a situation in which the lowest bid was accepted, neglecting other, indirect cost categories. An example of such an indirect cost category is the cost of complexity. For example, Davila & Wouters (2007) and Taylor (2000) provide further insight on the effect of complexity on the cost level. Thus, for a successful implementation of open book accounting, it is a challenge to design a proper incentive system that, on the one hand, will enhance the collaborative efforts and exchange between partner firms, but on the other hand, will still leave room for the appreciation of the individual's performance. However, an incentive for inter-organizational cost management must always consider the required level of quality. Even though in the understanding of this study open book accounting is the explicit alternative draft to the classical supplier-squeezing technique, which will, sooner or later, inevitably lead to quality flaws in the procured parts, principles for the required level of quality must not be neglected when managing the inter-firm cost level. This leaves an important implication for the design of the incentive system in a cost management context in general, but also for the inter-organizational context in specific. The compensation should, to a considerable extent, be dependent on the long term cost level. Which means that follow up cost, may they be higher or lower than expected, need to be considered. Typically, an insufficient initial quality level lowers the production cost level, but significantly increases the warranty cost level.

The incentive scheme in an open book accounting framework must assure that the actual gain through collaborative IOCM is shared between the two parties in a proper manner. This is

especially important when there is a cost shift within the supply chain. For example, the joint cost management could reveal the chance to lower the overall cost level by using sophisticated wrapping on the supplier side, which increases the packaging cost, but decreases the cost of quality assurance on the buyers side. In this case there would have to be compensation provided by the benefiting party to the party that has the higher cost incurred. Otherwise, there would be no incentive to engage further in cost information exchange for the supplier. This type of compensation or transfer payment is already in use in the supply chain wide management of inventory. For example, a traditional retailer receives a transfer payment from the manufacturer's virtual store when excess inventory is used to fulfill customer demand generated through the online store (Seifert, Thonemann, & Sieke, 2006). A similar mechanism could be installed between the supplier and the buyer, such that whoever benefits from the shifting of cost pays a transfer compensation to the partner with the disadvantage.

Increase partner's user acceptance!

No management tool has the chance to be applied in the long run if it lacks acceptance by the user. The general evaluation of open book accounting as a cost management tool was very positive across all groups, since the intention to use open book accounting in general was very high. This indicates that generally open book accounting is seen as an instrument that can be used to optimize supply chain wide cost and to foster inter-firm relationships. Therefore it is now the manager's task to transform this general propensity to use OBA into actual user acceptance. The results of the present study together with findings from prior research identify starting points for the persuasion to use OBA. First, attitudinal aspects should be aimed at. In general, for the short-term, decisions to adopt a new management technique will most likely provoke resistance. Persuasion strategies at this stage should be prevention oriented and focus on weakening resistance by reducing the fear of misconduct. For later stages, a persuading promotion-oriented strategy that concentrates on possible gains through the collaboration should be chosen, as recommended by the Temporal Construal Theory by Trope and Liberman (Trope & Liberman, 2000, 2003; Sherman, Crawford, & McConnell, 2004).

As shown in the study, perceived usefulness and for a specific situation the perceived own benefit are crucial for the acceptance of a management device. A firm, which is up to initiating IOCM activities with a target firm, should consult domain-specific persuasion strategies and desist from non-domain specific strategies. For instance, it should stress that joint cost management does not aim at eroding the partner's profit margin. Rather, it aims at eroding the partner's cost. The perceived own benefit could be pinpointed by presenting prior successful examples of inter-organizational cost management activities and/or by presenting possible

scenarios for the intended relationship with the targeted partner firm. Further, open book accounting aims at optimizing the cost structure in a supply chain. Hence, argumentation towards the target firm should concentrate on the benefits obtainable through the engagement in IOCM. The application of non-domain specific commitments such as joint investments or assets should only play a minor role in the direct negotiation efforts because the effectiveness of these non-domain specific strategies heavily depends on contingencies, which cannot directly be influenced, for example, the perception of the power relation between the firms.

7.5 Directions for further research

The results of the present research project support the results by Kulmala (2004), which propose that IOCM depends on the balance of power between the interacting parties. In general, future research should strive to identify ways to transfer the positive results of IOCM efforts in a *balanced* power setting to an environment of *unequal* power and dependence. Kulmala (2004) continues that creating a win-win situation can be a possible means to avoid the failure of inter-organizational cost management efforts. This is in line with the important role of perceived own benefit, which was identified in the course of the analysis. As pointed out, the present research approach did not manipulate the level of perceived benefit, but it revealed the important influence it can have on the development of an collaborative inter-organizational cost management process. Per definitionem, in a win-win situation, all parties involved will perceive a benefit for themselves, otherwise it would not be considered a win-win situation.

Future research could hence tackle the question which factors or variables can be applied not only to positively influence the perceived own benefit and to create a win-win situation—which actual mutual open book accounting has sufficiently proven to be capable of—but to communicate and to make clear the benefits to the involved firms, as well. For example, researchers could ask whether advance payments by the initiating partner can serve as an incentive for the target firm to agree upon the collaborative revelation of cost information. These advance payments could then be offset against the actual savings of IOCM. Even though this could also lead to a dispute about the quantification of the savings, the effect of the initial risk taking by providing payments in advance as a commitment device is an interesting field of future research.

As a further approach, research could tackle the issue of transferring the positive findings concerning open book accounting by means of process mediators or process moderators. Researchers from the area of inter-organizational cooperation have proposed the establishment of a ‘neutral’ moderator or facilitator to enhance the finding of possible solutions between the

partners (Thomas & Thomas, 2005; J. Weber, Hirsch, Matthes, & Meyer, 2004). Prior research has shown that participants are more willing to engage in a process if process fairness is achieved. Hence, researchers could ask the question whether an institution, which both partners trust, can mediate the interaction process. That is: Can the existence of institution-based trust serve as a cause for process-based trust and in a next step lead to a more prosperous exchange of cost information between the partners. For instance, a management consulting firm, which both partners trust, could play the role of a mediating institution between the involved partners. It would be the task of this agent to assure that none of the parties involved can or will take advantage of the other or take an opportunistic position.

Examples of effective IOCM have been reported to evolve primarily from a Japanese environment. Just as for any management accounting instrument, the question of the influence of cultural and social norms on the implementation of management techniques needs consideration. In general, Japanese companies seem to be more inclined to collaboratively embed the members of a supply chain in joint cost management activities. Just as the present research has, among other variables, investigated whether there is a significant difference in the behavioral pattern of students without work experience and participants of an MBA course with work experience, future research approaches could aim at comparing the behavior of people with different cultural background. It should be of great interest to search for possible differences in intra- and inter-cultural exchange relations.

This leads to a possible extension of the present research design by adapting Zucker's three central modes of trust production: (1) process-based, (2) characteristic-based, and (3) institutional-based modes (Zucker, 1986). The present investigation analyzed the effects of process-related aspects (the initial and subsequent disclosure of cost information) and situational aspects specified by the experimental scenarios on cost information disclosure. The third domain, characteristic-, or personal-based modes were not subject to investigation in this study. It would be an interesting task to further investigate the role personal characteristics, such as family background, ethnicity, or education play for the inter-organizational exchange process. Further research could strive for a verification of findings from other disciplines that similar personal characteristics simplify collaboration and exchange (Borgatti & Foster, 2003; Duysters, Hagedoorn, & Lemmens, 2002; McPherson, Smith-Lovin, & Cook, 2001).

Based on the findings by Heide & John (1990), future research could be up to analyzing the role of the importance of the sourced part or product on the eagerness to engage in cooperative action and inter-organizational cost management. Following the results of the abovementioned study, one could suggest that the more relative value of the components is involved, the higher is the propensity to engage in joint cost management with supply chain

partners because cutting cost in components with high value yields a rather high leverage and a great savings potential. However, since the research approach simultaneously investigated the effect of specific investments, no causal effects of the value component could be reported. Future experimental research could disentangle the effects of the different variables and report on the role of the relative value of the sourced component.

As mentioned in Section 7.4, the linkage of the incentive scheme to the desired collaborative behavior is a crucial factor. Whereas the implementation of awarding incentive components is obvious, the combination of incentives and punishments in combination with open book accounting features research potential. One could ask the question whether the exchange of cost information can be fostered by providing incentive schemes on an individual or firm level and/or by implementing devices that give either of the parties involved the chance to directly punish the partner in case of a divergent conduct. While this study set its focus on voluntary cooperation that is evoked and affirmed by persuasion, future research could investigate whether cooperation is or should be enforceable through the incentive scheme.

Many researchers have brought up the question whether trust is a prerequisite or a result of collaborative efforts, such as open book accounting. This specific question outlasts the present research, as no concise answer can be provided. In the future, studies aiming to analyze the emergence of trust among firms could compare the application of open book accounting in a trust-creating environment to the use of open book accounting between partners who already trust each other.

Effects of IOCM on profitability need to be analyzed. Just recently Wagner (2008) conducted an exploratory study on the use of different cost management tools within a supply chain. The author indicates that high-performing firms positively differ from low-performing firms in their use of open book accounting. However, in that particular study, open book accounting was defined as the unilateral flow of cost information from the supplier to the buying firm. For the definition as it was used for the present study, open book accounting as the mutual exchange of cost information, the question whether open book accounting will actually have a prosperous impact on the outcomes should be answered. For example, research could analyze the effects of OBA when a next generation of a product is designed and/or if a derivative product is to be designed, just as Everaert (1999) has done for target costing activities. Empirical evidence from the field is desirable on the efficiency effects of IOCM in general and open book accounting in particular.

Opportunism provides a vast field of possible research approaches in inter-organizational cost management. In the present investigation opportunism was evaluated as the perceived fear that the partner will behave opportunistically. The participants were asked whether they

feared that cost information revealed to the partner firm may be used opportunistically, for example, by disclosing it to competitor firms. It is an interesting topic to see whether people will actually engage in opportunistic behavior if offered a chance to do so. Or if the bonding to the exchange partner is strong enough to withstand the allurements. In a continuation of the present design, participants could, for instance, be offered the chance to use the gathered information in negotiation with another company and try to capitalize on the cost information gathered from the original partner company.

This research void implies further investigation on the aspect of active opportunism. Additional merit may lie in the analysis not only of the conduct alone, but also in the analysis of the type of opportunistic behavior. Researchers could investigate the aspect of passive opportunism. More specifically, the participants could be faced with a situation in which active opportunism, that is taking advantage of the partner's revealed cost information, can effectively be prevented and sanctioned by whatever means. Passive opportunism however, is possible. It will be interesting to see if the parties will engage in passive opportunism and shirk. It could be investigated whether participants are willing to adapt to a changing environment and follow the 'norm of flexibility' (See Section 2.2.2). One would ask the question whether the involved parties would be willing to provide the information or cost data necessary to adapt to changed circumstances, or if they will refuse to cooperate and try to take advantage of the situation by showing uncooperative behavior and trying to force the partner into a situation that improves the own terms of trade. Additionally, this design offers the chance to further investigate the still different assumptions of transaction cost economics and exchange theoretical concerning opportunistic behavior.

The aspect of organizational learning and innovation has captured increased attention among organizational researchers (W. M. Cohen & Levinthal, 1990; Das & Kumar, 2007; Doz, 1996; Koza & Lewin, 1998). Fayard et al. (2006) present a research approach in which they transfer the concept of absorptive capacity (Adler, 1965) to the area of inter-organizational cost management. Originally, this concept referred to the 'ability of an economy to absorb and utilize external information and resources' (Fayard et al. (2006) following Adler (1965)). W. M. Cohen & Levinthal (1990) transferred absorptive capacity to the organizational level by defining a firm's absorptive capacity as the 'ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends' (W. M. Cohen & Levinthal, 1990, p. 128). According to Fayard et al. (2006), there is a positive relationship between the absorptive capacity of a firm and the extent of inter-organizational cost management. Further, adopting the operationalization by Tu, Vonderembse, Ragu-Nathan, & Sharkey (2006), the authors propose 4 dimensions that foster IOCM. 1. Prior relevant knowledge, 2. communi-

cations network, 3. communications climate, and 4. knowledge scanning. Based on these influencing factors, it would be an interesting research topic to conduct cross-cultural and/or cross-industrial studies, to evaluate, whether certain cultures or certain industries are more inclined to using inter-organizational cost management. Be it because of cultural differences, be it because of industry-specific cost management knowledge.

The introduction of the regulatory focus in Section 7.3 also brings about research implications for the IOCM area. Findings from social science indicate that content from the same regulatory focus is more likely to have an impact than content that is focus incompatible. This means that information with a promotion focus are more convincing to persons who have a promotion focus and content from a prevention focus are more valuable to persons with a prevention focus. Future research in the area of inter-organizational collaboration could aim at optimizing interaction strategies using a regulatory focus approach. For example, the effectiveness of persuading strategies could be analyzed by identifying an individual's regulatory focus prior to the actual interaction and then either adapting the strategy or not.

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Appendices

A Materials and instructions for the experiment

In this appendix the cost data for the different scenarios is displayed. Additionally, for the better understanding of the design of the experiment, excerpts are presented from the condition in which the participants were in the more powerful position and a specific asset was suggested. This scenario is chosen as the example because it illustrates how the power relation and the relation-specific asset were operationalized in the investigation.

Handout provided by Framing.Inc (supplier)

| Material cost body | |
|--|--------------|
| If casings are made of plastic | Not provided |
| If casings are made of aluminum compound | Not provided |
| If casings are made of steel alloy | Not provided |
| Overhead production | |
| If casings are screwed | \$5,00 |
| If casings are riveted | \$25,00 |
| If casings are welded | \$45,00 |
| Labor cost assembly | |
| If casings are delivered unassembled | \$5,00 |
| If casings are delivered partially assembled | \$25,00 |
| If casings are delivered fully assembled | \$45,00 |
| Overhead handling cost | |
| If casings are unbagged | \$5,00 |
| If casings are single-bagged | \$20,00 |
| If casings are double-bagged | \$35,00 |
| Overhead handling cost with conveyer belt | |
| If casings are unbagged | \$4,25 |
| If casings are single-bagged | \$17,00 |
| If casings are double-bagged | \$29,75 |

Information initially provided to the participants in the large quantity of cost information/specific asset scenario

| Material cost - installation of the lid | |
|---|---------|
| If casings are made of plastic | \$45,00 |
| If casings are made of aluminum compound | \$25,00 |
| If casings are made of steel alloy | \$5,00 |
| Labor cost - installation of the circuit board | |
| If casings are screwed | \$25,00 |
| If casings are riveted | \$15,00 |
| If casings are welded | \$5,00 |
| Labor cost – handling | |
| If casings are unassembled | \$35,00 |
| If casings are partially assembled | \$20,00 |
| If casing are fully assembled | \$5,00 |
| Quality assurance cost | |
| If casings are unbagged | \$45,00 |
| If casings are single-bagged | \$25,00 |
| If casings are double-bagged | \$5,00 |
| Quality assurance cost with conveyer belt | |
| If casings are unbagged – 10% Reduction | \$40,50 |
| If casings are unbagged – 20% Reduction | \$36,00 |
| If casings are single-bagged – 10% Reduction | \$22,50 |
| If casings are single-bagged – 20% Reduction | \$20,00 |
| If casings are double-bagged – 10% Reduction | \$4,50 |
| If casings are double-bagged – 20% Reduction | \$4,00 |

Cost information of the participants' own firm for the scenarios with the specific asset

Handout provided by Framing.Inc (supplier)

| Material cost body | |
|--|--------------|
| If casings are made of plastic | Not provided |
| If casings are made of aluminum compound | Not provided |
| If casings are made of steel alloy | Not provided |
| Overhead production | |
| If casings are screwed | Not provided |
| If casings are riveted | Not provided |
| If casings are welded | Not provided |
| Labor cost assembly | |
| If casings are delivered unassembled | Not provided |
| If casings are delivered partially assembled | Not provided |
| If casings are delivered fully assembled | Not provided |
| Overhead handling cost | |
| If casings are unbagged | Not provided |
| If casings are single-bagged | \$20,00 |
| If casings are double-bagged | Not provided |

Information initially provided to the participants in the small quantity of cost information/no specific asset scenario

| Material cost - installation of the lid | |
|---|---------|
| If casings are made of plastic | \$45,00 |
| If casings are made of aluminum compound | \$25,00 |
| If casings are made of steel alloy | \$5,00 |
| Labor cost - installation of the circuit board | |
| If casings are screwed | \$25,00 |
| If casings are riveted | \$15,00 |
| If casings are welded | \$5,00 |
| Labor cost – handling | |
| If casings are unassembled | \$35,00 |
| If casings are partially assembled | \$20,00 |
| If casing are fully assembled | \$5,00 |
| Quality assurance cost | |
| If casings are unbagged | \$45,00 |
| If casings are single-bagged | \$25,00 |
| If casings are double-bagged | \$5,00 |

Cost information of the participants' own firm for the scenarios without the specific asset

Congratulations! Just recently you have been appointed manager of an electronic device manufacturer. Your first task is to ramp up the production process of the new generation of an electronic device.

The new generation of the electronic device will be the first for which all casings will exclusively be sourced from an outside supplier. The basic specifications have been fixed. Based on the requirements, the company Framing.Inc has been selected for further negotiations.

Framing.Inc is one of several companies which can deliver the casings you need for your production. An analysis of the relevant market has shown:

There are at least 5 alternative suppliers that are able to provide the same quantity and quality. Thus, you have several options!

The casing plays an important role for the protection of the sensitive interior (for example printed circuit boards). Though the casings are crucial for the protection of the circuit board, there are some properties of the casings that can be subject to negotiation. This means that the final design and the combination of the properties may be defined in a negotiation process between the supplier and your company. It is important to know that the finalization of the properties of the casings will have an impact on your own cost structure. That is, the cost structure of Framing.Inc and the cost structure of your company are interdependent. Properties of the product, as it is produced and delivered by Framing.Inc, will directly affect your own cost structure at your firm's level. Even though the cost categories are interdependent, one cost category of Framing.Inc only affects one cost category of your company.

Many competitors of Framing.Inc offer a 5% total price reduction. These alternative sourcing options enhance the bargaining power of

your company. Hence, most likely these price reductions can also be achieved in the negotiations with Framing.Inc.

Finally, the time of the kick-off meeting with Framing.Inc has come.

During the meeting the production manager of Framing.Inc suggests not to negotiate global price reductions, but rather to share relevant cost data among the two companies. The exchange of cost information can be referred to as Open Book Accounting. This procedure is a way to jointly search for inefficiencies and room for improvement in the supply chain set up between the two firms. Framing.Inc's production manager breaks the ice by initially revealing some cost information. These revealed cost information are displayed in table 1 "Cost information provided by Framing.Inc".

The production manager of Framing.Inc indicates that, depending on your reaction to this offering, eventually, further cost information might be revealed. It turns out that Framing.Inc uses a cost accounting system that is quite similar to the one your company uses. Thus, it can be assumed that cost data, which is as detailed as your own, is available on Framing.Inc's side.

Additionally, Framing.Inc presents the proposition of a joint investment in a fully automatic conveyer belt. Framing.Inc proposes that this conveyer belt shall connect the adjacent production sites of your firm and Framing.Inc. This makes it possible to deliver the casings directly to your assembly line. This will not only ensure a faster transportation of the casings to your assembly plant, but it will also lower your quality insurance cost and reduce the number of defects caused by transportation incidents. However, this asset is exclusively of use for the relationship between your firm and

Congratulations! Just recently you have been appointed manager of an electronic device manufacturer. Your first task is to ramp up the production process of the new generation of an electronic device.

The new generation of the electronic device will be the first for which all casings will exclusively be sourced from an outside supplier. The basic specifications have been fixed. Based on the requirements, the company Framing.Inc has been selected for further negotiations.

Framing.Inc is one of several companies which can deliver the casings you need for your production. An analysis of the relevant market has shown:

There are at least 5 alternative suppliers that are able to provide the same quantity and quality. Thus, you have several options!

The casing plays an important role for the protection of the sensitive interior (for example printed circuit boards). Though the casings are crucial for the protection of the circuit board, there are some properties of the casings that can be subject to negotiation. This means that the final design and the combination of the properties may be defined in a negotiation process between the supplier and your company. It is important to know that the finalization of the properties of the casings will have an impact on your own cost structure. That is, the cost structure of Framing.Inc and the cost structure of your company are interdependent. Properties of the product, as it is produced and delivered by Framing.Inc, will directly affect your own cost structure at your firm's level. Even though the cost categories are interdependent, one cost category of Framing.Inc only affects one cost category of your company.

Many competitors of Framing.Inc offer a 5% total price reduction. These alternative sourcing options enhance the bargaining power of

When considering the pros and cons of sharing cost information with Framing.Inc, you take into account several points concerning the situation between your company and Framing.Inc: On the one hand, Framing.Inc has other customers that are competitors of your company, and Framing.Inc could use your cost information opportunistically. For instance, Framing.Inc could offer your cost information to one of your competitors in exchange for better price conditions. On the other hand, your consulting firm says, that the exchange of cost information can lead to significant inter-firm cost savings, as activities between the two firms can jointly be optimized. Further on, you yourself could take advantage of the information you receive from Framing.Inc by using it for negotiations with other suppliers or for exerting pressure on existing suppliers. Nonetheless, sharing cost information might be advantageous for both sides. Furthermore, Framing Inc. has suggested a joint investment.

For the decisive meeting, your management accountant has provided you with all of your company's detailed cost information that is relevant for this issue. They are displayed in table 2 "Cost table – your own company".

Now it is your task to configure the cost information you would like to reveal to Framing.Inc in response to their initial revelation!

Please bring to your mind the interdependent cost structure of Framing.Inc and your firm by answering the following simple questions.

Based on the information provided, please indicate how high the cost incurred will be at Framing.Inc and at your firm depending on the properties of the casings.

Additionally, please indicate the sum of the two costs.

If delivered single-bagged (without conveyer belt):

- (1) Framing.Inc: _____
- (2) Your Company: _____
- (3) Sum: _____

Answer sheet 2

Please indicate for every single cost item whether or not you would like to disclose it to Framing.Inc in your response by either placing a checkmark with “not share” or “share”. You are free to share no information, only selected items, or all cost information.

Please take into account that your action might influence Framing.Inc’s next step in the information exchange process.

| | | | |
|---|---------|---|---------------------------------------|
| Material cost - installation of the lid | | | |
| If casings are made of plastic | \$45,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are made of aluminum compound | \$25,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are made of steel alloy | \$5,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| Labor cost - installation of the circuit board | | | |
| If casings are screwed | \$25,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are riveted | \$15,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are welded | \$5,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| Labor cost – handling | | | |
| If casings are unasssembled | \$35,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are partially assembled | \$20,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casing are fully assembled | \$5,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| Quality assurance cost | | | |
| If casings are unbagged | \$45,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are single-bagged | \$25,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are double-bagged | \$5,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| Quality assurance cost with conveyer belt | | | |
| If casings are unbagged – 10% Reduction | \$40,50 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are unbagged – 20% Reduction | \$36,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are single-bagged – 10% Reduction | \$22,50 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are single-bagged – 20% Reduction | \$20,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are double-bagged – 10% Reduction | \$4,50 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |
| If casings are double-bagged – 20% Reduction | \$4,00 | <i>not share</i> <input type="checkbox"/> | <i>share</i> <input type="checkbox"/> |

Please make sure that you marked every item!

Example of the written instructions for an experimental cell – high relative power and a proposed relation-specific asset - page six

B ANOVAs on the influence of group affiliation

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|------|--------|
| Info. quantity | 1 | 1.47 | 0.55 | 0.459 |
| Spec. asset | 1 | 12.57 | 4.72 | 0.033* |
| Group affiliation | 1 | 0.39 | 0.15 | 0.703 |
| Info. quantity × Spec. asset | 1 | 11.97 | 4.49 | 0.037* |
| Info. quantity × Group affiliation | 1 | 3.46 | 1.30 | 0.258 |
| Spec. asset × Group affiliation | 1 | 0.39 | 0.15 | 0.702 |
| Info. quantity × Spec. asset × Group affiliation | 1 | 0.02 | 0.01 | 0.927 |
| Residuals | 77 | 2.66 | | |

* Significant at the 0.05 level

ANOVA for dependent variable own willingness

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|-------|---------|
| Info. quantity | 1 | 20.36 | 10.50 | 0.002** |
| Spec. asset | 1 | 3.08 | 1.59 | 0.211 |
| Group affiliation | 1 | 0.86 | 0.44 | 0.508 |
| Info. quantity × Spec. asset | 1 | 17.53 | 9.04 | 0.004** |
| Info. quantity × Group affiliation | 1 | 5.88 | 3.03 | 0.086. |
| Spec. asset × Group affiliation | 1 | 3.01 | 1.55 | 0.216 |
| Info. quantity × Spec. asset × Group affiliation | 1 | 0.00 | 0.00 | 0.964 |
| Residuals | 77 | 1.94 | | |

** Significant at the 0.01 level

. Significant at the 0.1 level

ANOVA for dependent variable perceived partner's willingness

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|------|--------|
| Info. quantity | 1 | 6.15 | 4.30 | 0.042* |
| Spec. asset | 1 | 9.01 | 6.30 | 0.014* |
| Group affiliation | 1 | 0.56 | 0.39 | 0.533 |
| Info. quantity × Spec. asset | 1 | 6.67 | 4.66 | 0.034* |
| Info. quantity × Group affiliation | 1 | 0.53 | 0.37 | 0.546 |
| Spec. asset × Group affiliation | 1 | 1.01 | 0.71 | 0.403 |
| Info. quantity × Spec. asset × Group affiliation | 1 | 0.20 | 0.14 | 0.708 |
| Residuals | 77 | 1.43 | | |

* Significant at the 0.05 level

ANOVA for dependent variable perceived fairness and equity

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|------|--------|
| Info. quantity | 1 | 0.01 | 0.01 | 0.916 |
| Spec. asset | 1 | 2.21 | 1.76 | 0.189 |
| Group affiliation | 1 | 1.19 | 0.95 | 0.333 |
| Info. quantity × Spec. asset | 1 | 3.71 | 2.95 | 0.090. |
| Info. quantity × Group affiliation | 1 | 3.06 | 2.44 | 0.123 |
| Spec. asset × Group affiliation | 1 | 1.65 | 1.32 | 0.255 |
| Info. quantity × Spec. asset × Group affiliation | 1 | 2.42 | 1.93 | 0.169 |
| Residuals | 77 | 1.26 | | |

. Significant at the 0.1 level

ANOVA for dependent variable perceived own benefit

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|------|--------|
| Info. quantity | 1 | 2.59 | 1.92 | 0.170 |
| Spec. asset | 1 | 0.56 | 0.41 | 0.522 |
| Group affiliation | 1 | 4.11 | 3.04 | 0.085. |
| Info. quantity × Spec. asset | 1 | 6.99 | 5.18 | 0.026* |
| Info. quantity × Group affiliation | 1 | 6.94 | 5.14 | 0.026* |
| Spec. asset × Group affiliation | 1 | 4.26 | 3.16 | 0.080. |
| Info. quantity × Spec. asset × Group affiliation | 1 | 0.42 | 0.31 | 0.577 |
| Residuals | 77 | 1.35 | | |

* Significant at the 0.05 level

. Significant at the 0.1 level

ANOVA for dependent variable integrated trust

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|------|-------|
| Info. quantity | 1 | 1.11 | 0.74 | 0.394 |
| Spec. asset | 1 | 0.06 | 0.04 | 0.841 |
| Group affiliation | 1 | 0.44 | 0.29 | 0.590 |
| Info. quantity × Spec. asset | 1 | 0.03 | 0.02 | 0.888 |
| Info. quantity × Group affiliation | 1 | 2.77 | 1.84 | 0.179 |
| Spec. asset × Group affiliation | 1 | 1.89 | 1.25 | 0.267 |
| Info. quantity × Spec. asset × Group affiliation | 1 | 2.79 | 1.85 | 0.178 |
| Residuals | 77 | 1.51 | | |

ANOVA for dependent variable fear of opportunism

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|------|-------|
| Info. quantity | 1 | 1.84 | 1.04 | 0.311 |
| Spec. asset | 1 | 0.00 | 0.00 | 0.984 |
| Group affiliation | 1 | 1.53 | 0.87 | 0.355 |
| Info. quantity × Spec. asset | 1 | 4.45 | 2.52 | 0.117 |
| Info. quantity × Group affiliation | 1 | 0.38 | 0.21 | 0.645 |
| Spec. asset × Group affiliation | 1 | 0.03 | 0.02 | 0.893 |
| Info. quantity × Spec. asset × Group affiliation | 1 | 1.53 | 0.86 | 0.356 |
| Residuals | 77 | 1.77 | | |

ANOVA for dependent variable riskiness

| Source of variation | Df | Mean Sq | F | p |
|--|----|---------|-------|----------|
| Info. quantity | 1 | 123.96 | 19.74 | 0.000*** |
| Spec. asset | 1 | 1.34 | 0.21 | 0.645 |
| Group affiliation | 1 | 0.00 | 0.00 | 0.983 |
| Info. quantity × Spec. asset | 1 | 4.85 | 0.77 | 0.382 |
| Info. quantity × Group affiliation | 1 | 0.66 | 0.11 | 0.746 |
| Spec. asset × Group affiliation | 1 | 2.14 | 0.34 | 0.561 |
| Info. quantity × Spec. asset × Group affiliation | 1 | 1.51 | 0.24 | 0.626 |
| Residuals | 77 | 6.28 | | |

*** Significant at the 0.001 level

ANOVA for dependent variable cost information reciprocated

C ANOVAs on the effect on perceived ease of use and perceived usefulness

| Source of variation | Df | Mean Sq | F | p |
|------------------------------|----|---------|------|-------|
| Info. quantity | 1 | 1.11 | 0.73 | 0.397 |
| Spec. asset | 1 | 1.48 | 0.96 | 0.329 |
| Info. quantity × Spec. asset | 1 | 4.01 | 2.61 | 0.110 |
| Residuals | 81 | 1.53 | | |

ANOVA for dependent variable perceived ease of use – exp. 1

| Source of variation | Df | Mean Sq | F | p |
|---------------------|----|---------|------|-------|
| Power | 1 | 0.20 | 0.11 | 0.738 |
| Spec. asset | 1 | 0.02 | 0.01 | 0.927 |
| Power × Spec. asset | 1 | 0.75 | 0.42 | 0.522 |
| Residuals | 40 | 1.80 | | |

ANOVA for dependent variable perceived ease of use – exp. 2

| Source of variation | Df | Mean Sq | F | p |
|---------------------|----|---------|------|-------|
| Power | 1 | 2.21 | 2.47 | 0.133 |
| Residuals | 19 | 0.90 | | |

ANOVA for dependent variable perceived ease of use – exp. 3

| Source of variation | Df | Mean Sq | F | p |
|------------------------------|----|---------|------|-------|
| Info. quantity | 1 | 0.00 | 0.00 | 0.962 |
| Spec. asset | 1 | 0.41 | 0.41 | 0.524 |
| Info. quantity × Spec. asset | 1 | 2.55 | 2.55 | 0.114 |
| Residuals | 81 | 1.00 | | |

ANOVA for dependent variable perceived usefulness – exp. 1

| Source of variation | Df | Mean Sq | F | p |
|---------------------|----|---------|------|-------|
| Power | 1 | 0.41 | 0.38 | 0.539 |
| Spec. asset | 1 | 2.29 | 2.14 | 0.151 |
| Power × Spec. asset | 1 | 0.13 | 0.12 | 0.731 |
| Residuals | 40 | 1.07 | | |

ANOVA for dependent variable perceived usefulness – exp. 2

| Source of variation | Df | Mean Sq | F | p |
|---------------------|----|---------|------|-------|
| Power | 1 | 0.76 | 1.22 | 0.283 |
| Residuals | 19 | 0.62 | | |

ANOVA for dependent variable perceived usefulness – exp. 3