



Opening the black box of management accounting information exchanges in buyer–supplier relationships

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ABSTRACT

The purpose of this paper is to explain the reasons why collaborating firms “open their books” and share management accounting information. We investigate the effect of variables related to the tasks and relationships of single individuals of the partner firms (i.e., task interdependence and analysability, team interdependence and relationship duration) on open book accounting (OBA). Our model controls for firm-level variables (i.e., asset specificity, degree of economic dependence, contract presence, contract comprehensiveness, and firm size) known to influence management accounting information exchanges. By using social network analysis (SNA), the data collected from a fashion firm and its entire set of suppliers shows that the quantity of management accounting information is positively related to task interdependence while having an inverted U-shape relation with the duration of the relationship. In addition, it provides evidence of a positive association with task analysability, whereas we find no relation with team interdependence. The analysis also confirms the importance of firm-level factors in explaining the exchanges of management accounting information. Our conclusions have important implications for the design of OBA in inter-organisational relationships.

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1. Introduction

Over the last few years, the collaboration between firms has emerged as an important business trend. One important theme related to the functioning of these collaborative relationships is the need for “information openness”. To this end, research is investigating the use of the so-called *open book accounting* (OBA) consisting of management accounting information exchanges between firms to support inter-organisational action (e.g., Cooper and Slagmulder, 1999, 2004; Degraeve et al., 2000; Dekker, 2003; Ellram and Siferd, 1998; Ittner et al., 1999; Shank, 1989; Shank and Govindarajan, 1992; Widener and Selto, 1999; Wouters et al., 2005). Management accounting

information is here intended as the financial and non-financial information used by managers to cope with coordination and control issues (Bouwens and Abernethy, 2000). Previous research has generally concentrated on the variables that facilitate the use of OBA mainly at the firm level. For example, Kajüter and Kulmala (2005) concentrate on the firm size and the hierarchical nature of the relationship between the collaborating entities. Other studies (Berry and Rondinelli, 2000; Tomkins, 2001) focus on the long-term commitment of firms to the relationship. Still others focus on the existence of asset specific infrastructure, degree of economic dependence between collaborating organisations, duration of the contract and the number of contractual partners (Axelsson et al., 2002; Carr and Ng, 1995; Dekker, 2003; Kulmala, 2002; Seal et al., 1999; Tomkins, 2001; Hoffjan and Kruse, 2006).

The firm-level perspective neglects the effect of the characteristics of the specific tasks and activities carried

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out by *individuals* at the collaborating firms and some features of their relationships on activating open book accounting. There is a call for research to open the black box of inter-organisational relationships and their underlying management accounting information exchanges by focussing on the specific relationships activated by individuals and not simply on “average relationships” (Dekker, 2003). Our study responds to this call by investigating the effect of some micro variables – related to the tasks and relationships of single individuals of the partner firms (i.e., task interdependence and analysability, team interdependence and relationship duration) – on open book accounting. Our model controls for firm-level variables (i.e., asset specificity, degree of economic dependence, contract presence, contract comprehensiveness, and firm size) known to influence this practice. We include the perspectives of both the buyer and suppliers and collect data from all individuals involved in the inter-organisational management accounting information exchanges related to a specific manufacturing network (Caglio and Ditillo, 2008, 2012).

OBA is conceptualised here as the systematic exchange of management accounting information between legally independent business partners beyond corporate borders that would otherwise be kept secret¹ (Hoffjan and Kruse, 2006; Kajüter and Kulmala, 2005; Mouritsen et al., 2001). Following Hoffjan and Kruse (2006) and Lamming (1993), we examine one key dimension of OBA, i.e., the degree of “openness” or level of transparency operationalised as the amount of management accounting information disclosed between collaborating entities. This dimension, i.e., amount (otherwise labelled as “precision”) (Kulp, 2002) and

“level of detail” (Gerdin, 2005a)), is derived from the MAS literature (Bouwens and Abernethy, 2000; Chenhall and Morris, 1986; Mia and Chenhall, 1994).²

By using social network analysis (SNA), the data collected from 14 managers of a fashion firm and 43 managers of 18 suppliers (a total of 350 relationships) show that task interdependence has a positive relationship with the quantity of management accounting information while having an inverted U-shaped relation with the duration of the relationship, as expected. It also shows that, contrary to our expectations, task analysability has a positive association whereas we find no relation with team interdependence and the quantity of inter-organisational management accounting information exchanged. In line with our expectations, firm size has a positive relationship with the quantity of inter-organisational management accounting information exchanged. Contrary to our hypotheses, asset specificity and economic dependence have a negative relationship with management accounting information, while contract presence has a positive relationship and contractual comprehensiveness has a non-significant effect.

Our conclusions have important implications for the design of management accounting information flows in inter-organisational relationships. The design based on standard criteria identified with reference to an “average” task and a “typical” relationship between individuals of the collaborating firms can have potential negative effects in terms of effectiveness and efficiency of management accounting information flows. Without considering the specific characteristics of the tasks and the relationships among interacting individuals, the risk is that the quantity of management accounting information is too high to control certain tasks (generating problems of efficiency) and too low to control others (generating problems of effectiveness). In addition, the lack of consideration of the duration of the relationship between individuals may result in unnecessary and thus costly levels of openness and formality in the management of the inter-organisational relationships.³ Only by considering that collaborating firms are intertwined in a complex network of differentiated tasks and individuals’ relationships is it possible to develop a customised network of management accounting information flows to control inter-organisational interaction efficiently and effectively.

The structure of the paper is as follows. Section 2 introduces our model and hypotheses development. Section 3 describes the study and the method adopted to analyse data. Section 4 describes the results of our empirical analysis and Section 5 discusses and interprets the findings. Finally, we summarise our contribution to OBA.

¹ There is an open debate regarding the characterization of OBA. In effect, Hoffjan and Kruse (2006) maintain that a consistent definition of open book accounting has not emerged yet because different authors refer to different types of information when using this label. More specifically, some authors maintain that financial information and, in particular, cost information represents the “essence” of OBA, while others talk about both financial and non-financial information, i.e., management accounting information that would normally remain undisclosed beyond corporate borders. For example, Lamming (1993) define OBA as the “sharing of costing information between customer and supplier which would traditionally have been kept secret by each party for use in negotiations” (Lamming, 1993, p. 214). Hoffjan and Kruse (2006) distinguish between information sharing and OBA saying that the latter can be regarded as one aspect of the extensive area of information sharing, which is broader and comprises all data transfers, i.e., all forms of disclosure of valuable information between business partners. According to the authors, the disclosure of cost information is intrinsic to OBA. Other authors provide a broader definition of OBA, implying the exchange between collaborating firms of management accounting information, both financial and non-financial. In this respect, Tomkins (2001) talks about inter-organisational information exchanges referring to “business information”, including information on quality, price and delivery issues, R&D competencies, cost structures, and target costs. Carr and Ng (1995) and Mouritsen et al. (2001) point their attention to cost structure information, capacity saturation, set-ups, cycle times, movement times and delivery information, while Kajüter and Kulmala (2005), even though they focus mainly on cost information (such as raw material costs, labour costs, production overheads, transport costs), include also complementary non-financial information on scraps, capacity saturation, set-ups, cycle times and movement times in their analysis of OBA practices. In line with this second group of authors, in this paper, we consider as OBA all “private” management accounting information exchanged between collaborating firms.

² For completeness, we analyse two other dimensions of OBA (also derived from the MAS literature), namely frequency and scope, although there is no expectation that the relations will differ.

³ We are grateful to one of the anonymous Reviewers for pointing this out.

2. Hypotheses development

Our conceptual model illustrates how specific tasks and activities carried out by interacting individuals and their relationships explain OBA (Hoffjan and Kruse, 2006). Organisational literature has largely debated the relevance of individual tasks and inter-organisational relationships (e.g., Uzzi, 1997; Zaheer et al., 1998). However, the management accounting literature has not explored the effect of individual relationships on the inter-organisational exchanges of management accounting information. We try to fill this gap and explore the role of variables related to the specific tasks, the activities carried out by various individuals of the collaborating firms, and to some features of their relationships on OBA. We focus on the individual boundary spanners⁴ within collaborative firms, whose perspectives, tasks, and relationships are specific and having quite different management accounting information requirements. We are interested in the use of management accounting information for *control purposes*. This information will be used to verify that the actions of the other party are in accordance with expectations and that there are no sources of delay, error, and waste in the activities carried out by the collaborating entities. In other words, since the counterparts' actions are not easily observable given the legal and organisational separateness of the entities of the relationship, we are concerned with the use of management accounting information to effectively monitor how well individuals in the collaborating organisations serve common interests and stick to goals jointly defined (Engel et al., 2002; Gerdin, 2005a).⁵ We argue that inter-organisational management accounting information exchanges take place to control partners and are determined by the specific tasks and relationships activated by boundary-spanners in the organisations.

We draw on previous contributions maintaining that individual interaction can be described in terms of the interdependence of their tasks (Van de Ven et al., 1976), the degree of analysability of the tasks performed (Bensaou and Venkatraman, 1995; Gresov and Stephens, 1993), joint and simultaneous working activities (Van de Ven et al., 1976), and the duration of their personal relationships (Tomkins, 2001; Zaheer et al., 1998).

⁴ Boundary spanners are more directly implicated in the inter-organisational relationships compared to other subjects in the organisation because they exclusively interact with the counterparts and exchange information with them.

⁵ This is an important premise of our work, because recent conceptual and empirical contributions stress the fact that alternative uses of management accounting information (decision-supporting role vs. control role) may have very different relationships with a particular contextual factor (Abernethy and Brownell, 1999; Chapman, 1997; Chenhall, 2003; Gerdin, 2005a; Hartmann, 2000).

2.1. Task interdependence and OBA

Task interdependence,⁶ as suggested by Thompson (1967) and others (i.e., Daft and Macintosh, 1987; Dekker, 2004, 2008), can be defined in terms of the flow of work, materials, and objects between individuals (Gresov and Stephens, 1993; Thompson, 1967; Van de Ven et al., 1976). Based on prior empirical research, we define task interdependence as the degree to which individuals supply input to other individuals to perform their tasks and vice versa (Grandori, 1997; Williamson, 1981).⁷

Task interdependence generates coordination and control problems in inter-organisational settings owing to the lack of the structure and systems of traditional hierarchies (Gulati and Singh, 1998). When one party provides materials, resources, and work to the counterpart, this party needs to monitor the use of these inputs to accomplish activity completion according to common objectives. The management control literature argues that as interdependencies increase, more information, both of financial and non financial nature, is required to provide feedback about actual conditions, deviations from plans, and whether activities are on schedule and resources are used for intended purposes (Cooper and Slagmulder, 2004; Dekker, 2004; Tomkins, 2001).

An opposite view is that when task interdependence increases, management accounting information becomes increasingly incomplete and thus we would expect a reduction in management accounting information exchanges (Chapman, 1998; Hopwood, 1972). Given these contrasting perspectives, we do not predict the sign between task interdependence and the quantity of management accounting information exchanged through OBA.

H1. The management accounting information exchanged is associated with the level of task interdependence.

2.2. Task analysability and OBA

Task analysability is defined as the extent to which the sequence of steps that individuals need to follow in performing the task is made explicit (Bensaou and Venkatraman, 1995). It requires knowledge of cause-effect relationships (Thompson, 1967). It has been argued that when it is not possible or appropriate to formalise activities to perform a task, the need to use information for control purposes increases (Ditillo, 2004; Mia and Chenhall,

⁶ Recent literature reviews point out that although uncertainty is a core contingency factor upon which most contingency-type studies rest (e.g., Chapman, 1997; Chenhall, 2003; Hartmann, 2000), it is often not explicitly recognised; instead, it serves as “the implicit or theoretical factor behind the explicit and operational contingency variable chosen for empirical analysis” (Hartmann, 2000, p. 471). Interdependence represents one important explicit and operational contingency variable. For a more extended discussion on how interdependence can be considered as an important source of uncertainty, see Gerdin (2005a, pp. 303–305).

⁷ Though we acknowledge that other management accounting contributions (Abernethy et al., 2004; Bouwens and van Lent, 2007; Bushman et al., 1995; Keating, 1997; Lambert, 2001) have examined the issue of interdependence, they are not explicitly considered because they are not particularly relevant to the questions studied here, as they focus more on the weight placed on performance measures.

1994; Tushman and Nadler, 1978). In fact, given that the responses to the exceptions have not been specified in advance, it is necessary to verify that the reactive actions of the counterparts are appropriate, non-opportunistic, and consistent with common goals. The management control literature that has drawn on transaction cost economics to develop control archetypes has argued that, when the programmability of activities is low, collaborating parties strive for greater transparency through the provision of performance targets such as quality improvements and cost savings (van der Meer-Kooistra and Vosselman, 2000). In fact, the exchange of information helps reduce information asymmetry and develop a greater awareness of conditions and actions activated by the collaborator. Consequently, we expect a negative relationship between the degree of task analysability and the exchange of management accounting information.

H2. The amount of management accounting information exchanged will increase with the decrease of task analysability.

2.3. Team interdependence and OBA

Team interdependence refers to situations where individuals of the collaborating firms work jointly, in the same place and at the same point in time (Van de Ven et al., 1976). This means that managers who diagnose, problem-solve and collaborate in order to complete their work undertake the work together. There is no measurable time lag in the work between managers, because they simultaneously act upon it. This physical proximity promotes information exchanges, and easy accessibility to individuals makes seeking this information not too costly (Borgatti and Cross, 2003). Therefore, individuals exchange a high amount of management accounting information through face-to-face contacts, dialogues and meetings and in this way (Van de Ven et al., 1976) monitor actions and check whether the desired individual objectives are met (Bouwens and Abernethy, 2000; Ball, 1989; Mintzberg, 1983; Van de Ven et al., 1976). We thus expect to observe a positive relation between team interdependence and quantity of management accounting information exchanged.

H3. The amount of management accounting information exchanged will increase with the increase of team interdependence.

2.4. Duration of the relationship and OBA

Different theoretical perspectives have explored the relevance of the relationship duration. Based on the repeated play logic in the game theory literature (e.g., Kreps, 1990; Raub and Weesie, 1990), Coletti et al. (2005) focus on the repeated interfaces between the business relation counterparts. In an experimental setting, they show that over 20 periods of play, cooperation is greater for participants operating under a control system compared to those operating without one. After 20 periods, trust is greater for those participants who had been operating under a control system compared to those who had not. Participants who used a control system for a sufficient period continue

to be more cooperative compared to those who previously acted in the absence of it. The duration of the relationship, thus, seems to transform the nature of the relationship. In addition, based on social network theory, which has long provided evidence that the configuration of relationships (ties) with others has positive effects on the level of information exchanges between the parties, Tomkins (2001) proposes an 'idealised' model describing the way in which counterparts interact as the relationship moves progressively from an initial phase to maturity and stability. He also proposes that the volume of information exchanged changes with the development of the relationship (Tomkins, 2001).⁸ More specifically, the volume of detailed information required increases at the beginning of the relationship and then decreases as the relationship matures. In line with Tomkins' arguments, we hypothesise an inverted U-shape relationship between the information requirements and relationship maturity. We expect that the exchange of management accounting information will initially increase, but will decrease once the relationship has been soundly established.

H4. An inverted U-shape characterises the relationship between the amount of management accounting information exchanged and the duration of the relationship.

2.5. Control variables: firm level determinants and OBA

Management accounting theorists have concentrated mainly on the role of firm-level determinants in explaining OBA. We include these variables as controls in our model. In particular, we include asset specificity (Dekker, 2003; Kajüter and Kulmala, 2005), economic dependence (Cooper and Slagmulder, 2004; Dekker, 2003; Hoffjan and Kruse, 2006; Kajüter and Kulmala, 2005), the existence and comprehensiveness of a contract (Dekker, 2003; Tomkins, 2001), and the size of the firms involved in the relationship (Kajüter and Kulmala, 2005).

Asset specificity and OBA: The management accounting literature emphasises the potential opportunistic behaviour of the party that has made the investment. One way of controlling that the other party is not behaving opportunistically is to require detailed management accounting information related to the amount of resources invested in the collaboration and to the use of the investment for the common purposes (Fehr et al., 1993, 1997; Fehr and Schmidt, 1999; Wathne and Heide, 2000). Therefore, the higher the amount of asset specificity involved in inter-organisational relationships, the higher the exchange of management accounting information to monitor potential opportunistic behaviours of the counterpart.

Degree of economic dependence and OBA: Economic dependence can unbalance the bargaining power of the parties, thus exposing them to opportunism. According to Hoffjan and Kruse (2006), the exchange of management accounting information can be used as an important

⁸ Though the author does not explicitly use the label 'open book accounting', the information mentioned in the contribution overlaps with that described also in the OBA literature.

monitoring tool to reduce these opportunistic behaviours (Baiman and Rajan, 2002). The higher the economic dependence, the higher the amount of management accounting information exchanged through OBA to safeguard against potential opportunistic behaviours and an unfair distribution of value.

Contract and OBA: The presence and level of comprehensiveness of contracts in inter-organisational relationships have been investigated as the triggers of detailed ex post information exchange (Langfield-Smith and Smith, 2003; van der Meer-Kooistra and Vosselman, 2000). The relationship between contracts and information exchange is best understood through the notion of incomplete contracts (Anderson and Dekker, 2005). These contracts, while written to mitigate anticipated hazards, leave plenty of space for controlling the actions of the counterpart (Anderson and Dekker, 2005; Tomkins, 2001) through the provision of management accounting information. According to this view, if the contract is incomplete, or it is characterised by a low level of comprehensiveness, parties will use more management accounting information to control their reciprocal actions.

Firm size and OBA: Consistent with previous research, we also argue that, as with many other management accounting practices, firm size has an important effect on the use of open book accounting. Larger companies tend to adopt accounting methods more widely compared to smaller ones because they have additional financial and human resources to dedicate to new accounting and control systems, such as OBA (e.g. Kajüter and Kulmala, 2005). Thus, larger firms exchange more management accounting information.

3. Research design

3.1. Research setting

We collect data from the fashion industry in Italy. This setting is particularly suitable for this study for several reasons. Italian fashion houses have introduced innovative organisational solutions able to reconcile flexibility with almost limitless production capacity and high quality products. They do so by developing regular partnerships and outsourcing a large portion of their manufacturing operations to specific suppliers, maintaining only a few functional activities (i.e. design, marketing, and logistics) and product lines in-house. With their suppliers, they share resources, make common investments, and undertake joint transactions. Therefore, they are linked by mutual interdependencies and characterised by the strict need to monitor the entire set of activities along the value chain. These networks of buyer–supplier relationships are considered “ideal” both in the literature and in practice (Djelic and Ainamo, 1999; Uzzi, 1997).

We select a fashion firm that operates in the luxury goods industry and is one of the largest cashmere manufacturers as well as one of the biggest purchasers of the world's finest wools. It has more than 1700 employees worldwide and is structured into two specific business sectors,

textile and luxury goods. The latter is made up of different divisions in charge of the design and production of exclusive sportswear collections for men and women, knitwear, accessories, home, bags, small leather goods, and made-to-measure services distributed through directly operated and specialty stores.

We collect the data from the knitting division of this firm (the buyer firm) and from its whole set of suppliers. Before developing and administering the questionnaire, we conducted a pilot study in the fashion firm through a set of interviews with the senior managers responsible for the relationships with the suppliers. These interviews focused on a function that was considered critical for the interaction with the suppliers, i.e., operations, and on some key managers, i.e., the Managing Director, the CFO, and the COO. They were exploratory in nature and aimed at achieving three objectives: (a) understanding our research setting in more depth; (b) identifying the types and role of management accounting information exchanged between the managers involved in the buyer–supplier relationships; (c) mapping the entire set of managers involved in the buyer–supplier relationships, i.e., the boundary spanners.⁹

The knitting division “*has decentralized a lot of manufacturing activities and manufactures through façons*”. The reasons for such outsourcing relate to the huge variety of products offered. As explained by the Managing Director, “*We have a 360° production but we do not possess all the competencies internally [...] we have built a lot of relationships with other firms [the so called “façonists”] to search for manufacturing excellence*”. The buyer firm has activated multiple relationships with external suppliers and acts as a focal firm of a cluster of enterprises, which are all connected to this central firm but are not interconnected. As a whole, this network of relationships takes the form of a “star network” (Bavelas, 1950; Wasserman and Faust, 1994).

The suppliers, i.e., the “*façonists*”, are in charge of specific activities of the knitting process and contribute significantly to defining the superior features of the product appreciated by the market. In some cases, they even take part in defining the characteristics of products or contributing to the design and realisation of innovative products. The characteristics of *façonists* and the relationships that the buyer firm entertains with them vary. On the one hand, there are more “standard” *façonists* from which the fashion firm buys “*a certain amount of finished products for each season, at a certain date and then we visit them to inspect them and that's it. [...]*”, while on the other hand “*there are small handcrafters who are almost artists [...] there are small laboratories that are specialized in a few activities with very high quality standards*”. With these latter, the firm has tighter and more articulated relationships. These relationships vary also in terms of both the level of the specific

⁹ As recommended in the literature, we produced this map by asking managers to report on their ties (Wasserman and Faust, 1994).

investments required¹⁰ and the existence and comprehensiveness of the underlying formal contracts.¹¹

During the interviews, our respondents provided some interesting examples about the features of the relationships with the *façonists* as well as about some management issues. For example, the product developer of the buyer firm and the production manager of *façonists* often need to carefully discuss and define the specific instructions for performing the tasks necessary to provide the finished products. This is because the buyer firm keeps “*the model development and the ‘placing’ inside the company,*” and performs complementary activities, such as product development and prototyping. The *façonists* generally carry out the engineering and manufacturing of the products. Furthermore, in some situations, people of the buyer firm and those of the *façonists* need to work jointly. An example of situations of this kind can be defined in terms of technical specifications of products usually involving “*the production manager, the product development manager, the quality control manager [of the buyer firm] who are in charge of defining the technical characteristics [of the product] together with the façonists*”.

Regarding the types of management accounting information that flows across the firms, the interviewees clarified that both financial information, e.g., material costs, overheads, research costs, etc., and non-financial information, e.g., lead and delivery times, productivity, and resource consumption, etc., may be exchanged with the *façonists*.¹² The information is quite simple to collect and does not require sophisticated systems or the use of complex costly techniques. In addition, no formal devices, e.g., shared IT systems, are used to support such inter-organisational information flows.¹³ The main aim of such information sharing is to control the partners and to check the state of the relationships with the *façonists*. In par-

ticular, such information is used to verify whether the managers of the external partners meet the objectives of the relationship as well as to control for any opportunistic behaviours.¹⁴

3.2. Data collection

We use a structured questionnaire to collect the data to test our hypotheses. The design of this instrument originated from the pilot study. It draws on the ideas derived from the interviews and the social network literature (e.g., Borgatti and Everett, 1992; Scott, 1991). In particular, the questionnaire is organised into three different sections. The first section contains questions assessing the respondents' characteristics (name and organisational position) and the features of their firms (i.e., revenues, personnel, year of foundation). The second section focuses on the management accounting information exchanges taking place between the managers of the buyer firm and those of the *façonists*. The last section includes questions on the characteristics of the relationships between managers at the buyers and the suppliers' sites, both at the individual and firm level.¹⁵

To understand our analysis, it is important to clarify that our questionnaire reflects a social network, i.e., we designed sections two and three to study the interaction patterns of managers in terms of their information exchanges and their working relationships. In particular, we formulate our questions in a way that allows us to collect relational data.¹⁶ A sample question is, “*How much of your working time do you spend working directly with MANAGER X?*” (see Appendix A). Each respondent had to answer this question for every manager with whom he/she entertained a relationship,¹⁷ i.e., the boundary spanners identified in the pilot study.

Pre-tests of this social network instrument were conducted with the operations manager. A focus group with presentations and interviews with potential respondents

¹⁰ The COO provided the following example of a situation in which the supplier was required to make a specific investment to the buyer firm: “[...] With one of our *façonists*, recently, we revised our agreement concerning the volumes we recurrently grant him based on the fact that we helped him to fund additional production capacity. We did so, even though it is an important commitment on our part, because we want him [the *façonist*] to devote more production capacity to us rather than the capacity he devotes to other buyer firms. We want him to privilege the relationship with us and to neglect the relationships with others. If in the future we will make additional investments then it will also become necessary to regulate this relationship in order to be sure that the *façonist* works for us and in order to grant him a certain amount of production orders along the whole year”.

¹¹ As illustrated by the Managing Director: “There are some cases in which the contractual relationship is not that strong because the relationship started in an informal way as a ‘favour’. Nowadays we are trying to formalise these relationships more and more. [...] there are also *façonists* who like less an excessive formalisation of the relationship”.

¹² Overall, 34 possible types of management accounting pieces of information may be exchanged. This represents the spectrum of management accounting information at its broadest (the maximum number of different pieces of management accounting information potentially exchanged during interactions). For a complete list of these items, see the questionnaire reported in Appendix A.

¹³ On this point, the COO stated that, “The fact that we can control directly their consumption rates allows us to save money and make sure that our customers will get the predetermined number of garments [...] What happens now is that the production manager phones the *façonist* and asks for the information he needs. [...]”.

¹⁴ The COO clarified that to control for any opportunistic behaviours “[...] for the knitting products we just need to weigh the finished product [i.e. those obtained by the *façonist*]. We adjust the weight based on some parameters taking into account the fact that cashmere changes after knitting. In this way, we verify whether there has been an efficient use of materials by *façonists*. We then ask them to give us their net consumption rates...to double check what they say”.

¹⁵ The questions referred to the variables under study are reported in Appendix A. The social network questionnaire included some additional questions that we did not employ in our analysis because they were irrelevant for the specific topic we analysed in this paper.

¹⁶ Traditional data collection and analysis would be concerned with properties, qualities or characteristics, which belong to individual actors, i.e., with *attribute data*. A social network questionnaire, on the other hand, focuses on *relational data*, which refer to the relationships that connect actors to each other and the properties of relational systems (Wasserman and Faust, 1994).

¹⁷ The data collected through this kind of questions need to be subsequently expressed numerically in a matrix form. Each matrix is composed of x rows and x columns, corresponding to the number of all the respondent managers. Each manager has a row and a column and each cell in the matrix reports the value of a specific variable (in the example provided in the text, the amount of time spent working together) referring to the relationships between manager i in the row, i.e., the respondent, and manager j in the column, i.e., one possible counterpart in the relationship.

was also organised. The focus group reviewed the questionnaire items to ensure that the target informants were interpreting them as intended.

3.3. Sample

The sample includes the managers of the knitting division and its 18 suppliers. The informants are managers of different functions with relationships with external counterparts, i.e., the boundary spanners identified with the interviews. The response rate is 95%. The questionnaires of 14 managers of the fashion firm and 43 managers of the suppliers were usable. In total, we study 350 interactions between the managers of the fashion firm and the managers of the suppliers. The respondents from the focal firms include the managing director, the CFO, the COO and the managers working within the production and quality control departments. The buyer firm has revenues of 250 million Euro and 1650 employees. The respondents from the supplier firms include, in every case, the owner and in all but seven firms also include the operations/production manager and in some cases the product development manager is included. All the supplier firms have revenues below 7.5 million Euro and a number of employees ranging from 2 to 56 (mean of 20.32 employees). Details of the respondents from the buyer firm, as well as from the suppliers, are included in Appendix B, together with a visual representation of the network (Fig. 1).

3.4. Measurement of variables

To operationalise our variables, we use measures from prior literature and develop new measures based on the literature as well as on interviews and discussions with managers in the field (Venkatraman and Grant, 1986). We measure two types of independent variables, focusing our analysis on individual tasks and relationship variables while controlling for firm-level variables. The operationalisation of these constructs is presented in Appendix C.

To assess management accounting information exchanges (dependent variable), we construct a set of questions based on our interview data. Our aim is to capture the amount of management accounting information exchanged through OBA.

To this end, we measure the quantity of the management accounting information exchanged (QMAI) by assessing the number of different pieces of such information that each manager exchanges at an inter-organisational level. The measure comprises 34 items referring to different possible types of management accounting information that managers may transfer during their interactions. Thus, QMAI ranges from 0 when no piece of information is exchanged to 34 when all pieces of information are exchanged.¹⁸ The QMAI items are those identified in the OBA literature (i.e., Kajüter and Kulmala, 2005; Mouritsen

et al., 2001) and in our pilot study. In fact, after having developed a set of questions from discussions with numerous management accountants and academics in the early stages of the research, we interview some managers of the firm under investigation to identify the spectrum of management accounting information at its broadest and the level of aggregation of the types of information exchanged.¹⁹

4. Results

Our data are analysed with SNA. This technique is new to the accounting literature,²⁰ but is widely accepted in a large variety of disciplines, ranging from sociology to strategy and organisational studies. All the tests are carried out with the support of specific SNA software UCINET 6 (Borgatti et al., 2002).

The core of our analysis is based on the *Multiple Regression Quadratic Assignment Procedure* (MRQAP).²¹

Before applying MRQAP, to validate our measurement model²² and check for validity and reliability, we factor analyse the individual-level independent variables. A four-factor structure emerged, providing support for the dimensions of our theoretical model. As reported in Table 1, the first factor is composed by four items that represent task interdependence; the second factor includes the items concerning task analysability; the third one is made up of

(q_{ij}). In line with what social network analysis suggests to address memory biases (Koriat et al., 2000), we follow these criteria: when both a_{ij} and b_{ij} are positive, we put the highest in the resulting matrix, if either a_{ij} or b_{ij} were zeros, we take the average (Wasserman and Faust, 1994).

¹⁹ This way of constructing the scale is similar to Gerdin (2005a), even though he considers a different role of management accounting information, i.e., the decision-making role. To measure the amount of management accounting information, he counts the number of decisions in which the information is used. In our work, since we study the control role of management accounting information, we directly count the number of pieces of this information used to monitor the counterparts.

²⁰ To our knowledge, in the management accounting literature, social network analysis has been applied as a descriptive technique by Chapman (1998) with the aim to study how accounting may be used as a tool for organisational control in the coordination of networks facing different degrees of uncertainty and by Masquefa (2008).

²¹ Within the domain of social network analysis, one of the most serious problems related to the testing of hypotheses in both simple and multiple regression models is that the unit of analysis is the dyad, and dyads cannot be assumed independent of one another. In fact, network data are assumed not to consist of independent observations but rather to have varying amounts of dependence on one another according to which row or column they “belong”. In other words, the error terms can be assumed to be autocorrelated to at least some (unknown) degree within rows and columns. A non-parametric answer to the problem of testing the null hypothesis that two network variables are uncorrelated has been proposed and developed at length (Hubert and Schultz, 1976; Hubert and Golledge, 1981; Hubert, 1985). If we generate all correlations that result from permutating the rows and columns of one of the matrices, it is possible to determine the distribution of all possible correlations given the structures of the other matrices. It thus builds into the test statistic the kind of row/column interdependence that is assumed in network data. This permutation procedure is referred to as the quadratic assignment procedure (QAP). For further details, see Krackhardt (1988).

²² The literature review and in-depth interviews as well as pre-tests with the operations managers and a focus group with respondents established the basis for content validity of the survey instrument. However, given the nature of the context we analyse, we could not collect any archival data to undertake any construct validity tests.

¹⁸ It is important to specify that as we ask manager i to report the amount of management accounting information she receives from manager j (a_{ij}) and we also ask manager j to report the amount of management accounting information she provides to manager i (b_{ji}), we transpose the second of the two resulting matrices and we sum them up to obtain a third matrix

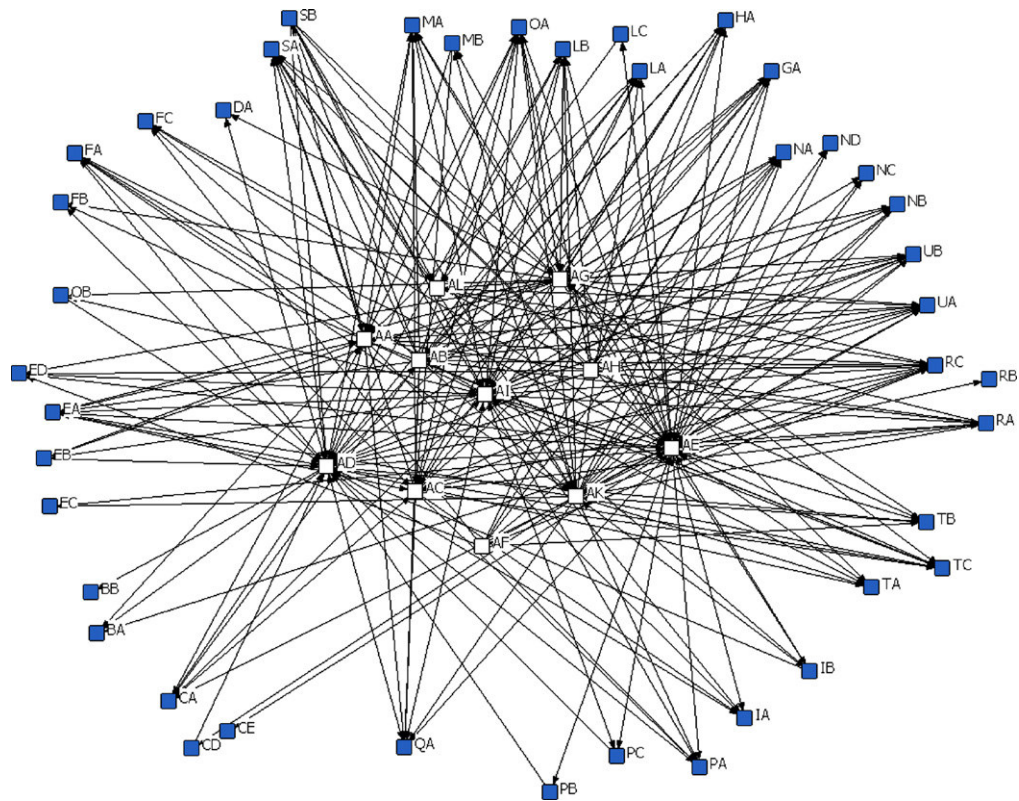


Fig. 1. A representation of the network of respondents and their ties. The above figure illustrates the network of management accounting information exchanges occurring between the managers of the buyer firm and those of its suppliers. The central group of nodes (in white) represents the managers of the fashion firm (the buyer), while the groups of nodes at the periphery (in black) represents the managers of the various suppliers. The nodes have been coded with the same initial letter if they refer to managers belonging to the same firm. Those coded as AA, AB, etc. are managers of the buyer fashion firm. The ties between the nodes show the existence of management accounting information exchanges.

the two items representing team interdependence; finally, the fourth factor is represented by the duration of the relationship. Unidimensionality is tested by looking at factor loadings, which were all above 0.5, with literature suggesting 0.3 as the lowest significant factor loading to define the construct (Hair et al., 1998). To measure reliability, we use

Cronbach's alphas. All scales have Cronbach's alphas higher than 0.7, with the lower limit of 0.6 considered acceptable for newly developed scales and 0.7 for established scales (Nunnally and Bernstein, 1994). The factor structures are shown in Table 1. Harman's one-factor test is conducted to check the presence of common method effect. The result

Table 1
Individual-level factors and results of measurement validation.

Factors	Items	Factor loading	Scale statistics
Task interdependence	Task.Interd.1	0.884	Cronbach's Alpha: 0.822; eigenvalue (variance explained): 3.429 (38.1%)
	Task.Interd.2	0.842	
	Task.Interd.3	0.765	
	Keyness.Indiv	0.589	
Task analysability	Task.Anal.1	0.860	Cronbach's Alpha: 0.707; eigenvalue (variance explained): 1.22 (13.55%)
	Task.Anal.2	0.841	
Team interdependence	Team.Interd.1	0.935	Cronbach's Alpha: 0.761; eigenvalue (variance explained): 1.548 (17.2%)
	Team.Interd.2	0.921	
Duration of the relationship	Duration.Relation	0.974	Eigenvalue (variance explained): 0.94 (10.48%)

Task.Interd.1, Likert-type variable indicating how much managers rely on other managers to obtain the inputs needed to start their work; Task.Interd.2, Likert-type variable indicating how much managers rely on other managers to further their work; Task.Interd.3, Likert-type variable indicating how much managers rely on other managers to complete their work; Keyness.Indiv, Likert-type variable indicating how much managers consider the other managers key for the relationship; Task.Anal.1, Likert-type variable indicating the extent to which the task of a manager has been described in a written format and there are manuals, procedures or the like that could guide them when doing their job; Task.Anal.2, Likert-type variable indicating the extent to which the task of a manager has been described and detailed verbally; Team.Interd.1, percentage amount of time spent negotiating, reaching an agreement and defining the conditions of the relationships; Team.Interd.2, percentage amount of time spent working jointly with the partner manager; Duration.Relation, duration of the relationship (years).

suggests that common method bias is not of great concern and thus is unlikely to confound the interpretations of our results. In fact, the first (largest) factor does not account for a majority of the variance (35%).

After having defined the factors, we calculate the correlations among these factors and the firm-level control variables to check for potential multicollinearity problems. As reported in Table 2, the results do not indicate issues with multicollinearity.

We use the MRQAP-procedure (double Dekker semi-partialling method²³) to regress the dependent variable on the independent factors and the firm-level control variables. We also include some additional controls to complement individual variables and check whether the organisational position of the respondents as well as their perception of the relevance of the shared information influences the quantity of management accounting information exchanges.²⁴

Table 3 presents the MRQAP estimation results.²⁵ The effects of the independent and control variables on the quantity of management accounting information exchanged through OBA (QMAI) are listed in columns. The influence of individual tasks and relationship variables is depicted in Model 1. All the relationships are significant ($p < 0.01$), thus confirming the influence of individual tasks and relationship factors on OBA. Model 2 accounts also for the influence of the additional individual control variables. In particular, the organisational position of the respondents shows a positive and significant effect ($p < 0.01$) on the quantity of management accounting information exchanges. On the other hand, the relationship with the perceived usefulness of information is significant at the 0.10 level of confidence ($p < 0.10$). Model 3 includes the test and firm-level control variables. All firm level variables are significant predictors of the amount of information exchanged except for contractual comprehensiveness. The R^2 reported in Table 3 supports the relevance of our models. The addition of the individual control variables significantly increases the R^2 (from 0.145 to 0.273). The increase due to firm-level control variables is only moderate (from

0.273 to 0.346). This suggests that the entire set of variables contributes considerably to explaining the management accounting information exchanges between firms.

5. Discussion

Our study seeks to understand the factors that explain why collaborating firms open their books and share management accounting information that would otherwise be kept private. This has important implications for the design of inter-organisational management accounting information systems. Our results show that to understand OBA, it is not enough to consider firm-level variables. Instead, it is necessary to *open the black box* to collect detailed information about the specific tasks and activities and the exact relationships taking place between the interacting individuals of the collaborating firms. Companies can combine different forms of management accounting information exchanges at one level to achieve information flows that are unique at a higher level. In addition, individuals may have a different propensity to exchange management accounting information if the receiver is perceived 'to be an important someone' and not simply a generic counterpart. This means that a company always has a mix of inter-organisational information flows, including some detailed and frequent, and some others narrower and occasional. Therefore, to design inter-organisational management accounting information systems, the individuals' tasks and relationships need to be considered. We thus conceive a theoretical model including these variables. Drawing on previous contributions, we maintain that the interdependence of the individuals' tasks (Van de Ven et al., 1976), the level of their tasks analysability (Bensaou and Venkatraman, 1995; Abernethy and Brownell, 1997), the joint and simultaneous working activities (Van de Ven et al., 1976), and the duration of their relationships (Zaheer et al., 1998) affect inter-organisational management accounting information exchanges. We control for firm-level variables previously investigated in the management accounting literature, namely asset specificity (Dekker, 2003), economic dependence (Hoffjan and Kruse, 2006), contracts (Anderson and Dekker, 2005), and firm size (Kajüter and Kulmala, 2005). Our evidence indicates that individual tasks and relationships variables have a significant explanatory power in explaining the use of management accounting information, thus confirming the importance of considering individuals and their patterns of interaction when studying inter-organisational management accounting.

Our results support an association between task interdependence and inter-organisational management accounting information exchanges and indicate that when task interdependence increases, partners exchange a higher quantity of management accounting information. This positive relationship suggests that in inter-organisational contexts in which the tasks of individuals are interdependent, the exchange of management accounting information is necessary to ensure that reciprocal activities are on schedule and that resources are employed for established uses. Our findings confirm Tomkins' (2001) theoretical model indicating that the higher the level of

²³ There are different permutation methods for performing the MRQAP analyses. We chose this one because it has the distinctive advantage that the significance test is the least bias of all the possible permutation methods (Dekker et al., 2003; Krackhardt, 1988).

²⁴ To measure the organisational position of the respondents, we introduced three dummy variables, each assuming the value of 1 if the respondent was respectively the owner, the product developer, or the manager of operations, these three roles being the most important boundary spanners in this kind of relationships. In addition, the perceived relevance of information was measured by asking respondents, on a Likert-type scale ranging from 0 = not at all to 5 = very much, the extent to which the information exchanged is useful for the activities related to the inter-organisational relationship. We are grateful to one of the anonymous reviewers for pointing this out.

²⁵ The procedure adopted is based on a two-step algorithm, which, in the first step, performs a standard multiple regression across corresponding cells of the dependent and independent matrices and in the second step, randomly permutes rows and columns (together) of the dependent matrix and re-computes the regression, storing resultant values of R^2 and all coefficients. This step is repeated 2000 times in order to estimate standard errors for the statistics of interest. For each coefficient, the program counts the proportion of random permutations that yields a coefficient as extreme as the one computed in step one (Borgatti et al., 2002).

Table 2Correlations among individual-level factors and firm-level control variables ($n = 350$).

	Task interdependence	Task analysability	Team interdependence	Duration of the relationship (SQR)	Asset.Spec	Econ.Depend	Contract.Presence	Contract.Compreh
Task interdependence								
Task analysability	0.000							
Team interdependence	0.000	0.000						
Duration of the relationship (SQR)	0.062	−0.005	−0.013					
Asset.Spec	0.029	−0.084	0.147	0.226				
Econ.Depend	0.072	0.021	0.034	0.165	0.018			
Contract.Presence	−0.109	0.011	0.095	0.177	0.376**	0.185		
Contract.Compreh	0.048	−0.027	0.044	0.045	0.129	0.110	0.164	
Size	−0.008	−0.007	−0.055	−0.093	−0.187	0.195	0.105	0.019

*** $p < .01$; ** $p < .10$. Task Interdependence: factor comprising the four items of task interdependence; task analysability: factor comprising the two items of task analysability; team Interdependence: factor comprising the two items of team interdependence; duration of the relationship (SQR): factor comprising the duration of the relationship squared; Asset.Spec: % amount of resources invested specifically to sustain the relationship; Econ.Depend: economic dependence as the value of the average purchases over the total purchases of the company in a year; Contract.Presence: contract presence (dummy variable); Contract.Compreh: Likert-type variable indicating the extent to which the terms of the relationship have been defined in a formal contract; size: firm size (as number of employees).

** $p < .05$.

interdependence between associated parties, the higher the intensity of information exchanges.

Hypothesis 2 is not confirmed. We expected a negative relationship between task analysability and OBA because when activities are pre-specified verbally or through rules and procedures, it is less necessary to verify that the actions of the counterparts are appropriate through the exchange of management accounting information. We do not find support for this hypothesis. Contrary to our expectations, the relation between task analysability and OBA is positive indicating that when tasks are

highly analysable more management accounting information to coordinate and control interactions is exchanged. Some previous contributors (Hopwood, 1972; Daft and Macintosh, 1981; Chapman, 1998) support these findings. They have argued that in highly analysable settings, parties can rely on more quantitative forms of financial and non-financial information whereas when tasks are not analysable such quantitative information does not adequately capture the actions of the collaborating partners. It is also likely that in this context, contracts will be more explicit thus enhancing the cost-effectiveness

Table 3

MRQAP regressions.

	Hypotheses	Model 1	Model 2	Model 3	Results
Test variables					
Task interdependence	?	0.331 ***	0.344 ***	0.372 ***	+
Task analysability	—	0.144 ***	0.218 ***	0.219 ***	+
Team interdependence	+	−0.083 ***	0.000	0.009	NS
Duration of the relationship (SQR)	—	−0.118 ***	−0.072 ***	−0.057 ***	—
Control variables					
Information relevance	?		−0.025 *	0.008	NS
Organisational position	?				
– Operations			0.248 ***	0.224 ***	+
– Owner			0.487 ***	0.524 ***	+
– Product development			0.098 ***	0.068 ***	+
Firm-level control variables					
Asset.Spec	+			−0.066 ***	—
Econ.Depend	+			−0.082 ***	—
Contract.Presence	—			0.212 ***	+
Contract.Compreh	—			−0.004	NS
Size	+			0.179 ***	+
R^2		0.146	0.275	0.348	
Adjusted R^2		0.145	0.273	0.346	

*** $p < .01$; ** $p < .05$; * $p < .10$. Task interdependence: factor comprising the four items of task interdependence; task analysability: factor comprising the two items of task analysability; team interdependence: factor comprising the two items of team interdependence; duration of the relationship (SQR): factor comprising the duration of the relationship squared; information relevance: Likert-type variable measuring the perceived relevance of information; organisational position: three dummy variables each assuming the value of 1 if the respondent was, respectively, the owner, the product developer, or the manager of operations; Asset.Spec: % amount of resources invested specifically to sustain the relationship; Econ.Depend: economic dependence as the value of the average purchases over the total purchases of the company in a year; Contract.Presence: contract presence (dummy variable); Contract.Compreh: Likert-type variable indicating the extent to which the terms of the relationship have been defined in a formal contract; size: firm size (as number of employees).

of using management accounting information to monitor and control the meeting of pre-specified standards of performance. When activities are poorly understood, coding schemes are difficult to develop and information is difficult to share. In addition, the resulting positive relationship can be explained by the fact that we consider an inter-organisational context in which authority cannot be applied to enforce pre-defined rules and procedures; thus, compliance can be checked mainly through the exchange of related management accounting information.

We do not find support for [hypothesis 3](#) which assumes a positive relation between team interdependence and OBA. There is no significant relation once we include the control variables. However, we do find that the position of the manager in the buyer/supplier firm does matter, suggesting that the interface between the collaborating firms might be organised around differentiated patterns of information exchanges between boundary spanners occupying different positions.

Finally, [hypothesis 4](#) is confirmed by our evidence suggesting that duration is an important explanatory variable of management accounting information exchanges. More specifically, the link between the relationship duration and the amount of management accounting information exchanged is positive in the initial phases of the relationship and then tends to decline in later stages, thus supporting the expected inverted U-shape pattern between these two variables. The first trend may be explained in that while the relationship between the managers progresses over time, they may be more willing to exchange a higher amount of management accounting information through OBA, owing to the level of confidence that they progressively develop in each other. This supports prior research. [Tomkins \(2001\)](#) theoretically argues that the volume of detailed, exchanged information increases with the maturity of the relationship. Similarly, [Coletti et al. \(2005\)](#) empirically shows that with the development of the relationship, the information reported at the inter-organisational level tends to activate a virtuous circle of cooperation and additional exchange of information. However, in the later life of the relationship, the second trend is that the parties involved in the relationship gradually reduce the level of management accounting information exchanged through OBA. While they open their books for specific projects to achieve transparency of actions/profits, measure the results, and explore possibilities for ‘milking’ what they have, they reduce the volume of management accounting information exchanged because repeated interaction between trading parties and multiple period interaction decrease the likelihood of opportunistic behaviour, thus requiring less management accounting information exchanges to control for such behaviour ([Baiman and Rajan, 2002](#)). This trend has important implications for the stabilisation of the relationship, because, as suggested by [Phua et al. \(2011\)](#), the use of mechanisms that generate trust (and management accounting information can be seen as one of them) at the very beginning of the agreement consolidates the inter-organisational relationship and reduces the likelihood of switching collaborating partners.

Our analysis confirms the importance of firm-level factors in explaining the exchanges of management accounting information. However the signs of the predictions are not confirmed (except for the one related to firm size). In fact, the relationship between asset specificity and OBA is negative; as the former increases, the amount of inter-organisational management accounting information exchanges decreases. This result contradicts previous literature reporting a positive relationship between asset specificity and OBA ([Dekker, 2004](#)). Prior research interpreted OBA as a “protection” tool to check for the potential opportunistic behaviours of the partner who made the relationship-specific investment ([Dekker, 2003, 2008](#)). [Dekker](#) argues that OBA discourages and reduces the likelihood of opportunistic behaviour, and thus in situations of high asset specificity the amount of information used increases. On the contrary, our negative association can be explained by referring to organisational economics ([Williamson, 1985; Heide and John, 1990](#)), which suggests that relation-specific investments²⁶ unbalance the relative weight of parties creating a lock-in situation where one counterpart is dependent on the other because it has sunk its investment that has no alternative uses. Such a lock-in situation changes the interaction between the two parties from an unconstrained bargaining or voluntary exchange to a command structure within which the party that has made the investment has a lower possibility to retaliate ([Wathne and Heide, 2000](#)). For this reason, the need to exchange management accounting information decreases because of the vulnerability of the partner who invested in the idiosyncratic asset. The locked-in party cannot exit the relationship without incurring significant economic losses and thus is less likely to engage in opportunistic behaviour.

This lock-in notion is also useful to interpret the relationship between economic dependence and the quantity of management accounting information exchanged. In effect, this relationship, contrary to expectations, is negative, indicating that a greater dependence of one party on the other decreases the need for exchanging management accounting information for control purposes.

The relationship with contractual comprehensiveness is not significant, the one between the contract presence and management accounting information exchanged through OBA is positive, thus contradicting some conclusions of previous literature, which identifies a complementary link between information and contracts. [Dekker \(2004\)](#), for example, suggests that if the terms and conditions of the relationship are not specified in a contract, the exchange of management accounting information is necessary to manage the inter-organisational transactions, implying that the relationship not regulated through a contract would require a greater need for exchanging information. In contrast, our findings seem to indicate a reinforcing relationship between the existence of the contract and the amount of management accounting information exchanged through OBA. Our data confirm the explanation

²⁶ In our case, this happens when the buyer firm develops a new product and, to produce it, asks the *façonist* to buy new equipment or to revise the manufacturing process.

Table 4

Summary of all the MRQAP regressions (with QMAI, FMAI and SMAI as dependent variables).

	Hypotheses	Results QMAI	Results FMAI	Results SMAI
Test variables				
Task interdependence	?	+	+	+
Task analysability	—	+	+	+
Team interdependence	+	NS	—	+
Duration of the relationship (SQR)	—	—	—	—
Control variables				
Information relevance	?	NS	NS	+
Organisational position	?			
– Operations		+	+	+
– Owner		+	+	+
– Product development		+	NS	+
Firm-level control variables				
Asset.Spec	+	—	+	—
Econ.Depend	+	—	NS	—
Contract.Presence	—	+	+	+
Contract.Compreh	—	NS	—	+
Size	+	+	+	+
R^2		0.348	0.194	0.349
Adjusted R^2		0.346	0.191	0.347

NS = not significant. QMAI: quantity of the management accounting information exchanged; FMAI: frequency of the management accounting information exchanges; SMAI: scope of the management accounting information exchanges; task interdependence: factor comprising the four items of task interdependence; task analysability: factor comprising the two items of task analysability; team interdependence: factor comprising the two items of team interdependence; duration of the relationship (SQR): factor comprising the duration of the relationship squared; information relevance: Likert-type variable measuring the perceived relevance of information; organisational position: three dummy variables each assuming the value of 1 if the respondent was respectively the owner, the product developer, or the manager of operations; Asset.Spec: % amount of resources invested specifically to sustain the relationship; Econ.Depend: economic dependence as the value of the average purchases over the total purchases of the company in a year; Contract.Presence: contract presence (dummy variable); Contract.Compreh: Likert-type variable indicating the extent to which the terms of the relationship have been defined in a formal contract; size: firm size (as number of employees).

proposed by [Anderson and Dekker \(2005\)](#) who argue that when the terms and conditions of a relationship are specified in a contract, there is a need to exchange information to monitor that the terms of the contract are met. Finally, our expectation concerning size is confirmed, thus suggesting that bigger firms are more endowed with resources that can be used to enhance openness and share management accounting information with their collaborating counterparts.