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Trust and Control in Evolving Inter-organisational Relationships: Evidence from the Aerospace Industry

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Structured Abstract:

Purpose – This paper contributes to debates about the relationship between trust and control in the governance of inter-organisational relationships. In particular, we focus on the question of how the relationship between trust and control shifts over time.

Design/methodology/approach – An in-depth case study was conducted in a company operating in the aerospace industry. We aim to understand this company's practices and, at the same time, to use our case study to deepen our knowledge of the complex trust/control nexus. We follow the changes in the relationship between trust and control as the company restructured its supply chain, and discuss issues which it had to address in the later phases of the supply chain restructuring.

Findings – The paper illustrates the duality of the trust/control nexus. We show how the studied company coped with the complex relationships with its suppliers as collaboration increased. We identify particular control mechanisms that the company developed to manage such complexity, such as a supplier strategy and a relationship profile tool.

Research limitations – The paper studies supply chain restructuring and the changing relationship of trust and control over time only from the perspective of the assembler/manufacturer which 'owns'/manages the supply chain.

Originality/value – We observe a move from inter-personal trust to inter-organisational trust. Furthermore, we illustrate how managers can intervene to maintain and stabilise trust and ensure that trust and control do not degrade or escalate beyond desirable levels.

Keywords: Trust, Control, Duality, Inter-organisational relationships, Supply chain maturity model, Aerospace industry

Article Classification: Research paper

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1. Introduction

Various scholars have explored the way in which trust is constituted in inter-organisational relationships. Although referring specifically to the context of management control within organisations, Merchant (1985) noted that "almost every control system involves some degree of trust that the individuals of concern will do what is best for the organization without any, or with only incomplete, monitoring of actions or results" (p. 39). It is only relatively recently that researchers have started to examine the relationship between trust and control in inter-organisational relationships and to date no consensus has been reached (see, for example, Caglio and Ditillo, 2008; Chua and Mahama, 2007; Dekker, 2004). However, trust is important in inter-organisational relationships, as trust assists in resolving the paradox of inter-organisational relationships where partners can also be competitors. The existence of trust enables such partners to exchange sensitive information and promotes interaction and commitment.

Although some studies have explored the relationship between trust and control in inter-organisational relationships, how this relationship shifts over time has not been extensively studied (see Tomkins, 2001, for a notable exception). While Tomkins (2001) highlighted that the relationship between trust and control could change as the relationships between the partners change, much of the literature explores the relationship between trust and control from a rather static perspective (Coletti *et al.*, 2005; Das and Teng, 2002) and as a consequence it fails to offer insights into the processes through which trust develops as inter-organisational relationships mature. In general terms, it is necessary to achieve a balance between trust and control (Das and Teng, 2001), but this is unlikely to be a simple and static balance as inter-organisational relationships themselves change over time (Tomkins, 2001). Even though the relationship between trust and control may change as the relationship changes, the existing literature adopts a rather static approach in studying the relationship between trust and control. However, there are calls in the literature for research to adopt a more dynamic approach and to study trust and control across the life cycle of an inter-organisational relationship (see, for example, Das and Teng, 2002; Langfield-Smith, 2008). Furthermore, other academics have called for further research into the trust building process (Caglio and Ditillo, 2008; Free, 2008; Meira *et al.*, 2010).

In this paper we examine the relationship between trust and control in inter-organisational relationships and, in particular, how trust develops as inter-organisational relationships mature. We study the inter-organisational relationships of a company in the aerospace industry as it restructured its supply chain. Although studies of supply chains are increasingly popular in a number of disciplines, they have received only relatively moderate attention from accounting scholars. We adopt a longitudinal perspective and study the trust/control nexus as the studied supply chain moved from arm's length relationships to (eventually) partnerships. To provide a structure for our analysis of how the relationship between trust and control shifts over time we draw on the supply chain maturity model (SCMM) of Berry *et al.* (2000). More specifically, we study how the aerospace company moved from (1) arm's length relationships with its suppliers (*autonomous firm phase*) to (2) identifying preferred suppliers (*serial dependence phase*), then to (3) increased collaboration (*reciprocal dependence phase*) and finally to (4) establishing partnerships with preferred suppliers (*mutual dependence phase*).[1] We argue that in the early phases the trust/control nexus can be conceptualised as a *dualism*. However, as we will show, over time as the supply chain matures and relationships become more collaborative and complex we need to understand the trust/control nexus as a *duality*. We thereby contribute to the discussions of the relationship between trust and control in the governance of inter-organisational relationships; specifically we demonstrate that the relationship shifts over time. Although our data does not enable us to explain in detail how or why it changed over time, we are able to examine and compare the relationship between trust and control in each of the four phases of the SCMM.

The paper has two dimensions; firstly, we examine the process of moving to a 'mature' supply chain and secondly we explore issues which arise when the supply chain has matured. Due to the importance and complexity of the later phases of the SCMM, and the duality of trust and control in those phases, we will focus more on those later phases: viz., the reciprocal dependence phase and mutual dependence phase. We will describe mechanisms developed in practice to manage collaboration in these later phases, and in particular mechanisms designed to maintain trust in an extended supply chain where there is significant staff turnover. In such a context, we observed an attempt to standardise and depersonalise trust in order to provide a more formalised approach for managing collaboration. The remainder of the paper is structured as follows. In the following section we discuss the notion of trust and the literature on the trust/control nexus. Then we discuss our research design and subsequently present our case study. We conclude by discussing our findings and their implications.

2. Trust and Control: Theoretical Underpinnings

Trust is frequently referred to as the "willingness of one party to relate with another in the belief that the other's actions will be beneficial rather than detrimental to the first party" (Child and Faulkner, 1998, p. 45); where this willingness "is held without undue doubt or suspicion and in the absence of detailed information about the actions of that other party" (Tomkins, 2001, p. 165) or "irrespective of the ability to monitor or control that other party" (R. C. Mayer *et al.*, 1995, p. 712). As such, trust provides the basis for an expectation which removes (or at least reduces) the fear that the other party will act opportunistically (Bradach and Eccles, 1989; Gulati, 1995). This expectation can be based on contractual, competence and/or goodwill trust. *Contractual trust* reflects accepted standards of honesty and is the expectation that the other party will fully honour the agreement (oral or written). Contractual trust is embedded in the transaction and usually exists prior to contracting (van der Meer-Kooistra and Vosselman, 2000). *Competence trust* reflects the confidence that the other party has the necessary capabilities to perform the task satisfactorily (Sako, 1992). Competence trust is often related to objective expectations, such as the partner's management or technical capabilities, skills, know-how and reliability (Das and Teng, 1998; Dekker, 2004). *Goodwill trust* "is a sure feeling that trading partners possess a moral commitment to maintaining a trading relationship" (Sako, 1992, p. 10). Shared norms and values, the absence of opportunistic behaviour in the past, and an open commitment and reciprocity are preconditions for the establishment of goodwill trust (Sako, 1992).

The literature provides a plethora of classifications and different concepts of trust, though many concepts seem to share similarities. For example, Nooteboom (2002) distinguished thin and thick trust, where thin trust arises from macro sources, such as the institutional environment of the partners (i.e. norms, values, laws), while thick trust originates from micro sources, such as reputation, friendship, routines, etc., and is therefore more personalized. Thin trust only compensates for the possibility of negative behaviour, without creating any positive expectations, and thus is a necessary but not a sufficient condition for the continuance of an inter-organisational relationship. As such, thin trust needs to be reinforced by the development of thick trust. Building on thin trust, partners when entering into a new relationship "must have the willingness" to undertake behavioural risks, and form positive expectations about the other partners' behaviour (van der Meer-Kooistra and Vosselman, 2010, p. 91). Such positive expectations, through processes of trust building, may result in thick trust.

Various claims have been made in literature about the relationship between trust and control and studies have identified complex interconnections between them. Some scholars conceptualise the trust/control nexus as a dualism, where "trust and control are two separate routes to risk reduction" (Das and Teng, 2001, p. 276). Studies that treat the trust/control nexus as 'distinct linkages' have shown that trust can be an *alternative* to *or substitute* for control. Knights *et al.* (2001, p. 314) pointed out that "a long tradition of management thought conceptualizes trust and control as opposing alternatives", where formal control allows the development of limited trust and vice versa. For example, the existence of trust can mitigate the need for control, especially in cases where activities and output cannot be measured with any certainty (see Dekker, 2004; Tomkins, 2001; van der Meer-Kooistra and Vosselman, 2000; Vosselman and van der Meer-Kooistra, 2006). So if trust is damaged or reduced, there will be more emphasis on formal control, while if trust increases, there is less need for formal control (Inkpen and Currall, 2004; Vlaar *et al.*, 2007). On the other hand, the establishment of more control mechanisms will reduce the need for trust. Furthermore, Free (2008) showed that the extensive implementation of control can actually *damage* established trust.

Other studies, however, see the relationship between trust and control as a *complementary* one, where trust and control reinforce each other. Cooper and Slagmulder (2004) conceptualised trust as a *necessary condition* for the adoption of specific control techniques, such as open-book accounting. The development of both contractual and goodwill trust can mitigate the risk of opportunistic behaviour between the partners and the possible abuse of the unequal bargaining power created by information asymmetry (Sako, 1992; van der Meer-Kooistra and Vosselman, 2000). Inkpen and Currall (2004) argued that in a supply chain relationship the selection of initial control mechanisms will depend on the level of trust between the partners. Furthermore, a close relationship will not develop unless there is trust (Das and Teng, 1998; Tomkins, 2001). In addition, Tomkins (2001) claimed that in the early and middle stages of the development of a relationship, control mechanisms help trust to develop, as a certain level of trust is needed to achieve effective control over one's partners, though in later more mature stages, further control can harm trust. Control mechanisms generate information which can promote the development of competence trust (Das and Teng, 2001). Higher levels of control enable managers to interpret their partners' behaviour (Vlaar *et al.*, 2007) as control mechanisms help managers to develop shared expectations and to coordinate their activities (K. J. Mayer and Argyres, 2004). Furthermore, through regular contacts, the development of mutual interests (Das and Teng, 2001; Langfield-Smith and Smith, 2003) and the two-way flow of information derived from the application of control mechanisms (Sako and Helper, 1998), goodwill trust can be enhanced. The closer the partners work together, the greater the development of goodwill trust (Langfield-Smith, 2008).

In contrast to the literature that sees trust and control as a dualism, Möllering (2005) argued that trust and control should be conceptualised as *duality*, as they "each assume the existence of the other, refer to each other and create each other, but remain irreducible to each other" (p. 284). Even though Möllering saw control mechanisms only as monitoring mechanisms, he claimed that trust assumes the existence of control and control assumes the existence of trust, in such a way that one is not sufficient if it is not supported by the other. Khodyakov (2007) studied the processes in creative organisations and provided empirical evidence that trust and control are mutually irreducible concepts that are always co-present. He argued that during his study "it was hard to understand when collaboration is facilitated by trust or control, which suggests that these governance strategies cannot be fully understood without considering the roles both of them play at the same time" (ibid, p. 15). Möllering's (2005) and Khodyakov's (2007) comments about trust and control as dualities are not alien to the accounting literature. Vosselman and van der Meer-Kooistra, in their 2009 paper, pointed out that control and trust can be seen as highly interrelated complements, which are instrumental in absorbing uncertainty, and that one cannot exist without the other. They conceptualised the trust/control relationship as an interactive one, whereby it can be both complementary and supplementary at the same time in order to reach positive expectations about future behaviour (also, see Das and Teng, 1998). Control mechanisms can be seen as the carriers of trust, as they create a platform that will encourage and build further trust. Embedded control structures, which provide a basis for the development of thick trust, mitigate the fear that the other party might engage in opportunistic behaviour (van der Meer-Kooistra and Vosselman, 2010). Vosselman and van der Meer-Kooistra (2009) claimed that "a trust-based pattern is not necessarily a substitute for formal control, but that trust (building) may interact with formal control as it is incorporated in a governance structure" (p. 6).

Vélez *et al.*, (2008) studied the influence in management control systems on firmly established trust in the mature stages of open-ended inter-organisational relationships. Drawing on a longitudinal case study of the distribution channels of a manufacturing company, they argued that greater trust can be built through the use of management control systems, even where trust is already high. Similarly, Langfield-Smith and Smith (2003, p. 304) pointed out that "trust may be compatible with the development of tighter accounting controls and contracts if trust is already well-established and those controls develop in a supportive and cooperative manner involving both parties". As van der Meer-Kooistra and Scapens (2008, p. 381) explained, "trust can be built where the governance of these relationships provides sufficient structure to mitigate the risks which are involved in co-operation between independent parties who may have different motives and interests, while at the same time allowing individual capabilities and knowledge to be exploited for the mutual benefit of all the parties".

As we see, contradictory claims/findings have been reported in the literature. On the one hand, control mechanisms can have negative effects on trust in later stages of a relationship where trust is well established (Free, 2008; Tomkins, 2001). Similarly, Dekker (2004) argued that trust can be damaged in cases where control mechanisms exceed what is necessary to safeguard the activities. On the other hand, other studies (Halinen *et al.*, 1999; Vélez *et al.*, 2008) have shown that control mechanisms cannot damage trust if there is an expectation of the continuity in the relationship. While introducing additional control mechanisms could damage trust when the 'maximum' level of confidence has been reached in a one-off relationship, if the relationship is open-ended and expected to continue, additional control mechanisms could contribute to the stability of the relationship and facilitate its continuing evolution (Halinen *et al.*, 1999; Vélez *et al.*, 2008). Similarly, Sako (1992) argued that in cases where partners show a willingness to continue their collaboration, for example through investments in systems which allow partners to share knowledge and technology, additional control mechanisms can further enhance competence trust. So, control mechanisms may generate the information that is required to strengthen competence trust and thereby contribute to the continuity of the relationship. Nevertheless, Vlaar *et al.* (2007) pointed out that although the trust/control dynamics might alter, we know little about how managers can intervene to ensure that trust and control do not degrade or escalate beyond desirable levels.

From the above it seems that the findings of the literature are ambiguous and remain open to debate (Vélez *et al.*, 2008). However, we do not see these different views of the relationship between trust and control as necessarily contradictory. Instead, we believe that the apparently ambiguous findings can be due to the different phases of maturity and collaboration in inter-organisational relationships, as "trust and control do not automatically become a duality. Instead each organization goes through a process of institutionalizing trust-control duality" (Khodyakov, 2007, p. 17). This duality perspective enables us to analyse the shifting emphasis placed on trust and control over time. So, although trust and control may be complementary at certain times, the relative emphasis on control and trust may change over time. As Möllering (2005, p. 299) pointed out, the trust and control duality implies "not only a *potential* relationship between trust and control, but an *inevitable* connection and reflexive influence". This motivated us to explore the dynamics of the trust/control nexus by studying the different phases in the process of supply chain restructuring.

As mentioned earlier, to structure the analysis of our data we will draw on the supply chain maturity model (SSCM) of Berry *et al.* (2001), which identifies four distinct phases in the process of supply chain restructuring. In the first phase, the *autonomous firm phase*, the supply chain comprises essentially market-based arm's length relationships (Cullen and Meira, 2010). In this phase there is little or no 'familiarity' between the organisations and the relationships are contract-based, with contracts awarded to the suppliers with the lowest bids

(Lamming, 1993). The second phase, the *serial dependence phase*, represents the beginning of a more collaborative relationship. Dominant or preferred suppliers are identified and encouraged to commit to the relationship by investing in the necessary productive capacity and management skills (Lamming, 1993). There is a focus on managing suppliers and supply chain management is given more strategic intent. The third phase, the *reciprocal dependence phase*, entails close collaboration with suppliers (Berry *et al.*, 2000). The importance of close relationships with suppliers is increasingly recognised (Lamming, 1993), there is much sharing of information across organisational boundaries, and advanced management systems are used to manage the supply chain (Lockamy and McCormack, 2004). In the final phase, the *mutual dependence phase*, collaboration with suppliers has been established and the focus of attention now shifts to the development of a partnership and to the governance of the collaborative relationship. Collaboration is routine and firmly established performance measures are in place to manage the supply chain (Lockamy and McCormack, 2004).

3. Research Design

To study the relationship between trust and control in the various phases leading to supply chain maturity, we conducted an interpretive case study to provide the thick descriptions which are needed to generate in-depth understandings of this phenomenon (Berry and Otley, 2004; Ferreira and Merchant, 1992). The case study has twin roles: to understand the practices of the company by drawing on the above concepts; and, at the same time, to use the case study to deepen our knowledge of the trust/control nexus.

Interpretive research involves on-going reflection on the data. In the interpretive paradigm, researchers do not seek to control empirical phenomena, rather they try to "enrich people's understanding of the meanings of their actions" (Chua, 1986, p. 615). Thus, the role of theory is to explain action. In interpretive accounting research, theory plays an important role and is both the input and output of an interpretative case study (Ryan *et al.*, 2002; see also Scapens, 2004). Interpretive research seeks to understand the studied phenomena in terms of existing theory, but through the research findings that theory may be "refined, modified or even rejected" (Ryan *et al.*, 2002, p. 150).

This paper is part of a larger research project.[2] In this larger project we started by exploring the governance of inter-organisational relationships as we particularly wanted to study accounting, performance measurement and control in an inter-organisational context. Initially, we gained access to the studied company and then began our data collection. The timing was fortuitous as we soon realised that the company was in the process of restructuring its supply chains. As we interviewed various people in the company and started to analyse our findings, it became clear that the relationship between trust and control was changing as the company moved through the various phases in its supply chain restructuring. As mentioned earlier, to provide a structure for our analysis of the phases of the supply chain restructuring we drew on the supply chain maturity model (SCMM) of Berry *et al.* (2000). Using the SCMM enabled us to study how the relationships between the parties and the trust/control nexus changed as the supply chain matured. Even though our study focused on supply chain restructuring, we would expect similar changes in other types of inter-organisational relationships, as the relationships mature and the parties collaborate more closely.

The subject of the case study is a company operating in the aerospace industry, which we refer to as AIR (to maintain confidentiality). Our fieldwork took place at the company's largest manufacturing/assembly site in the UK, and focussed on the supply chain for a specific component used in the manufacturing process. Having access to AIR proved to be particularly interesting because of the characteristics of the aerospace industry. The aerospace industry is a knowledge-based industry with high quality products; it is subject to intense competition and extreme levels of complexity; and, most importantly, it has high rates of outsourcing. A prominent feature of the aerospace industry is the high interdependency, close linkages and long-term relationships between manufacturers and suppliers. In recent years, a significant challenge for the industry has been to improve its supply chains (Smith and Tranfield, 2005). The traditional supply chain, with simple buyer-supplier relationships, not only leads to production delays, but also limits product development. Thus, the industry has been seeking to restructure its supply chains and to increase collaboration with suppliers. Our case study aims to show how the relationship between trust and control evolves within such a supply chain restructuring process. Thus, our focus is on the organisation which is managing its supply chain. Specifically, we are looking at an organisation which is going through a process of change in the way it manages its suppliers, rather than looking at the network of suppliers as a whole, or individual supply chain relationships.

Our main data collection technique was semi-structured interviews. Between 2006 and 2009, during ten site visits, we conducted twenty interviews with employees directly involved in the specific supply chain we studied. We interviewed eleven senior managers, middle-level managers and accountants spanning various departments – i.e., finance, purchasing and operations (see Appendix). These interviews enabled us to understand their experiences in the different phases of the supply chain restructuring. The interviews typically lasted for one to two hours and were directly or indirectly related to the management of the studied supply chain. The interviews were recorded and subsequently transcribed verbatim, with the exception of two interviews in which the interviewees did not want to be recorded and so detailed notes were made after those two interviews. We complemented the interviews with secondary data, such as relevant company documents (contracts, meeting agendas, scorecards, management reports and other formal documents). In addition, other data was collected from public sources, namely press releases, newspaper articles, investors' presentations, and annual reports.

Our study took place during and after the completion of the supply chain restructuring in AIR. For the purpose of this paper, we identified comments, events and issues which relate to the relationship between trust and control in the different phases in the SCMM. This enabled us to explore how trust and control change over time. The discussion during the interviews focussed primarily on the supply chain restructuring and the development of control mechanisms and accounting techniques. Specific questions were not asked about trust – instead we inferred levels of trust from the comments made and the procedures deployed, although at times some of the interviewees did specifically mention trust. However, to understand trust we have to look not only at what people say, but also at what they do; i.e., we have to look for "the subjective meanings that people attach to things" (Lukka, 2010, p. 112).

The restructuring of AIR's supply chain began in 2004 following a critical consultant's report (which will be described later). In this paper we focus more particularly on the changes that took place in the later phases of restructuring which were contemporaneous with our research (2006-2009). For the earlier phases we had to reconstruct how the supply chain had changed from people's memories of those changes. The more detailed contemporaneous information enabled us to gain deeper insights into the later phases, and especially the final phase. As we will show below, the later phases are particularly interesting as AIR's supply chain management team developed new and quite sophisticated control mechanisms which were intended to 'formalise' trust in a context where there was significant staff turnover.

We recognise that in interpretive research the traditional criteria of reliability, validity and generalisability can be problematic and alternative criteria such as procedural reliability, authenticity/plausibility and transferability are more appropriate (see Parker and Northcott, 2016; and also Ryan *et al.*, 2002). In terms of procedural reliability, in this section we have set out our research design and methods of data collection and analysis. For example, data collected in (early) interviews were discussed in subsequent interviews in order to seek clarification and corroboration. Furthermore, both internal and external documentary information was used to corroborate our interpretation of the interviews. Also, NVivo was used to organise and code the data. We hope that in writing this paper we have demonstrated both the plausibility and authenticity of our study.[3] Although our analysis was guided by the existing literature, it has to be acknowledged that the influence of the researchers cannot be excluded, and any interpretation of qualitative data is subject to data limitations and the complexities and limitations of the human mind (see McKinnon, 1988, pp. 37-39). As such the interpretation of the case study is 'our' interpretation, but it is grounded in the existing literature and based on multiple data sources. The challenge in presenting such an interpretation is to convince the reader that our interpretation makes sense and that it is based on appropriate evidence (Golden-Biddle and Locke, 2007). This we seek to do in the following section. Finally, we emphasise that rather than seeking to generalise our *specific* findings to all supply chains, or even to all supply chains in the aerospace industry, we would argue that the social processes surrounding the trust/control nexus, which we study in this paper, are likely to be applicable in other supply chains and that the theoretical insights we will gain through this study are thereby transferable to other settings; as such we are making a theoretical generalisation (see Parker and Northcott, 2016, p.1111) .

5. Restructuring the AIR's Supply Chain

Background

AIR is a leading UK-based company, which employs considerably more than 20,000 people globally.[4] It has numerous subsidiaries operating in different business segments, one of which is the aerospace industry. AIR can be described as a system integrator and its competitive advantage is the high quality of its products. Following the general trend in the aerospace industry to streamline supply chains and to increase collaboration with suppliers, in 2004 AIR's senior management team decided to restructure its supply chains in an attempt to improve its performance and to protect its competitive position. In this paper, we focus on the supply chain for an intermediate component in AIR's principal products for the aerospace industry. AIR as the final assembler of the output is the 'dominant partner' within the studied supply chain. However, we should point out that although it is dominant, its intention in restructuring its supply chains was, not to take control, but to govern the supply chain through collaboration. It is the need for high quality products and the social and economic consequences of faulty products that drive its decisions. As we will see, it is difficult to change suppliers (or partners) in a mature supply chain when there is close collaboration between them and this increases the bargaining power of the smaller parties.

Traditionally, AIR has dealt with suppliers on a project by project basis, where a project is for the supply, over a period of usually 3 to 5 years, of a particular part/component or type of material or service. As the relationships with suppliers moved towards partnerships, the definition of a project became rather vague because AIR's relationships with its suppliers began to change. Nevertheless, it is important to recognise that a transaction with a supplier is not for the supply of something at a specific point in time, but an agreement to provide the continuing supply over a period of time, according to an agreed schedule. The supply chain for the intermediate component we studied comprises both internal and external suppliers. Before the restructuring, as well as a large number of arm's length relationships (in the region of five hundred), there were three joint ventures (JVs). As a result of the supply chain restructuring, the number of arm's length relationships was reduced substantially (to approximately forty) and those that remained evolved into much closer collaborations. The three JVs continued to be suppliers throughout the restructuring process, but they also underwent significant changes.

The process of supply chain restructuring in AIR can be divided into three chronological periods which can be mapped onto the different phases of the supply chain maturity model (SCMM). These three periods are: prior to 2004 (autonomous firm); 2004-2006 (reciprocal dependence); and 2006 onwards (mutual dependence). However, 2004 represented a milestone in the supply chain restructuring and it can also be treated as a phase in the SCMM (serial dependence). The four phases are summarised in Table 1. The following sub-sections are organised according to the above chronological periods, and in each period we will use the SCMM to structure our discussion of the trust/control nexus.

-----*Insert Table 1 about here*-----

Early Stages: up to 2004

The situation in AIR prior to 2004 can be categorised as the first phase of the SCMM – *the autonomous firm phase* (see Berry *et al.*, 2000); where the supply chain comprises essentially market-based arm's length relationships (Cullen and Meira, 2010) and inter-organisational relationships are generally unstructured and not very well defined. At that time AIR's management was following the traditional style of purchasing and, as mentioned earlier, procurement was through one-off projects. As materials, parts, etc. were acquired through arm's length relationships, and the individual projects were characterised by low asset specificity, it was quite easy to switch suppliers. In general, each project was allocated to the supplier with the lowest bid, a practice that is a common characteristic of the first phase of the SCMM (Lamming, 1993). During this phase the only control mechanism in place was the contract, hence performance was difficult to manage and predict, but nevertheless there was a positive expectation that suppliers would not behave opportunistically and would honour their contracts. This positive expectation led to the development of contractual trust.

When a new project was being negotiated a contract review took place prior to signing the contract. This contract review systematically considered all the necessary activities and defined the quality, delivery and cost requirements. However, although there was a positive expectation that the suppliers would honour the contract terms, trust was not explicitly considered. Furthermore, there was no distinction between suppliers who were external and those who were internal (viz., the joint ventures). Purchasing managers simply allocated the project to the suppliers that met AIR's quality requirements and had the lowest cost. According to one purchasing manager (3):[5]

> If they [internal suppliers] are not as competitive, we outsource the work externally. So from the purchasing, commercial and supply chain perspectives, they [internal suppliers] must feature equal or better performance than the external. It's got to be the way to make decisions based on quality, cost, delivery and responsiveness. You cannot assign the work internally just because of an 'intimate' relationship.

When the contract review was complete an operational contract was signed. This set out all the requirements relating to the specific project, including the technical specifications, the price, manufacturing procedures, quality standards and delivery details. The normal length of a contract was 3 years, but this was not long enough to encourage suppliers to invest in new machines or new technology for the project. At the end of each contract, the supplier had to bid once again for a new project. AIR's senior management team had previously decided to have such short contracts in order to ensure that it always worked with the lowest cost suppliers. As one senior manager (5) explained "you didn't have any relationship with these people...you could look for different quotations to see if you could find someone who was a bit more competitive". However, this approach did have drawbacks. According to a purchasing manager (4), the interaction with the suppliers was along the lines of "This is what I want. Make it for me". As a result, suppliers had little influence over the product design, and this often resulted in a mismatch between the design and the manufacturing capability of suppliers.

As is characteristic of this first phase of the SCMM, no specific performance measures were used (cf. Lockamy and McCormack, 2004), and the suppliers' performance was only evaluated at the end of the contract – i.e., during the contract review for the next project. As such, the contract was the only formal control mechanism in place and signing the contract carried with it an expectation, underpinned by the legal protections provided in contract law, that the supplier would honour the terms of the contract. According to Sako (1992) this expectation can be described as contractual trust, and this is the minimum level of trust needed to enter into a contract. Contractual trust will be built up during the contract review process and in the negotiations which take place prior to signing a contract.

AIR's actions illustrate that during the autonomous firm phase a company's positive expectation of its supplier will initiate the relationship and lead to the development of contractual trust. In this early phase of the SCMM we saw that AIR's managers had the minimum level of trust needed to enter a contractual transaction with its suppliers. This minimum level of trust provided a positive expectation that the supplier would honour the contract – thus, contractual trust reduced the uncertainty as it was underpinned by the existing institutional arrangements and, in particular, by the legal system. In practice, the legal system underpins the contractual trust which people have in market-based transactions. The presence of a legal system reduces the risk inherent in entering into a transaction and provides the basis for a minimum level of trust between the parties. It also provides a platform upon which trust can grow (Lane and Bachmann, 1997; Luhmann, 1979). However, in this phase the control system used to manage the supply chain was very simple – comprising just the contract. As contractual trust provided the basis for control, in this phase trust and control were complementary. Minimal trust initiated the transaction and control was underpinned by the contract. In this way, trust and control *together* led to uncertainty reduction.

A milestone for change: 2004

In 2004 a number of changes occurred in AIR, including the beginning of the restructuring of its supply chain. This restructuring had the aim of improving AIR's supply chain performance and eventually its overall performance. Earlier, AIR's management team had commissioned consultants to study how it (AIR) was perceived by both its customers and its suppliers, and the results were very disappointing, characterising AIR as 'arrogant'. Consequently, it began restructuring its supply chains in order to put in place a new global supply chain strategy, which included a substantial reduction in the number of suppliers, identifying the major suppliers and developing close relationships with them. These actions correspond to the second phase of the SCMM – the *serial dependence phase*, which represents the beginning of a more collaborative relationship and a focus on actively managing suppliers (see Berry *et al.*, 2000). Major suppliers were identified and encouraged to invest in capacity and technology that would be beneficial for their business with AIR; this is typical of the serial dependence phase (Lamming, 1993; Lockamy and McCormack, 2004). Initially, no additional control mechanisms were introduced, but trust became more important than in the previous phase. As we will explain below, goodwill trust was a necessary condition for the identification of major suppliers and for the development of collaborative relationships with them.

It was the consultants who recommended restructuring the supply chain. They had measured the satisfaction expressed by AIR's customers and suppliers, analysed their experiences, and benchmarked both against AIR's major competitors. The consultants pointed out that both customers and suppliers were very disappointed with AIR's attitude and performance, with some suppliers indicating that they would reconsider working with AIR in the future. In view of the problems of changing suppliers in the aerospace industry, even though AIR is the dominant party in its supply chain, it had to react and improve these relationships. As a senior manager (5) explained:

> We were arrogant, we were short term, rather than medium and long term, we were constantly moving products to save unit price cost, but the total cost was actually more, because you had to pay to move components, you had to support it, you had to validate it, etc…So we had like an alcoholic moment, we thought we were socially drinking, and we were okay, but we actually had a problem and then it was pointed out to us that we were not very good at purchasing, we were not very good at relationship management, and we were not very good at working with our supply chain.

Furthermore, suppliers also complained that their supply chain was too complicated with too many interfaces and points of contact, and this created confusion and delays. As a purchasing manager (3) pointed out:

> One of the big criticisms that AIR received is that we didn't use the suppliers' expertise, knowledge and staff. On the contrary, we thought that we knew best. We were not satisfying our customers, mainly through supply chain delivery issues. Good performance didn't necessarily equal more work, etc., and so that's when a change in the focus was necessary.

Having recognised the problems, AIR's senior managers started restructuring its many and diverse supply chains. As another purchasing manager (4) explained, "we wanted to give more capabilities to the supply chain". For the first time, they had strategic intentions for their suppliers. In a later interview the first purchasing manager (20) pointed out that:

> There was a plethora of relationships, because of the number of supply choices out there…However, technology requirements are increasing and there's less and less people involved in it, so you have to initiate a partnership.

Having analysed the feedback from the consulting company, as well as studying the expectations of the industry's regulators, AIR's senior managers developed a new *global purchasing supply chain strategy* in 2004. As a senior operations purchasing manager (5) explained:

> ….to drive the business forward we need a smaller number of larger strategic relationships…our core business is original equipment and technology, managing supply chains is just a by-product of trying to do that, so we much prefer to have these organisations [first-tier suppliers] working with the supplier chains, organising them and delivering us components… Now the purchasing strategic direction is to go from approximately 500 suppliers per product down to 40. So, we now have to manage and work with the suppliers that had been put under pressure in the traditional purchasing world. But that is a conscious decision and it's difficult, but that's what we didn't have.

In order to reduce the number of suppliers and to create closer relationships with fewer major (i.e., first-tier) suppliers, the new strategy was divided into three steps (see Table 2). In the first step the priority was to rationalise the supply base by 'exiting' poor performing suppliers – i.e., stopping working with them. In the second step the focus was on developing close relationships with the major suppliers. The final step was to develop a system of integrated accountability for the major (first-tier) suppliers who, in turn, would be responsible for managing their own (second-tier, third-tier, etc.) suppliers. By reducing the number of suppliers and developing closer and better relationships with the remaining (major) suppliers, a more flexible supply chain was created, with increasing overall performance.

-----Insert Table 2 about here-----

The identification of major (or preferred) suppliers is typical of the *serial dependence phase* (Lamming, 1993; Lockamy and McCormack, 2004). For AIR, a 'major supplier' is not necessarily defined in terms of the frequency or volume of projects, but it is a supplier who is important for the continuity of the manufacturing process. For such suppliers it is important to have a positive expectation that they would not act opportunistically and to display an open commitment and reciprocity. As the parties communicate their intentions through relational signals, the trust which is necessary for AIR to start to work more closely with the selected suppliers, and thereby to encourage further collaboration, is gradually built. As an operations manager (9) pointed out: "we need to trust them that they won't use the same technology with other customers". The aim during this phase was to enter into close, long-term relationships in which the suppliers would become involved from the early stages of the design process and would share investment and technical know-how. Consequently, trust was a necessary condition in the choice of these major suppliers. As a purchasing manager (4) explained: "the existence or not of trust changed our negotiation strategy – meaning our willingness to share more or less information with them". Thus, the chosen suppliers must have a moral commitment to the maintenance of the relationship, be willing to offer help when it is needed, and not take unfair advantage of any situation that may arise.[6] As such, trust is seen as a "cognitive state that generates positive expectations of the abilities, intentions and integrity of the other" (van der Meer-Kooistra and Vosselman, 2010, p. 94).

AIR's actions in this phase illustrate that goodwill trust provides a platform upon which collaboration can be built and facilitates the implementation of (initial) control mechanisms. AIR reduced the number of its suppliers and continued working only with those suppliers which its managers thought likely to possess the motivation and capabilities needed to develop a collaborative relationship. So goodwill trust was needed to initiate closer collaborative relationships. In this phase, in AIR, we did not see the implementation of additional control mechanisms to safeguard behaviour (i.e., in addition to the contract). In other words, although goodwill trust facilitated the initiation and development of collaborative relationships, it was not until the next phase that additional control mechanisms were introduced – as we will see below. In the current phase trust was built and this facilitated closer collaboration, but as there were no additional control mechanisms beyond the contract, trust acted in place of (i.e., as a substitute for) control. As such, trust and control can be seen as a dualism. However, this may be due to the way we present our case study findings, as there is no unambiguous distinction between the different phases.

Restructuring of the Supply Chain: 2004 – 2006

As we saw above, in 2004 the supply chain restructuring began with the development of a new global supply chain strategy. Initially, the number of suppliers was reduced significantly, and then AIR's managers developed much closer and longer-term relationships with those that were retained. During the subsequent couple of years, AIR continued to implement its supply chain strategy by introducing new initiatives. First, it entered into long-term agreements (LTAs) with its external suppliers, and second it made a number of changes to the management of its JVs. The actions taken by AIR during 2004-2006 fit the *reciprocal dependence phase* of the SCMM (see Berry *et al.*, 2000). The focus was on increasing collaboration with preferred suppliers, which is characteristic of the reciprocal dependence phase (see Lamming, 1993). Furthermore, in this phase, there is typically more information sharing across organisational boundaries and cross-organisational teams are formed to manage the supply chain. AIR's senior managers introduced new performance measures into the JVs and they initiated continuous improvement programmes – actions which again are typical of the reciprocal dependence phase (see Lockamy and McCormack, 2004). In this phase control and trust become interactive. During this phase the strengthening of goodwill trust facilitates the implementation of new control mechanisms, which in turn support the development of competence trust – as will be described below.

By working more closely with its major suppliers, AIR was seeking to take advantage of their expertise and to promote supplier involvement in the early design stages. As the traditional arm's length relationships were no longer suitable, AIR signed LTAs with its major suppliers, typically with an average life of ten years. The LTAs provided legal protection to both sides and were the contractual basis for close long-term collaboration. During the period covered by an LTA, AIR and the supplier could collaborate on several projects and share knowledge, technology and the procurement of raw materials. For each project, a separate operational contract would be signed between AIR and the supplier.[7] In this reciprocal dependence phase the character of the projects and the context in which they were allocated changed. In the earlier phases the projects were quite separate and independent, but in this phase a project was generally just one element within a LTA. Whereas previously the (operational) contracts were used to control the projects and to provide the legal basis for the relationships between AIR and its suppliers, in this phase the operational contract was used to set out the specifications for individual projects, while the LTA was used to control the long-term relationships. As individual suppliers typically had more than one operational contract, there was a need to develop new control mechanisms to manage these relationships. During this phase, a new 'suite' of contracts emerged, comprising an 'early supply' contract and a non-disclosure agreement. However, despite the use of these new contracts to safeguard behaviour, trust was still important. As a purchasing manager (14) explained:

> The non-disclosure agreement offers the legal protection. We do a lot of them. But practically if they [the suppliers] want to disclose it, they can. And there is nothing you can do to stop it. You just have to trust them. That's another reason why I need to develop better relationships with our suppliers, so they won't get annoyed and tell our competitors our practices.

By entering into LTAs, the aim was to create an environment which would promote collaboration and reduce the uncertainty and lack of security that suppliers had complained about in their earlier responses to the consultants – mentioned above. The suppliers could now begin to see the future of their relationship with AIR and the potential for further work to be allocated to them. In our interviews within AIR, carried out in late 2006 and early 2007, interviewees talked about "relationship values", and although there was no explicit discussion of trust, expressions like "credibility", "openness" and "being able to rely on someone" were used. After entering into LTAs, suppliers were more willing to invest in technology, facilities and people because of the commitment of AIR and the longer-term contracts that they had signed. As both parties were working more closely together over rather longer periods, they developed a joint vision and a familiarity with each other that strengthened goodwill trust. As a senior operations purchasing manager (5) explained:

> High technology industries, such as the aerospace industry, normally need significant investment. So when our suppliers need to borrow money to buy new machines, or new facilities, they need to give to their banks a longer justification. So you [AIR] then have to make a very balanced decision between: do you do very short-term tactical purchase orders; or do you build for the longer, more stable future, and have a trusting relationship that says that you will work with these suppliers to make sure they're low [cost], and they're very competitive.

This closer collaboration with suppliers created the need for more information to be available before operational contracts were signed. In addition to the cost, quality and delivery issues that were discussed during the contract review process,[8] AIR started to perform SWOT[9] analyses to gather information about the suppliers' technological capabilities and capacity to perform the project, the availability of the required materials, and the related risks. Furthermore, subjective criteria such as confidentiality, management attitude, ability to manage lower-tier suppliers and financial viability (through a financial assessment of the supplier) were all discussed before operational contracts were signed. As a purchasing manager (4) explained:

> Before we source a project to a supplier, we go through a contract review process, where we invite key stakeholders and we present what the Purchasing view is...we are looking at a supplier and we ask the Supplier Intelligence Team to do a financial health check on them. If someone comes back as red then that means that we won't source to him.

Even though the information gathered through the contract review process was potentially quite sensitive, (according to our interviewees) the suppliers were willing to disclose this information. This willingness is probably due to goodwill trust which was stronger during this phase because of the close collaboration between AIR and the suppliers. With the exception of the financial assessment, this information was monitored annually to identify any changes in the suppliers' situation. Having this information meant that AIR's team was able to assess the suppliers' capabilities to perform their allocated projects. Thus, this additional information enabled AIR's managers to build competence trust in the suppliers; i.e., trust that the suppliers have the capabilities necessary to perform satisfactorily the tasks allocated to them (Sako, 1992). It seems here that there is a complementary relationship between trust and control; where control builds trust, and in particular competence trust.

A significant element of the supply chain restructuring process during this phase focused on the JVs. Until that time, there had been limited interaction between AIR and the JVs, partly due to the geographical distance between them, and all the JVs had been reporting losses. When AIR became more involved during this phase, its immediate aim was not only to improve the JVs' financial positions, but also to change their manufacturing and strategic goals. Consequently, initially the focus was on the way the JVs were managed as entities, rather than specifically focussing on their operational contracts. The JVs needed to have a strategic focus/orientation, and to recognise that a balanced approach, combining performance effectiveness and high quality products, could be profitable and secure their long-term success by meeting their customers' requirements. To achieve this, management teams in AIR began to have a much closer involvement in the JVs; developing mutual interests through more frequent interactions with AIR, and support from AIR's own staff when needed, thereby working much more closely together despite the physical distances. As a financial controller (6) explained: "they [the JVs] now take a lot of our best people, business methods engineers; they all go out to those places [the JV sites] to help them". Transparency was further improved as the JVs started to become involved in the early design and manufacturing stages. These changes improved the relationship between the teams in both parties and led to the development of goodwill trust. Improved personal relationships, together with goodwill trust, was seen as crucial for the management of the JVs. As a senior manager (13) pointed out:

> You have to have trust. Both the management team and the shareholders spent time and effort to try to make sure that both parties are aware of things. You have to have good trust, from the Board level to the General Manager, to the people actually supporting it and looking after the JV. If trust breaks down, then you start getting problems.

Goodwill trust was particularly important where there was distance between the parties. For example, in one of the JVs, where the Chinese government owned the majority of the equity, language barriers and cultural distance created many problems in the day-to-day operations of the business. As a financial controller (6) illustrated:

> We had to build a lot of trust between ourselves. They [the JV] were extremely secretive in what they do and it was quite hard to get information out of them. For example, they had the tendency not to speak English when it suited them. So it required a lot of bridge-building to get to a level of understanding and trust. But once we got that, they were very good in providing information to us and we only had to ask them once. They are very quick and responsive now.

During this phase, AIR's managers saw the JVs as a way of developing their own ideas and processes, and in particular as a way of learning and testing the supply chain restructuring process. They introduced new control mechanisms for monitoring supply chain performance into the JVs first, before extending them to the external suppliers. As a manager (7) responsible for JVs explained:

> The idea originally was to pilot it with the JVs and then any mistakes and any learning points…, we could then take them and work with the other suppliers. It wasn't because we wanted to do the JVs first, other than the fact that you don't wash your dirty laundry in public. You want to make mistakes with someone in house and then you can learn from them and then take it to others. That's just the reality.

The intention was to improve the control of the JVs through the application of AIR's domestic measures; i.e., its financial and operational key performance indicators (KPIs) (see Table 3). All the JVs had to submit a monthly business review pack which included these KPIs, together with reviews of sales and marketing operations, together with an income statement and a statement of financial position. One result of this process was an improvement in the JVs' performance and consequently in their profitability. This frequent flow of information helped to overcome obstacles related to the physical distance between the partners. Furthermore, there was increased assurance that the JVs had the required capabilities to perform their allocated projects. Thus, this information helped to build competence trust in the JVs. As the Financial Director for Operations (13) explained:

> What really made me apply the KPIs to the JVs was to provide a strategic focus – to try actually to realign what they are making with what they should be making in accordance to AIR's strategy for that JV.

A senior purchasing manager (12) commented on the benefits of applying the new control mechanisms to the JVs as follows:

> That focus has allowed us to move the P&L [income statement] in the right direction because we can see excess inventory or sales. The profit increased and people there had a better understanding of what they are doing.

-----Insert Table 3 about here-----

Getting the JVs to accept and implement the new control mechanisms was not straightforward, as such controls were not part of the JV agreements. Consequently, the JVs' management teams and the other parents had to be persuaded of the benefits of using these control mechanisms. Because of their poor performance, and also the previous lack of proper management support from AIR, the JVs did not initially trust AIR, and there was a concern that, although the new control mechanisms might benefit AIR, they might not be beneficial for the JVs themselves. Thus, goodwill trust was needed – i.e., trust that AIR was not acting opportunistically – for the JVs to accept and implement the new control mechanisms. However, over time AIR managers were able to persuade the JV managers that these control mechanisms would improve the performance. As goodwill trust started to develop between individuals from the JVs and AIR, managers of the JV became more willing to supply the information to AIR and also to use AIR's KPIs to control their own operations.[10] As a senior manager (13) pointed out:

> I don't think we had to force the KPIs on any JV. I think that was because we managed to persuade them that this is a mix that makes sense, it's a balanced scorecard approach. Also, because they trusted us, because we are a big manufacturing company, they expected us to have the best practices…Now the KPIs are always displayed on their notice boards.

AIR's actions in the reciprocal dependence phase illustrate the complex complementary relationship between trust and control, where trust builds control and control builds trust. The increasing collaboration strengthened goodwill trust between the partners. The development of goodwill trust between AIR and its suppliers facilitated the implementation of additional control mechanisms, and subsequently the implementation of these control mechanisms built competence trust. In this reciprocal dependence phase, collaboration became more intense as AIR entered into LTAs with its major suppliers. With these longer-term agreements in place suppliers gained confidence in their relationships with AIR, and consequently they were willing to invest in new technology, facilities and people. More frequent interaction created familiarity and empathy, which in turn strengthened goodwill trust. This goodwill trust made suppliers willing to disclose sensitive information and facilitated the use of additional control mechanisms (initially in the JVs). The additional information gathered through the contract review process, such as information about the suppliers' technical capabilities and financial situation, led to the development of competence trust. In this way, the additional control mechanisms provided the information needed to maintain and further develop trust. Previously, AIR's managers had only been concerned about the suppliers' ability to meet the terms of the individual contracts. Now, however, they were interested in the suppliers' broader competences to contribute to the performance of the supply chain. Moreover, competence trust in the JVs was further developed through the monthly financial and operational data which the JVs provided. The above discussion illustrates the duality of trust and control in the reciprocal dependence phase, where the one cannot exist without the other. Goodwill trust enables additional controls to be implemented and those controls help to build competence trust as the relationships develop.

Final Changes: 2006 – onwards

Having completed the initial steps in the implementation of its new global supply chain strategy (see Table 2), AIR began the final step in 2006, with the development of an integrated system of accountability for its major suppliers. This included formalising procedures for the procurement of commodities and the management of suppliers. Collaboration with suppliers had by then already been established and the focus of attention shifted to the development of a partnership model and to the governance of the relationship. AIR's actions during this period are in line with the final phase of the SCMM – the *mutual* *dependence phase* (see Berry *et al.*, 2000). This partnership model sought to identify mutual interests and establish mutual respect between AIR and its suppliers (cf. Lamming, 1993). Furthermore, advanced supply chain management practices, which transfer responsibility without legal ownership (Lockamy and McCormack, 2004), were put in place. AIR introduced a range of control and performance measurement mechanisms, including a supplier scorecard and a relationship profile tool. These mechanisms not only generated technical information, which increases competence trust, but also developed 'soft elements', such as mutual respect, common values and long-term integrity, which strengthen goodwill trust and contribute to the continuity of the relationship.

AIR's new supply chain strategy now provides clearly defined and well documented procedures for the management of relationships with its suppliers and for the procurement of raw materials and intermediate commodities. These procedures are divided into two parts: (a) the development of *commodity strategies* and (b) the development of *supplier strategies*. The commodity strategy, which replaces the previous purchasing policy, plans the procurement of each commodity for the next 10 years; i.e., the procurement of raw materials, components, services, etc. Amongst other things the commodity strategy includes the make-buy decision for each commodity and identifies potential suppliers when the decision is to 'buy' – i.e., to allocate projects to suppliers.

With a commodity strategy in place, the supplier strategy is developed *jointly* by AIR and its supplier(s). It seeks to align the strategies of both parties in order to identify, develop and deliver the long-term business objectives of both. By promoting the early involvement of suppliers, issues related to the supplier's capabilities and available technology, facilities and people can be addressed. Where necessary technology can be shared and agreements made about new investments required to provide the capacity needed to meet AIR's requirements. By jointly developing the supplier strategy, the suppliers feel valued by, and committed to, AIR. This has a positive impact on goodwill trust between the partners, and it further strengthens the competence trust that AIR's managers have in its suppliers. As such, this mechanism signals trustworthiness between the partners. As a finance manager (7) explained:

> The supplier strategy is something that we say we want from the supplier and they say they want from the customer [AIR] ... then we get together and we agree a joint vision for the next 10 years... Does the supplier have the capability to deliver? What

do they need to do? What technology, facilities, training or personnel [are needed] to get that capability?

Following the successful introduction of new control mechanisms for the JVs (described in the previous section), similar control mechanisms were extended to all the suppliers; specifically, a quality control system, a supplier scorecard, target costing and a relationship profile tool. The quality control system, which is termed the *Supplier Advanced Business Relationship* (SABRe), is intended to support the relationships and to develop mutual commitment. This is now an important tool for AIR since, as the final assembler, it is responsible for the overall performance of its final product. SABRe sets out the business requirements for suppliers in terms of four measures, which AIR benchmarks against other suppliers; namely quality, cost, delivery and responsiveness. These requirements are regularly discussed with suppliers and their achievements are recorded on the *supplier scorecard* (see Table 4). A scorecard is constructed for every supplier when its supplier strategy is designed, and it is updated every six months. According to our interviewees, the suppliers are willing to disclose the required information because of the close collaboration they now have – in other words, because of the goodwill trust which now exists between them. When necessary, AIR will work with suppliers to improve their performance. The regular discussions of the supplier scorecards are a two-way process. As a senior purchasing manager (12) explained: "...we start by listening to the supplier and we will go through what is important for them first". This enables suppliers to discuss openly their concerns and issues with AIR. As such, the supplier scorecards can help to reinforce (or otherwise) the belief that the suppliers continue to have the capabilities needed to perform satisfactorily the projects which are allocated to them. Thus, this mechanism contributes to the development of competence trust which supports the continuity of the relationship.

-----Insert Table 4 about here-----

The early involvement of suppliers, as well as the creation of partnerships with suppliers, led to the recognition that AIR's cost management techniques needed improvement. As the Financial Director of Operations (13) commented: "I think that AIR was traditionally naïve in managing cost and now we are looking at it very seriously". The involvement of suppliers in the early stages of the design and manufacture of components has enabled target costing to be introduced. The discussion now starts from the expected selling price and AIR's finance and procurement teams work with the suppliers to build agreed target costs. The process of building target costs has improved communication and information flows at both the cross-functional and the cross-organisational levels. Having target costs in place, which are developed jointly with the suppliers, gives AIR much greater control over suppliers' costs and enables it to form realistic expectations about whether suppliers can meet the agreed price. This in turn helps to strengthen competence trust. Furthermore, as the approach taken in these control mechanisms is to ensure than the suppliers' interests are being achieved, goodwill trust is also enhanced.

In this mutual dependence phase, AIR's managers seek to develop supportive, mutually committed relationships (cf. Berry *et al.*, 2000). To promote long-term partnerships with its suppliers, the focus is on encouraging two-way communication in order to improve transparency and to build confidence in each other. To do this there is a need to look beyond the traditional technical measures (such as cost, quality and delivery) and to give attention to such soft elements as mutual respect, common values, long-term integrity and so on (as mentioned earlier). However, the expression 'soft elements' was not used by the interviewees in AIR; instead, some used the more light hearted expression 'pink and fluffy'. As a senior purchasing manager (12) explained:

> …to get a better long-term view, the characteristics we need to focus on are not always price, not always quality, not always delivery; but the relationship value is one of the assets we needed to be more focused on... I think it has to be done in a measured way because a lot of the importance of the collaboration is to have a strong relationship and it takes time to set that up…You formulate relationships by doing work outside of the day-to-day transactional side…what I call 'pink and fluffy'. When we arrange a meeting I want for the first hour to talk about our relationship, about our common values. While my supply chain manager argued that no, we need to tell them to improve their deliveries, etc. I disagree with him. I am going to have a pink and fluffy session; we need to bring the teams together…working on the relationship to get an openness to say what your values are. I could show you statistically that the delivery was linked to relationship management, rather than the transactional side.

Nevertheless, building good personal relationships between the people involved is not sufficient on its own for the successful governance of the relationships in the long term as the aerospace industry is characterised by high staff turnover. There is always the possibility that the benefits of good inter-personal relationships will be lost in the handover when someone leaves. The same senior purchasing manager (12) argued that there is a need for a more 'detailed structure'. Reflecting on a conversation he had had with a colleague, he explained:

> Well how have we done that? What's the structure? He'll just say that it's his personal energy, that it's his personal way of driving issues, that it's his networking with senior people within AIR. So when you go, what happens? And he'll say 'oh well, maybe somebody else will pick it up'. But it is within my portfolio now, but where's the governance structure, where's the protocols, where's the framework for management? He says, 'well, I'll take you out, I'll introduce you to them'. So I think we have relied on very good individuals to generate direction, and their personal energies to increase performance, but what we haven't been very good at, until now, is putting in rigour, structure and a framework.

Consequently, senior managers have attempted to build a structure to promote the openness, honesty and trust that good personal relationships require. With the help of consultants, the *relationship profile tool* was developed. This tool seeks to set out the structures upon which a good relationship can be built, independently of the specific individuals involved. As a purchasing manager (20) explained:

> The first pilot was done with a big supplier with a really problematic relationship. That was one reason. And also, we didn't want any bias from our end. We had a completely neutral, independent person and they [the external consultant] produced a series of reports, some on what the supplier sees that we don't see, and some on what we see that the supplier doesn't see, and then a de-sensitisation that everyone sees and goes in, and they [the consultants] basically decided if it's a strategic match. Then we've got our version, which we don't have to pay for. So with little suppliers we've got basically what we did with the external consultants, a shortened version, but if it's a big spend we'll go halves with the supplier.

So the relationship profile tool was initially developed to improve a poor relationship with a major supplier, but when managers realised its benefits, the tool was introduced across the whole supply chain. The relationship profile tool is completed jointly by AIR and the supplier, and provides an opportunity for both parties to identify problematic issues and together decide on improvement plans. It is more complex and more sophisticated than the supplier scorecard, mainly because it focuses on the social aspects of the relationship, which are difficult to quantify. It addresses such soft elements as mutual respect and mutual benefit, transparent processes, collaboration, trustworthiness, relationship management, long-term integrity and two-way communication (Table 5 illustrates the categories). This tool gives an objective measure which states quantifiably what the relationship with a supplier is like. Each partner knows what to expect from the other, and through continuing interaction they try to achieve these expectations. Each party seeks to understand and document the other party's needs and expectations. By doing so, the relationship profile tool is intended to help maintain these relationships when someone from either party leaves. As such, the relationship profile tool aims to remove the uncertainty and to accelerate the process of developing inter-personal trust between the new people. By documenting experiences, the relationship profile tool sets out clear expectations. As a purchasing manager (20) commented:

> This tool gives an objective measure that says quantifiably what our relationship [with the supplier] is like. So someone might say that he has a cracking relationship with Supplier A, whom he deals with and I might be dealing with a different person [from that supplier] and have a rubbish relationship. So, someone says to the client 'What's your relationship like with Supplier A?' 'Brilliant'; me, 'Rubbish'. So you need an objective measure. What's your relationship like with Supplier A? Well according to the profiling tool I've got this percent, because here's a document that says quantifiably what our relationship is like.

---Insert Table 5 about here---

The relationship profile tool comprises an actual score and a desired score on a 1-4 scale, where 1 reflects least integration of the two parties and 4 the most. There is space for creativity – i.e. flexibility – in this category. AIR and the suppliers agree on the principles and the desired score, so they each develop their ways of working together. In cases where the desired state of the relationship is not achieved, immediate action can be taken to improve the relationship. So for example, if the two partners decide that the relationship currently scores 2 regarding their long-term integrity, whilst the desired score is 4 (see Table 6), they will draw up an action plan setting out what is needed to improve the problematic areas. This will then be followed by six-monthly reviews to verify that the improvement plans are being implemented.

---Insert Table 6 about here---

The relationship profile tool seeks to harmonise expectations and to support interactions by providing guidelines for recognising necessary actions and evaluating their results. The aim is to provide the stability and standardisation which are necessary to give some protection against breakdowns in trust. It provides a template for building and maintaining trust, and thereby enables trust to persist across groups and over time.

AIR's actions in the mutual dependence phase reveal the implementation of mechanisms that aim to promote communication and to signal trustworthiness. The development of trust is affected by the partners' abilities to 'read' each other and to signal trustworthiness (Carson *et al.*, 2003; Vosselman and van der Meer-Kooistra, 2009). This can be seen particularly in the development of the relationship profile tool. The control mechanisms which have been implemented generate the information required to strengthen competence trust and thereby contribute to the continuity of the relationship. These control mechanisms have led to more sharing of information (including accounting, technical and operational information). The goodwill trust, which was built up in the earlier phases, can explain the willingness of suppliers to share this information and also the successful implementation of the new control mechanisms. These control mechanisms, e.g., the supplier scorecard and target costing, have allowed managers within AIR to strengthen competence trust in its suppliers. Furthermore, both the supplier strategy and the relationship profile tool have strengthened goodwill trust and maintained good relationships with suppliers, even after individuals directly involved in the relationship have left. In the mutual dependence phase, as in the previous phase, we can see the duality of trust and control, as existing goodwill trust facilitates the use of additional control mechanisms, which in turn further strengthen competence trust. So, in this context additional controls do not damage trust, rather they strengthen it and contribute to the continuity of the relationship.

6. Discussion

In this paper we have shown that the relationship between trust and control changed over time, specifically as the studied organisation moved through the different phases of its supply chain restructuring. Furthermore, we noted a shift in the relationship between trust/control from a dualism to a duality as the supply chain matured. In the early phases of the SCMM the relationship between trust and control was relatively simple and straightforward. However, as the supply chain moved into the more mature phases, the relationships became more complex, and trust and control seemed to inevitably become more interconnected, interactive and reflective – a duality. Looking at AIR's supply chain before it was restructured, a minimum level of trust was needed for a transaction (Arrow, 1974) – i.e., what Nooteboom (2002) calls thin trust – and the use of the contract as a control mechanism led to the development of contractual trust (Sako, 1992). Hence, trust and control were complements, and the relationship between trust and control could be characterised as a dualism.[11] As the supply chain restructuring got underway and there were increasing interactions between AIR and its suppliers, goodwill trust developed and this facilitated the implementation of other control mechanisms, beyond the contract. As the collaboration became more intense and the relationship more important to the partners, goodwill trust was not sufficient on its own and additional control mechanisms were needed both to promote further collaboration and to safeguard behaviour. Here, we saw the role of control, not only in monitoring and safeguarding behaviour (as the contract does), but also in producing the information needed to promote further collaboration and commitment, and subsequently to enhance trust. Over time, familiarity and collaboration strengthened goodwill trust, and facilitated the implementation of new control mechanisms, such as the supplier strategy, the supplier scorecards, target costing techniques and the relationship profile tool. The information generated by these mechanisms further developed competence trust (Sako, 1992). As such, trust builds control and control builds trust (Vosselman and van der Meer-Kooistra, 2009). The duality means that trust assumes the existence of control and control assumes the existence of trust, and furthermore it is not feasible to have one without the other (Möllering, 2005).

It is well documented that organisations cannot trust, but individuals who are members of an organisation can trust other "individuals, organisations, institutions and systems" (Nooteboom, 2002, p. 8). Inter-organisational trust describes "the extent to which organizational members have a collectively held trust orientation toward the partner firm, which is quite different from saying that organisations trust each other" (Zaheer *et al.*, 1998, p. 143). As such, inter-organisational trust is held at the individual level, but individuals can be trusted because they work for a particular organisation – not as individuals per se. If they move from that organisation they will not necessarily continue to be trusted. Our findings document a distinct attempt to move from inter-personal trust relationships to inter-organisational trust relationships. We observed an attempt to disembed trustworthiness from the individual relationships and to maintain trust over the long periods of time which are involved in the development of partnerships. By doing so, AIR hopes to secure the benefits of a trusting relationship despite personnel changes. A shift from inter-personal to inter-organisational trust can occur if the *representative's conduct* is viewed as typical of the *organisation's conduct* (Doney and Cannon, 1997). Kroeger (2011) observed similar behaviours in the UK book publishing industry, where a group of managers reduced their reliance on traditional individualised inter-personal relationships (between editor and author for example) by creating a more formalised approach to trust building. He questioned whether the organisation as an entity can be the subject of trust (p. 8), and concluded that "the organization, as a distinguishable entity, will only be truly consequential as a subject of trust if there is a degree of stability in the way action is organized over time" (p. 9).

Nevertheless, we do not see an organisation as a subject, but as an object of trust. In AIR, we saw the development of the relationship profile tool as a formalised approach to trust building which facilitates the development of an impersonal and quantified form of trust. The relationship profile tool seeks to maintain trust as specific individuals come and go, but nevertheless aims to retain trust at an individual level. As discussed above, inter-organisational trust remains at the individual level. Our findings indicate that it was the lack of consistency and structure that led to the development of the relationship profile tool. This might have been particularly intense in AIR because of high staff turnover, geographical distance, and the complex supply chain. The relationship profile tool aimed to achieve consistency and standardisation across the entire supply chain.

The approach that we have adopted in this paper does not distinguish between the different partners, as the supply chain as a whole was the unit of analysis. Nevertheless, we need to acknowledge that not all members of the supply chain achieve the same levels of individual or organisational trust due to, among others constraints, their geographical distance. Geographical proximity of firms can encourage the development of inter-organisational trust due to frequent face-to-face communication (Dyer and Chu, 2000; Lane and Bachmann, 1998). Still, organisations may trust their most important partners irrespectively of where the partners are located due to the many and repeated transactions between them (Bönte, 2008). In the case of AIR, the attempt to formalise trust building through the use of the relationship profile tool was prompted, not only by the desire to maintain trust despite high levels of staff turnover, but also to overcome the obstacles posed by geographical distance.

A further point to note is that control mechanisms can fulfil a dual role. In AIR the control mechanisms were used not only to constrain (or safeguard) behaviour, but also to facilitate collaboration and contribute to the continuity of the relationship. Before AIR's supply chain restructuring, its control system was quite simple, with the contract the only mechanism used to constrain behaviour. However, as AIR moved through the various phases of its supply chain restructuring, the constraining role of the control mechanism(s) became less important and, instead, control was used to *jointly* enable the parties to contribute to the relationship. In the later phases the contract (and possibly other control mechanisms) continued to act as a constraining mechanism(s), but other controls also acted as enabling/facilitating mechanisms.

In this paper we have drawn upon the SCMM of Berry *et al.* (2000) to analyse our case. However, there are some notable differences between AIR's supply chain, particularly in the mutual dependence phase, and the SCMM. According to Berry *et al.* (2000), in the mutual dependence phase there is a 'partnership' between the parties (i.e., between the supplier and the buyer), as both have equal power. In this phase, even though AIR emphasised their mutual interests and involved its suppliers in the product design and the early development stages of manufacturing, AIR nevertheless retained a dominant role in the relationship. Although there was collaboration, and the character of the relationships with its suppliers had changed, AIR remained *in control* and set the boundaries. So, even though the suppliers are more involved in the process, it is a process that is largely controlled by AIR. There are important institutional reasons for this – especially given the nature of the industry. AIR is responsible for the final products and is accountable to customers, governments and the general public. If there are problems in its supply chain, which lead to defects in its products, AIR has to deal with the economic and social consequences, and these could include criminal as well as civil legal action, commercial penalties and loss of reputation. Consequently, controlling quality is crucial for AIR. As such, there cannot be an equal *partnership* between AIR and its suppliers. Although Berry *et al.* (2000) developed their SCMM from a study in the UK manufacturing industry, the mutual dependence phase may not, in all cases, take the form of the partnership model which they describe. Such a partnership may be impossible in the aerospace industry or in other industries where there are similar levels of social responsibility. For example, BP, the oil multinational recently faced massive financial and social consequences due to the pollution caused by its oil exploration activities off the US coast; activities in which there was significant involvement of its suppliers. As the final assembler or producer remains liable for the outcomes of its supply chain, there cannot be a full partnership with suppliers in the form suggested by Berry *et al.* (2000). Nevertheless, the essential character of the mutual dependence phase of the SCMM still applies and there will be very close collaboration with suppliers, as we saw in AIR.

7. Concluding Remarks

In section 2 we reviewed studies which have explored the relationship between trust and control, and concluded that the findings are ambiguous and remain open to debate (Vélez *et al.*, 2008). For example, should trust and control be viewed as a dualism or a duality (see Khodyakov, 2007; Möllering, 2005)? However, we pointed out that there have been relatively few studies which have examined how the relationship between trust and control shifts over time, especially as levels of collaboration increase. In this paper, drawing on the supply chain maturity model (SCMM) of (such as, Berry *et al.*, 2000; Cullen and Meira, 2010; Lamming, 1993; Lockamy and McCormack, 2004), we show that in the early phases of supply chain restructuring the relationship between trust and control could be characterised as a dualism. Initially, there is a complementary relationship in the autonomous firm phase and this evolves into a supplementary relationship in the serial dependence phase. However, in the later, more mature, phases the relationship between trust and control becomes a duality, as increasing collaboration between the parties leads to the emergence of more complex interactions between trust and control during the reciprocal dependence and the mutual dependence phases.

Whereas many previous studies have examined the relationship between trust and control from a rather static perspective (Coletti *et al.*, 2005; Das and Teng, 2002), by studying a case of supply chain restructuring in this paper we have seen that the relationship between trust and control can shift over time as the supply chain matures. This enables us to contribute to the trust/control literature in several ways. We show how the studied company endeavoured to cope with the complexity of the duality of trust and control as collaboration with its suppliers increased. In particular, we identified control mechanisms that the company developed to manage this complexity; for example, the supplier strategy and the relationship profile tool. Furthermore, we illustrated how this led to a move from inter-personal trust to inter-organisational trust (as conceived above), and discussed how in this case the supply chain managers intervened to maintain and stabilise trust by reducing the uncertainty that can be triggered by the high staff turnover in the aerospace industry.

AIR's efforts to move from inter-personal trust to inter-organisational trust raises two practical issues. Firstly, AIR's managers introduced a formalised approach to trust, with the aim of achieving consistency and standardisation, as they had frequently to rebuild trust relations due to high levels of staff turnover. After restructuring its supply chain, building and maintaining trust was crucial for AIR, and having to rebuild trust each time relevant staff left either AIR or its suppliers was a difficult and time consuming task. This is unlikely to be a problem which is unique to AIR. In other companies where trust is important in inter-organisational relationship, rebuilding (inter-personal) trust when staff leave is also likely to be a problem. The relationship profile tool which was developed in AIR was one attempt to overcome this problem by providing a mechanism through which partners could monitor, repair or rebuild trust on an ongoing basis. Further research into how other organisations attempt to maintain and standardise trust, and whether they have developed similar or other such mechanisms, could provide practical insights into this issue.

Secondly, the relationship profile tool also identifies where interventions are needed to ensure that trust is maintained, or to repair it where necessary. Vlaar *et al.* (2007) pointed out that we do not know much about how managers can intervene to ensure that trust and control do not degrade (or escalate) beyond desirable levels. Studying such interventions could enhance our understanding of the evolution of trust and control, as "very low levels of trust and very high levels of distrust have a negative effect on interorganizational performance" (ibid., p.415). The relationship profile tool monitors the 'achieved' level of trust and indicates where interventions are required if the desired level of trust in the inter-organisational relationship has not been achieved. The relationship profile tool aims to maintain the achieved/desired levels of trust and, as such, it is a control mechanism which provides for the maintenance of trust.

In this paper we have studied the restructuring of a supply chain from the perspective of the assembler of the final product, namely AIR. This provides a one-sided perspective of supply chain management and of the relationship between trust and control over time. Unfortunately, interviewing the other parties was not possible in this research (due to access difficulties[12]). However, supply chain management is a very important activity for an assembler, such as AIR, and it is an activity that many such companies are currently restructuring. In this paper we have been able to study in-depth the way in which one assembler restructured its supply chain. However, it has to be acknowledged that it would have been better if it had been possible to interview all the other parties involved in the supply chain. Future research could investigate such supply chain restructuring from the perspective of those other parties (i.e., the suppliers) and/or study the supply chain as part of a network of relationships. A second limitation of this paper relates to the company/industry we investigated. AIR has some specific characteristics, which may not be common in other companies or industries, as it operates in a highly regulated industry. However, nowadays many hi-tech manufacturing industries have quality standards imposed by non-governmental and consumer organisations. Furthermore, AIR, because of its position as the final assembler, has significant bargaining power over its suppliers. Therefore, our specific findings are contextual and may not be characteristic of supply chains more generally. Nevertheless, as we indicated earlier, we would make a theoretical generalisation, whereby the social processes surrounding the trust/control nexus, which we have studied in this paper, are likely to be applicable in other supply chains and that the theoretical insights we have gained in this study are thereby transferable to other settings.

In future studies of the development of inter-organisational relationships, we would suggest that there should be two distinct levels of analysis: (a) the development of inter-organisational relationships *as* the relationships/supply chains mature and (b) the development of inter-organisational relationships *within* mature supply chains; e.g., where new suppliers are added to supply chains which are already mature. In this paper, we have studied the former; i.e., the restructuring of an existing supply chain. However, there is also a need for research which examines the processes, and in particular the relationship between trust and control, as new suppliers are added to an already mature supply chain. In such a supply chain, where there will be mutual dependence between the existing parties, an important question is how a new supplier can be added? Does it have to go through the various phases of the SCMM, or are there other processes through which trust can be built, and what is the relationship between trust and control in such processes? Such research would complement the research reported in this paper which has looked at these relationships as an assembler and its suppliers went through the various phases of its supply chain restructuring.

[1] These are the four phases in Berry et al.'s (2000) supply chain maturity model (SCMM), as will be explained later.
[2] The findings presented here are part from a larger research - see (Author, 2011).
[3] Parker and Northcott (2016, pp.1116-7) refer to the trustworthiness of the research.
[4] The exact figures are withheld to disguise the identity of the company.
[5] The number in brackets refers to the interview number in the Appendix.
[6] As the continuity of production is of paramount importance for AIR, and the process of approving a new supplier for a highly critical commodity can take up to eighteen months, AIR 'pre-approves' alternative suppliers for critical commodities in order to avoid delays in delivery to final customers due to unexpected problems such as fire, natural disaster or even the bankruptcy of a supplier.
[7] Operational contracts were also signed for projects AIR allocated to the JVs.
[8] As mentioned earlier, there is a contract review before every new operational contract is signed. These reviews took place even during the autonomous firm phase, and they have continued to be undertaken in each of the subsequent phases.
[9] Strengths, Weaknesses, Opportunities and Threats.
[10] As our research only involved interviews in AIR, we were unable to confirm this. But it seems to us that AIR's assertions are reasonable.

[11] In the next (serial dependence) phase of the SCMM there was a supplementary relationship between trust and control, and we observed the emergence of goodwill trust, but not the implementation of new control mechanisms. This may have been due to the way we chronologically present our findings in terms of the four phases of the SCMM. If, instead, we had studied the changes as a continuum this supplementary relationship between trust and control might not have emerged.

[12] However, we did have some informal discussions in one of the joint ventures based in the UK.

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Appendix: Table of interviewees

No.	Date	Management Level
1	September 2006	Financial Director *(Preliminary Meeting)*
2	March 2007	Financial Director *(Second Interview)*
3	March 2007	Purchasing Manager I *(First Interview)*
4	March 2007	Purchasing Manager II
5	June 2007	Operations Purchasing Executive *(First Interview)*
6	June 2007	Financial Controller *(First Interview)*
7	June 2007	Business Finance Partner for Subsidiaries and JVs *(First Interview)*
8	September 2007	JV Relationship Manager *(First Interview)*
9	November 2007	Operations Manager I *(First Interview)*
10	November 2007	Operations Manager II
11	November 2007	Management Accountant *(First Interview)*
12	March 2008	Operations Purchasing Executive *(Second Interview)*
13	March 2008	Financial Director of Operations
14	April 2008	Purchasing Manager I *(Second Interview)*
15	April 2008	Financial Controller *(Second Interview)*
16	May 2008	Business Finance Partner for Subsidiaries and JVs *(Second Interview)*
17	May 2008	Operations Manager I *(Second Interview)*
18	June 2008	Management Accountant *(Second Interview)*
19	June 2008	JV Relationship Manager *(Second Interview)*
20	March 2009	Purchasing Manager I *(Third Interview)*

Tables

Table 1 Time line of events

Periods	
Period 1: up to 2004 ***Autonomous firm***	Traditional style of purchasing • One-off transactions • Arm's length relationships • No performance measurements • No suppliers' impact on the design process
2004: Milestone for change ***Serial Dependence***	Decision for supply chain restructuring (Consulting report) • Development of global purchasing supply chain strategy • Reduction of suppliers / identification of preferred suppliers
Period 2: 2004-2006 ***Reciprocal Dependence***	Increased collaboration with major suppliers • Long term agreements • Implementation of control mechanisms to the JVs
Period 3: 2006 – onwards ***Mutual Dependence***	Implementation of the new supply chain strategy and various control mechanisms • Supplier strategy • Supplier Advanced Business Relationship • Supplier scorecard • Relationship profile tool Cost management techniques • Target costing • One-way open book accounting

Table 2 Global Purchasing Supply Chain Strategy

Step 1	*Rationalise supply base* *Exit poor suppliers*
Step 2	*Develop relationships across the supply chain with major suppliers* *Develop capable low cost sources* *Selectively delegate supply chain management responsibility*
Step 3	*Develop an integrated system/module of accountability for major suppliers*

Source: AIR's Investor Presentation – Internal Documents

Table 3 Key Performance Indicators for the Joint Ventures

Operational KPIs		Financial KPIs	
Cost	Productivity	***Profit & Loss***	UPBT (Underlying Profit Before Tax)
	Throughput per hour		Sales
	Net sales per hour		Gross Margin
	Operating costs		Working Capital
Quality	Scrap	***Cost***	Cost Rate
	PPM* Concessions		Operating Costs
			Head Count
	PPM Defective		
	Customer Incidents	***Balance Sheet***	Cash (Balance)
Delivery	Schedule Adherence		Additions to Fixed Assets
	Total Arrears		Inventory
	Lead time adherence		Debtors
	Yield		Creditors
	Days arrears		
	Longest output arrear		
Inventory	Net Inventory		

Source: Internal Documents
*PPM stands for Parts Per Million

Table 4 Suppliers Scorecard: Key Performance Indicators

Quality	*Delivered Quality PPM**
	Delivered Quality Concessions PPM
	Delivered Quality (occurrences)
	Concessions (occurrences)
	Customer Complaints
Delivery	*Schedule Adherence*
	Delivery Performance
	Total Days Late
	Total Schedule Lines Missed
Cost	*Cost of Non-quality*

Source: Internal Documents
*PPM stands for Parts Per Million

Table 5 Categories included in the Relationship Profile Tool

Mutual respect and mutual benefit	*All interactions with AIR reinforce mutual benefit and respect. Supplier's capabilities are fully understood and utilised*
Clear purpose and transparent processes	*Mutual objectives are fully understood*
Collaboration	*AIR and supplier jointly resolve issues, seek to develop and improve together*
Capable empowered joint teams	*Clear understanding of responsibilities and processes for each role*
2-way communication	*Communication from both sides is effective and covers needs*
Act with long-term integrity	*Trust and honesty characterise the relationship, problems are shared, no opportunistic behaviour*

Source: Internal Documents

Table 6 Example of the various scores of long-term integrity

Score	Act with long-term integrity
1	*Lack of trust characterised by examples of poor behaviour historically. Perceived lack of honesty or delayed sharing of information handicaps the relationship. Short-term opportunistic actions are common.*
2	*Generally relationship is characterised by both parties trust in the other in 'day-to day' interaction. Some issues are considered to be withheld / not disclosed in a timely manner. Some evidence of short-term opportunistic actions.*
3	*Relationship is characterised by both parties implicit trust in the other complemented by honesty and integrity in all decisions. With some exceptions, issues are promptly and openly discussed across the spectrum of activity. Problems are shared rather than withheld. No deliberate evidence of short-term opportunistic actors.*
4	*Relationship is characterised by both parties implicit trust in the other complemented by honesty and integrity in all decisions. Issues are promptly and openly discussed across the spectrum of activity. Problems are shared rather than withheld. No evidence of short-term opportunistic actors.*

Source: Internal Documents