

1-1-2012

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Beckett, Ronald and Jones, Michael: Collaborative network success and the variable nature of trust 2012, 240-251.
<https://ro.uow.edu.au/commpapers/954>

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Abstract

We observe that the nature of trust when viewed in a collaborative context can have varied implications and outcomes. For example, actors who may trust one another in one situation may not display the same level of trust in other situations. These trust variations arise as a result of differences in organisational competencies, the nature of the contract and the level of goodwill the collaboration expects. It is broadly agreed that trust is important in relation to collaborative ventures. In this article, we use the ARCON reference model as a framework to consider endogenous and exogenous aspects of trust important in the establishment, operation and dissolution of collaborative ventures. Some observations are made about the use of the model and some possible shortcomings are noted. Most prior research is focused on the influence of trust on internal operations of a collaborative venture. In this article, we identify the need to also consider trust of the venture by external stakeholders.

Keywords

era2015

Disciplines

Business | Social and Behavioral Sciences

Publication Details

Beckett, R. & Jones, M. (2012). Collaborative network success and the variable nature of trust. *Production Planning and Control*, 23 (4), 240-251.

Collaborative Network Success and the Variable Nature of Trust

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Michael Jones is a lecturer in Organisational Behaviour in Australia's University of Wollongong. His recent writings focus on eCollaboration, especially with regard to small to medium enterprises. This has led to a number of competitive grants for research into this area. Early writings dealt with two principle areas; studies of qualitative methods, particularly in the field of grounded theory and computerised techniques for qualitative data analysis; and, organisational behaviour, concentrating in areas of motivation and commitment. Michael received his PhD in organisational behaviour from the University of Wollongong.

Collaborative Network Success and the Variable Nature of Trust

Abstract. We observe that the nature of trust when viewed in a collaborative context can have varied implications and outcomes. For example: actors who may trust one another in one situation may not display the same level of trust in other situations. These trust variations arise as a result of differences in organisational competencies, the nature of the contract and the level of goodwill the collaboration expects. It is broadly agreed that trust is important in relation to collaborative ventures. In this paper we use the ARCON reference model as a framework to consider endogenous and exogenous aspects of trust important in the establishment, operation and dissolution of collaborative ventures. Some observations are made about the use of the model and some possible shortcomings are noted. Most prior research is focused on the influence of trust *on* internal operations of a collaborative venture. In the paper we identify the need to also consider trust *of* the venture by external stakeholders.

Keywords: Trust, Collaboration, ARCON

1. Introduction

It has been observed that the focus of collaboration activities is changing and there is an expectation of increasing levels of collaboration (EC, 2009). In 2004 a review of ten years of European collaboration research (Baquet et al, 2004) noted changes in collaboration focus, seeing movements away from a supply chain focus to a customised products orientation. In addition, as a result of advances in information and communication technologies (ICT), the study predicted further evolution in the area of collaboration with an increased focus on sustainable collaboration, managing and taking advantage of complexity, and inter-enterprise creation and innovation. New ways of doing business may require new forms of collaboration that may introduce unique interdependencies between the collaborators. As a result there is now increased emphasis on trust and the important role it plays in ensuring collaboration success. Trust, in its various permutations, (trust in the product, trust in the enterprise, trust in the people, trust in ICT) impacts on how disparate business

practices make sense to collaborating firms (Chi et al, 2005). The absolute importance of trust, especially social trust, in sustained economic efficiency is elaborated by Fukuyama (1995, p. 341) where trust is a pivotal ingredient in the survival of business today, giving businesses in high-trust societies “a natural advantage”.

While trust may be important in facilitating the endogenous workings of collaboration, we observe there are some exogenous interactions relating to trust in and by a collaborative network organisation (CNO). This is what we are also exploring in this paper. Our research approach draws on our own case study material accumulated over many years. These studies are combined with similar research projects taken from extant literature. Combined, these data will illustrate the variable nature of trust as it occurs in different collaborative environments. After a brief discussion on the importance of trust in collaboration, followed by an overview of our case study methodology, the paper will reference findings and proposals in the context of a comprehensively researched collaborative network organization (CNO)reference model, ARCON (Camarinha-Matos et al, 2007). The paper will discuss the utility of ARCON from a trust perspective, and will present a number of issues for future consideration.

2. The importance of Trust in collaboration

2.1 Trust and Collaborative Ventures

Two traditionally accepted paradigms for supporting the competitive attitudes of business are the resource-based view (RBV) (Hamel & Ruben, 2000; Prahalad & Hamel, 1994), and the market-based view (MBV) (Porter, 1985). Using the former strategy – RBV – firms gain and sustain competitive advantage through management

and protection of scarce resources. These resources are the inner strengths of the company and include both tangible assets – for example process inputs and capital structures, and intangible assets like capabilities, processes and knowledge. In RBV key strategic value is gained through resources which are valuable, rare, inimitable and non-substitutable (Barney, 1991). Market-based view on the other hand sees firms competing to gain market advantage through identifying strategic opportunities and endeavouring to dominate disruptions in the market. MBV is driven by Porter's (1985) Five-Forces framework, which enables firms to assess potential opportunities through an analysis of five elements or market forces. These are: 1) The threat of the entry of new competitors; 2) The threat of substitute products or services; 3) The bargaining power of customers (buyers); 4) The bargaining power of suppliers; and, 5) The intensity of competitive rivalry.

Most firms operating today exist in a super-competitive environment. Strategies like RBV and MBV which promote a protectionist and exploitive agenda are not enough for firms to maintain a sustainable competitive position in their market. Businesses are increasingly faced with the need to collaborate to maintain a competitive foothold (Berasategi, Arana, & Castellano, 2011). When firms collaborate and form sustainable collaborative ventures additional benefits of RBV and MBV can be realised. Firstly, firms are better able to focus on their core competencies leaving fellow collaborators to concentrate on theirs. Therefore, through collaborative complementarity, real synergies can be leveraged (Eschenbacher, Kück, & Weiser, 2001). Secondly, collaboration, especially where forward vertical integration is utilised, can expand market opportunities (Ulbrich, Troitzsch, van den Anker, Plüss, & Huber, 2011).

As firms work together through collaborative network organisations, increased interdependencies introduce a reliance on mechanisms and attitudes of trust: “Trust amongst all network agents is the cornerstone of collaboration, and therefore there is a need to promote a collaboration culture based on fostering human relations” (Berasategi et al., 2011, p.5). The merging of business interests through collaboration, whether short-term or long-term, requires the establishment of mutual trust. This is attained through commitment, time, effort and dedication (Msanjila & Afsarmanesh, 2011). Building on mutual goodwill, reciprocal credibility and general predictability, mutual trust expects partners to act benevolently toward each other (Ulbrich et al., 2011).

Trust has been argued as a very important determinant of effective partner collaboration (Das & Teng, 1998). Scholars have examined inter-firm trust in many inter-firm relations, such as supply-chain relations (Moorman, Zaltman, & Deshpande, 1992), joint ventures (Inkpen & Currall, 1997), and alliances (Zaheer & Venkatraman, 1995), showing that trust benefits the relationship by lowering transaction costs (Gulati, 1995; Sako, 2006), encouraging desirable behaviour (Madhok, 2005; Ryu, SoonHu, & Koo, 2009), and facilitating conflict management (Dechurch, Hamilton, & Haas, 2007; Ring & Van de Ven, 1994).

2.2 Some Dimensions of Trust and Derived Benefits

Sako and Helper (1998) explored aspects of trust evident in domestic and international automotive supply chains. They suggested there was an interplay between three bases of trust – contract based trust (**will** I do what I say I will do), competence based trust (**can** I do what I say I can do); and goodwill based trust (do I **consider** the needs of my collaborators as well as my own). The impact of trust on

sustainable collaborative ventures can also be examined according to four business perspectives: technological, economic, organisational and behavioural trust (Ratnasingam, 2005, p.5; Noteboom, 2000, p.53).

3. Methodology

In this paper, we present various cases which epitomise the practice of collaborative networking. As such, we adopt a case study methodology for data collection and analysis, as this method permits the researcher the opportunity of explaining the causal links in real-life interventions that would be too complex for surveys or experimental strategies (Yin, 1989). A case study is an empirical inquiry that “investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are clearly not evident, and in which multiple sources of evidence are used” (Yin, 1989, p.27). The qualitative approach of this method differs from quantitative research which infers results through statistical means, which can then be generalised to a larger population. This case study method uses logical inference to generalise findings to theoretical propositions (Yin, 1993).

While a single case can provide a comprehensive overview of the phenomenon under study, multiple cases enable a more comprehensive point of view with greater potential for analysis and generalisation (Borman, Clarke, Cotner, & Lee, 2006). As Eisenhardt (1989, p.540) explains “people are notoriously poor processors of information”. Researchers often find, deduce, and assume conclusions when they would otherwise not exist. Cross-case analysis drawing from multiple cases is one way of avoiding such information-processing biases (Eisenhardt, 1989). The use of multiple cases permits the researcher to build a logical chain of evidence (Miles &

Huberman, 1994), and to engage replication logic which enables a wider generalisation of findings (Eisenhardt, 1989).

Our case selection was influenced by the work of Bacquet et al (2004) who reviewed more than a decade of European Union initiatives aimed at facilitating collaboration. They suggested that the initial focus was on supply chain efficiency and improved market access, whilst the emergent trend was towards collective creativity and innovation. Bacquet et al also noted that the research to that time (2004) had a strong technological orientation, and that complementary research on human and business process factors was needed. In our own work, we also noted some concerns about the reliability and security of enabling information technology tools used to facilitate collaboration.

In conducting cross-case analysis we selected cases from our own research and from the research of others covering supply chain, market access, innovation and e-collaboration activities. We used an interpretation of the ARCON model (discussed after our cases are presented) as a framework to discover emergent themes in relation to trust.

4. The Context-dependent Nature of Trust: Some Illustrative Cases

In this section of the paper we present snapshots from ten instances of collaboration having some different kinds of objectives: improved market access, supply chain enhancement, innovation and e-collaboration.

4.1 Trust in cooperative marketing

4.1.1 Case A: Austmine (Beckett, 2008).

Austmine was established in the early 1990s as a virtual enterprise to assist in accessing export markets. The collaboration comprises around 80 member companies each with a diverse range of specialities focusing on the provision of equipment and services to the mining industry. Members are relatively small by international standards, typically ranging in size from around ten employees to a few hundred. These companies presented their diverse range of capabilities at international tradeshows under the Austmine banner. The collaboration has established competence-based trust which revolves around the equity endowed in the Austmine brand. Austmine provides a central point of contact, and then contract negotiations are between the client and the individual member firm. The focus of trust in this case is in the CNO (Austmine) reputation.

4.1.2 Case B: TIFA Aerospace (Beckett, 2008).

TIFA Aerospace was established in 2002/03. The original collaboration comprised three focal firms (each with many years experience making tooling for the Australian Aerospace industry) and an industry association, potentially linking with up to 60 small firms. The collaboration was intended to expand business opportunities with overseas aircraft manufacturers. After business links had been established, the three focal firms promoted themselves separately, and the collaboration fell apart. This case demonstrates failure based on poor economic trust, as the collaborators had commonly been competitors in the past. TIFA Aerospace operated in the style of a short-term opportunity-driven network.

4.1.3 Case C: Nepean IT (Beckett, 2008).

Nepean IT was established to create a business network that would assist a large telecommunications company (Telstra) in fulfilling its clients' needs by providing an

extended range of combined information and communication technology services. A group of firms decided to form a virtual company and a participant code of behaviour was agreed. The project was championed by the CEO of a regional development organisation. Eventually the strategic partner, Telstra, withdrew from the collaboration which led to a reduction in business referrals from that source. Some participants dropped out when they could not meet the performance standards required by the group, leading one of them to comment that they should have learned more about each other before committing to work together. Nepean IT operates as a virtual enterprise impacted by both external market conditions that diminished the need to collaborate, and by issues of internal competency-based trust that emerged.

4.2 Trust in the supply chain

4.2.1. Case D: (Nielsen et al, 2004)

These authors compared two enterprises that sought to get their suppliers involved in innovation initiatives. They observed an interplay between power, trust and politics at different levels (personal and departmental) within and between the cooperating enterprises that in turn led to different levels of commitment, openness and participation. In some cases, a change in the individuals involved was (or could have been) beneficial. The supplier firms were collaborating to support their customer, but parts of the customer organisation were not comfortable with collaborative arrangements.

4.2.2. Case E: TAAG (Tooling Australia Automotive Group) (Beckett, 2006)

Formation was stimulated by some collaborations being explored by other members of their industry association. Impressive brochures describing the combined capabilities of firms in plastic mold-making were produced, and the group started to work with the engineering departments of new international clients, establishing

significant levels of goodwill and competency-based trust. However, once a level of competency had been verified, the client firm purchasing departments were only interested in price. In one instance, the purchasing department was given a directive to buy everything from China. This discounted the value of any goodwill trust that had been established.

4.2.3 Case F: A Japanese manufacturer-supplier study (Miyamoto et al, 2002).

This study investigated collaborative buyer-supplier relationships from the perspective of a Japanese manufacturer. Feedback was obtained from 117 Japanese manufacturers and structural equation modelling was used to assess relationships and antecedent interactions between the firms and the roles of three attributes of customer trust (contractual, competence and goodwill trust). It was found that four forms of interaction supported all three trust attributes. These were:

- Task compliance and competency demonstrated over time
- Responding behaviour – the actions a supplier undertakes to satisfactorily accommodate a customer’s requests, or operational and/or strategic ‘needs’
- Alerting behaviour – the actions a supplier engages in to alert a customer, at the earliest point, of any possible supply problem that affects the customer’s sourcing operation in order to allow the customer to make, in advance, necessary adjustments in the exchange and
- Initiating behaviour – the initiative a supplier takes in realising a customer’s operational and/or strategic ‘wants’.

4.3 Trust in inter-organisation innovation

4.3.1 Case G: An agricultural network. (Kilpatrick and Bell, 1999)

Kilpatrick and Bell (1999) have observed the evolution of small business networks of farmers in regional Australia. A community of practice was formed to help make

changes in the operations of participating firms to improve business outcomes. A series of network “chapters” were formed in a number of geographical centres, and members were required, as a prerequisite, to complete a farm management training course. This provided them with some common experiences and a common language. It also provided a foundation for building trust. The CNOs operated in the style of a professional virtual community with external training support. This type of trust is similar to the behavioural perspective from Ratnasingam (2005) where trust is developed through normative influences deriving from common experiences and values, and through shared competencies.

4.3.2 Case H: An innovation incubator. (Burnett & McMurray, 2008)

Burnett & McMurray (2008) studied the experience of twelve start-up entrepreneurial firms supported by a business incubator. The incubator provided space, access to business services and networks, mentoring and regular performance reviews. Analysis of interview data showed that trust and networking were the two dominant themes supporting success, particular that of trust between mentor and mentee. The most valued external networks were entrepreneurial networks that may stimulate new linkages and business opportunities, and linkages with other family businesses. The incubators established a form of ‘breeding environment’ CNO. Trust in an intermediary was a feature of this case. This is similar to affective trust (Huang and Wilkinson, 2006).

4.3.3 Case I: An aerospace design and development network (Beckett, 2005).

A number of one-to-one strategic alliances with a focal firm evolved over time, and exhibited high levels of trust between collaborators. This allowed the alliance to operate in the style of an extended enterprise when required. After a period of time discussions took place regarding the extension of relationships into a multi-partner

network that would offer a wider range of services. Despite the well-established history of working together, which generally supported positive responses to the new network, most participants wanted to address new issues of potential risk. Some only wanted an associate relationship and wanted to offer services on the historical project-by-project basis, as they saw a risk that any other arrangement might be regarded by other stakeholders in their business as some form of exclusivity (response – too risky, so withdraw). Some were concerned about protecting any intellectual property that might be shared, and wanted to set up a contractual framework for further development of the concept (response – enhance situational control, focus on contract based trust). Others wanted to have a meeting to clarify goals and practices and to meet some of the people that would be the “organisational influencers” (response – try and initially assess trust at a personal level by establishing the extent of goodwill). In this case, the additional risk altered the trust relationships creating a range of reactions. However, all of these reactions were based around Huang and Wilkinson’s (2006) concept of calculative and affective trust.

4.4 Trust in e-collaboration

4.4.1 Case J: Promoting e-collaboration. (Burgess and Jones, 2009)

Three established cluster groups were encouraged to enhance their collaborative relationships through the use of e-collaboration (Burgess and Jones, 2009). E-collaboration approaches the formation and maintenance of cooperative enterprises through the introduction of electronic communication tools to facilitate collaboration. With e-collaboration the interface between firms changes and can take a multitude of forms. The Internet and email are two forms most commonly used. A focus group approach involving about 70 business owner-managers in groups of 8 - 10 was used to identify perceived barriers. Four distinct aspects of trust emerged: individual

(interpersonal) trust, economic trust (Ratnasingham, 2005), system trust Abdul- (Rahman and Hailes, 2000), and technology trust (Ratnasingham, 2005). We observed that all four aspects had to be addressed before e-collaboration could proceed. Of these, individual (interpersonal) trust was considered the most important, leading to the suggestions for face-to-face networking events. However, consistent with other research (Brunetto and Farr-Wharton, 2007), it was thought that such trust would take some time to develop, depending on the nature of antecedent linkages between the parties.

5 Characterising Collaborations

As mentioned in the methodology section of this paper, we wanted to compare matters of trust arising in a variety of circumstances. To do this we chose to use a well researched model, ARCON.

5.1 *The ARCON Model*

The ARCON model (Camaribha-Matos et al, 2007) was constructed to provide a framework that helps capture the multi-dimensional complexity of a Collaborative Networked Organisation (CNO). Aspects of the social networks and technology networks that support CNO operations are inter-woven in the model, as are a number of different business perspectives. At the highest level there are seen to be three interacting perspectives: life-cycle stages, environment characteristics and modelling intents. CNOs are seen to have both internal (endogenous) and external (exogenous) environment interactions. The ARCON model defines three levels of detail in each category, as illustrated in Figure 1. The modelling intent may be to identify general concepts and relationships in a particular instance of a CNO, or to more specifically identify how it is to operate, or at a finer level of detail, define how operations are implemented. In this paper, we are only concerned with the general conceptual level

5.2 *Trust and the ARCON Model*

Taking the view of Sako and Helper (1998), there are elements of contract, competence and goodwill based trust evident in B2B relationships. We identified aspects of trust embedded in the ARCON model by going through descriptions of attributes at the third level of detail in the 60 page document that describes the model. The results are shown in Table 1.

As a result of this process, we observe there are implied attributes related to trust *within* the network and attributes related to trust *of* the network. Most studies of trust in collaborative ventures focus on trust *within* the network. The limited literature focussing on trust *of* the network relates to discussions of structural holes (Ahuja 2000) – where networks are designed to increase trust by strategically creating disconnections between partners. In examining the ARCON model, we are prompted to consider trust *of* the network as well trust from the perspective of different stakeholders. This new view of trust is an area which deserves additional research interest.

Our interpretation of ARCON model attributes shown in Table 1 is that, not surprisingly, contract trust has an endogenous inter-enterprise focus and an exogenous supply chain focus. Competence trust has an endogenous focus on both capabilities to contribute to the goal of the CNO and collaboration capabilities, whilst the exogenous focus is on the supply chain and external certification. The goodwill trust endogenous elements are relatively simply represented in the model as various forms of rules and procedures. The exogenous elements are focused on network identity and seen as more complex due to the variety of stakeholder perspectives that may have to be addressed. Risk management appears in all bases of trust (see Table 1). This may reflect the fact that trust is about anticipated future behaviour, and as such has an associated element of uncertainty (Beckett, 2005)

6 Some Observations from our Case Studies

Table 2 provides an overview of the cases from a trust perspective. Some collaborations were successful, some were not. In the following sections of the paper we illustrate the way questions prompted by the contents of Table 1 (based on the ARCON model) facilitated cross-case comparison.

6.1 A view of some endogenous (internal) attributes

The following example describes a comparison of some cases in relation to one cell of Table 1: structural aspects of goodwill based trust in respect of relationship trust between actors drawing on the market collaboration cases A (Austmine), B (TIFA Aerospace) and C (Nepean IT). In case A, the firms involved did not generally see each other as competitors, and they represented the whole Austmine community in marketing missions, learning more about each other in the process. In case B, the three focal firms had traditionally been competitors, and experienced difficulty in establishing contract-based trust between them. They knew each other quite well through their common involvement in an industry association. As it turned out, the customer did not want to contract with their combined virtual enterprise, but with one of them who would organise the others. Which one would take the lead became a matter of hot debate. In case C, direct contracting with the virtual enterprise resulted in a succession of small tasks for the participants. Issues related to competency-based trust started to emerge as they rotated leadership roles on successive contracts. The collaborators did not see each other as competitors, but they had no prior experience working together. The common theme emerging from the three cases is that there is some benefit to be gained from marketing under a collective brand, but this should be separated from contracting arrangements.

6.2. A view of some exogenous (external) attributes

We tabulated the main focus of exogenous trust from each case in terms of their ARCON market, support, societal and constituency interactions. This simplified view of the cases indicated that some of the collaborations presented may not have a direct link with markets (e.g. case G), but when they do, the objective is to establish network identity trust in a CNO brand (e.g. Case A) or via the reputation of the participants (e.g. case B). The other market approach is to establish trust in the CNO by direct interaction with specific customers. Customers may not choose to contract through the CNO, and may exercise power in constructive or destructive ways (e.g. case D). Notions of ‘economic trust’ came up in some cases, and this will be discussed later.

Support may be provided through government agencies in a policy context (cases A and H), through industry associations pursuing industry objectives (cases B and E), through academia (case G) in an action research context, through training organisations or through mentors (case H). Here the CNO has to have trust in the support agency. Trust in the CNO can be enhanced by interaction with certification entities (case C). The e-collaboration cases raise questions about trust in the internet, and other ICT (case J), as an external logistics entity.

Societal interactions in all of these cases related to economic sustainability values supporting growth or competitiveness for both the benefit of the CNO members and their broader stakeholder community, and this is linked to government support. The focus is on trust in the network entity.

Constituency interactions varied, but none were completely open. Some were restricted by the establishment of a CNO company (case A), some by a pre-requisite membership of an industry association (cases B and E) or regional group (case G), and others by some form of competency test (case I). These are matters of trust in the network entity, and bear further consideration from a social capital perspective.

Doing things together was a recurring theme in building trust within a CNO. However, this might draw on external resources.

6.3 Other Observations

In some cases, client representatives in powerful positions (e.g. the purchasing departments in cases D and E) discounted the value of trust that had been previously developed.

A number of authors have noted that trust develops over time (Inkpen & Curell, 2004; Laaksonen, 2008; Msanjila & Afsarmanesh, 2011), and that this involves learning together in some way. In some of the cases cited here, learning with the goal of enhancing competency was an initial joint activity. In other cases, clearly established competency and interaction with the market resulted in the establishment of goodwill, and then contract based trust, or vice-versa. This suggests three different patterns of comprehensive trust-building that depend on the starting point of the collaboration and the goal:

1. Competence \Rightarrow contract \Rightarrow goodwill trust (cases D, F, I)
2. Competence \Rightarrow goodwill \Rightarrow contract trust (cases A, B, C, E)
3. Goodwill \Rightarrow competence \Rightarrow contract trust (cases G, H, J)

Although, not represented in the cases presented in this paper, we are also aware of cases where contract based trust was the starting point. In such cases, this mode was the result of organizations being in a privileged position, for example being nominated in client specification.

In cases B, C and I the collaboration was not sustainable due to both internal and external factors. In case B, the issues were competition for a limited number of opportunities and a customer aversion to contracting with a virtual enterprise. In case C the issues were previously unidentified competency gaps in some partner firms (some technology, some organisational), and the withdrawal of the large firm sponsor

resulting from a re-organisation. In both cases B and C the market environment did not support further development of the collaboration. In case I, the issues were the lack of prior engagement to build goodwill trust between some of the proposed partners, and concerns about the perceptions of some of their other customers/suppliers if relational preference was given to the network group.

Earlier in this paper we referred to technological, economic, organisational and behavioural trust impact. Case J raised some questions about trust in technology. Technological trust draws from one's adherence to technical standards and security. Specifically: "technological trust is defined as the subjective probability by which organisations believe that the underlying technology infrastructure is capable of facilitating transactions according to their confident expectations" (Ratnasingam, 2005, p.5).

An economic perspective of trust deals with the economic advantages an enterprise gains from their collaboration activities and the affect this has on relationships. Examples of this factor are illustrated in Case B where there were debates about how to share work flowing to the network members, and in case E the customer purchasing agent had a low level of economic trust in the network.

Organisational trust relates to business elements such as management best practices, risk management systems, quality standards, top management commitment, and project management approach. Noteboom (2000, p.53) claims that "organizational trust is a constellation of behavioural trust, with organizational structure and culture acting as institutions that limit and guide behaviour of staff". This appeared as a feature of case H.

The last perspective – behavioural – focuses on the interpersonal characteristics, overall values, attitudes and moods of trading partners, where trading

partners exhibit a willingness to rely and depend on partner's integrity, competence and honesty. Case F refers to a need for positive responding, alerting and initiating behaviour to build customer goodwill trust.

Based on our observations in relation to trust impact, we formed the view that our interpretation of trust aspects of the ARCON model presented in Table 1 would be enriched if each attribute identified was considered in terms of its relationship to a technological, economic, organisational and behavioural impact overlay.

7 Concluding Remarks

Our first comment relates to working with the ARCON reference modelling framework using some pre-conceived aspects of trust (contract-based, competency-based, goodwill-based trust) and a comprehensive (60 page) description of the framework (Camarinha-Matos et al, 2007). We selected items within the model that we thought could impact on the assignment or development of trust. All of these items were found at least somewhere in our case study set, implying that the ARCON framework can be used in a variety of circumstances. Reversing the position and using a high level view of the ARCON framework to characterise our cases provided an interesting overview.

Our second comment relates to context. Some of the cases illustrate that trust developed in one context does not necessarily translate to the same level of trust in another context. The ARCON framework presents some internal and external views of CNO context. Endogenous elements we identified were relationship structures, competencies, some functional processes (e.g. trust management) and contract-driven behaviour. This presented as a structural view, whereas much of the literature on trust takes an agency view. From a trust perspective, the ARCON framework generally views exogenous interactions in the context of trust *in* the CNO as an entity. Our case

studies suggest that exogenous factors also impact on trust within the CNO - if the original CNO objectives are compromised, if a client, a sponsor or the community introduce some 'rules' or behaviours that cause conflict, or if some form of support is not effective.

Our third comment relates to things that we did not perceive to be part of the ARCON framework - matters of agency related to the constructive or destructive use of power, to the role of interpersonal trust amongst key internal or external supporters of a CNO.

Our final comment relates to trust and the CNO life-cycle. An initial quantum of trust has to be assigned by the participants to get a CNO started. This may be based on prior relationships or some past performance data (Msanjila and Afarmanesh, 2009). But trust must be built as the CNO evolves for it to operate effectively. This did not happen in some of our cases, sometimes due to internal factors, sometimes due to external factors. Trust and related aspects of power may have their own life-cycle (Kilpatrick, 1999; Huang and Wilkinson, 2006), which may or may not synchronise well with the CNO life-cycle.

There are a number of implications for practitioners emerging from this study in relation to matters of trust. Firstly, whilst establishing trust *within* a CNO is important, trust *of* the CNO by its potential clients and supporters should also be carefully considered, for example using the contents of Table 1 as a kind of checklist. The development of trust *of* the CNO may take some time and persistence, with positive outcomes being delivered on a number of occasions. Secondly, the order in which competence, contract and goodwill based aspects of trust may develop can be quite context specific, and this should be considered in establishing a CNO. Finally, both CNO working arrangements and trust develop over time, and their interaction

needs to be understood. Some aspect of trust needs to come first, with an initial amount of trust provided to start up the CNO. But then the CNO must have participants extracting value together to both build trust and by that mechanism, simplify CNO operations. Intermediaries have a useful role in facilitating this process.

It is suggested that further research is needed to explore stakeholder trust of a CNO and to consider the affect of power relationships in the development of such trust.

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Table 1. Some attributes of a Collaborative Network Organisation related to trust inferred in the ARCON Model

<i>ARCON Model Element</i>	<i>Contract</i>	<i>Basis of Trust Competence</i>	<i>Goodwill</i>
Endogenous (Internal) Dimensions			
<i>Structure</i>			Relationship trust between actors
<i>Componential</i>		Knowledge resources – profile and competency	
<i>Functional</i>	Risk Management	Risk Management	Trust management. Risk Management
<i>Behavioural</i>	Prescriptive behaviour, Collaboration formal agreement		
Exogenous (External) Dimensions			
<i>Market</i>	Network Identity – references & testimonials (do these guys deliver)	Network Identity – references & testimonials (can these guys deliver)	Interactions: advertising and evidence of customer/supplier oriented transactions
<i>Support</i>		Interaction parties – certification entities, coaching entities and training entities	Network identity – social aspects (e.g. not-for-profit)
<i>Societal</i>			Network identity – values and principles
<i>Constituency</i>			Network identity- inclusiveness of external members

Table 2. An overview of the cases from a trust perspective

<i>Case</i>	Collaboration Type	Trust Building Sequence	Trust Focus	Trust Perspective	Outcome
<i>A: Austmine</i>	Cooperative marketing	Competence ⇒ goodwill ⇒ contract	Reputation	Economic, organizational	Successful
<i>B: TIFA Aerospace</i>	Cooperative marketing	Competence ⇒ goodwill ⇒ contract	Growth	Economic	Unsuccessful due to increased competition
<i>C: Nepean IT</i>	Cooperative marketing	Competence ⇒ goodwill ⇒ contract	Service quality	Behavioral	Unsuccessful due to competency gaps
<i>D: (Nielsen et al, 2004)</i>	Supply chain	Competence ⇒ contract ⇒ goodwill	Service quality	Technological, behavioral	Unsuccessful
<i>E: TAAG</i>	Supply chain	Competence ⇒ goodwill ⇒ contract	Productive complementarity	Economic , organizational	Unsuccessful
<i>F: Japanese manufacturer-supplier study</i>	Supply chain	Competence ⇒ contract ⇒ goodwill	Goodwill towards customer	Behavioral	Successful
<i>G: Agricultural network</i>	Inter-organization innovation	Goodwill ⇒ competence ⇒ contract	Operational performance	Behavioral	Successful
<i>H: Innovation incubator</i>	Inter-organization innovation	Goodwill ⇒ competence ⇒ contract	Business development	Organizational, behavioral	Successful
<i>I: Aerospace design and development network</i>	Inter-organization innovation	Competence ⇒ contract ⇒ goodwill	Business development	Behavioral	Unsuccessful due to poor goodwill
<i>J: e-collaboration</i>	E-collaboration	Goodwill ⇒ competence ⇒ contract	Network development	Technological, economic	Successful

Figure 1. An Overview of the ARCON Reference Modeling Framework

