Supply chain alliances and social dilemmas: bridging the barriers that impede collaboration

Stanley E. Fawcett*
Marriott School
Brigham Young University
668 Tanner Building
Provo, UT 84602, USA
E-mail: Stan_Fawcett@byu.edu
*Corresponding author

Gregory M. Magnan
Albers School of Management
Seattle University
900 Broadway, Seattle, WA 98122, USA
E-mail: gmagnan@seattleu.edu

Matthew W. McCarter
College of Business
University of Illinois
350A Wohlers Hall
1206 South Sixth Street
Champaign, IL 61820, USA
E-mail: mmccart6@uiuc.edu

Abstract: Strategic Supply Chain Management (SCM) creates and maintains collective gains through appropriate alliance relationships, which often require initial investments in an uncertain environment. The development of such relationships may be hindered because, as a form of strategic alliance, Supply Chain (SC) alliances are social dilemmas. This paper uses the social dilemma perspective and data gathered from mail survey and case study methodologies to report how strategic SC relationships navigate social dilemmas to collaboratively create and maintain collective gains.

Keywords: strategic supply chains; social dilemmas; collaboration.


Biographical notes: Stanley E. Fawcett is the Donald L. Staheli Professor of Global Supply Chain Management at the Marriott School at Brigham Young University. He obtained his PhD at Arizona State University and taught at Michigan State before joining the Marriott School faculty. Fawcett is an active researcher and has published over 100 academic and professional articles as well as seven books. He has also taught professional development in SC business model design in Europe, North America and South America.
Supply chain alliances and social dilemmas

Gregory M. Magnan is an Associate Professor in the Albers School of Business and Economics at Seattle University. He received his PhD in Production/Operations Management from Michigan State University. Dr. Magnan was recently voted the Professor of the Year (2005) in SU’s Albers School of Business and Economics. Magnan regularly speaks and gives presentations on a wide variety of supply chain-related topics.

Matthew W. McCarter is a PhD student in organisational behaviour in the Department of Business Administration at University of Illinois, Urbana – Champaign. Before coming to the University of Illinois, he received his BS in Management from the Marriott School at Brigham Young University. McCarter’s research has focused on social decision making with a particular interest in social dilemmas.

1 Introduction

As globalisation, customer demands, and competition increases, managers proactively look beyond their organisation’s boundaries to evaluate how supplier and customer resources can be used to create a competitive advantage (Bartholomew, 1999; Blackwell, 1997; Christopher and Ryals, 1999; Dell and Fredman, 1999; Togar and Ramaswami, 2004). Collaboration among Supply Chain (SC) members is the foundation for this improved competitive advantage (Fawcett and Magnan, 2001). Like other forms of interorganisational relationships (Zeng and Chen, 2003), SC alliances create value through pooling member resources; e.g., information, skills, and innovative processes. SC leaders recognise their interdependence on each other, and have taken initiative to leverage this interdependence to create value through strategic alliances (Danese et al., 2004); where “members are strategically, operationally, and technologically integrated” for long-term value creation (Hult et al., 2004, p.241).

Despite the increased importance of SC alliances, many fail (HBR, 2003). One reason for failure is that the very interdependencies allowing SC members to collaborate and create value for the SC ‘team’ provide an incentive to compete and claim value for private interests. This tendency for opportunistic behaviour in managed supply chains resembles the classic social dilemma (McCarter and Northcraft, 2007). Social dilemmas are situations where participants may opt for a strategy that yields a higher individual payoff than choosing an alternative that is best for the SC team (Liebrand, 1983). When enough SC members pursue their own short-term interests, the SC team’s competitiveness declines.

Opportunist behaviour in SC alliances undermines the collaborative behaviour needed to create unique customer value, costing the alliance members profits, market share, and social capital. Hendricks and Singhal (2005) demonstrated (with a sample of publicly-traded firms) that SC performance ‘glitches’ resulted in roughly a 10% decrease shareholder wealth. Reputation damage can also be high (Schurr, 2007). This paper explores how SC alliances can mitigate the downside of social dilemmas. Two core research questions are addressed:

1 What SC initiatives are capable of mitigating social dilemmas to build collaborative SC teams?

2 How do SC initiatives mitigate the opportunistic behaviour associated with social dilemmas?
2 Social dilemmas and SC alliances

Tension exists between collaborating to enhance resources and competing over scarce resources (Zeng and Chen, 2003). Collaboration involves doing what is best for the supply chain, even when initial investments are required. Competition is the drive to pursue self-interest at the expense of the team. In social dilemmas, value is created for all to enjoy when at least one participant is willing to make an initial investment or sacrifice for the SC team. The dilemma is that no one desires to make the up-front investment when the return is risky. Thus, most firms seek to avoid internalising the costs by placing them on others. As managers evaluate social dilemmas, they must weigh the costs and benefits between collaboration and competition without knowing for sure how other members of the alliance will behave in the future.

2.1 Social dilemma scenarios

Three scenarios are used to explain supply chain social dilemmas and are often portrayed as mixed-motive games: volunteer dilemmas (Murnighan et al., 1993), prisoner’s dilemmas (Komorita and Parks, 1996), assurance dilemmas (Kollock, 1998). The key difference among these three scenarios is the threshold of collaboration needed to achieve advantage. Figure 1 illustrates this point via a simplified game theoretic model. The term ‘n-person’ connotes any number of parties (greater than two) that are involved in the dilemma. The numbers in each cell are the conceptual payoffs for each player contingent on their and other players’ decisions to collaborate or to defect. Each scenario is briefly described below.

Figure 1 Three social dilemma scenarios common in SC alliances

<table>
<thead>
<tr>
<th>Number of others that cooperate</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5-Person Volunteer Dilemma Game</strong></td>
<td>Cooperate</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Defect</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of others that cooperate</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5-Person Prisoner's Dilemma Game</strong></td>
<td>Cooperate</td>
<td>0</td>
<td>15</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Defect</td>
<td>20</td>
<td>35</td>
<td>50</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of others that cooperate</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5-Person Assurance Dilemma Game</strong></td>
<td>Cooperate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Defect</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Notes: Game theoretic matrices are adapted from Franzen (1995, p.190). Row player can be any member of the supply chain. The numbers in each cell are arbitrary values used to communicate conceptual payoffs to the row player contingent on their action and the actions of others.
2.1.1 Volunteer scenarios

In volunteer dilemmas, value is created for everyone contingent on one party’s willingness to incur the initial investment (Diekmann, 1985). Other parties enjoy the benefits at little or no cost – free riding (Olson, 1965). SC examples include one company being asked to pilot a new technology or strategic initiative. The ‘volunteer’ incurs the initial costs, but the benefits are shared by all; e.g., other SC participants know whether the programme works, gain insight into implementation glitches, and obtain documented results to convince their own management to adopt the programme. Another example involves inventory sharing: it may make sense for one firm to hold all excess inventory for the SC team. The dilemma is that no one wants to ‘enjoy’ the costs of volunteering to carry the team’s inventory, but, if no one volunteers, no value is created and the team is less competitive.

2.1.2 Prisoner’s scenarios

In the prisoner’s dilemma paradigm, mutual collaboration always provides benefits; however, each party is tempted to unilaterally defect (or free ride) when they believe that the other parties will collaborate. Unilateral defection (assuming others cooperate) always pays more than mutual collaboration or mutual defection (Dawes, 1980). In n-person prisoner’s dilemmas, the payoff for individual defection increases as a function of the number of collaborators (Franzen, 1995). Inter-organisational teams provide an example of the prisoner’s dilemma in the SC setting. For example, several members of a chain may agree to have their own employees work on a new product development initiative. However, most companies still expect their employees to be productive in-house. The tendency is for team members to opportunistically focus on their own jobs and allow the other SC members to develop the new product. If everyone behaves this way, the SC team creates little or no value.

2.1.3 Assurance scenarios

In the assurance dilemma value is created only if all parties cooperate. Every member of the SC team possesses a unique ability that is needed to achieve success. Mutual collaboration always yields greater benefit than mutual or unilateral defection – free riding is thus discouraged (Kollock, 1998). The dilemma: a single party’s defection destroys value for all collaborating companies (Liebrand, 1983). It only pays to collaborate when one is assured that everyone else will. Unfortunately, it pays to defect when one believes someone else will. Research in SCM and strategic alliances advocates restructuring of alliance interdependence to resemble an assurance dilemma (Celly et al., 1999; Gulati et al., 1994). However, assuring collaboration can be difficult in an SC setting with many potential participants (Franzen, 1995). Even if the SC team is structured to assure no free riding, changes in the external environment can alter the payoffs (Gulati et al., 1994), leaving some less sure that collaboration is really in their best interest (Luo, 2007; McCarter and Northcraft, 2007). Potential miscommunication and misunderstanding diminishes collaboration stability; after all, it only takes one defection to undermine success.
2.2 **Social dilemmas in SC alliances**

The underlying question in each scenario above is, ‘Why don’t companies more willingly and proactively contribute to SC alliance success?’ Two phenomena – social fences and social traps – help explain opportunistic behaviours.

2.2.1 **Social fences**

In SC alliances, a constant temptation exists to forego short-term relationship investments. The hope is that other alliance members will make investments, generating gains for all members of the alliance. Of course, if everyone skimps on needed investments, the alliance starves, collaborative benefits do not emerge, and long-term goals are forfeited. Individual, short-run rationality leads to collective, long-run irrationality. The literature identifies this behaviour as a ‘social fence’ (Messick and Brewer, 1983). The term fence describes the ‘silo mentality’ that keeps people focused on their own short-term, local optimums. For collaboration to succeed, each member of the alliance must scale the fence (escape the silo) to document the long-term benefits and be willing to make short-term investments.

The social fence describes the classic public goods dilemma (Olson, 1965; Gulati et al., 1994; Vibert, 2004). Public goods are resources that once provided can be enjoyed by anyone regardless of their contribution to their creation. Recent research has conceptualised SC alliances as a public goods dilemma (McCarter and Northcraft, 2007). The public good in SC alliances can include new skills, knowledge, processes, systems, or prestige. Throughout the development of the public good situations, managers must understand the nature of the collaboration cost curve (see Figure 2) and be willing to sustain investments long enough to create the public good (Fawcett et al., 2007). High levels of partner trust must also exist. Absent trust, alliance members may fear being taken advantage of by their partners. Fearing opportunism, they minimise their own investments and risks. Fear of exploitation builds a higher fence, making successful collaboration less likely (Williamson, 1975).

![Figure 2](image-url)
2.2.2 Social traps

Whereas social fences lead to short-term cost avoidance, ‘social traps’ emphasise short-term benefit expropriation (Messick and Brewer, 1983). Alliance members fall into the trap when one or more participants choose to use channel power (or some other mechanism) to obtain benefits at the partners’ expense. The most identifiable social trap is the commons resource dilemma (see Dawes, 1980; Kollock, 1998; Kopelman et al., 2002). The ‘tragedy of the commons’ is that because the common resource is open to all and supply is limited, the tendency towards first-mover exploitation means that no one has incentive to maintain the commons resource (Hardin, 1968). Resources developed in a SC alliance may suffer from overuse of the resource (overgrazing) or stealing shared resources for private gain (poaching) (Kumar and van Diesel, 1996). In SC alliances, not all participants are equally well positioned to overgraze or poach. Trust becomes a critical control on opportunistic behaviour (McCarter and Northcraft, 2007).

Social traps may also occur at the organisational level, affecting a SC alliance’s ability to maintain value (Kramer, 1991). The fact that internal resources are scarce and sought after by different departments may lead to conflict as departments fight over who gets what portion of the commons resource. Internal turf conflicts tend to expend excessive resources and reduce a company’s capacity to be a reliable, contributing SC alliance partner.

To summarise, the existence of social fences leads alliance members to minimise short-term cost while hoping that partners make investments that generate benefits. This behaviour foments a value-creation problem. In social traps, alliance members seek to expropriate short-term benefits, creating a value maintenance problem. Alliance success depends on managing strategic SC relationships to avoid, or at least mitigate, the negative impact of social dilemmas.

3 Methodology

To investigate the dynamic nature of social dilemmas in SC alliances, a triangulation research methodology was employed (Scandura and Williams, 2000; Lewis, 1998). A thorough literature review was combined with cross-functional mail surveys and in-depth case-study interviews. The surveys focused on examining functional perceptions while the interviews evaluated channel perspectives of SC alliance management practice.

3.1 Cross-functional mail survey

The survey targeted three groups of managers: purchasers, logisticians, and manufacturing managers. A four-page survey was developed based on existing literature as well as a series of pre-survey interviews. Feedback from members of the study’s advisory board was used to modify the instrument. A large-scale pre-test was conducted. Three mailing lists of 1500 middle and senior level managers were compiled from the membership rosters of the Institute for Supply Management, the Council of Supply Chain Management Professionals and APICS.

The survey process followed Dillman’s (1978) Total Design Method. Approximately 100 non-respondents from each group were telephoned to obtain basic demographic data so that respondent and non-respondent profiles could be compared. No differences were
found. The pre-test results were reviewed and the survey was modified. New mailing lists were compiled. These mailing lists consisted of 500 names. Each manager was telephoned and asked to participate. About 20% of the telephone numbers were inaccurate. The mailing list was updated and the survey sent out. The sample sizes, number of respondents, and response rates are shown in Table 1. The findings from the two mailings were compared and no statistical differences were found.

Table 1  
Survey samples and response rates

<table>
<thead>
<tr>
<th>Associations</th>
<th>Adjusted sample size</th>
<th>Completed surveys</th>
<th>Response rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISM</td>
<td>1329</td>
<td>96</td>
<td>7.2</td>
</tr>
<tr>
<td>CSCMP</td>
<td>1369</td>
<td>129</td>
<td>9.4</td>
</tr>
<tr>
<td>APICS</td>
<td>1351</td>
<td>109</td>
<td>8.1</td>
</tr>
<tr>
<td>Pre-notification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISM</td>
<td>370</td>
<td>84</td>
<td>22.7</td>
</tr>
<tr>
<td>CSCMP</td>
<td>398</td>
<td>76</td>
<td>19.1</td>
</tr>
<tr>
<td>APICS</td>
<td>328</td>
<td>94</td>
<td>28.7</td>
</tr>
</tbody>
</table>

3.2  Case study interviews

The case study method emphasises in-depth qualitative analysis and provides an opportunity to contextualise survey findings (McCutcheon and Stuart, 2000). Four chain positions were pre-determined to allow cross-channel analysis (Eisenhardt, 1989). A total of 51 in-depth interviews were conducted as follows: 14 retailers, 13 finished goods assemblers, 15 suppliers, and nine service providers. All interviews were conducted face-to-face. Confidentiality was promised to facilitate candid responses. Case study participants were largely senior-level managers at leading SC companies. During each interview, a semi-structured interview guide was used. The guide consisted of open-ended and rating-scale questions, enabling a clearer perspective of each interviewee’s responses (Spradley, 1979). Structured case study write-ups were created to allow further analysis and to avoid ‘data asphyxiation’ (Pettigrew, 1990). The insight gained by combining the surveys with the interviews yielded a more holistic view of the status of SC alliances as well as a prescriptive look at what is still needed to facilitate effective collaboration.

4  The status of SC alliances

The three groups of materials managers were asked to indicate the extent to which they agreed with 12 different statements that assessed the implementation status of key SC alliance initiatives (see Table 2).
Supply chain alliances and social dilemmas

Table 2  Status of SC alliance initiatives

<table>
<thead>
<tr>
<th>Mechanisms</th>
<th>Combined</th>
<th>Purchasing</th>
<th>Manufacturing</th>
<th>Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>R</td>
<td>% 5–7</td>
<td>Mean</td>
</tr>
<tr>
<td>Custom products/services</td>
<td>5.51</td>
<td>1</td>
<td>78.00</td>
<td>5.50</td>
</tr>
<tr>
<td>Accommodate customer needs</td>
<td>5.49</td>
<td>2</td>
<td>81.20</td>
<td>5.51</td>
</tr>
<tr>
<td>Key customer accounts</td>
<td>5.37</td>
<td>3</td>
<td>77.60</td>
<td>5.36</td>
</tr>
<tr>
<td>Trust-based customer alliances</td>
<td>4.86</td>
<td>4</td>
<td>66.60</td>
<td>4.93</td>
</tr>
<tr>
<td>Supplier screened and assessed</td>
<td>4.84</td>
<td>5</td>
<td>64.20</td>
<td>5.10</td>
</tr>
<tr>
<td>Suppliers manage upstream</td>
<td>4.65</td>
<td>6</td>
<td>57.70</td>
<td>4.98</td>
</tr>
<tr>
<td>Trust-based supplier alliances</td>
<td>4.37</td>
<td>7</td>
<td>49.60</td>
<td>4.72</td>
</tr>
<tr>
<td>Written alliance contracts used</td>
<td>4.08</td>
<td>8</td>
<td>45.80</td>
<td>4.04</td>
</tr>
<tr>
<td>Shared rewards/risks upstream</td>
<td>3.90</td>
<td>9</td>
<td>35.70</td>
<td>4.27</td>
</tr>
<tr>
<td>Alliance creation guidelines</td>
<td>3.69</td>
<td>10</td>
<td>31.50</td>
<td>3.81</td>
</tr>
<tr>
<td>Alliance monitoring guidelines</td>
<td>3.66</td>
<td>11</td>
<td>30.70</td>
<td>3.68</td>
</tr>
</tbody>
</table>

Notes:  Indicate the extent to which you agree with the statements as they relate to your SC.  
(1 = Strongly disagree, 7 = Strongly agree).

The fundamental principle driving SCM is that closer, more cooperative relationships can yield mutually beneficial competitive advantage. The data in Table 2 suggest that companies are making some progress in managing SC alliances; however, the progress is uneven and is most pronounced on the customer side. Three customer-focused practices received scores greater than five on a seven-point scale. Respondents believe that their firms are effectively customising products and services for key customers (mean = 5.51), accommodating customers’ special requests (mean = 5.49), and adopting the key account approach to managing their best customers (mean = 5.37). Establishing trust-based relationships with customers was also recognised as a relatively well-established practice (mean = 4.86, rank = 4). Customers appear to exert the greatest leverage in most dyadic relationships. As a result, respondent companies are anxious to meet customers’ needs and achieve greater customer loyalty. The first three initiatives help to navigate collective fences by demonstrating a willingness to invest in the collaborative alliance. The fourth, building trust, lowers fences and eliminates traps by reducing the tendency to expropriate
early benefits. These behaviours may be considered signalling behaviours since they send the signal that a company is serious about building a collaborative relationship. The hope is that other members of the alliance will reciprocate (Komorita et al., 1992).

The highest-ranked practice directed towards achieving better supplier relationships was the careful screening and assessment of suppliers prior to selection (mean = 4.84, rank = 5). Supplier selection is the most basic sourcing practice; thus, this finding reveals that sourcing continues to receive less attention than downstream marketing activities. Even purchasers ranked rigorous supplier selection as less fully implemented than customer management initiatives (mean = 5.10, rank = 4). Moreover, companies have been significantly slower in establishing trust-based supplier relationships than they have been in building customer alliances (mean = 4.37, rank = 7). Another supplier-targeted practice that is widely used is the reliance on first-tier suppliers to manage upstream suppliers (primarily second-tier suppliers). Most efforts to manage second- and lower-tier suppliers go through the most important first-tier suppliers. The one exception is the use of second-tier purchasing contracts. Overall, these initiatives seem to be focused on carefully choosing who the players are in the social dilemma game (Coricelli et al., 2004).

Finally, each of the practices used to formalise alliance management were viewed sceptically. Only the use of written contracts received a score greater than four; however, fewer than 50% rated this practice a five or higher (mean = 4.08, rank = 8). Likewise, fewer than one in three respondent companies use clear guidelines to create or to manage SC alliances. Companies continue to manage alliances on a largely ad hoc basis. They persist in maintaining an inward focus, worrying about their own immediate short-term performance – a symptom of both collective traps and fences. The relatively low scores for managing alliances on the basis of shared risks and rewards further manifest this reality. Most companies hesitate to share risks and rewards with SC alliance partners, but they are particularly reticent when it comes to sharing upstream with suppliers. They exploit power asymmetries to expropriate relationship resources. Building SC alliances based on equal sharing in the presence of unequal power is a stretch since most companies fear being taken advantage of by defecting alliance partners.

To summarise, progress is being made in forming strategic SC alliances. Companies are clearly dedicating more resources to understanding and fulfilling unique needs of their most important customers. Supply-side relationships have not received the same attention or resource dedication. Perhaps most interesting is the overall lack of attention to formalising the alliance creation and management process. Most companies seek the benefits of closer relationships without making enduring investments in those relationships, a classic social dilemma problem.

4.1 Barriers to strategic supply chain value creation

To further explore the state of alliance management, managers were asked to indicate the extent to which certain alliance management practices acted as a barrier to developing value through SC alliances (see Table 3). Interview and survey results suggest that transitioning away from transactional (often win-lose relationships) is a real challenge. Over 60% of the survey respondents noted that the lack of clear alliance guidelines impedes value creation. SC alliances are not easy to establish and require a change in philosophy as well as a change in practice. Guidelines are needed to determine (1) which
Supply chain alliances and social dilemmas

relationships merit partnership status; (2) the intensity of specific relationships; (3) how key resources like intellectual property are to be developed, shared, and protected; and (4) when an alliance should be modified or terminated.

Table 3 Alliance practices as barriers or bridges to value-creating SC alliances

<table>
<thead>
<tr>
<th>Alliance practices</th>
<th>Combined</th>
<th>Purchasing</th>
<th>Manufacturing</th>
<th>Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barriers to SC teaming</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack clear alliance guidelines</td>
<td>4.87</td>
<td>1</td>
<td>62.4</td>
<td>4.74</td>
</tr>
<tr>
<td>Lack shared risks and rewards</td>
<td>4.83</td>
<td>2</td>
<td>65.6</td>
<td>4.73</td>
</tr>
<tr>
<td>Lack willingness to share info.</td>
<td>4.56</td>
<td>3</td>
<td>56.1</td>
<td>4.56</td>
</tr>
<tr>
<td>Organisational boundaries</td>
<td>4.49</td>
<td>4</td>
<td>52.4</td>
<td>4.42</td>
</tr>
<tr>
<td>Measuring SC contribution</td>
<td>4.32</td>
<td>5</td>
<td>49.2</td>
<td>4.31</td>
</tr>
<tr>
<td><strong>Bridges to SC teaming</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply base reduction</td>
<td>4.21</td>
<td>1</td>
<td>42.8</td>
<td>4.50</td>
</tr>
<tr>
<td>Customer selectivity</td>
<td>4.11</td>
<td>2</td>
<td>43.5</td>
<td>3.89</td>
</tr>
<tr>
<td>Clear selection guidelines</td>
<td>3.97</td>
<td>3</td>
<td>38.2</td>
<td>4.05</td>
</tr>
<tr>
<td>Sharing risks and rewards</td>
<td>3.83</td>
<td>4</td>
<td>35.6</td>
<td>3.99</td>
</tr>
<tr>
<td>Clear alliance guidelines</td>
<td>3.76</td>
<td>5</td>
<td>32.0</td>
<td>3.81</td>
</tr>
</tbody>
</table>

Notes:  
* To what extent do the above act as barriers to supply chain integration?  
(1 = Not a barrier, 7 = Serious barrier).

† To what extent have each of the above facilitated increased inter-firm coordination  
(1 = Not a facilitator, 7 = Effective facilitator).

Similarly, two-thirds of the respondents identified the lack of shared risks and rewards as a real impediment to SC alliance success. Business environments that emphasise P&L statements and quarterly reports lead managers to attempt to maximise short-run profits and economic rents rather than try to add value through collaborative alliances. Most companies, especially those with market power, find it difficult not to expropriate the economic benefits of alliances. Despite this fact, dominant SC members demonstrate a desire to spread the risks of uncertainty with alliance partners. Moreover, even when the decision has been made to apportion risks and rewards equally, identifying and quantifying them is extremely difficult.

The third relationship barrier (identified by 56% of the respondents) involves a lack of willingness to share information with SC ‘partners’. The unwillingness to share information is an attitudinal barrier that arises from long-standing channel tensions. Many managers simply do not feel that they can afford to share proprietary information. The
downside: without open information sharing, strategic and tactical SC decisions are
certain to be sub-optimised and future integration efforts jeopardised. This tendency is
evacubated by the fact that just over half of the respondents claimed that organisational
boundaries represent a serious obstacle to SC initiatives (mean = 4.49). Traditional
organisational boundaries endanger SC collaboration because they promote sub-unit
loyalties and a desire to ‘protect turf’. Since people tend to hold tenaciously to their
comfort zones, efforts to alter organisational boundaries and redefine roles and
responsibilities among alliance partners almost always produce employee resistance. SC
reengineering initiatives are viewed as a threat. Social dilemma theory highlights the
dangers to collaboration when participants feel that their turf has been invaded:

“Traditional users of the [commons resource] feel threatened by the invasion of
their space by a new [comers] … that reduces the value of [the resource]. In
many other settings, when new users arrive …. they do not share a similar
understanding of how a resource works and what rules and norms are shared by
others. Members of the initial community [or group] feel threatened and may
fail to enforce their own self-restraint, or they may even join the race to use up
the resource.” (Ostrom et al., 1999, p.280)

One theoretical explanation for this need to protect one’s turf is that people form
psychological bonds or attachment to such things as ideas, traditions, places, people,
objects, and practices. This bond may lead people to perceive themselves as the
‘psychological owners’ of the object, person, or practice (Pierce et al., 2001). The result:
an increase in one’s psychological ownership of an item leads to territorial behaviour;
after all, the resource is theirs and no one else’s (Brown et al., 2005).

Finally, about 50% of the respondents viewed the difficulty in evaluating the
value-added contribution of each SC member as a challenge to alliance success. Being
unable to measure inputs may decrease a chain’s ability to scale the collective fence: if
inputs are not easily measured, it becomes easier for a party to say they contributed
resources, when they really did not (or at least contributed very little) (McCarter and
Northcraft, 2007). The interviews revealed that relatively few companies are actively
engaged in evaluating value-added contributions up and down the chain.

4.2 Bridges to strategic supply chain value creation

To understand how companies are attempting to overcome the barriers to alliance
success, managers were asked to indicate the extent to which certain practices act
as a bridge to creating value through SC alliances (see Table 3). Very few practices
– mentioned in our mail survey – have a remarkably positive impact on enabling SC
alliance success. Enabling scores ranged from 3.76 to 4.21. Two possible explanations
exist. First, none of the practices is truly effective in bridging collaboration barriers.
Second, while there has been a lot of talk regarding SC alliances, the typical company is
not very adept at managing alliance relationships for value creation. The interviews
suggest that firms are indeed struggling to walk the alliance talk. The interviews reveal
that high-level SC collaboration is sufficiently complex that no simple set of practices is
capable of closing the cultural, emotional, physical, and strategic gaps that hinder alliance
value creation.

Strengthening SC relationships typically requires some degree of SC simplification.
This is done upstream through supply base rationalisation (mean = 4.21) and downstream
through customer selectivity (mean = 4.11). SC complexity wastes resources, diverts
managerial attention, and complicates the building of effective alliances. Complexity in the chain also increases the tendency towards opportunist behavior. Explanations may include the following:

- more participants makes it easier to social loaf; that is, companies may appear to be doing their part when in reality they are not (Latane et al., 1979)
- larger groups just by sheer size alone suggests a greater likelihood of more free riders (Franzen, 1995)
- individuals in large groups may perceive their contribution as insignificant or not necessary (Kerr, 1992)
- participants may defect since they anticipate that their partners will defect for any of the three former reasons (McCarter and Northcraft, 2007).

To reduce the complexity and enhance the company’s ability to effectively manage SC alliances requires a reduction in the total number of SC participants or an increase each party’s perception that their contribution matters and is measured. It further requires that supplier and customer relationships be evaluated and classified, usually through some form of ABC classification. Close relationships are then formed with a very select group of SC partners – the most important of the ‘A’ suppliers and customers. Few companies have the necessary resources to manage alliance relationships without having first rationalized and classified SC relationships.

The enabling capability of three additional alliance management tools – ‘clear partner selection guidelines’, ‘a well-accepted approach to sharing risks and rewards’, and ‘clear guidelines to manage strategic supply chain’ – was also evaluated. The highest ranked of these was the use of clear guidelines to select the best possible SC partners. Even among purchasers, whose primary job is to find and/or develop the best possible suppliers, this practice was ranked in the middle of the pack (mean = 4.05). Ambiguity persists when it comes to determining who to work with on a collaborative basis. Indeed, most companies develop synergistic relationships with fewer than 3 to 10% of their SC members. Similarly, only a little over a third of the respondents gave ‘shared risks and rewards’ an enabling score of a five or greater. Self-interest and scepticism are hard to overcome. Finally, the use of guidelines to manage evolving alliance relationships has yet to be recognised as an effective facilitator (mean = 3.76). Overall, the responses regarding SC relationships indicate that simplifying the chain is easier than managing SC relationships for competitive impact.

Looking at the three response categories (status, barrier, and bridge) yields a consistent and compelling conclusion – most companies do not yet have the skills needed to build winning SC alliance that creates value.

5 Building winning supply chain alliances

The interview results underscored the fact that synergistic SC alliances are very rare. When asked to indicate the percent of their SC relationships that are alliances, two responses were common. First, several managers asked, “What do you mean by alliance?” This response revealed that the word alliance is used to signify a wide range of relationship types. Second, many managers indicated a rather large percentage of
relationships operate as alliances. The interviewer then followed-up by defining an alliance as a collaborative or synergistic relationship that adds value above and beyond what is achievable through long-term contracts. With this clarification, interview managers inevitably adjusted their percentage dramatically downward. Many managers use words like ‘alliance’ or ‘partner’ to describe long-term contracts, technology linkages, or certification status. Since collaborative, synergistic working relationships represent only a small fraction of all SC relationships, the question arises, “How do companies build winning SC alliances?”

5.1 The alliance development process

The interview findings suggest that the alliance development process occurs in three phases (see Figure 3).

Figure 3 The alliance development process

5.1.1 Phase 1: Internal planning

SC leaders begin the alliance development process in-house, asking themselves, “What should our alliance strategy look like?” They assess the probability that the company can improve competitiveness through closer relationships. Part of this assessment is aimed at ascertaining the company’s readiness to participate in collaborative relationships. Do managers really have the mind-set, the skills, and the patience to build successful alliances?

When alliances are an appropriate part of the competitive strategy, SC leaders establish an overall relationship management policy. A rigorous relationship screening and evaluation process is put in place to classify SC partners and define appropriate
relationship intensity. Managers then conduct an opportunity analysis. Specificity helps set expectations, promote open communication, and define roles and responsibilities. It also helps quantify the real, attainable benefits to be gained and shared.

5.1.2 Phase 2: Collaborative planning

Once specific opportunities have been identified, defined, and prioritised, managers begin to work with potential alliance partners. After initially approaching a potential partner with an idea for collaboration, the only way to truly know if it can create value is to explore the possibility together. This requires team-based collaborative planning between the company and targeted alliance partners. Initially, the goal is to quantify the net impact of the potential alliance on both sides of the proposed partnership. If the alliance is viable and profitable for both sides, it will be possible to obtain the top management support that is critical to alliance success.

Once top managerial support is in place, an alliance steering team is put in place and an execution timeline is established. Their job is to get specific. The focus is now on implementing specific relationship and operational improvement activities via goal identification, role specification, and the adoption of performance metrics and milestones. Both sides should be interested in clarifying minimum performance expectations, how changes in the technological and competitive marketplaces will be handled, and how shared resources and jointly developed technologies will be allocated.

The final aspect of the up-front collaborative planning is to define the exit strategy. At SC leaders, alliances are entered into to build specific capabilities. As the competitive environment may change, new technologies are developed, the desired capabilities are achieved, or the alliance fails to deliver on its initial promise, it may be appropriate to exit the alliance. Because a company’s reputation as a good partner depends on its ability to end an alliance amicably, the various contingencies should be planned for as part of the alliance definition process.

5.1.3 Phase 3: Day-to-day management

Making an alliance work entails the hard work of managing change, people, and technologies. Good process and project planning skills supported by frequent and open communication, strong leadership, and good team building help assure successful alliance execution. Patience is also needed. Alliances that truly change the nature of the relationship always run into problems. When these problems are anticipated, it is easier to work through them. Celebration is also an important aspect of alliance implementation. When great results are achieved, SC leaders recognise and celebrate them. Partner recognition programmes are standard practice at SC leaders because they generate goodwill and create visibility and momentum.

As competitive imperatives change, SC leaders evaluate the alliance’s performance and look for renewal opportunities. This involves active scanning of market conditions, customer needs, competitors’ strategies, political shifts, and technology trends. The goal is to make sure that the alliance stays relevant and that it captures as much value as possible. Complacency or a sense of independence promotes social fences and traps, impeding long-term alliance sustainability.
5.2 Practices that support SC alliances

Turning strong relationships into collaborative SC alliances is resource intensive and requires a variety of tools and techniques to govern the relationship development process. Twelve practices emerged from the interviews as important to building winning SC alliances. Many of these practices specifically attempt to mitigate the negative consequences of social dilemmas by discouraging opportunistic defection or expropriation.

5.2.1 Phase 1: Practices

1. Formal guidelines govern alliances. Once an alliance is initiated, a set of policies and procedures is needed to guide everything from whom key contacts will be to how resources will be shared and when investments will take place. Established guidelines should touch on all major aspects of alliance management and have been advocated by scholars for decades as a strong mechanism for cooperation in social dilemmas (e.g., Ostrom, 1990).

2. A formal mechanism is used to identify potential alliance partners. ‘ABC’ classification is a tool commonly used by participant companies to define relationship intensity. A continuum that ranges from occasional transactional relationship to synergistic alliance is used to characterise relationship strength.

5.2.2 Phase 2: Practices

3. Clear and concise long-term contracts govern most successful alliances. Long-term contracts often run one to five years (a few contractual relationships of up to ten years were found). One manager called a clear contract ‘the key’ to alliance success. Long-term contracts that guarantee a certain amount of business are used more than any other tool to lower social fences, mitigate opportunistic behaviour, and foster strong SC alliances.

4. Clear roles and responsibilities are defined and communicated. All sides of an effective alliance must explicitly understand what is expected from them. Defining and stating roles and responsibilities help to make sure that important issues do not ‘fall between the cracks’ and reduces the frequency and magnitude of alliance conflict. This mechanism focuses not just on the decisions SC teams make but also on how they make them.

5. Confidentiality agreements are used to protect proprietary technologies and processes. Excellent companies like to partner with excellent companies. Therefore, confidentiality agreements are considered a requirement for collaborative SC alliances. The agreements should specify how any jointly developed technology will be used in the future.

6. Continuous improvement clauses have become standard in most SC alliances. Companies want a commitment from their partners that assures continued superior performance over the duration of relationship. Improvement clauses target cost, quality, delivery, and innovation performance and specify both rewards and penalties. Increased volumes are often tied to improvement.
Exit criteria should be spelled out at the very beginning of the relationship. A strong consensus emerged throughout the interviews that even the best of relationships often become one-sided or cease to be mutually beneficial. This may occur because of changes in the external environment (Gulati et al., 1994) or because the contacts that a company has become accustomed to and comfortable doing business with either changes roles or leaves the company (Broschak, 2004). As a rule, managers possess a strong desire to maintain some flexibility through exit clauses.

5.2.3 Phase 3: Practices

Dedicated alliance governance teams are increasingly used to foster ‘personal’ relationships and establish continuity between alliance partners. Knowing the people on the other side of the relationship facilitates communication, reduces the time needed for problem solving and brainstorming activities, and mitigates the likelihood of opportunistic behaviour. Dedicating resources to a relationship also demonstrates commitment and helps establish trust.

Technology linkages are used to routinise information exchange. The connective technology must be supported by a policy promoting frequent, honest, and open information sharing. Establishing a formal information-sharing policy helps promote the efficient and willing exchange of accurate and relevant information between alliance partners. Information sharing builds trust and is the third most frequently cited key to alliance success.

A problem resolution methodology must be in place. Even in the best of relationships, occasional misunderstanding or breakdowns occur. Successful alliances have an established and agreed-to approach to evaluate and resolve any problems that arise.

Risks and rewards are shared on a mutually acceptable basis. Real alliances cannot be one-sided – synergy demands that both sides benefit from the relationship. The need to establish a mechanism for jointly sharing risks and rewards was the second most frequently cited key to alliance success. Managers consistently expressed concern that the company with greatest channel power benefits disproportionately from most SC relationships.

A rigorous measurement alignment methodology helps keep alliance partners ‘on the same page’. Partners need to know how they are being evaluated as well as how they are actually performing. When all parties of an alliance use consistent measures to evaluate their own and each other’s performance, problems can be identified before they become crises. Fewer misunderstandings arise and lower-cost corrective action can often be initiated.

In addition to the tools and techniques identified by the interviewed managers, numerous less-tangible attributes and philosophies need to be cultivated to support effective SC alliances. Foremost among these ‘keys’ to managing supply chains is trust (Fawcett and Magnan, 2004). No single word was mentioned more frequently than trust; yet, managers lamented that high levels of trust seldom exist. One of the challenges to building trust-based relationships is that trust has numerous antecedents including open and honest information sharing, commitment, clear expectations, and follow through. The passage of
time, high levels of actual performance, and the fulfilment of promises also precede trust. Finally, real trust exists only when both sides agree that it does. Relationships that one party describes as trust-based are often viewed as less friendly and less mutually advantageous by the other side (Van Lange et al., 2002).

The attributes listed below were described as fundamentals of outstanding SC alliances. The difficulty in measuring the extent to which each attribute is present combined with the lack of a precise formula for developing each attribute creates the air of intangibility. For some of the attributes, the most difficult aspect to measure is the ‘shared’ or ‘collaborative’ nature of the activity. The asymmetry in distribution of benefits and burdens in social dilemmas can lead to increased egocentrism, biased feelings of what constitutes one’s fair share, and overexploitation of the commons resource (Wade-Benzoni et al., 1996). The underlying characteristic of all the following attributes is an emphasis on bringing parties together to create value that they could not do alone (Zeng and Chen, 2003).

- Collaborative/joint efforts
- Collaborative continuous improvement
- Creativity, innovation, and idea generation
- Cultural fit
- Mutual commitment to the relationship
- Mutual dependence
- Patience and perseverance
- Personal relationships
- Shared vision and objectives
- Trust
- Understanding of each other’s businesses
- Willingness to be flexible and tailor services

5.3 Collaborative efforts that reinforce SC alliance success

Efforts to build and leverage effective alliances focus on a variety of collaborative activities. The most frequently used approach to building strong SC relationships is to provide quality and technical assistance. At a couple of the participant companies, channel partners have access to every class or seminar that is offered to internal employees. Leading SC companies recognise the need to do everything they can to help build the skills of the entire SC team. An extension on the training motif is the increased use of process development teams to help supply partners dramatically improve their own capabilities. Several companies have dedicated a large portion of their process engineering staffs to assist key suppliers in process redesign efforts. Such education programmes may very well help navigate and resolve SC social dilemmas because they bring to parties’ attention that a dilemma exists in the first place and this makes them more prepared to ask the right questions for the right problems (cf. Kollock, 1998). Several other collaborative initiatives were described in the course of the interview process.

1 Continuous improvement suggestion programmes. At one interview company, suppliers are encouraged to make suggestions for how the buying company can improve its process costs. Every suggestion is reviewed and feedback provided to the supplier within 20 days. When a suggestion is approved, the two companies
Supply chain alliances and social dilemmas

Collaborate to make ‘it’ happen. The first year’s savings are shared 50/50. Continuous improvement programmes often go beyond cost and quality to target cycle time reduction, tailored services, and new product development.

1 Joint problem solving. Closer relationships facilitate collaborative problem solving. When a problem is discovered, a problem-solving team comprised of buyer and supplier personnel comes together to identify the root cause, brainstorm a resolution, and take action.

2 Collaborative pilot projects. Alliance relationships often provide the ideal setting to test new programmes and validate innovative SC ideas. For example, when one interview company began to consider the adoption of Collaborative Planning, Forecasting, and Replenishment (CPFR), it looked to a channel partner that had proven to be a close ally in previous ventures. The two worked closely to pilot test CPFR. The close working relationship removed many of the challenges inherent to social dilemmas. The successful pilot test yielded outstanding results that were used to sell CPFR to other customers.

A natural outcome of SC collaboration is the redefinition of organisational boundaries. Ideally, roles and responsibilities are shifted from one member of the chain to another based on who is best positioned to most efficiently and effectively achieve results. A company must make sure that other SC members do not develop all of the competencies they possess. When this happens, that company becomes dispensable or ‘redundant’ and can be role-shifted out of the chain (Cortazar, 1997). Such disintermediation is becoming a real threat and is altering the dynamics of many supply chains.

5.4 Caveats to SC alliance development

Based on our interview data and existing literature the following cautions merit attention.

- Too many companies rely on size or channel power to motivate supplier cooperation and, in the minds of suppliers, to extract concessions. Two comments were commonly heard throughout the interviews. Customers tended to say, “They need us”, when talking about suppliers. By contrast, suppliers often lamented, “They constantly beat us up”, when referring to customers. McCarter and Northcraft (2007) highlight how power asymmetry may actually increase one’s tendency to defect – not as an offensive strategy, but as an effort to avoid being taken advantage of.

- Real risk and reward sharing is not the norm. Companies that possess greater channel power tend to hold on to a greater proportion of mutually generated benefits. When asked how his company shares rewards, one manager said, “We don’t do that.” A manager at a supplier shared the same perception, but from the other side of the ‘power’ fence. He expressed his opinion that a key customer was ‘very good at sharing risks and rewards. The buyer keeps all of the rewards and passes all of the risks on to us’. This observation suggests that ‘volunteering’ is often the product of coercion rather than doing what is best for the collective (Keating et al., 1981).

- A company’s position within the chain determines how it sees the world and role-shifting possibilities. For example, during one interview, a manager suggested that a key company goal is to increase the percent of product that it essentially holds
‘on consignment’. The goal is to take possession of product at its distribution centre and manage it until it is sold, at which time it pays the supplier. This type of ‘pay at scan’ strategy greatly improves the cash-to-cash cycle and asset utilisation of the buyer while placing a greater financial burden on the supplier. The manager who shared this objective felt that this new role definition made perfect sense. When the topic of suppliers establishing alternative distribution channels via the internet, the manager reacted passionately, saying, “We would never tolerate that.” Fairness is still defined locally and usually in a company’s own best interest.

- Many companies still do not have the supply side in full view; rather, they are focused expressly on the customer. Several managers noted that while their companies aggressively pursue partnerships with valued customers, they do not build supplier alliances. This unbalanced view of the supply chain suggests that the supply side is still the lesser of two equals.

- When it comes to alliance relationships, institutional memories are very short. Consistently excellent performance is expected – a supplier is only as good as its last performance. Although commitment to strategic SC alliances varies from company to company, a prevalent perception is that SC relationships are fungible. One company walked away from a relationship that had taken seven years to develop simply because it decided that other suppliers offered lower prices. This caveat suggests that sustained cooperation may be unstable when one partner’s quest for immediate returns leads to ‘interchangeable’ relationships.

- Most managers are focusing on the notion of appropriateness. Partnering is appropriate only in a very small percentage of relationships. All other relationships are to be managed at much lower levels of resource intensity. The key is to identify the best SC ‘partner’ to fulfil a specific need and then establish the appropriate relationship with that company.

- Managers (interviewed and surveyed) noted that written contracts are ‘key’ to strategic SC alliance success. However, experimental work (Malhotra and Murnighan, 2002) shows that in prisoners’ dilemma games, binding contracts can increase compliance without building the relationship. Trust between parties is not strengthened, and, in fact when binding agreements are terminated and nonbinding agreements employed, cooperative behaviour drops off. The opposite was found when partnerships began with non-binding contracts. This counter-intuitive finding suggests that perhaps formal contracting may be a social dilemma in and of itself: parties may be tempted to use a resource (i.e., the binding contract) that brings them short-term benefits (cooperation) while increasing the likelihood of creating long-term burdens (low inter-party trust) that can hurt everyone involved.

6 Conclusion

Today’s companies are aware of opportunities to improve organisational competitiveness through SC alliances and have moved away from the adversarial model that dominated SC relations for much of the 1900s. However, few managers have abandoned the notion that channel power and coercion can and should be used to advance their companies’ positions – even in collective efforts. The result is that more collaboration is taking place in modern SC relationships, but it is taking place on a very selective basis and, in
many cases, the benefits and burdens of collaboration are not evenly distributed. Such asymmetry can lead to barriers that inhibit behaviours that can benefit the whole rather than a select few (Wade-Benzoni et al., 1996).

Managers are willing to pursue closer buyer/supplier relationships when they perceive that it is in their best, immediate interests. However, this tendency to pursue self-interests over collective interests creates several social dilemmas that undermine the very benefits that these alliances were instituted to create. Moreover, managers are attempting to become more proficient in utilising the tools and techniques that foster synergistic relationships. Their companies are also making slow progress in assimilating the attributes that will enable more collaborative ventures. Nonetheless, many managers remain somewhat opportunistic and defensive, limiting their ability to build truly cohesive, mutually advantageous SC alliances.

Viewing strategic SC alliances as social dilemmas is relatively new. This paper advances this line of thinking in the following ways. First, our case studies provide some evidence that both forms of social dilemmas – social fences and social traps – occur in SC alliances. Second, several new mechanisms for cooperation were found through the interviews that may hold promise for social dilemma scholars to study in the future; e.g., pilot programmes and clear rules and conditions for relationship termination. Lastly, several mechanisms are brought to the fore that may exacerbate defecting behaviour. Turf protection is one example where people seek to guard their ‘property’ even when it is technically not theirs. When this is coupled with lack of control or the feeling of vulnerability, a person may be tempted to hoard resources or use them up simply so that others cannot use them (Ostrom et al., 1999). Table 4 highlights the areas where the greatest progress has been made in improving SCM while pointing out that much work remains to be done.

<table>
<thead>
<tr>
<th>Points of progress</th>
<th>Deficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater efforts to understand customers</td>
<td>Excessive dependence on leverage</td>
</tr>
<tr>
<td>Tailored services more widely used</td>
<td>Synergistic alliances are rare</td>
</tr>
<tr>
<td>Greater efforts to train and certify suppliers</td>
<td>Alliances viewed as transitory</td>
</tr>
<tr>
<td>Use of continuous improvements clauses</td>
<td>Different definitions/perceptions of trust</td>
</tr>
<tr>
<td>Use of long-term contracts</td>
<td>Do not share risks and rewards</td>
</tr>
<tr>
<td>Alliance management procedure understood</td>
<td>Integration usually ends with first tier</td>
</tr>
<tr>
<td>Collaborative improvement initiatives</td>
<td>Alliance management tools not used</td>
</tr>
<tr>
<td></td>
<td>Institutional memories are short</td>
</tr>
</tbody>
</table>

**Acknowledgements**

Authors are listed in alphabetical order. This paper was previously College of Business Working Paper #05-0116 at the University of Illinois, Urbana-Champaign. This study was made possible by the generous funding of the CAPS Research Center. The authors would like to thank the editor and anonymous reviewers for their helpful suggestions.
References


**Bibliography**


