CHAPTER 12

STRATEGIC ALLIANCES AND NETWORKS IN SUPPLY CHAINS

Knowledge management, learning and performance measurement

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Abstract. This manuscript defines and analyses the concept of a strategic alliance as one specialized collaborative agreement among vertically-allied firms in the supply chain. Vertical relationships and alliances coagulate among upstream and downstream firms in an effort to form networks that are synergistic and add value beyond what an individual firm may be able to achieve. One driver to form a strategic alliance is intellectual property that serves as a base for *maximizing value added* within a supply chain. Multiple diverse organizations that collaborate within a supply chain compose a network.

Knowledge management is introduced in the analysis of strategic alliances. Knowledge management logic helps in understanding the information-sharing aspects of a strategic alliance. Ambiguity plays a role in the extent to which information is shared. Thus, knowledge management provides novel insight into the foundations of a strategic alliance. The potential of a strategic alliance creating a real option for managers is examined along with the characteristics of networks that are organized around constant learning.

Strategic-alliance performance evaluation also is addressed. Sometimes it is not appropriate to evaluate the strategic alliance based on conventional means such as profit and return on investment. Strategic alliances may involve objectives such as entering new markets, learning and obtaining new skills, and/or sharing risks and resources. When a profit centre is not part of the object of cooperation the alliance presents challenges to managers in terms of evaluation. Performance evaluation of alliances is suggested based on a certain-to-fuzzy continuum of inputs and outputs.

Keywords: supply-chain performance; resource-based theory; agribusiness; food

KNOWLEDGE MANAGEMENT AND PERFORMANCE MEASUREMENT OF STRATEGIC ALLIANCES IN FOOD SUPPLY CHAINS

The globalization of the food system has been rapid and resulted from numerous factors. Among those factors are lessening national boundaries through freer trade, and rapid technological advance in areas such as biotechnology, communication and information technologies, and transportation and packaging technologies. The past decade has witnessed genetically engineered commodities, global positioning

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systems for production agriculture, cheaper and better computers, and aseptic packaging, which allows cost-effective shipment of relatively low-value commodities over long distances (Sonka et al. 2000). At the same time, domestic trade policy provided enhanced free-market incentives and encouraged firms to reach beyond their traditional geographic perspectives (Sporleder and Martin 1998).

Strategic partnering among firms is one response to this more challenging and complex environment. Partnering among firms may take numerous forms, ranging from informal alliances to more formal joint ventures (Harrigan 1988). The purpose of this manuscript is to examine drivers underlying managerial decision-making regarding firms entering into strategic alliances, where joint ventures are regarded as part of the broader definition of strategic alliances. Strategic partnering is one of a broader class of governance structures that may be useful in achieving enhanced vertical coordination in the supply chain.

The emerging area of knowledge management is introduced in the analysis of strategic alliances. Knowledge management helps in understanding a firm's willingness to enter into strategic partnering with another firm where the object of cooperation cannot be evaluated using conventional means. The structure of knowledge management is useful in providing novel pathways in which to explore interfirm information sharing. Knowledge management logic is especially useful by providing additional characteristics of a strategic alliance, such as the potential for learning and creating managerial flexibility. Such characteristics provide novel insight into incentives for entering into strategic alliances among vertically-allied economic agents within a supply chain.

Strategic alliances are viewed as a special case of strategic partnering. The analysis specifically focuses on the issue of performance evaluation of strategic alliances, especially when there is no separate profit centre created as part of the alliance. If no profit centre is a part of the object of cooperation, performance evaluation becomes more arduous and complex. In this situation, the partners to the alliance typically cannot use conventional performance measures, such as profit or return on investment, to judge the performance of the alliance or to evaluate the wisdom of their partners' decision to enter into the alliance.

ALTERNATIVE EXCHANGE MECHANISMS

Alternative exchange mechanisms may be categorized based on the relative extent of vertical control available from the mechanism (Sporleder 1992). Broad alternatives are spot markets, contracts, strategic alliances (including joint ventures) and ownership integration (Peterson and Wysocki 1998). The extremes of the continuum are the spot-market alternative, which offers virtually no vertical control, while vertical ownership integration provides the firm with relatively strong vertical controls through ownership of another stage or industry within the vertical chain. Contracting and strategic alliances offer increasing vertical control relative to spot markets, but the negative is increased idiosyncratic investment by the firm.

There are several strategic partnering options available to firms participating in the global food system. Strategic partnering involves a broad class of activities.

Contracts, strategic alliances and ownership integration are the three most basic forms of strategic partnering. Interestingly, Peterson and Wysocki (1998) propose a choice model that managers might employ to decide about one coordination strategy over another.

CHARACTERISTICS OF STRATEGIC PARTNERING ALLIANCES

Strategic alliances are a form of strategic partnering, but partnering also includes contracting, ownership integration, and/or entering into mergers and consolidations. Performance evaluation of strategic alliances is of particular concern in this manuscript. However, before turning to this issue, the specific types of strategic alliances are categorized and the characteristics of the various strategic partnering alternatives are identified.

Types and characteristics of strategic alliances

Strategic alliances are defined as any agreement between or among firms to cooperate in an effort to accomplish some strategic purpose. The categorization of strategic alliances is based on Barney (2002) and captures the essence of contemporary thought regarding strategic alliances. Categorization includes three types of strategic alliances: non-equity alliances, equity alliances and joint ventures. In non-equity alliances, each firm to the agreement is a stakeholder, but not necessarily a shareholder in the object of the cooperation. By contrast, equity alliances and joint ventures typically are a more formal configuration for a strategic alliance where the partners become both stakeholders and shareholders, in the sense that the partners contribute equity capital to the joint venture. Also, typically the resultant object of cooperation (often a newly-defined business) is operated as a profit centre.

Non-equity alliances represent cooperation between firms, managed less formally than the other forms of strategic alliances. Sporleder (1994) has articulated distinguishing factors unique to non-equity strategic alliances, including fuzzy prerogatives and fuzzy obligations relative to joint ventures, relatively weak and malleable vertical control, and partners which are stakeholders in the object of the alliance but not necessarily shareholders. Rarely is a new independent firm created. Trust is a cornerstone of these less formal and often fuzzy arrangements[1].

By contrast, equity strategic alliances and joint ventures refer to business relationships where agreements are supplemented by equity investments by one partner in the other, an action that is often reciprocated. These types are more formal, involve capital investment, and consequently the partners to the arrangement become shareholders as well as stakeholders[2]. Joint ventures are distinguished from equity strategic alliances as cases where firms agree to cooperate with each other to achieve a specific, relatively well-defined, goal. The participating companies usually form a new and separate legal entity in which they invest. Typically, profits from the joint venture provide compensation for the partners (Kogut 1988).

Major stimuli for food processors entering into a strategic alliance with their suppliers include (in the order of importance) cost control, developing product prototypes, improving product quality, and improving package design (Food Processing Magazine). Over one-fourth of the alliances were formed for reasons of cost control while another 45 % were formed for R&D purposes of improving existing product formulations or developing new products. Food processors are consistent with general manufacturing firms in joining strategic alliances primarily for the purpose of improving operational efficiency or learning and technology transfer.

KNOWLEDGE MANAGEMENT AND STRATEGIC ALLIANCES

Knowledge management has emerged recently as an integrated approach to identifying, creating, managing, sharing and exploiting the information and knowledge assets of an organization (Sporleder and Moss 2002). The importance of skill acquisition, learning and the accumulation of capability over time is the core of knowledge management within an organization (Nonaka 1994; Teece 2000). Organizational knowledge management may be viewed as a process of knowledge creation and the organizational performance outcomes that result from that knowledge (Soo et al. 2001). Information sources include networks for acquiring information from internal and external sources. The notion is that networking improves the flow of information.

Learning

Learning capacity differs among firms or agents in the supply chain. The absorptive capacity (learning capability) of an individual or organization is the ability to recognize, assimilate and incorporate information, either internal or external to the organization (Cohen and Levinthal 1990). Absorptive capacity partially determines the use of knowledge and the quality and scope of decision-making based on it. One tenet of the model is that that as absorptive capacity of an organization or an individual improves, the more new knowledge is created (Powell et al. 1996). The knowledge management logic is based on the notion that knowledge creation is positively correlated with both innovation (Nonaka 1994) and financial performance (Nelson and Winter 1982). Innovation and improved performance are the end points from new organizational knowledge.

The application of knowledge management logic to strategic alliances seems appropriate. One driver behind the formation of strategic alliances is often regarded as information sharing or exchange (Sporleder 1994). The aspect of knowledge transfer in strategic alliances is focused on causal ambiguity that is common in resource-based theory of the firm. Ambiguity conceptually provides barriers to imitation, which makes it difficult for rivals to know which competencies form the basis for competitive advantage (Simonin 1999). Ambiguity is empirically verified by Simonin (1999) to play a major role in the knowledge transfer process among alliance members. Thus, ambiguity is a contingency that appears to influence the outcomes of knowledge transfer in a strategic alliance. Ambiguity joins the list of other factors thought to influence knowledge transfer such as complementarities of existing firm assets among alliance partners and the governance mechanism employed by the alliance. Complementarities of assets are thought to enhance the firm's capacity to understand new information from the partners of the alliance.

Opportunism and trust are thought to be important in the outcome of a strategic alliance. The extent of trust is rooted in the cultural-value similarities among alliance members and may be related to the social capital of the organizations of the alliance. This social-capital direct tie back to the knowledge management literature could serve as the base for numerous interesting and novel hypotheses and interactive influences regarding information sharing, trust and social capital in alliances.

Real options

Finally, the notions of relational embeddedness and structural embeddedness flowing from knowledge management logic may be important to understanding why strategic alliances form among particular firms and not others. Network embeddedness, encompassing both structural and relational embeddedness, may influence the outcome of a firm's participation in an alliance and could affect the design and implementation of strategy relating to quality signalling in supply chains (Sporleder and Goldsmith 2001). The type of social capital that generates a competitive advantage over rivals may depend on the competitive environment. Firms engaged in knowledge exploitation, rather than exploration, may require specific knowledge that is best procured from dense network structures (Rowley et al. 2000). However, dense networks may cause firms to neglect or not fully appreciate new information and alternatives (Nahapiet and Ghoshal 1998).

PERFORMANCE EVALUATION OF STRATEGIC ALLIANCES

Numerous analysts have written about evaluation of joint ventures. Some analysts have noted an apparent long-term instability of joint ventures, both international and domestic. Empirical studies concerning the instability of joint ventures often use proxies for instability. Blodgett (1992) used renegotiation of the venture contract or any change in equity division as a proxy for instability. Inkpen and Beamish (1997) used a change in partner relationship or bargaining power to represent instability. Consensus among analysts is that strategic alliances, in general, are relatively unstable business arrangements even when there is a separate legal entity involved.

The performance of non-equity alliances is difficult to measure because there is no single 'indicator' of performance, such as profit/loss, that can be assessed. The role of management may be critical in these agreements. Non-equity alliances are transitional compared to other alternatives for strategic partnering. Evaluation of such alliances may evolve as a negotiated item between the partners.

There are several challenges related to evaluating joint ventures. Often, joint ventures are evaluated as if they were a division of the parent (Anderson 1990). This method of evaluation may cause dissonance relative to which parent performs the evaluation. Another challenge is that joint ventures may not receive an accurate evaluation if they are evaluated in the same manner as a wholly-owned division of the parent. A joint venture is a shared entity and unless the method of evaluation is specified this might cause some conflict (Pearce 1997). The goals of the parents and the joint venture may be divergent, so evaluating the joint venture as a division may not be optimal. Although it might be easier to determine profitability and other standard performance measures, joint ventures may be deployed in risky, uncertain situations with high levels of instability. Thus, the sole criteria of profitability might not provide an accurate account of how the joint venture is performing.

In reality however, without a profit centre the financial aspect of performance evaluation may not be possible. The focus, therefore, is on the relationship among the alliance partners as well as on the resources devoted to the alliance by each partner. A firm that partners in an alliance may evaluate its own performance after engaging in an alliance and may be able to ascertain the impact of the relationship on its own profitability. Evaluating the alliance, the relationship or agreement between the companies, however, may remain a point of obscurity.

Alliance evaluation criteria based on a certain-to-fuzzy continuum

The role of management is critical when evaluating strategic alliances. They need to be aware of what types of resources, tangible and intangible, are dedicated to the strategic alliance. According to traditional methods, a manager may be required to determine performance based on the amount of stockholder equity to debt that is held by the company, the level of profitability of a company, the productivity (i.e., output per hour), or even participation in the global market. However, conventional output measures may be sufficient for, or even relevant to, performance evaluation, especially in the case of a non-equity strategic alliance.

The concept of using weights in evaluating joint ventures refers to how heavily inputs and outputs should be considered in the process. For example, should learning be given more importance than marketing performance? Following Ouchi (Ouchi 1979) the first dimension examines how certain managers are regarding how inputs become outputs – the transformation process. The second dimension encompasses the extent to which a firm is able to assess measure and judge results (outputs). A combination of these two dimensions results in the analytic framework of Figures 1 and 2. The generic space defined in Figure 1 simply provides the analytic framework for determining the relative performance evaluation outcomes for non-equity strategic alliances, equity strategic alliance, and joint venture.

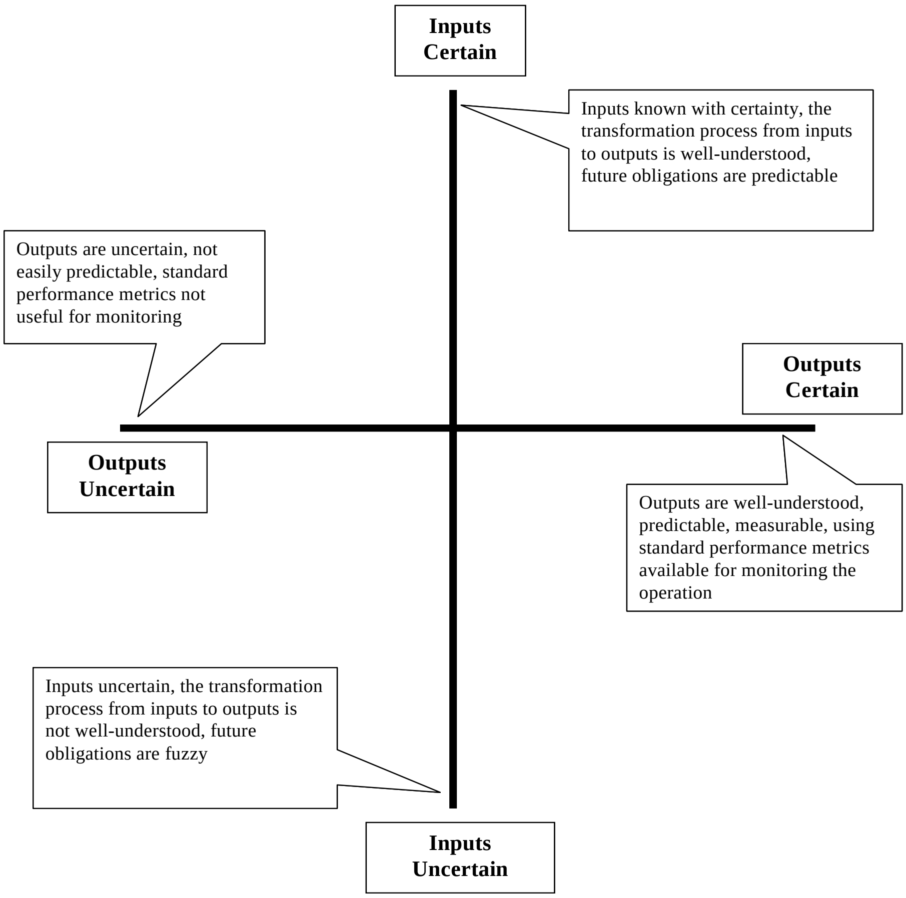

Figure 1*. Relative space for strategic-alliance performance evaluation, based on a certain-to-uncertain continuum inputs and outputs*

On the right side of the output continuum of Figure 1 managers have a poor grasp of the transformation process; therefore, outputs cannot be accurately assessed. The northwest quadrant of Figure 1 represents strategic-alliance cases where the transformation process is well-understood but outputs cannot be accurately assessed. In this case, input measures are heavily weighted and output measures weighted lightly. In the southeast quadrant of Figure 1 managers have a poor understanding of the input-output process but are able to assess outputs with some certainty. In this southwest quadrant case, output measures are heavily weighted and input measures weighted lightly.

The northeast quadrant represents the ideal case where the partners in the alliance realize what inputs to contribute and are able to evaluate outputs with accuracy. In this quadrant the use of both inputs and outputs in the evaluation process is valid. Both variables should be used with more weight being placed on outputs because these measures of performance can be obtained and evaluated.

Evaluating non-equity alliances

The contributions of Ouchi (1979) and Anderson (1990) provide the foundations for a model adapted to exclude financial (results-oriented) methods of evaluations but to emphasize the input variables that indicate the state of an alliance. The northwest and southwest quadrants of Figure 2 were used appropriately as a guideline for evaluating these alliances.

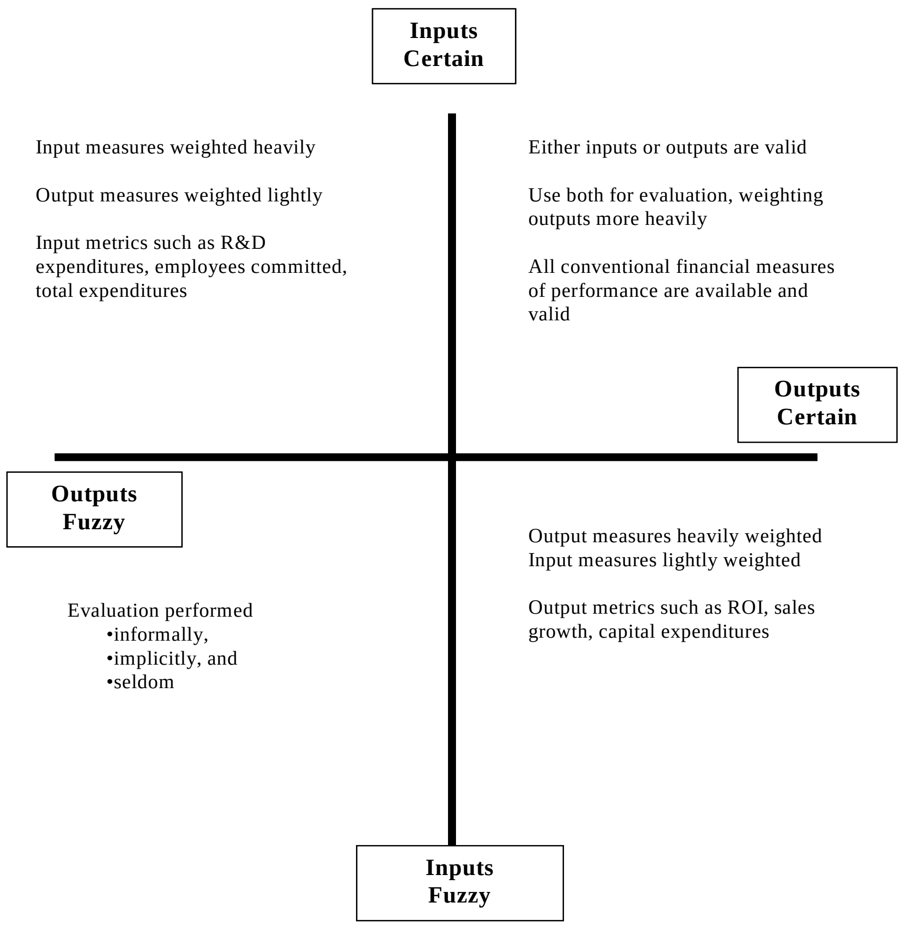

Figure 2. *Relative space for strategic-alliance performance evaluation, based on a certain-to-fuzzy continuum inputs and outputs*

The southwest quadrant represents alliances operating in information poor situations. This is usually the initial stage of a relationship where firms are operating with fuzzy prerogatives. The appropriate actions and inputs are often unclear to the partners of the alliance. It might also be the case that the firms are unsure of what the outputs of the relationship will be or should be, hence the perplexity of the transformation process.

The northwest quadrant refers to cases where managers have a better grasp on what they should be doing and what actions should be taken to meet the objectives of the alliance. However, there is still no clear means for assessing outputs. This is where proper definition of the goals and objectives of the alliance becomes important.

Non-equity alliances typically are placed in either the northwest or northeast quadrant. Since these alliances furnish no standard results-oriented measures of evaluations, the focus then turns to inputs variables, classified by Anderson (1990) as states of being. States of being refers to how the alliance is doing. Is there harmony among the alliance partners? Is there high morale among the employees of the company? Are there sufficient levels of communication between the alliance partners to facilitate a successful relationship? There are no standard measures of harmony and the presence of conflict might indicate a lack of harmony. The evaluation of strategic alliances rests heavily on the managers' shoulders. It relies on managers' abilities to understand the inputs (i.e. human resources) that are necessary for the particular alliance, their ability to communicate with employees, and to motivate them to act accordingly. The input measures should be utilized with the goal or objective of the alliance in mind.

Evaluating non-equity strategic alliances is a subjective process because managers must decide what is working and what is not. Although the manager may be unable to evaluate the output, if there is some certainty regarding the necessary inputs the alliance can be evaluated in this manner.

It is important to note that resources dedicated to an alliance may be evaluated rather than more conventional output measures of performance. In the case of non-equity alliances, only inputs are likely to be evaluated. The role of managers is critical to performance evaluation of these alliances, because without measurable outputs managers can still provide some evaluation.

CONCLUSIONS AND IMPLICATIONS

Strategic alliances are agreements between or among firms to cooperate in an effort to accomplish some strategic purpose. Each firm to the agreement is a stakeholder, but not necessarily a shareholder, in the object of the cooperation. By contrast, joint ventures typically are more formal configurations for a strategic alliance where the object of cooperation is operated as a profit centre. Thus, performance evaluation of the partnership resulting from the alliance is through conventional means such as profit and return on investment. However, other types of strategic alliances may involve objectives such as entering new markets, obtaining new skills, and/or sharing risks and resources. If no profit centre is a part of the cooperation, performance evaluation becomes more arduous and complex. Methods of alliance evaluation are suggested.

Knowledge management is introduced in the analysis of strategic alliances. Knowledge management logic helps in understanding the information-sharing aspects of a strategic alliance. Ambiguity plays a role in the extent to which information is shared. Thus, knowledge management provides novel insight into the foundations of a strategic alliance.

Non-equity strategic alliances help in understanding a firm's willingness to enter into strategic partnering with another firm where the object of cooperation cannot be evaluated using conventional means. Non-equity strategic alliances, in general, are inherently different from either equity strategic alliances or joint ventures. Distinguishing factors, unique to strategic alliances, include fuzzy prerogatives and fuzzy obligations relative to joint ventures, relatively weak and malleable vertical control, and partners that are stakeholders in the object of the alliance but not necessarily shareholders. In the case of a non-equity alliance, only inputs are likely to be able to be evaluated. The role of managers is critical to performance evaluation of transitory alliances, although subjectivity and uncertainty are minimized.

NOTES

[1] Adams and Goldsmith (1999) provide a new analytic framework for fuzzy strategic alliances based on the codification of trust. Three levels of trust are explicitly recognized in their analysis. Their framework for fuzzy strategic alliances is enhanced by this perspective on trust.

[2] The equity structure among joint ventures is often 50:50 investments from its partners. There are, however, cases of minority/majority equity investments, such as 49:51, or some other agreed upon ratio.

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