Understanding the Value of a Relationship

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Based upon current research the elements of a successful relationship are developed. Then a brief discussion of how hybrid relationships develop leads to the main focus of the paper, a discussion of value creation in a relationship. Drawing upon literature from economics, engineering, real estate and marketing, we explore alternative ways to conceptualize value. We conclude with a discussion of the issues faced in trying to determine the value created in a relationship or strategic alliance.

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TQM, global markets, the emerging Pacific-Rim economies, free trade, are examples of the forces propelling business to seek some form of alliance to protect and enhance their competitive position. Buyers seeking to lower costs through JIT and quality programs found that they could not manage these programs with their current supplier base, so they reduced the size of the base by creating single source relationships. Effectively managing the costs of these transactions is best accomplished through a close relationship between the firms.

Alliances are formed to develop new products or enter new markets. Joint ventures are developed to enter markets or to vertically integrate resources. New distribution patterns are emerging as firms seek low cost ways to reach competitors and to create competitive advantages.

Close business relationships are not new, but the purposeful development of relationships to achieve strategic goals is a recent development. Traditional relationships developed organically as the key individuals in each firm built close personal or business friendships. Their mutual trust allowed their firms to make specialized non retrievable investments that created structural bonds which served to hold the relationship together (Williamson 1975, 1979; Wilson and Mummalaneni, 1986; Han 1992; Han and Wilson, 1993). The slow naturalistic development of these traditional relationships permitted governance structures and a relationship culture to develop that supported the continuance of the relationship. Both partners (firms and individuals) found value in the relationship and strove to enhance and protect the relationship.

The IMP Group (Hakansson 1982; Ford 1990) model reflects their research on firms where relationships had developed in a naturalistic way over time. Today, however, strategic relationships are forced growth relationships and the failure rate as reported by scholars and the popular press is high (Harrigan, 1988).

How to develop relationships is our subject. We offer a conceptual framework that can be applied by both researchers and business people to guide their understanding and development of relationships. The goals of relationship development are in a broad sense to create a satisfactory and successful relationship. We draw upon current research to specify these goals in terms of the factors that seem to lead to successful relationships. Then we use the concept of a hybrid relationship as the process element for goal attainment. Within the hybrid development process we explore in depth the construct of value in a relationship and seek not only to specify the concept but to begin to explore ways of measuring value. We conclude with suggestions for research.

We draw upon the work of Wilson and Moller (1992) to specify the factors that lead to committed relationships and for the hybrid model development.

**The Key Constructs**

A strategic alliance or partnership may be defined as a relationship where a synergistic combination of individual and mutual goals encourages the partners to invest time, effort and resources to create a long term collaborative effort that achieves individual and partnership strategic advantage. This definition may be the motivator of a relationship but the glue that holds it together and allows it to develop are the constructs outlined in Table 1.

The constructs will now be discussed in some detail.

**Goal Compatibility**

Some significant portion of each partner's goal must be seen as being met only by collaborating in a relationship. The synergistic aspect comes from the merging of quality and price where buyers are concerned about "the lowest all-in-cost, the lowest cost when all is said and done, not the lowest initial price per unit" (Burt, 1989). Under these circumstances both parties may receive financial rewards and the supplier may become a better business and increase its operating profits from other customers. Becoming a single source supplier may have significant value. Having goal compatibility is important for the long run survival of the relationship because as long as both partners see their goals being met by joint action they are motivated to maintain the relationship.

**Trust**

Trust or distrust has always been a part of business relationships. It is a construct in most models of long term relationships. Yet, it is a difficult construct to define as its definition seems to depend upon the research paradigm being used. Parsons (1977) suggests that trust is more basic to the formation of solidarity in groups than are moral, economic or power factors. Deutsch (1958), an experimental psychologist using Prisoner Dilemma situations, assumes the presence of trust to be groundwork supporting all acts of cooperation. Rotter (1967), a social psychologist, sees trust as a personality trait. Sociologists
Lewis and Weigart (1985a) believe that, "Trust functions as a deep assumption underwriting social order and is not reducible to individual characteristics". This focus is what Dwyer and Lagoa (1986) refer to as the "relational" conceptualization of trust.

The sociological view suggests that trust is a socially constructed reality that exists at the relational level and is characterized by reciprocity ("Trust is Trust"). "Sociologically, trust is conceptualized as a reciprocal orientation and interpretive assumption that is shared, has the social relationship as the object and is symbolized through intentional action" (Lewis and Weigert 1985b).

Given this position, trust is critically related to the perceptions held by one party of another party's abilities, expertise and knowledge, as well as to the individual's perceptions of the other party's motives and intentions.

In the business exchange relationships, trust in the IMP Group model is seen in a social exchange context between individuals and between organizations. Young and Wilkinson (1989) investigating relationships among Australian firms support the grounding of trust on relationship history. However they found that trust is positively related to relative power among the trading partners. They state, "more powerful firms were very trusting...less powerful firms were less confident of the trustworthiness of partners even when the relationship was progressing smoothly" (1989). It is clear that trust is a construct that needs to be defined and measured. Nevertheless, it is the gateway to a successful relationship.

**Satisfaction**

Satisfaction relates to performance of the key elements of the exchange process. A relationship will not endure if the supplier is unable to meet the buyers expectations. However, many sophisticated buyers are now willing to work with selected suppliers to raise their performance and make the suitable partners. Buyers must be satisfied with their side of the exchange or they will seek alternative partners.

**Investments**

Both partners make investments in the relationship. These investments range from physical facilities to knowledge and training investments that may not be recovered if the relationship ends. In transaction cost theory these are transaction specific investments while Wilson and Mummelaneni and Han would call them irretrievable investments which bond the partners together. In both instances they affirm the partners' trust in each other and create a barrier to exit from the relationship.

**Social Bonding**

Mummelaneni (1987), Mummelaneni and Wilson (1991) and Han (1992) examine the social bonding relationship between the salesperson or relationship contact person and the buyer contact person in a relationship setting. They found that social bonding leads to higher levels of commitment to the relationship. However, commitment is also influenced by the level of the investment in the relationship and the quality of available alternatives. Mummelaneni and Wilson conclude that, "Close personal relationships between the principals thus seem to have some, if not an absolute effect in enhancing their commitment to the future continuance of their role relationships". It should be noted that their study used a range of relationships which had more likely developed in an organic way whereas in many of the accelerated relationships that are occurring today the partners are being pushed into personal working relationships. It is clear that the individuals who must interact with each other within the context of the relationship need to have some positive level of social bonding for the relationship to reach its full potential.

**Structural Bonding**

Organizations become tied together in relationships when the cost of exiting becomes high. Investments dedicated to the relationship that cannot be used again tend to hold partners together. Intertwined technologies make it difficult to end relationships. Structural bonds may include social pressures one group in the firm places on another group to maintain the relationship because the former group is enjoying great benefits from the relationship. Structural bonds are a richer version of the transaction cost analysis (TCA) framework.

**Comparison Level of the Alternative**

Thibaut and Kelley (1959) have suggested that outcomes from a relationship can be evaluated at two levels: the comparison level (CL) and the comparison level of alternatives (CLalt). The comparison level is the expected level of performance based on one's past and present experience with similar relationship situations. The comparison level of the alternative represent the level of performance that can be obtained by changing relationships. It becomes a minimum level of performance that is acceptable from the incumbent. However, structural bonding may offset the acceptable level of
incumbent performance as the cost of obtaining the alternative level of performance may be too high for to be offset by the gain in performance. Anderson and Narus (1984, 1990) have used these constructs in their models of distributor working relationships and found both CL and CL.alt contributing to the understanding of the model. There is face validity for including these constructs in the model. Han (1992) found that CL.alt had a negative effect on structural bonding meaning that the better the alternative relationship the weaker the structural bond. In a business situation a very attractive alternative relationship is worth giving some level of transaction specific investment or irretrievable investment.

Hybrid Organizations

Thorelli (1986), Williamson (1991) and Borys and Jemison (1989) describe relationships using the term "hybrid". Williamson describes hybrids in relationship to the polar modes of markets and hierarchies with hybrids being in the middle between the two forms of governance structures. Although transaction cost analysis (TCA) has been a major conceptual framework in the conceptualization of channel relationships it has not had the same impact on buyer-seller models. The concept of transaction specific assets does have a major role in the more behavioral driven model of buyer-seller relationships. Thorelli describes hybrids as organizational networks that straddle markets and hierarchies. Hybrids use networks of relationships of power and trust to exchange either influence or resources. His is a more behavioral view than the TCA framework.

Borys and Jemison (1989) define hybrids as "organizational arrangements that use resources and/or governance structures from more than one existing organizations" (p. 235). This broad definition covers a wide range of organizational forms which makes it difficult to precisely define and analyze hybrids. They suggest that a theory of hybrids should, "address the multiplicity of issues raised by hybrids, and it should integrate previous research in these areas into a theoretical whole. Existing theory fails on these counts." (Borys and Jemison, 1989, p. 235). They identify four key elements that provide a useful framework to define the process of creating a hybrid relationship.

The four key elements are:
1. Purpose
2. Boundary definition
3. Value creation
4. Hybrid stability.

Borys and Jemison developed their view of hybrid organizations mainly to deal with problems between organizations such as mergers, acquisitions and joint ventures. They add supplier arrangements mainly as an after thought and as such in their paper, do not spend much time discussing supplier relationships. Their view that a new hybrid structure emerges when two organizations join together in an intimate relationships is a powerful and compelling concept. We extend the concept by merging the work done on modelling relationships with the four key elements of hybrid creation. We treat the first three elements of the hybrid relationship as stages in the development of the relationship. Hybrid stability is achieved by continu-

Figure 1: Stages and Issues at Each Stage in Creating a Hybrid Relationship

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<th>PURPOSE</th>
<th>Goal Definition</th>
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<td>Your Goals</td>
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<td>Mutual Goals</td>
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<td>Assess Corporate Culture Compatibility</td>
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<td>Openness of Communication</td>
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<td>Define Mutual Purpose of Relationship</td>
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<th>BOUNDARY DEFINITION</th>
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<td>Limits to Resources</td>
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<td>People Commitment</td>
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<td>You Partner</td>
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| VALUE CREATION | Value Created by the Relationship |
|               | Value Measurement |
|               | Sharing Value     |
|               | Changes in Value  |

| HYBRID STABILITY | Hybrid Culture Maintenance |
|                 | Reward Systems to Support the Relationship |
|                 | Relationship Expansion |

relationship enters the stability stage the probability of long run success increases dramatically. Since we are focussing on the value creation stage we will not discuss the earlier stages in the process or the relationship maintenance stage.
Value Creation in Buyer Supplier Relationships

Hybrid arrangements such as long term buyer-supplier relationships are created with an expectation of synergy, i.e. an expectation that the hybrid will create value in a way that each of the partners alone could not (Borys & Jemison, 1989). Sharing of knowledge, technology, and other resources between buyer and supplier takes place in order to improve the competitive advantage of the hybrid and/or the partner(s). The process by which this happens is called value creation by Borys & Jemison; it is the joint effort that occurs once the relationship is formed. As the relationship develops, both partners need to assess the value created by their partnership versus alternative choices. Knowledge of where value lies for the buyer is critical for the supplier firms. In a recent state-of-the-practice study of customer value assessment, Anderson et al. (1993) found a number of business decision areas such as new product development or product modification, marketing communication, and pricing, where the knowledge of value was very useful to the suppliers.

In order to be able to understand how value is created in a strategic alliance, we need to look into the basic question: What is value? This section deals with these issues.

What is Value?

Lawrence Miles, who popularized the use of value analysis in the U.S. industries in the 1940s and 50s said, "value means a great many things to great many people because the term VALUE is used in a variety of ways. It is often confused with cost and with price. In most cases, value to the producer means something different from value to the user. Furthermore, the same item may have differing value to the customer depending upon the time, place, and the use" (1961, p. 3). The situation is not much different today. Even when "value marketing " is the buzzword of the day (Business Week, November, 1991), the questions still remain the same: What is value? What are its components? It is difficult to find answers to these questions because value has to be "closely defined to be meaningful, yet a close definition can be established only when we build a framework for reference" (Helfert, 1966, p. 1). Here we have presented such a framework and discussed the issues that need further research. Any discussion on value has to be in relation to the social, economic, political, and religious systems and environments surrounding the individual(s) concerned. However, in order to avoid further complications in this already murky area, we have focused on the general realm of economic value, rather than ethical or philosophical values.

In order to develop the construct of relationship value, we first need to examine the concept of value itself. It is a concept widely used in different disciplines in different contexts. Hence we start with reviewing the ways in which value is being used across disciplines; for example, finance and accounting, purchasing, microeconomics, and marketing.

Accounting, Finance, and Real Estate

Valuation of an asset is one of the key functions of these three areas. In finance, maximizing the value of the firm's stock is the primary goal of management (Brigham & Gapenski, 1990). Helfert's book on valuation (1966) is the main source for the different aspects of value presented below:

Recorded value: This is based on the accounting principle that the values of physical and intangible goods should be stated in terms of the original cost of the items. Hence recorded value is the amount a customer pays for a good in the transaction.

Market value: In this concept, the value is viewed from the stand point of the buyer and seller. Market value is a fair approximation of the place of a good or service on the value scale of the business community or society in general. It is dependent upon the nature of exchange mechanism and the conditions under which buyer and seller meet. Market value as an indicator of economic value is most reliable when good in question has a broad market, i.e., when demand is frequent and supply adequate and stable. For example, New York Stock Exchange or the distribution systems for consumer goods. Market value is a current concept whereas recorded value loses its immediacy with the passage of time.

In real estate, the market value approach is based on a comparison of a property in question with other similar properties that have been sold recently, plus current asking price and offers, which helps measure the market reaction to the subject property (Tosh, 1990).

Replacement value: This represents an attempt to determine, for a particular asset, the current market value of an asset that could take its place, in order to establish a fairer value for the old asset than its original cost less any
accumulated depreciation.

Assessed value: Assessments of value are made of real property for purposes of taxation. The current market value may be a starting point from which the assessor proceeds to make adjustments according to governmental policy guidelines.

Appraised value: This form of value is different from the assessed value in that appraisals of value are made in order to determine a "fair value" of the good in question usually to establish a selling price where no ready-made market value of the tangible asset exists. The appraiser normally specializes in making judgments of this sort and is familiar with supply and demand of the goods s/he is asked to appraise. Thus, appraised value can often be an approximation of market value.

Earning potential: Value, according to this concept, is measured by the total expected earnings (economic benefits) that will accrue to a long-lived asset over its useful life. Its elements are contained in the market value of an asset, because the demand for a good or service and the price a buyer is willing to pay will depend on the economic usefulness of the good or service. Its elements are also contained in appraised value, since the skilled appraiser will arrive at his/her judgment by taking into account the earning potential. Expected earning power is considered a key source of value for both tangibles and intangibles (Hendriksen, 1970). For a real estate property, the stream of net income that it is likely to produce for an investor, or its equivalent to the user, during the property's economic life is estimated (Tosh, 1990).

The value of most financial assets such as stocks and bonds lie in the streams of expected cash flows, therefore, all such assets are valued in similar ways: (i) Estimate the cash flow stream, i.e. find both the expected cash flow for each period and the riskiness of each cash flow, (ii) Establish the required rate of return for each cash flow based on its riskiness and the returns available on their investments, (iii) Discount each cash flow by its required rate of return, and (iv) Compute the present values to arrive at the value of the asset (Brigham & Gapenski, 1990).

Liquidation value: This value arises when an enterprise is in financial trouble or is on the brink of termination. Due to the unusual circumstances and urgency related to the selling of assets under such situations, their value upon liquidation will be a fraction of what they "were worth" to the going concern. Thus, liquidation value is related to market value, the difference being largely one of the circumstances under which the exchange takes place.

Economics

As Carver said in his article on value in the Encyclopedia Americana, "Value is the most important word in the whole science of economics" (cf. Falcon, 1964). All economic systems are concerned with production and distribution of goods that are of value to individuals, groups or society as a whole (Helfert, 1966). Given below is the summary of different aspects of value based on economics. Miles (1961), Falcon (1964), and French (1970) have been the key sources of these definitions:

Use value or value in use: It is the properties of a product or service that accomplish or contribute towards accomplishing a task or work. It is the utility of some particular object (Adam Smith, 1776).

Exchange value or value in exchange: This is the power of purchasing other goods with the goods possessed by us. Adam Smith (1776) contradicts value in use and exchange value by saying that the things that have the greatest value in use may not have high exchange value, whereas the things with the highest exchange value may have little value in use.

Cost value: From this perspective, value is the sum total of labor, material, and overhead costs required to produce a good. Marx (1912), for example, viewed value as an absolute magnitude-its cost of labor. Ricardo (1963) spoke of value as computed by the cost of production.

Purchasing/Materials Management

In this field, value is examined mainly from its functional utility and cost perspectives. Miles (1961) views value as a measure of the appropriateness of the costs involved. He defines value as "the minimum dollars which must be expended in purchasing or manufacturing a product to create the appropriate use and esteem factors" (p. 3). Miles further defines use and esteem value as follows:

Use value: It is the lowest cost of providing for the reliable performance of a function.

This is similar to the functional aspects of value described by Dobler et al. (1990).

Esteem value: It is the lowest cost of providing the appearance, attractiveness, and features which the customer wants.

The key to assessing value of a product or component in purchasing management is value analysis. Value analysis is an organized
sequence of investigation aimed at challenging existing product specifications, design, and production method (Fallon, 1971). Depending on the nature of the product, typical value analysis involves an inquiry such as: (1) What the material or part under consideration contributes to the end product? (2) What is the minimal function it must perform to give the end product the desired performance capabilities? (3) How much this minimal or contribution is worth? (4) Does the part or material used need all its features? (5) What else would perform the same function? (6) Can it be made at lower cost? (7) Can it be obtained from another dependable supplier for less? (Hill et al., 1986).

Marketing

Finally, let us look at the concept of value as described in marketing literature. Researchers in marketing have extensively examined the concept of value in the context of consumer products; the focus of which has been the relationship among price, brand name, quality, and perceived value (e.g. Zeithaml, 1988; Monroe & Chapman, 1987; Dodds et al., 1991; Monroe & Krishnan, 1985).

Holbrook and Corfman (1985) define value as "an interactive relativistic preference experience-or, more formally, as a relativistic (comparative, personal, situational) preference characterizing a subject's experience of interacting with some object. The object may be anything or event" (p. 40). They present a typology of value with these three dimensions: extrinsic/intrinsic, self-oriented/other-oriented, and active/passive value. Mattson (1990) advocates the use of Hartman Value Profile which classifies value in another set of three dimensions: emotional, practical, and logical.

In business marketing, the work on value is in terms of value-based strategies (Forbis & Mehta, 1981; Wind, 1989; Wilson et al., 1990), and in terms of assessment of product value using different value analysis techniques (Anderson et al., 1993; Keeney & Lilien, 1987). Forbis and Mehta (1981) recommend the use of Economic Value to Customer which they define as follows:

"The economic value to the customer (EVC) of a given product X is calculated by subtracting its start-up costs and its post-purchase costs from the life-cycle costs of a reference product Y, then adding the amount of incremental value it offers relative to the reference product" (p. 34).

Value-in-use (VIU) has been a popular concept in marketing. Lee's (1978) idea of VIU is essentially similar to EVC, it is "the calculated worth of an alternative (or "candidate") product when substituted for the product now in use (the "incumbent")" (p. 60). Lee (1978) and Urdanisheck (1978) have outlined the way to use VIU. Some of the other techniques of assessing product value as indentified by Anderson et al. (1993) have been given in Table 2. Anderson et al. (1993) define value in business markets as "the perceived worth in monetary units of the set of economic, technical, service and social benefits received by a customer firm in exchange for the price paid for a product offering, taking into consideration the available alternative suppliers' offerings and prices" (p. 5). As mentioned earlier, they found that businesses and market research organizations use the value concept in a wide range of strategies. Wind (1989) and Wilson et al. (1990) demonstrated the use of value-based pricing. Keeney & Lilien (1987) successfully used multiattribute value analysis for designing and evaluating a high-tech industrial product.

Reddy's (1991) classification of product value components is a useful approach to understanding overall value. In Figure 2, we present a part of his model, a 2*2 matrix. The two dimensions of value are economic-non-economic and intrinsic-extrinsic. Components listed in each quadrant are potential sources of value.

**Relationship Value**

We have discussed how value is measured in a number of discri-
plines and now will examine how we might begin to measure the value created in a relationship. In Figure 3, we conceptualize relationship value along three dimensions: economic, psychological or behavioral, and strategic. The economic dimension moves from a simple cost reduction that is achieved through the relationship partnership to a complex concurrent engineering relationship that creates value through cost savings in design, in assembly and field service and also has the benefit of reducing the time to market. It may be possible to develop some estimates for initial cost savings of the design but costs reductions in assembly and field repair may be more difficult to estimate a priori.

Relationships should be driven by strategic goals. We use relationships to gain competitive advantage, to strengthen our core competencies and to create market position. Assessing the value of adding to a core competency is a difficult task. We may be able to make short term estimates of the benefits but it is difficult to forecast the future. IBM turned over the operating system of the PC to Microsoft not believing it was a core element of this new product. Similarly chip development was place in the hands of Intel. These technologies became the key to the future of computing.

It is difficult to assess the value of reducing the time to market on a firm’s ability to compete. We know there are first-mover advantages but what value is created and how should the partners share it? The strategic elements of relationships are reason for creating relationships and yet they are the most
difficult part to measure because of the need to project the future.

The behavioral dimension of relationships ensures the long term growth of the relationship assuming the basic product performs. People make a relationship work or fail. Social bonding of key individuals helps develop trust in the relationship. The establishment of shared goals is important as we may be able to estimate the economic value of reaching these goals. With time a hybrid culture develops that will help bond the relationship. This culture is likely to carry values from both organizations and may develop values not present in either organization. The closer the partners' culture at the beginning the easier it will be for the hybrid culture to emerge. Dissimilar national or organizational cultures make it difficult to find the common values upon which to build a hybrid culture to support the relationship. The value of the culture to support and promote the relationship is very difficult to measure.

In assessing the value of a relationship we may best begin with economic value. Then we may attempt to evaluate the strategic value created and finally estimate some qualitative estimate of the behavioral elements of the relationship.

The estimation of a value-in-use price of a product can be done most easily in business-to-business relationships.

Table 3 gives an example calculation of the value-in-use of a biocide chemical. The value-in-use price is about $40 for a 30 day treatment while the market price of a relatively ineffective competing product is approximately $5.00 for a 30 day treatment. The small machine shop owner may have a perceived value price of $10 based upon her/his estimate of the relative value between the products. A machine shop owner spends approximately $950 per machine per year to maintain the fluid and assuming 20 machines the cost of fluid is $19,000 per year. Any price up to $40 will save the machine shop owner money but the economics become blurred with the comparison to the current product. Although not very effective, the competing product may be seen by the machine shop owner as providing more value than its chemistry actually provides. The perception of value even in a relatively straight forward economic example illustrates the difficulty in estimating value in a more complex relationship. The economic dimensions of a relationship are going to be much easier to measure than the strategic and the behavioral dimensions in the relationship.

Conclusions

Any relationship or strategic alliance creates some value to both partners. How this value is shared is likely to be a major issue in the life of the relationship. The greater the value created, the greater the issues in sharing the value. Understanding the value created makes it easier to negotiate a position within the relationship.

Short term value is easier to estimate than the longer term value that may be created during the life of a relationship. It is this future value that may be created that makes both parties concerned about dependence and opportunity costs. Han, Wilson and Dant (1993) found that two major fears forming a relationships for both buyers and sellers was becoming dependent upon their partner and missing an opportunity because they were committed to a partner.

It is the uncertainty of the value of the relationship in the future that fuels these fears. If one knew which relationship was going to create high value in the future it would be an easy task to commit to the high value producing relationship.

Value in is a problematic concept which cannot be ignored. We have attempted to raise some of the issues in understanding value and how to measure value in relationships.

Table 1: Factors Affecting Relationship Success

- Goal Compatibility
- Trust
- Satisfaction
- Investments
- Structural bonds
- Social bonds
- Comparison level of the Alternatives

Table 2: Value Analysis Techniques (Anderson et al., 1993)

1. Internal Engineering Assessment: An estimate of the value for a product offering is obtained by laboratory tests conducted by engineers within the supplier's own firm.

2. Field value-in-use assessment: Interviews are conducted at customer firm(s) to determine a comprehensive listing of cost elements associated with the usage of a product offering compared with the incumbent product offering (e.g. life cycle cost). Making explicit assumptions, values are assigned to these cost elements to estimate the overall value-in-use of the product offering in that application in cents per pound or dollars per unit.

3. Indirect survey questions: In a field research study, respondents are asked what the effects of one or more changes in the present product offering would be on certain aspects of their firm's operations. From these answers, typically combined in some way with other known information, estimates of the value or worth of each product offering change can be obtained.

4. Focus group value assessment: Within a focus group setting, participants are exposed to potential product offerings or
product concepts, and are then asked what the value or worth of them would be to their firms: "Would your boss be willing to pay for this?"

5. Direct survey questions: In a field research survey, respondents are given a description of a potential product offering or concept, and are then asked what the value or worth of it would be to their firms: "What would your firm be willing to pay for this?"

6. Conjoint or Tradeoff analysis: In a field research survey, respondents are asked to evaluate a set of potential product offerings in terms of their firm's purchase preference for each of the offerings. Each offering consists of an array of attributes or features, and the levels of these attributes are systematically varied within the set of offerings. Respondents provide a purchase preference rating (or ranking) for the offerings. Statistical analysis is then used to "decompose" these ratings into value ("part-worth") that the respondent placed on each level of each attribute. The range of these values for the levels of each attribute determines the relative value of attributes themselves.

7. Benchmarks: In a field research survey, respondents are given a description of a product offering, typically representing the present industry standard, that serves as a "benchmark" offering. They are then asked how much more their firm would be willing to pay for the selected additions in product attributes or features to this "benchmark" offering. Likewise, they might be asked how much less their firm would expect to pay for selected reductions in attributes or features from the "benchmark" offering.

8. Compositional approach: In a field research survey, respondents are asked to directly give the value of selected levels of attributes or features to their firm. For example, respondents might be asked to give the value in cents per pound or dollars per unit for each of the alternate levels of a given attribute, where all other attributes of the product offering were the same. The values given for the attribute levels can then be added to give estimates of the overall value of various offerings to the firm.

### Table 3: Example Calculation of Value-In-Use

| Metal working fluids are used to cool and lubricate the work piece and the machine to clear debris from the work surface. Being 90% to 95% water, the fluids become host to microorganisms such as bacteria, fungi and yeast which cause staining of the metal, clog filters, flow lines and drains and are foul smelling. Treatment of the metal working fluid for small machines with 50 gallon reservoirs ranges from using household bleach to using a sump chemical in pill form that lasts three days. Treating a single machine costs about $5.00 per 4 weeks. Disposal of the used fluid costs $1.36 per gallon. The fluid is changed every 4 weeks. Two gallons of replacement concentrate ($5.68/gallon) is mixed with 48 gallons of water to make the 50 gallons of fluid needed. A new product has been developed that treats 50 gallons of diluted metal working fluid for 4 weeks and can be used for 8 weeks before changing. The value-in-use is:

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<th>Value Price</th>
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| (1) & = & (2) \\
| 952.32 & = & 476.16 + 10 P_v \\
| P_v & = & 47.62 \\
| \end{align*} \] |

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