Creating and Dividing Value in a Value Creating Network
(Work in progress)

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Abstract

This work-in-progress paper presents a discussion on how value is created and divided in a value-creating network. The paper begins with a literature review of value and how it has been conceptualized in the past. This is followed by a brief discussion on consumer multi-attribute choice models. Subsequently, deterministic attributes that can be product based or relationship based are discussed, and their importance in consumer choice is reiterated. Since value chains bring together a network of firms whose core capabilities combine to create the market offering, in this paper, we examine the alliances and relationships of firms that form important nodes in the value chain. We elaborate on the idea that value to the buyer can determine the form of the relationship, but if a supplier controls a key deterministic attribute, the supplier will have a position of strength in the relationship. The paper concludes with a discussion on how value is divided between the buyer and seller.

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Overview

In order to have success in the market place, it is essential for a firm to understand what value means to the consumer. There is little doubt that both consumers and business customers are seeking the best value in their purchases. But what is value? How can we define value from the customer and the consumer perspective? Once we understand what value means to the business customer as well as consumer, the next question is, how can a firm create this value?

In this paper, we attempt to answer some of these questions and study the value-creating network. We begin by defining value at the consumer and customer level. We posit that a multi-attribute model price is a useful model for conceptualizing and measuring value. Subsequently, we link the concepts of value creating networks and supply chains. We conclude the paper with a discussion on how value is divided between the buyer and seller.

Value lies at the heart of marketing and is receiving increased attention from scholars. The Merriam-Webster's Collegiate Dictionary (2001) defines value as,
"1. a fair return or equivalent in goods, services or money for something exchanged
2. the monetary worth of something". It is clear that value involves money and an exchange of something of worth to the participants in an exchange. There are a number of definitions of value in the literature and in this section we will examine some of these definitions.

Anderson, Jain and Chintagunta (1993) define value in terms of the monetary worth of benefits customers receive for the price paid. The authors discuss nine methods that have been used to measure value, ranging from an internal engineering assessment that measures the value of the product through laboratory tests within the supplier's firm, to conjoint or tradeoff analysis. Value in business markets context has also been defined as "the worth in monetary terms of the economic, technical, service, and social benefits a customer firm receives for the price it pays for a market offering" (Anderson and Narus 1999). The authors emphasize that value is expressed in monetary terms. Further, they state, "we can conceptually represent any market offering as a set of economic, service and social benefits a customer firm receives. By benefits, we mean *net* benefits where any costs a customer incurs in obtaining the desired benefit, except for purchase price are also included." The third point the authors stress is that market offerings are defined by value and price.

The relative quality of a firm's offering is also relevant to the value construct. It has been suggested that market perceived quality and customer value are two concepts "essential to the understanding of value" (Gale 1994). Here, market perceived quality is defined as "the customer's opinion of your products (or services) compared to those of your competitors" while *customer value* is defined as "market perceived quality adjusted for the relative price of your product".

Another aspect of value that is relevant to this discussion is the value of the relationship between a buyer and a seller. Relationship value can be classified along three dimensions: economic, behavioral and strategic (Wilson and Jantania 1997). The economic dimension can range from a simple cost reduction to the development of a concurrent engineering program that creates value through cost savings in design,

assembly and field service. By definition, relationships are strategic and hence relationship value can be said to have a strategic dimension. Relationships can be used strategically to gain competitive advantage, to open new markets and to add core competencies. The behavioral dimension of relationship value can range from the creation of social bonds and trust, to the evolution of a shared culture. Each of the three components of relationship value has measurable attributes (hard attributes) and attributes that are difficult to measure (soft attributes).

Meauring and Capturing Value

From the above literature review, it is evident that value involves something of monetary worth and can be generated both from a physical product and from a relationship. To capture both the product attributes and the relationship attributes in the value equation, we suggest the use of multi-attribute scales. Multi-attribute scales have been suggested in the past for the measurement of value. Reidenbach, Goeke and McClung (2002) defined value as "the interaction between the benefits that customers want from a particular product/service and the price they are willing to pay to acquire the benefits provide by that product service". The authors note that some product/service offerings can be complex with many benefits, while others may be less complex with fewer benefits, and suggest that for offerings to be actionable by management, "they are best represented as dimensions, or multi-attribute scales".

Wilson, Cory and Ghingold (1990) also recommend using a multi-attribute model to determine the pricing power that a seller has with respect to a competitor. The authors note that price becomes the means of adjusting relative value by either increasing performance of important attributes or a price reduction. Superior performance of important attributes will support a higher price. The index suggested by them is calculated as follows:

Pricing Power Index $PPI_{I/c} = \Sigma I_j (P_j - Pcj)$ where

$PPI_{I/c}$ is the power of a firm to obtain a premium price relative to a specific customer

I_j is the importance of the attribute j for the customer.

P_j is the performance of the firm on attribute j as perceived by the customer, and

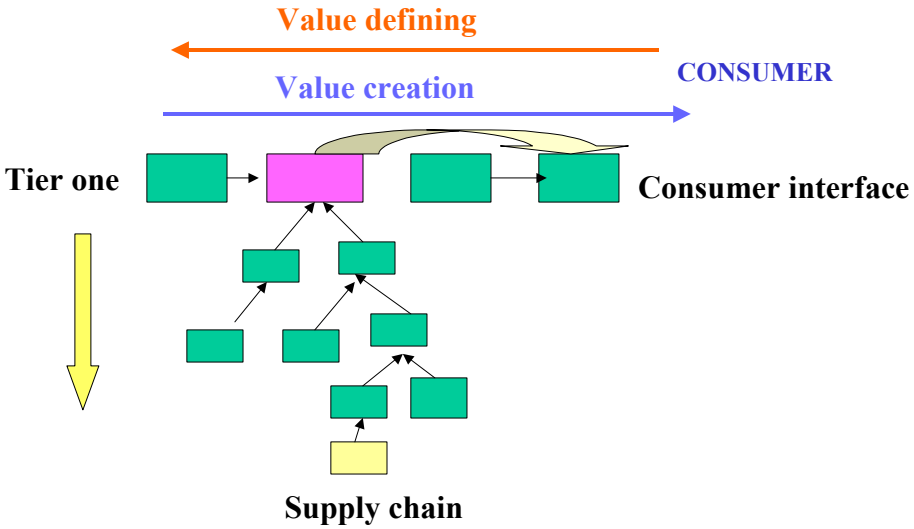
P_{cj} is the performance of the competitor on attribute j as perceived by the customer.

Scholars have developed different methods to measure value (Anderson, Jain and Chintagunta (1993) but for our purposes in measuring value the Multi-attribute model provides a solid framework. Based on the above literature review, we suggest that value has monetary implications, is composed of both product and relationship value and can be measured using multi-attribute models. In the following section, we will present an overview of the value-creating network.

Overview of the value-creating network

Figure 1 represents a stylized value creation network. The arrow at the top of the page indicates that value definition flows from the consumer back through the network. The creation of the network is driven by firms aggregating their resources to deliver the value that the consumers seek. Value creation flows towards the consumer and occurs when firms that interface with the consumer or business firms develop a product or service that addresses deterministic attributes.

Figure 1



There are some important attributes that need to reach a performance level equal to the competition but since most of the sellers can deliver the same level of performance on these attributes, they do not determine choice whereas deterministic attributes do determine consumer choice.

To get a better insight into the concept of deterministic attributes, in the following section, we will review some of the behavioral literature in consumer decision-making. For the past few decades, multi-attribute choice models have been used extensively to study consumer attitudes towards products. One of the most popular models used has been the Fishbein model, which has been termed as an "adequacy-importance" model (Fishbein 1972, Bettman et al 1975). This model states that: -

$Aj = \Sigma^{n}_{i=1} a_i b_{ij}$

Where:

A_j = attitude toward brand j

a_i = evaluative aspect of attribute I (its goodness or badness)

b_{ij} = strength of belief that brand j possesses attribute I

n = number of attributes

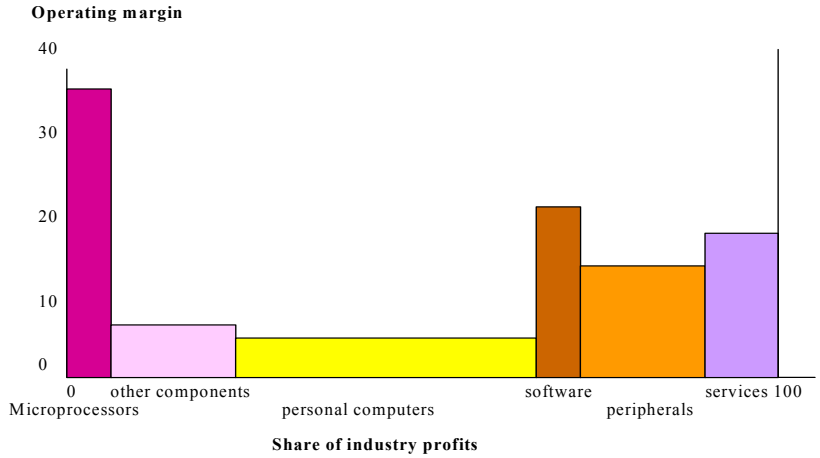
Another related area of interest in consumer literature has been the study of decision-making rules or heuristics that consumers use when choosing brands. The behavioral literature suggests a variety of different methods that consumers use to make decisions. These include the weighted additive rule, satisficing heuristic and lexicographic rule (e.g. Svenson 1979, Simon 1955, Bettman et al 1975). Of these, the weighted additive rule is one of the more frequently cited decision-making heuristics in the literature (Svenson 1979). In this method, the performance of each alternative on all the relevant attributes as well the relative importance of each attribute is taken into account by the decision maker (Bettman et al 1975).

As the above discussion suggests, there is strong evidence in the literature to indicate that consumers weigh the different attributes of a product before making a decision. Having said this, it is important to note that some attributes are more likely to cause a consumer to act than others (Myers and Alpert 1968). "Attitudes toward features which are most closely related to preference or to actual purchase decisions are said to be determinant" (Myers and Alpert 1968). In this paper, *determinant attributes* refer to features or attributes that cause determinant attitudes and have significant variance in performance from supplier to supplier.

Traditionally, determinant attributes have been viewed from a consumer-marketing context but we suggest that determinant attributes can be very important in the business-marketing context as well. Assume a simple supply chain in which there are suppliers selling different components of a product to a buyer, who then sells it to the final consumer. In such a case, a supplier who is able to provide determinant attributes will create much more value in the chain and consequently will have a much greater degree of leverage with the buyer than other suppliers. Examples of suppliers who control determinant attributes include Intel with its chip design and Microsoft with its Windows Operating System.

Let us turn back to our discussion of figure 1. Tier one indicates that there are firms that aggregate the products of other firms to create an important piece of the final product. For example, in the automotive industry the tier one firms are building larger pieces of the car, which were traditionally built by the automotive firm. The firm that controls the ability to influence the final customer commands the network. Firms such as Dell and Ford have key suppliers that deliver critical aspects of the final product but they themselves ultimately control the final marketing offering. The ability to influence consumer choice can give a firm power in the network. The curved arrow joining a tier one firm to the consumer interface firm represents the relationship between key tier one suppliers and the firm that has access to the consumer. Access to the consumer gives this firm power when it comes to dividing the value created.

Figure 2: The PC industry profit pool



Source Havard Business Review

In figure 2, the microprocessor firm (Intel) provides deterministic attributes to the end-use customer and therefore it is able to obtain about a 35% operating margin. Intel with its "Intel inside" campaign built a connection to consumers that influenced their final choice and allowed Intel to claim a high margin. Thus, Dell may be the network commander but Intel is an influential partner.

Going back to figure 1, the boxes toward the bottom of the figure illustrate that a network of firms provides the parts and services that are assembled by the tier one firm, and contributes to the overall value creation of the network. In general, the firms at the bottom of the supply chain have less power, as the variance between the ability of these firms to contribute to value is small. Firms that provide products in the commodity category tend to have less power than firms that have the ability to provide unique value

The sub networks relate to the concept of a supply chain. Within the sub-networks there can be regional value centers where value provided is the determinant of supplier choice. Firms in the sub-networks may control determinant attributes that give them value performance and provide pricing power within the sub-network. Only when the final customer recognizes determinant attributes, does the supplier have significant power to extract higher prices from the network commander.

As noted earlier, we conceptualize value using a multi-attribute choice model. The attributes represent the salient dimensions, and the importance ratings provide the relative importance of the attributes. Alternative marketing offerings are evaluated by measuring a firm's performance on each attribute. *Value* can be defined as the sum of the product of each attribute's importance and its performance rating, less the price of the market offering. All other things being equal, the customer is likely to choose the alternative with the highest value. Ultimately, deterministic attributes will influence consumer choice since they have high variance on performance.

Creating Value

The attributes of a market offering can be separated into product attributes and relationship attributes. Product attributes reflect the performance of key attributes that are dependent upon the physical product's performance e.g. speed of printing for a printer. Relationship attributes reflect dimensions of interaction between the buyer and the seller. For example, service support is an easily defined and measured non-product attribute.

Relationship attributes are very important in the total value equation. JIT II is one approach that often brings to light relationship attributes for which economic value is not easy to determine (Dixon and Porter 1994). In this concept, the seller may replace its sales person with a material manager who resides in the buyer's facility and is charged with managing the procurement of the seller firm's product for the buyer. In such a case, it is possible to account for the cost savings resulting from the replacement of the purchasing person but it is difficult to measure the savings that result from an in-plant person assisting with new product development.

Value can be created in different ways such as by changing processes, integrating activities and improving communication in order to shorten time between awareness of the problem and action taken to solve the problem. The costs of creating product attributes are usually well known since industrial engineering maps the process costs. However, while the costs of adding services such as engineering advice, helping in new

product development, troubleshooting and service support maybe known in total, the cost is not likely to be known by account. These costs are like a big cupboard full of goodies that are dispersed without tracking the cost by account.

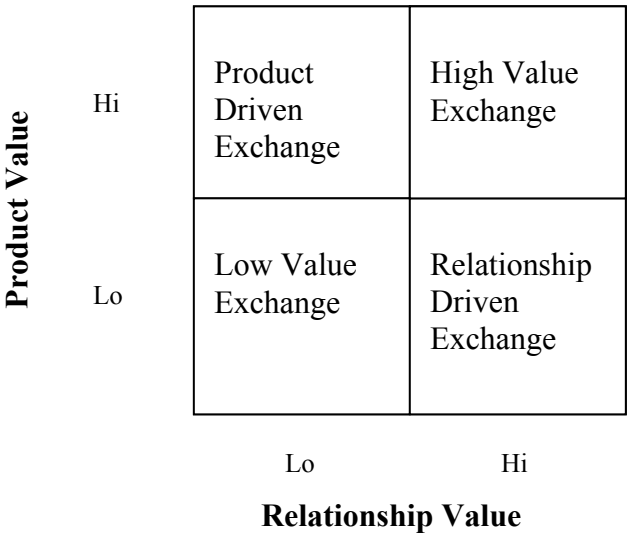
Measuring the costs of relationship support is something that firms need to address. A simple approach is to track activities by account and allocate the respective costs. Here another difficulty arises, since costs may be relatively easy to track but measuring the value created for the customer by providing these services is much more difficult. For example, what is the value of saving five days in response to a change in consumer demand for the product? Typically, the sales department receives an order and sends it to the purchasing department, which processes and sends it to the production person who books it into the production process. A JIT II arrangement has the production person housed within the customer's plant. This deep relationship may save several days in producing the required parts and result in savings that are not easy to quantify.

If we take a buyer-seller context, then the total value generated by the seller will arise from both the product and the relationship. In this context, the total value added by the seller will equal the sum of the product value and the relationship value. Thus, we suggest the following: -

Total Value = Product Value + Relationship Value

It is important to define the value concepts in the above equation in monetary terms. Thus, we define *product value* as the amount a buyer is willing to pay an unfamiliar seller for a product that has certain known performance levels for a set of attributes. On similar lines, *relationship value* can be defined as difference between the amount a buyer is willing to pay for a product from a particular seller and the amount a buyer is willing to pay for an identical product from an unfamiliar seller. In figure 3, we illustrate the value drivers in an exchange.

Figure 3: Value Drivers in a Business-to-Business Exchange



Low Value Exchange – Seller leverage will be low.
Relationship Driven Exchange – Seller leverage will be medium
Product Driven Exchange – Seller leverage will be medium
High Value Exchange – Seller leverage will be high

Dividing Value

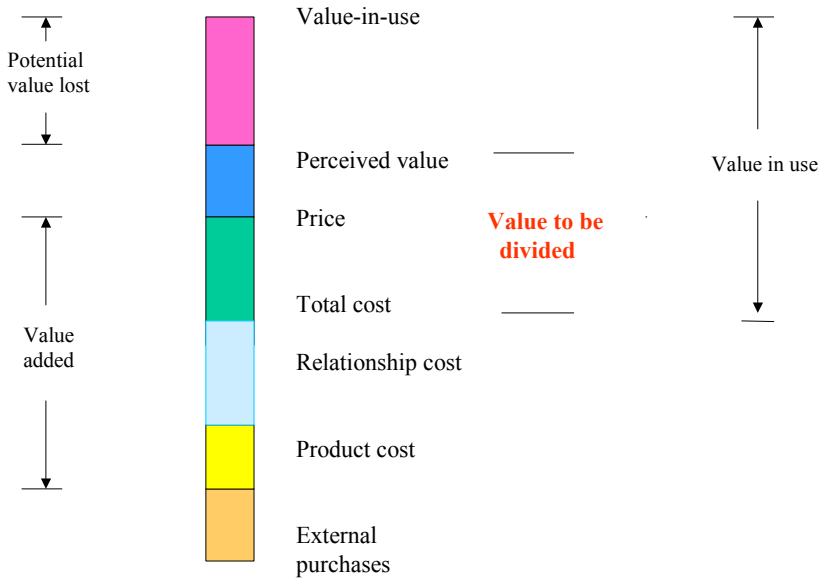
Value creation cannot be separated from the division of value between the buyer and seller. We have elected to use the term dividing value in lieu of sharing value as dividing has a sharper edge than sharing. The division of value generally centers on price setting but changing attributes such as inventory held, and JIT support can change the cost equation but not always the price. The buyer may ask the seller to take on activities that change both the seller's and buyer's cost structures while holding the price constant. The net costs change with the buyer now having lower profits and the seller having higher profits.

In this context, value is not a clear concept since both partners have their own perception as to what constitutes value. This difference may arise because the partners differ in their perception of a 'fair' price for the bundle of attributes to be exchanged, and even the composition of the bundle of attributes. Here, price plays a central role in setting value. The higher the price to the buyer, the lesser the value received by the buyer. Conversely, the lower the price, the lesser the value received by the seller. Thus, price and performance in delivering value creates friction in the relationship between the buyer and the seller. Given a constant bundle of attributes, low price creates more value for the buyer while a high price creates more value for the seller. The buyer weights the performance level on the bundle of attributes received, and what it must pay for that bundle of attributes. The seller extracts value from the difference between the cost of providing the bundle of attributes and the price received.

The assessment of value is made more complex by the fact that each party to the exchange may place different importance weights on the attributes. Jantania (2002) using the laddering technique of interviewing and by means-end analysis demonstrates that assessment of value can be quite complex and she finds that attribute preference and weighting varies by segment.

In this context, an interesting concept is that of value in use (Gross 1992). The author discusses value-in-use as a way to set value and a price. He defines value-in-use as, " what an offering is "worth" to the buyer, i.e. the highest price a particular buyer could economically justify paying for the product given the way it is to be used in the buyer's operations and what alternatives are available at their market prices."
Figure 4 provides a conceptual view of value-in-use The costs of the bundle of attributes consist of external purchases, production costs to create the physical product and relationship costs that provide non-product attributes. These costs are represented by the total cost in figure 4. Relationship costs are costs such as engineering support, warranty costs, design assistance and other costs that are part of the bundle of attributes that the buyer is seeking. *Value-in-use* is defined as the price at which a knowledgeable buying firm would be indifferent between buying the product and creating the bundle of attributes itself. The assumption is that the buyer knows the value-in-use of the product/service. In many cases, the buyer has a perceived price that represents a 'fair' price for the bundle of attributes. This perceived price is usually less that the value-in-use price as both the buyer and seller have not fully explored what the value-in-use is. The value-in-use price, if known, represents the break-even price that the buyer can economically pay for the bundle of attributes.

Figure 4: Costs, prices and value



In many instances, neither the buyer nor seller knows the value-in-use price. Obviously, a buyer would like to buy the product/service for less than his/her perceived price. If the seller does not know either value-in-use or the perceived price of the buyer, then the seller must set a price. In figure 4, this price divides the perceived value between buyer and seller. In such a situation, it is natural for the buyer to push to lower price and the seller to push to raise the price.

An example of value-in-use is a chemical firm that developed a product to extend the life of machine cutting fluid. The firm's cost to manufacture the product was $0.50 per unit that was marked-up to $1.00 for sale to the distributor. The distributor marked-up the price to $2.00. The cost of replacement fluid and environmental costs for fluid disposal indicated that the value-in-use to the machine shop was about $40.00. In figure 4, the difference between the total cost ($2.00) and the value-in-use price ($40.00) is the value–in-use of the product. The economic incentive to buy the product is the difference between price that the seller sets and the value-in-use price. The $2.00 price creates a $38.00 incentive to buy if the seller can convince the buyer of the value-in-use of the product to the buyer. Thus, if a selling firm knows the value-in-use, it can set a price that will give the buyer an incentive to buy while increasing its profits.

Some of the customers had a perceived value of $6.00. This price serves as an indicator of the upper price boundary for these buyers. In such a case, a buying firm will pay $6.00 because it has a value-in-use number that makes $6.00 price appear quite fair to it. The perceived price, which is unknown to the seller, guides the buyer's behavior since the buyer has a $4.00 per unit incentive to buy the product. Eventually, the low price of $1.00 set for a $.50 per unit did not provide enough money to fund the relationship costs of selling the product and the product failed. Thus, the lack of knowledge as to value-in-use of the product to the customer can frequently lead to a failure in the marketplace.

Referring back to figure 1, we see a network of horizontal and vertical alliances. Value is divided between each dyad through the price mechanism. Prices can be fixed or negotiable. The form of negotiation between buyers and seller is influenced by their relative power. When the power between partners is relatively balanced, negotiations can be competitive but since a partner may have other options, a reasonable price is likely to be reached. This is a likely scenario between tier one partners.

When a seller contributes to a deterministic attribute at the consumer level, it is able to extract higher prices and hence have a higher operating margin than other firms in the network. We suggest that having an impact on deterministic attributes gives the seller power in the negotiation of price, and consequently, in the division of value. However, there are regional areas on the value-creating network where local area deterministic attributes may be present. A firm that holds a patent position at an important node in the network would have deterministic attributes. Being an alliance partner who is able to deliver higher performance on relationship attributes that change the transaction costs between partners can give a partner power in the division of value.

If one firm is far more powerful than its partner, then we have a command mode where the more powerful partner takes a large share of the value created. The further down the network we go, the more likely that the tier one firms will drive prices in the vertical network where they can dictate prices to the suppliers The emergence of on-line reverse auctions is an example of buyers using marketplace power to gain a larger share of the value created. A firm has power in an auction situation if it is able to provide unique value to the buyer. This may cause that firm's products/services to be taken off the auction bid list or alternatively, when the firm bids, it can submit the current market price and still be selected as the supplier of choice. This is particularly true of relationship performance on hard to measure attributes such as engineering support, shortening time-to-market by working closely with the partner in product development, saving money through close coordination of the two firms in logistical activities and being a JIT II partner.

Conclusion

Since networks are organized to deliver value to the consumer, it can be said that consumers drive networks. Determinant attributes enhance a firm's power position within the network particularly if the attribute directly affects consumer choice. The network commander is the firm that has direct connection to the consumer. It owns the brand, but in some cases, other firms within the network may have a direct relationship with the consumer if they deliver high performance on a key deterministic attribute.

Value creating networks can be viewed at different levels ranging from the network of tier one firms to the vertical networks (supply chains) that support the value creating activities of the tier one suppliers. Being able to break out of the commodity trap is essential to ease the market pressures when dividing the value created. In conclusion, we reiterate that deterministic attributes give a firm power in the division of value. These attributes allow firms to have their products exempted from online vertical auctions and help a firm move from the commodity category to a specialized supplier. Relationships can create value that may be deterministic at all levels of the network and relationship value is also an important part of the creation of a value-creating network

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