

The Value of Internet Commerce to the Customer

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Internet commerce has the potential to offer customers a better deal compared to purchases by conventional methods in many situations. To make this potential a reality, businesses must focus on the values of their customers. We interviewed over one-hundred individuals about all the pros and cons of using Internet commerce that they experienced or envisioned. The results were organized into twenty-five categories of objectives that were influenced by Internet purchases. These categories were separated into means objectives and fundamental objectives used to describe the bottom line consequences of concern to customers. These results are applicable to designing an Internet commerce system for a business, creating and redesigning products, and increasing value to customers. The set of fundamental objectives also provides the foundation for developing a quantitative model of customer values. (*Internet Commerce; Customer Value; Value-Focused Thinking; Value Proposition; Objectives*)

1. Introduction

Selling products and services over the Internet is touted to have massive potential sales. Burke (1997) and Mehler et al. (1997) cite industry analysts' expectations of over \$250 billion in sales by 2000 and over \$1 trillion by 2002. For comparison, mail-order sales today are around \$50 billion annually. Since current Internet commerce is less than mail-order commerce, significant changes must occur to make the potential for Internet commerce a reality. Customers must transfer a lot of their purchases from store acquisition to Internet acquisition. For this to happen, customers must feel that they get a better deal with Internet shopping than with conventional shopping. A framework for how the customers will make this comparison is the topic of this paper.

Internet commerce is defined as the sale and purchase of products and services over the Internet. What does it offer the customer? How can it offer more to the customer than currently available through conventional means? The answers are based on the values of individual customers.

Businesses frequently use the concept of a value proposition to characterize the combination of end-result benefits and price to a prospective customer from purchasing a particular product. A customer will choose the competing product, or no product, that offers the best value, meaning the best combination of benefits and price. To examine Internet commerce, the notion of the value proposition must be expanded (Rayport and Sviokla 1994).

It is clear that there is no value proposition of Internet commerce per se, since Internet commerce is not a product that one purchases but a means to purchasing products. However, we can speak of a value proposition to a customer of purchasing a specific product on the Internet. Hence, we define the value proposition associated with Internet commerce as the net value of the benefits and cost of both a product and the processes of finding, ordering, and receiving it.

Different customers, of course, may view the value of the same Internet purchase very differently. This is so even if they value the purchased item identically.

One may experience a hassle and find it impersonal to buy over the Internet, whereas another may find it convenient and quick. Also, different customers may consider different benefits and costs in appraising the net value of prospective Internet purchases. This net value may include benefits and price of the product, benefits and costs of ordering the product, benefits and costs of receiving the product, possible benefits and costs to others (e.g., forced labor), and possible benefits and costs to the world (e.g., environmental impacts).

The competitors to a specific Internet purchase are other products purchased on the Internet, other means (e.g., stores, mail order) of purchasing the same product, or no purchase. From the customer's perspective, at the time he or she decides to search for a product to fill a need, it may not be clear what product will eventually be purchased. Hence, the value proposition associated with Internet commerce must include the value proposition of the product eventually purchased. Even if the customer knows exactly what product he or she will purchase, the price of the product may be different on the Internet or in a store. Thus, even in this case, the value proposition of the product is potentially influenced by the means of purchasing it.

Suppose you are interested in buying a book. If you are sure of the book you want, an Internet purchase and a store purchase will result in the same book. The book will have the same value regardless of how it was purchased. The difference in the value proposition will be due to the net value of the transaction costs and benefits of ordering and receiving it and its price. Now suppose that you only know the topic of interest for a book. Depending on the information you acquire as you search for a book, you may end up with a different book. So the value propositions of the Internet purchase and store purchase will partially depend on the book purchased as well as the method. In this situation, the value proposition of a purchase can be significantly enhanced or worsened by the Internet. It is here that there are both major opportunities and pitfalls. To take advantage of the opportunities and avoid the pitfalls, the values of the customers are key.

2. Methodological Approach

The best way to find out what customers value is to ask them. It is useful to ask many prospective customers because different people have different values and they express them differently. When values are elicited, they are not naturally combined into cohesive groups with a clear understanding of which values relate to which others and why. This organization is important to provide a basis for reasonable thinking through company decisions about Internet commerce.

To address the complexities described, one uses concepts of value-focused thinking (Keeney 1992) in three steps:

1. develop a list of customer values,
2. express each value in a common form,
3. organize the values to indicate their relationships.

The first step involves asking people what they care about in purchasing goods and services. The second and third steps are done by analysts to make sense out of the values identified. Step two involves converting each value into an objective. Step three involves recognizing means-ends relationships and articulating the fundamental (i.e., end-benefit) objectives.

List Customer Values

People can be interviewed individually or in groups. At the beginning, clarify that the purpose is to understand all the possible pros and cons of Internet purchases versus purchases by other means or not purchasing a product. Then ask each individual to write down all the values that he or she think would influence purchase behavior. After the writing stops, stimulate additional thinking with specific situations.

Inquire about the pros and cons of purchasing a book over the Internet or in a bookstore. Then ask about airline tickets, stocks, a computer, clothes, a vehicle. Each specific situation may stimulate different thoughts. It is not possible to test drive a car or see how a garment would look on you over the Internet, although virtual reality may simulate this in the future. On the other hand, these features may not be too relevant for a book purchase or a stock trade.

You can further stimulate thought by bringing up categories where specific values may exist. Ask if individuals have concerns related to cost, time, pri-

vacy, and so on. For “yes” responses, pursue in more detail what those concerns are.

Also, after each individual has thought about and written down his or her initial list of values, engage him or her in a discussion of the pros and cons of Internet commerce. This may stimulate the recognition of additional values that should be added to the list.

Once the interviews stop producing additional values, combine all the individual lists. The combined list will likely include cases where the same value is stated in different ways, but the nuances may be helpful and in any case they do not hurt. Redundancy is not a shortcoming as the intent is to get a comprehensive list of all the values. Ideally, this comprehensive list should include the values necessary to describe any individual’s values.

Convert Each Value to a Common Form

The initial list of values will come in many forms: quicker way to purchase, security problems, cost, minimize time needed, quality of product. It is clearly useful to develop some consistency in these expressions. This is done by converting each item into a corresponding objective.

An objective is defined as something one wants to strive towards. In general, an objective has three features: a decision context, an object, and a direction of preference. For our case, the decision context is whether or not to make purchases over the Internet. The object is a noun and the direction of preference is a verb. For example, “quicker way to purchase” listed above becomes “minimize purchase time,” “security problems” becomes “assure system security,” and “cost” becomes “minimize cost.”

Organize the Values to Indicate their Relationships

At this stage, there will likely be a long list of objectives. The first thing to do in organizing objectives is to combine similar objectives into categories. There are, for instance, many components of the objective “minimize cost.” These include product cost, taxes, shipping cost, cost of using the Internet, travel cost, and so forth. All of these can be categorized as part of a general objective “minimize cost.”

Once objectives are categorized, it is useful to relate

categories by means-ends relationships. For each general objective, ask why it is important in the decision context of whether or not to make purchases over the Internet. There are basically two responses. It is important because it helps to achieve one or more of the other objectives or it is one of the fundamental reasons for purchasing on the Internet or not. Objectives with the former response are referred to as means objectives and those with the latter response are referred to as fundamental objectives. One can link objectives through a series of means-ends relationships. Consider this example.

A stated objective of any purchase system is to “ensure system security.” Why is this important? It helps to “minimize misuse of credit cards,” “minimize misuse of personal information,” and “maximize privacy.” Why is the first of these objectives important? It affects the objectives “minimize cost,” “maximize convenience,” and “minimize time spent.” Why are these latter objectives important? The answer is that they are fundamental to the decision to purchase over the Internet. These three are then fundamental objectives. The other objectives mentioned are means objectives. To a customer, the decision about whether to purchase over the Internet can be made with only a knowledge of how well the alternatives perform in terms of the fundamental objectives. Means objectives are still important because they suggest numerous mechanisms for how companies can improve their product or delivery system for customers. All of the means-ends relationships can be clearly illustrated using a picture called a means-ends network.

A second useful concept for categorizing the initial list of objectives is specification. The intent is to clarify the meaning of a broad general objective by specifying its logical parts. One objective in purchasing desired items is “maximize convenience.” But what exactly does this entail? From stated objectives, it might be clear that it includes time flexibility in purchasing, ease in finding the product, ease in getting after-sale service, and an easy return policy if necessary. A fundamental objectives hierarchy that lists component objectives under the corresponding general objectives can clearly indicate such relationships.

3. Obtaining Customer Values About Internet Commerce

I had interviews and discussions with over 100 individuals about their values with regard to purchasing goods and services over the Internet versus the alternatives. About half of the people were interviewed individually and others were interviewed in groups. With the groups, individuals were first asked to write a list of all the pros and cons they could think of associated with Internet purchases. Then we discussed these pros and cons to possibly expand the lists. The interviews were opportunistic (i.e., not a random sample or a cross-section of customers). However, the selection of people interviewed included individuals from over 20 countries, with ages from 18 to over 65, with approximately 75% under 35, who had and had not purchased items on the Internet, and who were and were not connected to the Internet. Since the intent is to get a comprehensive list of values related to Internet commerce and not a representative list about which values seemed more common or most important, the breadth of the individuals interviewed served the purpose well.

After all of the interviews, each value listed was converted to an objective. Duplicate objectives were deleted although similar objectives were retained. The results are described by the more than 100 objectives listed in Tables 1 and 2, which indicate the categorization discussed in the following section.

4. Organizing Customer Values

There were two separate tasks to organize all the objectives. One involved combining similar or component objectives under a common general objective. The other involved identifying these objectives as means objectives or fundamental objectives. Some examples illustrate this.

Several objectives concerned product information. These included maximize information about promotions, provide a product picture, be able to try a product on, feel the product, maximize accuracy of information, and so on. These were all listed under a broad general objective, "maximize product information." Similar groups of objectives were combined as indicated in Tables 1 and 2.

Next, the issue was to categorize the general objectives into means or fundamental objectives. In many of our interviews, we had asked why it is important to achieve several of the now-called product information objectives. The responses were that this would lead to better comparison shopping, better purchases, and eventually to better product quality, lower costs, less inconvenience, and so forth. Hence, the product information objectives were clearly means objectives.

Another category of objectives had to do with the time involved in purchasing a product. These objectives concerned time to gather information, time to select the product, time to order, payment time, and so forth. These were all categorized under the general objective "minimize purchase time."

Did purchase time constitute a fundamental objective? The reason given for why it was important was that individuals like to save time for other interests. Other interests relate to different decision contexts. Hence, in the context of purchasing items on the Internet, purchase time is a fundamental objective.

Table 1 lists means objectives and Table 2 lists fundamental objectives. In each table, component objectives are listed under corresponding general objectives.

The next task was to indicate the main means-ends relationships among the general objectives. The means-ends network in Figure 1 does this, where the objectives are referred to by their object only to reduce clutter. On the right in Figure 1 is the set of fundamental objectives. The overall fundamental objective is to maximize customer satisfaction. Its component fundamental objectives collectively can be used to describe the complete value proposition of an Internet purchase to a prospective customer. The set of means objectives on the left indicates numerous categories in which changes could be made to alter the resulting value proposition.

5. Adapting Customer Values to Specific Situations

How much the customer values your products and services is critical to the success of any company. Knowing the components that your customers fundamentally value is critical to making informed deci-

Table 1 Means Objectives Related to Internet Commerce

Minimize Fraud	Maximize Accuracy of Transaction
Maximize fraud protection	Minimize product errors
Discourage/prevent fraud	Minimize shipping errors
Maximize seller legitimacy	Minimize charging errors
Assure System Security	Enhance Comparison Shopping
Maximize security of transaction	Maximize products for comparison
Discourage hacking	Provide comparison shopping
Maximize Access to Information	Maximize ease of comparison shopping
Have many search possibilities	Maximize speed of comparison shopping
Learn about specials efficiently	Make Better Purchase Choices
Facilitate information gathering	Minimize likelihood of disappointment
Get more focused profile of what is of interest to you	Maximize confidence (right choice)
Maximize transaction speed	Maximize Product Variety
Maximize Product Information	Increase variety of products
Maximize information about promotions	Maximize product selection
Maximize available product information	Have broad choice of products
Be able to feel the product	Maximize Product Availability
Be able to see the product	Have many products in stock
Be able to try product on	Maximize range of quality options
Be able to test product	Minimize Personal Travel
Maximize information about products	Minimize travel distance
Maximize accuracy of information	Minimize driving effort
Minimize Misuse of Credit Card	Maximize Ease of Use
Minimize unauthorized use of credit card	Maximize ease of user interface
Maximize safety of credit card	Make access easy
Minimize Misuse of Personal Information	Make search process easy
Minimize receipt of unsolicited material	Maximize ease of the purchase
Minimize transfer of personal information	Simplify finding desired product
Assure Reliable Delivery	Offer Personal Interaction
Provide reliable delivery	Provide human customer support
Assure arrival of purchase	Provide opportunity for personal interaction
Limit Impulsive Buying	
Minimize "unwanted" purchases	
Control unreasonable buying	

sions about your products and services. Hence, the list of fundamental objectives specified in Table 2 provides the basic starting point to answer several important questions.

- What is the value proposition we offer our customers?
- What new products might we create and successfully market?

- How can we redesign existing products to improve them?
- How can we improve the delivery of our products to customers?
- Should we offer our products on the Internet?

To address these questions, one should consider the type of product or service offered. For this type (e.g. books, computers, airline tickets, stocks, or clothes),

Table 2 Fundamental Objectives Related to Internet Commerce

Overall Objective	Minimize Time Spent
Maximize customer satisfaction	Minimize purchase time
	Minimize processing time
Maximize Product Quality	Minimize payment time
Maximize product value (i.e., price/quality relationship)	Minimize queuing time
Ensure quality of product	Minimize time to find product
Get the best product for the buck	Minimize communication time
Maximize functionality of purchased item	Minimize search time
	Minimize time to order product
Minimize Cost	Minimize time to gather information
Minimize product cost	Minimize time to select a product
Minimize tax cost	
Minimize shipping cost	Maximize Privacy
Minimize Internet cost	Avoid electronic mailing lists
Minimize travel cost	
Minimize Time to Receive Product	Maximize Shopping Enjoyment
Minimize delivery time	Make shopping a social event
Minimize shipping time	Minimize worry
Minimize dispatch time	Inspire customers
	Enhance user productivity (i.e., get ideas that you would not have had otherwise)
Maximize Convenience	Minimize regret
Maximize purchasing convenience	Minimize disappointment
Maximize time flexibility in purchasing	Maximize customer confidence
Provide quality after-sales service	Reduce demand for forced labor
Assure an easy return process	
Minimize effort of shopping	Maximize Safety
Minimize personal hassle	Maximize driving safety
Maximize ease of finding product	Minimize risk of product use
	Minimize Environmental Impact
	Reduce environmental damages
	Minimize pollution

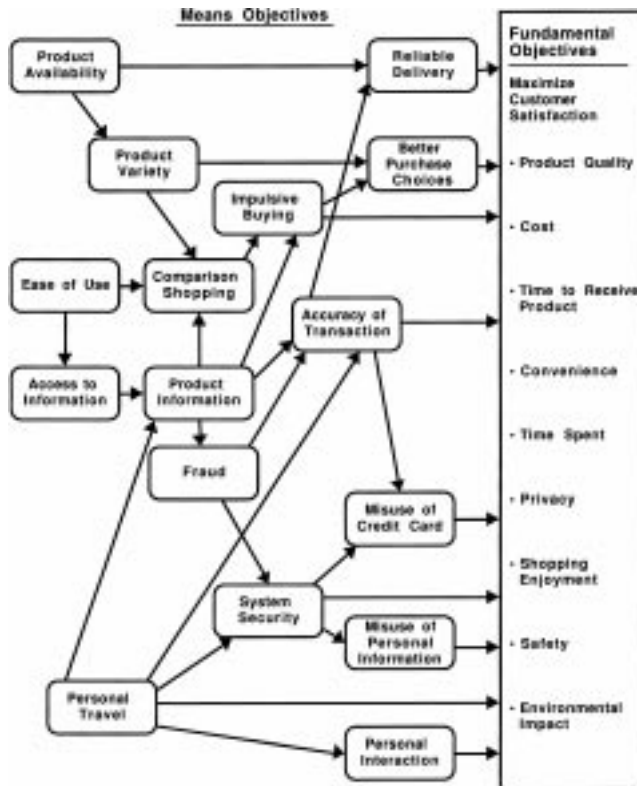
you will want to be more specific about each of the objectives in Tables 1 and 2. The meanings of product quality, delivery time, and shopping enjoyment may be different for different types. Hence, given a type, one can be more specific about the relevant objective. On the other hand, fundamental objectives like cost, privacy, and purchase time would seem to be more similar for all types. In any case, review each objective and alter it to be specific to a given product type.

To provide additional insights to answer the questions above, you can quantify aspects of the specific fundamental objectives relevant to your type. For this, it will be helpful to identify a measure for each fundamental objective that is used to indicate the

degree to which that fundamental objective is met by a specific product purchased in a specific way.

Some measures will be easy. Cost can be measured in dollars, purchase time in minutes, delivery time in hours or days. Privacy might be measured by the number of lists your name is added to without your approval or the number of data banks obtaining unauthorized information about you. Safety might be measured by the likelihood of being involved in a serious accident while shopping for or purchasing the product. Measures for product quality, shopping enjoyment, and convenience will require more thought and need to be tailored to specific situations. Concepts from behavioral research (von Winterfeldt and Ed-

Figure 1 A Means-Ends Objectives Network for Internet Commerce



wards 1986) and from decision analysis (Keeney 1992) will be useful in this process.

The prioritization process is meant to address the tradeoffs among objectives. It indicates exactly how much in terms of one objective a prospective customer is willing to give up to receive a specified improvement on a second objective. For example, how much time is a customer willing to wait for delivery of a book in order to save either eight dollars or to reduce purchase time by 45 minutes.

The priorities assigned to the fundamental objectives represent specific value judgments of a customer. They can be gathered directly from customers, inferred from customer behavior for existing products, or articulated by others (e.g., sales personnel) in contact with customer preferences. There are detailed steps to build models that address situations such as this involving multiple objectives (e.g., Keeney and Lilien 1987).

6. Using Customers' Values

The information above provides us with a compact way to represent and use customer values. Let O_1, \dots, O_n be the set of n fundamental objectives that are found to apply to a type of product or service. For each objective O_i , let X_i be a measure that describes the product or service with respect to O_i and let x_i be a specific description. For example, if O_1 is minimize cost of obtaining the product, then X_1 may be dollars and x_1 could be \$71. Objective O_2 may be to minimize delivery time, X_2 may be days, and x_2 could be 3 days. Now the vector $\mathbf{x} = (x_1, x_2, \dots, x_n)$ provides a description of the product or service and the process of obtaining it.

The prioritization of objectives provides a value model indicating the overall desirability of a product. It assigns a number to each vector \mathbf{x} such that a higher number represents a preferred value proposition. A common value model is the additive value function

$$v(x_1, x_2, \dots, x_n) = \sum_{i=1}^n k_i v_i(x_i), \quad (1)$$

where k_i is the weight that indicates the relative priority of objective O_i and v_i is a scaling of the relative desirability (i.e., value) of different values of O_i (Dyer and Sarin 1979, Fishburn 1965).

Objectives should be prioritized with individual customers, because different customers have different tradeoffs. The qualitative basis for this prioritization is the common list of fundamental objectives. This is one reason why it is important to try to obtain all the possible values in the initial interviews about the pros and cons of Internet commerce. The weights in the value model (1) are what differentiates the concerns of different customers. Some individuals may place zero weight on some objective, which indicates that the corresponding objective is irrelevant to them. With this option, the common product description \mathbf{x} can be used for all prospective customers. It would be very useful to prioritize the objectives using (1) for a large representative set of customers to help a company answer the questions posed at the beginning of §5.

The Value Proposition

The value proposition to a customer associated with your product and its purchase is quantified by a value model such as (1). The number $v(x_1, x_2, \dots, x_n)$ represents the net value of the benefits and costs to the customer. It is important to recognize that the model (1) indicates value on a relative scale like a temperature scale. You can specify the scale to range from 0 for the worst of \mathbf{x} considered to 100 for the best considered, or you can develop the model so $v = 0$ represents a product with no net benefit (e.g. it is just worth its cost). Then, when $v > 0$, the product has a net positive benefit, meaning it is better for the customer to buy the product at the stated price than not.

Since different customers have different values, and therefore different value models, it is completely reasonable that the value proposition of an Internet purchase of a given product is positive for one customer and negative for another. Similarly, a customer may find a positive value for the proposition associated with your product, but have a greater positive value of a competitor's value proposition. This competitive situation is necessary to consider in thinking through the next decisions.

Creating New Products

Creating a successful new product involves finding a hole or gap in the space represented by measures X_1, \dots, X_n where you can offer a superior value proposition. Kim and Mauborne (1997) refer to this process as value innovation. It involves improving performance on objectives that customers care a lot about and perhaps reducing performance on objectives of lesser concern. As an example, college students may care mainly about getting textbooks before classes start in a convenient manner at a low price. If so, perhaps an Internet company could offer slow (but prior-to-classes) service to any location for a low price if books were ordered early and without involving any direct interaction with a company employee. This way they may be able to profitably skim from an existing market.

A new product in an existing market may add dimensions to the existing X space. Mobile phones added dimensions to the telephone market. A revolutionary new product may actually create a market that

would need to be characterized by a new X space. Initially, the alternatives for customers may only involve purchasing the product or not, and, if so, how.

Redesigning Products

The process of redesigning products is similar to that of creating products. The two main differences are that you start with an initial product, which can be represented by \mathbf{x}^* , and you should have a much better idea about the feasible and reasonable changes in the value proposition of your product. Consider an example.

Suppose for your current product $\mathbf{x}^* = (x_1^*, x_2^*, \dots, x_n^*)$ that x_1^* is the product cost to the customer and x_2^* is a level of quality. You may be able to improve quality by an amount q for an additional cost of c . If so, then a redesigned product could offer the value proposition $v(x_1^* + c, x_2^* + q, x_3^*, \dots, x_n^*)$.

A simple example involves a specific book sold over the Internet. As part of the current value proposition, total cost x_1 may be \$20 and delivery time x_2 may be 7 days. You could redesign this product so that you offer the book with $x_1 = \$28$ and next day delivery ($x_2 = 1$ day). In such a case, you may wish to offer both options as not all potential customers would prefer the same option.

In deciding whether to redesign your product or not, you should compare the alternatives from the perspective of what's best for your organization. For this decision, the fundamental objectives will not be O_1, \dots, O_n . Your fundamental objectives will likely include such concerns as profitability, market share, customer satisfaction, and employee satisfaction. In this case, one fundamental objective is to maximize customer satisfaction, which might be measured by v , the desirability of the value proposition to the customer. The objectives O_1, \dots, O_n are then component objectives to the overall fundamental objective concerning customer satisfaction. It may sometimes be the case that an organization thinks of customer satisfaction as a means objective to higher sales which is a means to greater profits. The O_1, \dots, O_n are component means objectives.

In both cases, whether customer satisfaction is considered a fundamental objective or a means objective, it is important to focus on improving customer satisfaction to improve the achievement of the organiza-

tion's fundamental objectives. Also, at some point, further improving the value proposition can decrease the overall desirability of the situation to the organization. For a simple example, decreasing product price increases the value proposition but will eventually eliminate any profit.

Improving Product Delivery

The delivery of a product can affect all of the fundamental objectives of the value proposition (see Figure 1) except for product quality. Conceptually, improving product delivery is the same as improving product design. We will try to alter the value proposition x^* in a way that improves it, and, through the resulting implications, improves the situation for the organization in terms of its fundamental objectives.

Entering Internet Commerce

Suppose you now offer your product in stores and/or by mail order. Each of these cases offers a different value proposition to the customer and provides a certain level of achievement of your fundamental objectives. If you decide to sell the product over the Internet, you will be offering still another value proposition. Issues that you need to think about include what should be the design of its delivery system, what are the potential sales of this product over the Internet, will the Internet alternative decrease current product sales, and will this offer affect competitor's sales. In addition, one needs to think about what might be learned from the attempt at Internet commerce that will be helpful for Internet involvement in the future.

The knowledge of the different value propositions offered by your own product delivery in different ways and by your competitor's products will help you carefully consider these questions. Combined with information and judgment about how the Internet commerce alternatives might affect achieving your objectives, you can make an informed decision about whether and how to proceed.

7. Conclusions and Implications

The values of prospective customers are a key element in essentially all of the major decisions facing any organization involved in or considering being involved in Internet commerce. The research described

provides a useful comprehensive list of all the values that concern potential customers. They are categorized logically into means and fundamental objectives and their relationships are indicated.

This research addresses the role that Internet commerce may have on the value proposition to the customer for any product or service that may be sold over the Internet. To directly apply the results, it will be necessary to tailor the meanings of each of the objectives in more detail to apply to your specific product. Once this is complete, measures for each of the resulting fundamental objectives should be selected and a value model developed to represent the value proposition viewed by each potential customer. It would be insightful to conduct such an applied research project.

Given specific objectives, measures, and a value model, it would be useful to collect information from numerous prospective customers about their values. A sample of customers should be interviewed to prioritize objectives and indicate individual value tradeoffs. This would indicate, for example, the percentage of prospective customers that considered it worth \$5 to save one half-hour of time, worth \$10, worth \$15, and so forth.

There are two useful research projects associated with quantifying customer values and value propositions. One is an applied research project to develop a sample of customer values for a specific category of products. The other is to develop an automated procedure to help assess customer values and to store and manage the resulting information to provide insight for making decisions about Internet commerce. It would be reasonable to have an interactive interview, via a computer program or the Internet, to assess customer values. The applicability of such an approach was demonstrated over 20 years ago by Krischer (1976) who used an extensive questionnaire to determine preferences (i.e., values) for the fundamental objectives for treating a cleft palate.

Prior to obtaining details about customer values for a specific case, it would be useful to embed this into a framework for addressing specific decisions facing companies about Internet commerce. A component of such a research project would articulate the objectives of a company in considering such a decision. The initial phase of the project would be similar to that in

this paper in that it would articulate the objectives the company was pursuing with Internet commerce. Then the objectives would be quantified and combined with the quantification of prospective customer objectives. This would allow the company to simultaneously investigate the implications of proposed product creation or delivery decisions on both the value proposition to customers and on the achievement of fundamental company objectives.

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