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THE EFFECT OF BUYER-SELLER RELATIONSHIPS
ON THE BUYER'S EVALUATION AND CHOICE

by

David William Large

School of Business Administration

Submitted in partial fulfilment
of the requirements for the degree of
Doctor of Philosophy

Faculty of Graduate Studies
The University of Western Ontario
London, Ontario
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ABSTRACT

Sellers of technology-based capital equipment are often required to participate in a competitive bidding process prior to the buyer's final evaluation and choice. Factors such as the competing sellers' relative prices and relative functional benefits are certainly important to the buyer. However, the relative quality of the competing sellers' buyer-seller (B-S) relationships, both before and during the bidding process, may also play an important role. Therefore, the management problem addressed by this dissertation, stated from the seller's perspective, is how to manage B-S relationships to favourably affect the buyer's choice in competitive bid situations.

A research model comprising eight constructs and sixteen hypotheses is derived from three fundamental propositions: 1) the buyer's Choice from the short list of competing sellers is determined by the buyer's overall expectation of Relative Value; 2) the buyer's expectation of Relative Value is derived from a tradeoff of a set of interdependent Relative Expectations of the products' benefits and costs; and 3) the buyer's Relative Expectations of benefits and costs are affected by relative perceptions of the quality of the sellers' B-S Relationships.

Each construct in the research model is operationalized with a series of questionnaire items. Of particular importance, the three B-S relationship constructs are operationalized with questions regarding the sellers' relational behaviours, i.e., Attention, Collaboration, Intensity and Reliability. The questionnaires were completed by 106 buyers of private branch exchange (PBX) telecommunications equipment, and the data were analyzed using the Partial Least Squares (PLS) program and Discriminant Analysis. The results demonstrate the research model's ability to predict over 88% of buyer Choice, and show strong statistical support for thirteen of the sixteen hypotheses.

In conclusion, the three fundamental propositions are validated: buyer Choice of seller is determined by the buyer's expectation of Relative Value; which is in turn derived from Relative Expectations of the products' benefits and costs; and which are in turn affected by relative perceptions of the quality of the sellers' B-S Relationships. Furthermore, the quality of an effective B-S Relationship can be defined by a set of four relational behaviours. Application of these findings may help sellers to favourably affect the buyer's Choice in bid situations.

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"TO A BETTER LIFE!"

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1.1.2 The Product Focus: Technology-Based Capital Equipment

As stated earlier, an important goal of this dissertation is to provide empirical support for the proposition that the relative quality of buyer-seller relationships can affect the buyer's ultimate choice. It is plausible that the effect of buyer-seller relationships might vary depending on the type of product involved in the competitive bid process. For example, in the Adjeleian case examined in the previous section, the choice of a CADD supplier took eighteen months, involving extensive personal interactions between the members of the buying team and the members of the competing selling teams of the competitors, and extensive modifications to performance specifications. Such interaction would not likely be necessary for the selection of a window cleaning service. Therefore, it is reasonable for this dissertation to focus on a product type whose sale necessitates a high degree of buyer-seller interaction.

Which product type is appropriate? Kotler and Turner (1985) give four categories of industrial products: materials and parts, capital goods, supplies, and services. Capital goods can be sub-classified into relatively stationary goods such as buildings and furniture, and technology-based (i.e. operational) equipment such as process machinery, computer and telecommunications systems, office work stations and medical diagnostic instruments. Leenders et al (1985) and Dobler et al (1990) say that such capital equipment requires infrequent but substantial search efforts by a buying team, substantial but uncertain acquisition and operating costs, and often a significant startup period. This type of product appears to meet the requirements of this dissertation: its purchase is complex and possibly anxiety-provoking, requiring a high degree of buyer-seller interaction to educate the buyer, to set appropriate performance specifications, and to "sell" the buyer on the merits of a particular offering. Therefore, this dissertation will focus on bidding processes which concern technology-based capital equipment.

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LEGEND OF NOMENCLATURE

<u>Symbol</u>	<u>Explanation</u>
α	Cronbach's Alpha, or 2-tail probability from t-distribution
ARC	Applied Research of Cambridge
B	Buyer
B-S	Buyer-Seller
CAD/CAM	Computer Aided Design/Computer Aided Manufacture
CADD	Computer Aided Design and Drafting
cov	covariance
DCF	Discounted Cash Flow
df	degrees of freedom
E	Explanation
E, ϵ	residual of manifest variable
ECV	Economic Value to the Customer
Eta, η	latent variable, i.e. X, Y
FP	Fundamental Proposition
Grp	Group
H	Hypothesis
IP	Intermediate Proposition
λ	loading of variable on construct
MV	Manifest Variable
n, N	number of respondents
NT	Northern Telecom
n.s.	not significant, $\alpha_{2-tail} > 0.05$
PBX	Private Branch Exchange
PC	Path Coefficient
PLS	Partial Least Squares
Q	Question
ρ_{avg}	a scale's average variance extracted
ρ_{FL}	Fornell and Larcker's scale reliability coefficient
R ²	R-squared, i.e., variance explained
RE	Relational Exchange
ROI	Return on Investment
RQ	Research Question
Σ	sigma, i.e., summation
S	Seller
Sat	Satisfaction
S.D.	Standard Deviation
SE	Standard Error
U	a construct's residual
wt	weight of scale item on sub-construct
x	variable measuring X
X	independent (exogenous) construct
y	variable measuring Y
Y	mediating or dependent (endogenous) construct

Constructs

HistServRelp	History of Service Relationships
RepnServRelp	Reputation for Service Relationships
PastServRelp	Past Service Relationships (both Hist and Repn)
InterRelp	Inter-transactional Relationships
PresBidRelp	Present Bid Relationships
ExpBen/Costs	Expected Benefits and Costs
ExpServRelp	Expected Service Relationships
ExpFuncBen	Expected Functional Benefits
(Exp)\$Costs	Expected Financial Costs
(Exp)\$Benefits	Expected Financial Benefits

cont.

Sub-Constructs and Variables

Past (Serv)Atten	Past Service Relationship Attention
Past (Serv)Collab	Past Service Relationship Collaboration
Past (Serv)Intens	Past Service Relationship Intensity
Past (Serv)Reliab	Past Service Relationship Reliability
(Doc'n)Content	Documentation Content
(Doc'n)Commun'n	Documentation Communication
Pres (Bid)Atten	Present Bid Relationship Attention
Pres (Bid)Collab	Present Bid Relationship Collaboration
Pres (Bid)Intens	Present Bid Relationship Intensity
Pres (Bid)Reliab	Present Bid Relationship Reliability
Exp (Serv)Atten	Expected Service Relationship Attention
Exp (Serv)Collab	Expected Service Relationship Collaboration
Exp (Serv)Intens	Expected Service Relationship Intensity
Exp (Serv)Reliab	Expected Service Relationship Reliability
(Exp)SpecConf	Expected Specification Conformance
(Exp)FuncFeat	Expected Functionality and Functional Features
(Exp)SystFriend	Expected Systems Friendliness
(Exp)UserFriend	Expected User Friendliness
(Exp)\$Price	Expected Financial Price
(Exp)\$Op/Maint	Expected Financial Operating and Maintenance Costs
(Exp)\$OverallImpl	Expected Overall Implementation Costs

CHAPTER 1

INTRODUCTION

This dissertation is set in the general context of business-to-business marketing, in a situation where two or more sellers are competing to win a contract with a single buyer. The purpose of this dissertation is to provide a theoretical basis and empirical support for the overarching proposition that the relative quality of the buyer-seller relationships can ultimately affect the buyer's choice of supplier. In essence, then, this dissertation constitutes an empirical test of the effectiveness of Marketing's so-called "Fifth P", People (Judd 1987).

This introductory chapter begins with a more detailed description of the management context and management problem, continues with a discussion of the need for research, suggests appropriate research questions, and discusses some potential contributions to the practice and science of Marketing. The chapter concludes with a brief explanation of the format of the dissertation.

1.1 A MANAGERIAL PROBLEM

An important goal of this dissertation is to help improve the effectiveness of business-to-business marketing managers. Thus, this dissertation will address a particular management problem which is both relevant and important to today's marketing managers. A description of the managerial context precedes the definition of the management problem.

1.1.1 The Situational Focus: Competitive Bids

Business-to-business Sellers are often, if not usually, required to participate in a bidding process prior to the Buyer's final evaluation and

choice of supplier. This applies to all types of industries, and all types of products, from goods such as bricks to nuclear reactors, and services such as window cleaning to management consulting. In basic terms, a bidding process commonly comprises: 1) the Buyer's initial discussion with at least one Seller about perceived needs, product availability and performance specifications; 2) the buyer's initial go/no go decision (which is always subject to subsequent review throughout the bidding process); 3) the issuance of an "RFP" (Request for Proposal) or "RFQ" (Request for Quotation) by the Buyer to two or more competing Sellers, which describes in some detail the Buyer's required performance specifications; 4) the submission of product/price proposals by the Sellers in response to the Buyer's request; and 5) in most cases, the award of a contract to the chosen Seller.

Sellers in most cases would probably prefer to avoid the bidding process, relying instead on exclusive sole-source long term relationships with their customers. However, the buyer often derives several advantages from conducting bids: 1) the buyer uses the opportunity to become fully updated on product advances in the field; 2) potential new suppliers may be discovered; and 3) through the process of negotiation, the buyer strives to obtain the highest possible benefits for the least costs. Therefore, even though sellers might prefer to avoid a bidding situation, bidding is likely to remain a common reality in business-to-business marketing for some time to come.

In order to be the most effective, marketing managers must develop an in-depth understanding of the bidding processes of their customers, and tailor their marketing plans accordingly. Thus, it is important to recognize that the format of a bidding process varies widely from industry to industry, and even from business to business within that industry. The format can vary in several ways. For example, the process can be very formal, where an upcoming tender is publicly announced by the Buyer, formal documents are issued by the Buyer at a specific time and location,

sealed documents are returned by the qualified Sellers at a specific time and location, and the winner is officially announced to all parties. Governments frequently employ such a formal process for public works projects and major capital acquisitions. In contrast, the process can also be informal, where intent to purchase is not announced, no official tender documents are released, and proposals are received over time with no guarantee of a purchase decision or announcement.

Bid processes can also vary in their complexity. For example, some complex bids are conducted in several stages by the buyer, involving a search for qualified sellers, a request for pre-qualification proposals, a request for more detailed proposals from qualified sellers, and perhaps a final proposal from the two or three most qualified sellers. Such a process might be pursued by an auto manufacturer seeking to install its first fully robotized assembly line. In contrast, a bid process might also be quite simple, where a single round of quotations is solicited, and a decision made on the basis of the proposals returned.

The bid process may also be flexible, wherein the performance specifications are subject to change during the process, and the degree of negotiation between the sellers and buyer is high both before and after the "final" proposals are received. This may be common in situations where the buyer is unfamiliar with the range of product configurations and/or technologies available in the marketplace. It also may be common where the culture of the buying organization supports the practice of "wheeling and dealing." In contrast, some buying organizations tend to be inflexible with their tendering practices, where specifications issued in the tender documents are firm, and little or no negotiation transpires between the time that tenders are issued and the winner announced.

One final observation about bidding processes is that they may be competitive, in the sense that two or more competing sellers have been requested to submit proposals; or they may be single-source, in the sense

that only one seller has been requested to submit a proposal. An example of the latter situation might arise where an emergency dictates the immediate replacement of damaged equipment, and where there is only one supplier capable of meeting the time constraint.

To illustrate these concepts about the bidding process, let us examine the real case of Adjeleian and Associates, an engineering firm which was at the final stage of choosing a computer aided design and drafting (CADD) system (see Large and Barclay 1992). The three principal members of Adjeleian's buying team had been actively searching for eighteen months, and had received four proposals at various times over the preceding three months: 1) a technically satisfactory mini-computer system from a highly reputable English company called Applied Research of Cambridge (ARC), @ \$300,000; 2) a satisfactory, but possibly slightly inferior, minicomputer system from Systemhouse of Canada @ \$175,000; an incomplete and clearly inferior minicomputer system from a tandem alliance of two relatively unknown companies including Omnitech of Canada, @ \$150,000; and 4) a partially developed microcomputer system from AutoCAD @ \$50,000, which was potentially satisfactory but possibly years away from practical application. Adjeleian's purchase process had taken eighteen months from the initial search for information to the point of decision, and had involved extensive travel to trade shows, extensive personal interactions between the members of the buying team and the members of the competing selling teams of the competitors, and extensive modifications to performance specifications. None of the first three alternatives, based on an analysis of projected cash benefits versus cash costs, promised a financial return. However, Mr. Adjeleian eventually chose the first option from ARC, on the grounds that it best met the company's functional requirements, and that its "cadillac" image might attract the most challenging projects and the brightest employees. Financial return was not an important criterion, and Mr. Adjeleian could not wait for AutoCAD's uncertain introduction. Of particular interest, the interpersonal relationships between ARC and Adjeleian were frequent and congenial,

suggesting the possibility that the relationships between the seller and the buyer might have been a factor in Mr. Adjeleian's ultimate choice. As a parting note, Omnitech declared bankruptcy within a few years of failing to win the decision.

The bidding process in this case outlined above could be described as informal, because no tender documents were issued, and the sellers' proposals were received at various times over the period of several months. It could also be described as being flexible, because the performance specifications varied substantially over the 18-month period, and considerable negotiations transpired both before and after the receipt of the four proposals. Furthermore, the process was more complex than simple because of the length of time, several stages, and specification changes. Finally, the process was competitive because more than one competing Seller was involved. This case will also prove useful for illustrating many other points in the balance of Section 1.1.

Does the case help this dissertation achieve a situational focus? From the sellers' perspectives, the most important issue was not that the bid process was informal, flexible, or complex. Rather, the most important issue was that the bid was competitive, i.e., that the outcome of a Seller's effort was dependent on the activities and offerings of the competitors. Furthermore, we saw that in the case of at least one young competitor, Omnitech, failure to win in such a competitive situation may have contributed to the eventual bankruptcy of the company. Therefore, because competitive bid situations are relatively common in business-to-business marketing, and because success in competitive bid situations may influence the long term health of the selling organization, this dissertation will adopt a situational focus on competitive bid situations. The dissertation will also focus on a particular product class, as described in the following section.

1.1.2 The Product Focus: Technology-Based Capital Equipment

As stated earlier, an important goal of this dissertation is to provide empirical support for the proposition that the relative quality of buyer-seller relationships can affect the buyer's ultimate choice. It is plausible that the effect of buyer-seller relationships might vary depending on the type of product involved in the competitive bid process. For example, in the Adjeleian case examined in the previous section, the choice of a CADD supplier took eighteen months, involving extensive personal interactions between the members of the buying team and the members of the competing selling teams of the competitors, and extensive modifications to performance specifications. Such interaction would not likely be necessary for the selection of a window cleaning service. Therefore, it is reasonable for this dissertation to focus on a product type whose sale necessitates a high degree of buyer-seller interaction.

Which product type is appropriate? Kotler and Turner (1985) give four categories of industrial products: materials and parts, capital goods, supplies, and services. Capital goods can be sub-classified into relatively stationary goods such as buildings and furniture, and technology-based (i.e. operational) equipment such as process machinery, computer and telecommunications systems, office work stations and medical diagnostic instruments. Leenders et al (1985) and Dobler et al (1990) say that such capital equipment requires infrequent but substantial search efforts by a buying team, substantial but uncertain acquisition and operating costs, and often a significant startup period. This type of product appears to meet the requirements of this dissertation: its purchase is complex and possibly anxiety-provoking, requiring a high degree of buyer-seller interaction to educate the buyer, to set appropriate performance specifications, and to "sell" the buyer on the merits of a particular offering. Therefore, this dissertation will focus on bidding processes which concern technology-based capital equipment.

There is some evidence that attention to this product type may be of special interest to North American marketing managers. In North America, foreign sellers of technology-based capital equipment have emerged as the strongest competitors in some of the domestic markets, and there is evidence that many domestic sellers may be in serious distress. For example, Port (1989, p.17) reports that the U.S. share of the \$53.5 billion domestic computer market has declined from 97% in 1975 to 74% in 1989, and the U.S. share of the \$485 million machine tool market has declined from 97% to 35% during the same period. Therefore, a focus on more effective marketing of technology-based capital equipment may prove to of special interest to domestic marketing managers.

1.1.3 The Seller's Management Problem: Getting Chosen

The management context of this dissertation has been described in the previous two sections, i.e. competitive bid situations for technology-based capital equipment. In this section, the seller's specific management problem within that context will be defined, which will help guide the development of the research questions.

As described in Section 1.1.1, a bidding process can vary substantially in complexity, with the most complex bids involving several stages of buyer search, qualification of suppliers, and refinement of the bid list to a "short list" of perhaps only two or three remaining competing sellers. This dissertation will focus on the final, and arguably the most critical, stage of the bid process, i.e. the buyer's final evaluation of the short-list of competing sellers, and choice. Therefore, stated from the seller's perspective, the management problem to be addressed in this dissertation is how to get chosen from the buyer's short list of competing sellers.

Taken from a slightly different perspective, this management problem might also be re-stated as how not to get rejected. In many cases, sellers

are rejected from the short list one at a time because they are deficient with respect to key performance specifications. In other cases, when all sellers may be deficient on at least one important specification, the eventual winner may simply be "the best of a bad lot." Hence, getting chosen may sometimes be simply a matter of survival.

Before proceeding to the next section, it is important to add a longitudinal dimension to the management problem. It must be emphasized that a buyer's choice may not be an isolated event in time. Instead, each choice could be considered by the seller as only one of a potential series of repeat purchases involving either similar or unrelated products. Consider the case of the seller who sold a \$300,000 welding robot to John Deere Limited, only to have it scrapped because the robot proved incapable (Benzing 1989). The seller may have exaggerated claims about the robot's abilities, or may have failed to help the buyer properly implement it. In either case, it may be difficult for that seller to sell any equipment to John Deere in the future. Therefore, the management problem of how to get chosen must be approached with the past and the future squarely in mind.

It is also important to recognize the importance of profit in connection with getting chosen. While in some cases it may be important for the seller to "buy" a contract, i.e. to submit a bid price lower than the seller's variable costs, it is generally a wiser practice to submit a bid price which covers the seller's total costs and allows a fair return on investment. Most sellers and buyers of technology-based capital equipment in North America subscribe to the dual philosophy of both fair competition and fair profit. Therefore, this dissertation will focus on bidding situations where cutthroat pricing is not the dominant marketing tactic.

1.1.4 A Potential Management Lever: B-S Relationships

How do we approach the management problem of getting chosen from the buyer's short list of competing sellers? Port (1989) suggests that declines in domestic market shares for technology-based capital equipment may be largely attributed to inferior design and manufacturing on the part of domestic sellers. Indeed, some domestic sellers faced with declining shares have taken a variety of actions to correct what they consider to be the underlying causes. For example, many U.S. companies are trying the Japanese "fast cycle" approach to development (Mitchell 1989), and using ad-hoc mission-team groups (Port 1989) to move more products more quickly from concept to launch. This approach is being coupled with other techniques such as Design For Manufacturability (e.g. Heldenreich 1988, Walleigh 1989), Quality Function Deployment (e.g. Sullivan 1986), and Total Quality Control (e.g. Fawcett 1989, p.48).

However, while the application of these techniques has resulted in some examples of improved market share by U.S. manufacturers (e.g. Cole 1989), many authors feel that domestic sellers may also be deficient in the management of their buyer-seller relationships. For the moment, consider the buyer-seller relationship to consist of the complete set of interpersonal relationships between the members of the seller's selling team and the members of the buyer's buying team. Many authors contend that improvement in the quality of such buyer-seller relationships may be a lever for marketing managers to help improve their success rates in bidding situations.

Recall the Adjeleian purchase of the CADD system described in Section 1.1.1. ARC won the bid even though its system was priced about double that of the next less expensive competitor. As noted earlier, the interpersonal relationships between the members of ARC's selling team and the members of Adjeleian's buying team were more frequent and congenial than those between Adjeleian and the other competitors. Is it possible

that the quality of the relationship was a factor in Mr. Adjeleian's ultimate choice? Furthermore, and interestingly, two of the three losing competitors have since achieved significant and sustained market share, with AutoCAD arguably the dominant competitor in the field. This indicates that their products' functional performance and pricing policy were quite capable of satisfying large numbers of buyers. Is it then possible that these two competitors lost the Adjeleian bid because their sales teams failed to communicate their offering's benefits as well as ARC's? In the following paragraphs, several authors' arguments are given for the potential contribution of buyer-seller relationships.

More (1986) has studied varied patterns of co-development relationships between sellers and buyers of advanced technologies such as CAD/CAM systems. He concludes that badly managed relationships have made the difference in several instances between the buyer's decision to adopt versus reject:

"... the real failure of managers in (some) developing organizations has been in understanding and managing their strategic relationships with potential adopting organizations. In many of these situations, more effective management of these interorganizational relationships might have had a major impact on success in the situation." (p.501)

Cespedes (1986), in his explanation of how to organize and implement the marketing effort, supports this claim that relationships can make a difference:

"personal relationships that develop among people in buying and selling organizations have intangible, but real value" (p.561).

Davidow (1986), in his book about successful marketing of high technology, hints at how the relationship can have an effect. He concentrates on the role of the individual sales representative, who has the ability to differentiate the seller's product through customization:

"Good salespeople make a difference. They are powerful tools for making your products and services unique when properly trained, and they can tailor the product to the customer. They

can even become the product. Figuratively speaking, the customer buys the sales-person, and a physical device is shipped in that salesperson's place." (p.45)

Judd (1987) takes a broader view of the B-S relationship, by including all of the seller's people who have the potential to influence the buyer's perceptions and choice. He calls this "people-power", or the "Fifth P" of the marketing mix, and he maintains that the total relationship may be a tiny but measurable basis of differentiation that provides the winning edge. However, instead of physical customization of the product, Judd suggests that the seller's competitive advantage will come from the alteration of the buyer's perceptions via interpersonal persuasion:

"People-power is particularly significant in those product-markets where products, prices, promotion, and distribution channels tend to be perceived as undifferentiated or where target market members do not have the knowledge to distinguish among the alternatives. In all instances, however, people-power provides an organization the potential for creating a favourable perception in its customers' minds, which may differentiate it from competitive organizations." (p.244)

All of the authors quoted above are in agreement that well-managed buyer-seller (B-S) relationships can favourably influence the buyer's choice. Davidow suggests that customization is the key, while Judd suggests persuasion is the operative mechanism. In fact, both are correct, i.e. relationships permit the seller to understand how to create more benefits ("value") for the buyer, and then allow the seller to communicate that value.

Both mechanisms are important, but the latter will be the focus of this dissertation. I propose to discover which dimensions of the B-S relationship can help communicate the seller's value, thus favourably influencing choice. The importance of focusing on this mechanism is supported Spekman and Johnston (1986):

"...competitive advantage hinges on the selling company's ability to demonstrate value ... and on its ability to influence the buying centre participants' procurement decision process." (p.519)

In other words, the seller's offering may have the potential to provide value to the buyer, but that potential may only be realized to the extent that the seller can demonstrate value through its relationships with the buyer. As such, relationships represent a powerful lever for marketing managers in competitive bidding situations. It is critically important to emphasize that good relationships are not intended to replace a poor quality product, nor are they to be used to misrepresent a product; rather, they are to be seen as a legitimate and effective tool for conveying the product's benefits to the buyer more clearly than the competition. In light of this, the original management problem presented in the previous section can be now more precisely worded. The revised management problem is: how to manage buyer-seller relationships to favourably affect the buyer's choice in competitive bidding situations. A seller is deemed to be successful if that seller is the ultimate choice from the buyer's short list. In the next section, specific research questions are developed which will help guide the dissertation research.

1.2 THE RESEARCH QUESTIONS

Before proceeding with research to help provide a solution for the management problem, it is useful to first ask whether relevant and sufficient research results already exist. If the answer is negative, then a set of specific research questions can be posed to guide the research project.

1.2.1 The Need for Research

The pursuit of research in the context of competitive bidding situations is justified because competitive bid situations are common in business-to-business marketing, yet there is very little marketing literature devoted to the topic. Bid situations are common to the extent that a high proportion of public sector capital acquisitions, and the majority of private sector acquisitions, are done via competitive bids.

Unfortunately, there are no readily available current descriptive studies about the frequency and type of bid practices to back this observation. Of much greater importance, and in spite of the volumes of research and writings on buyer behaviour, there are very few empirical studies of which factors helped to determine the winner when the finalists' bids are summarized on a spreadsheet. The studies which have actually examined the importance of decision criteria (e.g. Evans 1981; Lehmann and O'Shaughnessy 1974, 1982; Puto et al 1985; Rao and Kiser 1980; Wind et al 1968) have not explicitly analyzed the buyer's head-to-head tradeoffs in real spreadsheet situations. Even case studies published for classroom discussions tend to give only a partial picture of the complexity of winning in bid situations. For example, bids are often presented principally as a pricing problem (e.g. Mason Instruments, by Corey and Alexander 1987). Furthermore, many of the classic models of buyer behaviour (e.g. Sheth 1973; Webster and Wind 1972; Choffray and Lilien 1980) describe the overall process rather than undertake a detailed examination of the final evaluation phase. A second class of models, the Group Choice class, attempts to describe how the buying group arrives at a single decision where the individuals involved have started with different personal preferences, drawing mainly from work in the consumer domain and conflict resolution (see Lilien, Kotler and Moorthy 1992, Ch.3). Yet a third class of models, the Bargaining class, views the outcome as the consequence of a negotiation process between the buyer and seller (see Lilien et al 1992, Ch.3). None of these models addresses the detail of which factors actually determine Choice versus Rejection at the final stage of a competitive bid process. Thus, empirical research is needed which helps marketers better understand the reality of the buyer's final choice in a competitive bid situation.

Research on the topic of buyer-seller relationships is also needed. This topic has been recognized for several years as vital by both marketing managers and marketing researchers, and has become the theme of a paradigm shift in Marketing away from a focus on transactions "toward a

focus on building value-laden relationships" (Review 1991, p.1). Conceptualization of relationships has begun (e.g. Wilson and Moller 1988), some empirical research into the dimensions of relational behaviours has been completed (e.g. Parasuraman et al 1985, 1986), and some empirical work into the quality and effect of the seller's relational behaviours is also available (e.g. Crosby et al 1990). However, the database of empirical results is still understocked, and further research is warranted.

1.2.2 The Fundamental Propositions

Because research has been judged to be warranted, a series of research questions should be developed to guide the research program. The formulation of the research questions will be assisted by the presentation and discussion of three fundamental propositions. These propositions will also help to delineate the scope of the dissertation.

In the discussion in Section 1.1.4 about the potential role of B-S relationships as a marketing lever, the threads of a few fundamental propositions are visible. First, the concept of "value" was introduced, and it was suggested that the buyer's expectation of value was a key determinant of the buyer's choice. This is the basis of the first fundamental proposition FP1: "The buyer's Choice is determined by the buyer's expectation of Relative Value", involving a series of comparisons of the best competing offers. This proposition is supported by some researchers who have specifically studied the concept of value. For example, Tellis and Gaeth's (1990) Expected Utility Model defines choice as the outcome of the buyer's calculus of maximum value. In other words, value is estimated relative to the buyer's next best choice.

The preceding brief discussion of value leads us towards the second fundamental proposition FP2: "The buyer's expectation of Relative Value is determined by a tradeoff of a set of Relative Expectations of the

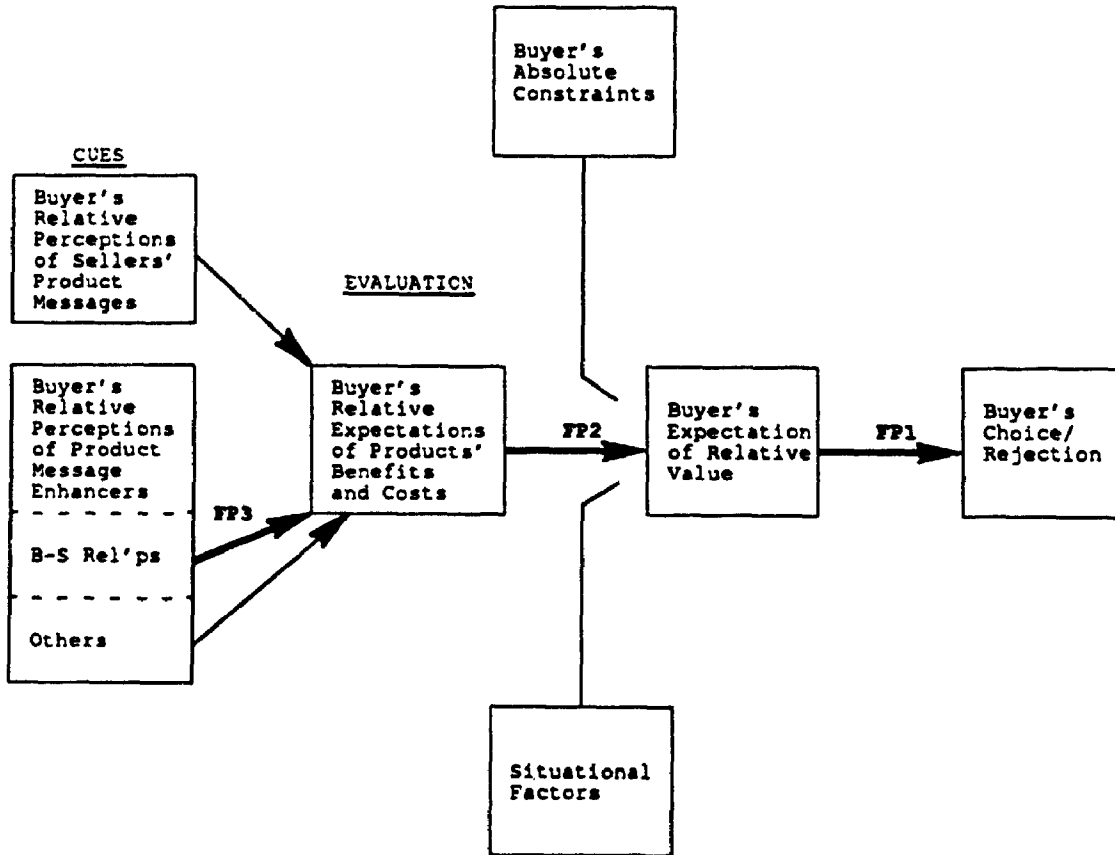
competing products' benefits and costs." The notion of value as the outcome of a tradeoff of benefits and costs is widely supported. However, only a few authors have explicitly noted the importance of Expectations in the buyer's choice process (e.g. Sheth 1973; Tellis and Gaeth 1990). This is a key concept because Expectations are future-oriented and uncertain, and are thus susceptible to change over the duration of the bidding process, and during the final evaluation and choice.

The brief preceding discussion of the buyer's reliance on Relative Expectations to aid in the estimation of Relative Value leads us to the third fundamental proposition FP3: "The buyer's Relative Expectations of benefits and costs can be affected by the buyer's relative perceptions of the Buyer-Seller Relationships." The buyer's perception of a high quality relationship can ease the uncertainty associated with the buyer's Expectations, in turn enhancing the buyer's expectation of Value. As noted by Judd (1987, p.244): "People-power provides an organization the potential for creating a favourable perception in its customers' minds." The theoretical basis for this argument will be discussed at some length in Chapters 3 and 4.

Notice that the title of the dissertation refers to "Evaluation", but this term does not appear in any of the three propositions above. For the purposes of this dissertation, "Evaluation" refers to the process whereby the buying centre processes the set of expected benefits and costs to arrive at an overall expectation of relative value. Hence, B-S relationships can affect the buyer's evaluation by initially affecting the buyer's expectations of benefits and costs.

The three fundamental propositions are illustrated in Exhibit 1-A. The diagram in Exhibit 1-A relates the three FP's to each other, but also illustrates other important concepts which are excluded from the scope of this dissertation. Choffray and Lilien's (1980) model of organizational

EXHIBIT 1-A
THE THREE FUNDAMENTAL PROPOSITIONS



buying behaviour notes the importance of Constraints, such as financial limitations which may exclude a high priced proposal. Sheth's (1973) model notes the existence of Situational Factors, such as the Decider's personal biases either for or against a particular seller. Both of these concepts are modelled as "gates" in Exhibit 1-A, through which all of the short-listed sellers have passed, and thus their effects will be excluded from consideration in this dissertation. Also excluded from the scope of the dissertation will be the effects of other cues on the buyer's Expectations, such as product trials or direct advertising. By excluding these independent effects from consideration, the amount of variance explained in the dependent variables, i.e., the buyer's Relative Expectations and Relative Value, may be lower than if those independent variables were included. However, there are practical limitations to the scope of any empirical study.

1.2.3 The Research Questions

In Section 1.2.2, three fundamental propositions were introduced, together with rudimentary explanations:

- FP1) The buyer's Choice is determined by the buyer's expectation of Relative Value;
- FP2) The buyer's expectation of Relative Value is derived from a tradeoff of a set of interdependent Relative Expectations of the competing products' benefits and costs; and
- FP3) The buyer's Relative Expectations of benefits and costs can be affected by the buyer's relative perceptions of the Buyer-Seller Relationships.

These three propositions were introduced to help delineate the scope of the dissertation, and to help generate research questions, rather than to suggest specific research hypotheses. The research hypotheses will follow from the investigation of the research questions. Therefore, pursuant to the three fundamental propositions, these research questions will be addressed in this dissertation:

- RQ1) How are the buyer's expectations of Relative Value and Choice related?
- RQ2) How is the buyer's expectation of Relative Value derived?
- RQ3) How can B-S relationships affect the buyer's expectation of Relative Value?

The pursuit of answers to these research questions will lead to a research model and empirically testable research hypotheses. It is hoped that the results of the empirical test will in some way contribute to the practice and science of Marketing. These potential contributions are briefly discussed in Section 1.3.

1.3 POTENTIAL CONTRIBUTIONS

This proposed research can make worthwhile contributions to the practice and the science of Marketing, and possibly to the science of Social Psychology. Some of the potential contributions are suggested below.

1.3.1 To the Practice of Marketing

This research has three potential contributions for marketing managers. The first is a more complete understanding of which buyer Expectations are the most important to the buyer in the final evaluation phase of a competitive bid situation. The second is a more complete understanding of which behavioural dimensions of the B-S relationship influence the buyer's Expectations the most. This may allow marketing managers to hire, train and deploy personnel more effectively, to decrease the focus on ineffective relational behaviours, and to increase the focus on effective relational behaviours. Ultimately, these first two contributions may help marketing managers improve their success rates in competitive bidding situations.

The third potential contribution is that the discovery of effective relational behaviours may be applied in other contexts where interpersonal

interactions are required. Some of these contexts include: competitive bid situations for product types other than technology-based capital equipment; pre-launch new product development relationships between the developer and potential adopter(s); intra-organizational relationships between Marketing and other functional groups; service relationships between sellers and buyers of services; and service relationships between customer service departments and dissatisfied customers.

1.3.2 To the Science of Marketing

The definition of "science" is addressed in Section 8.2.1, but in basic terms science can refer to either the process of conducting rigorous research, or to the body of knowledge which is the outcome of that process. There are three potential contributions to the science of Marketing. The first is an enhanced conceptualization of the Value construct, which includes both a definition and empirical support for how it is derived by the buyer. The second is an enhanced conceptualization of B-S relationships, with a specific focus on effective relational behaviours. The third is empirical support for the proposition that B-S relationships can affect the buyer's choice.

1.3.3 To the Science of Psychology

Persuasion theory from the field of social psychology will be invoked in this dissertation to explain how B-S relational behaviours serve as message enhancers to influence the buyer's Expectations. If the effect of such relational behaviours is confirmed, this would provide empirical support for a subset of the "channel" enhancers identified by McGuire (1985).

1.4 ORGANIZATION OF THE DISSERTATION

This dissertation is organized in a relatively standard fashion. Chapter 2 conducts a literature review of the constructs Relative Value and Choice, and is summarized with a proposed "Relative Expectations" conceptual model. Chapter 3 conducts a literature review of the field of B-S relationships, and is highlighted by a proposed "Persuasion Network" perspective and a dimensional summary of effective relational behaviours. These two chapters are separated for the purpose of clear presentation.

Chapter 4 conceptually integrates the B-S relational behaviours of Chapter 3 with Chapter 2's Relative Expectations model of Value and Choice. This is explained using persuasion theory, specifically Tesser's (1978) theory of self-generated attitude change. Each construct in the integrated model is further divided into sub-constructs, and an initial research model is derived therefrom.

Chapter 5 outlines the proposed research methodology, i.e. survey-based research, beginning with an overview of some key parameters and the proposed principal analytical tool (PLS). It continues with a more detailed discussion of the initial development of the questionnaire, the pre-test of the questionnaire, changes to the questionnaire and the research model, and the procedures used for the final mail-out.

Chapter 6 follows with a detailed presentation of the principal analysis, while Chapter 7 augments the principal analysis with a series of complementary analyses. Chapter 8 concludes with a summary of the principal findings, a discussion of some contributions, a caveat about limitations, and recommendations for future research.

CHAPTER 2

CUSTOMER VALUE AND CHOICE - A LITERATURE REVIEW

It is the purpose of Chapter 2 to begin to address the first two research questions posed in Section 1.2.3. Therefore, in Chapter 2 the concepts of customer Value and Choice are first explored and defined. Then the argument is made that these two concepts are closely linked, whereby the customer's (buyer's) expectation of Relative Value is the principal determinant of Choice. Various models of Value are presented and analyzed, and an integrative model proposed called the "Relative Expectations" model. The chapter concludes with a discussion of the principal dimensions of the buyer's Expectations, and the sub-dimensions of three of the principal dimensions.

2.1 VALUE AND CHOICE - DEFINITIONS

The terms "Value" and "Choice" each share a broad range of meaning both within Marketing and in many fields outside of Marketing. It is important to examine the most important of these meanings, and to select or propose definitions which are appropriate for the context of this dissertation. The examination begins with an overview of buyer Choice.

2.1.1 Buyer Choice

The marketing literature concerning Choice is vast and the term "choice" appears in a wide variety of contexts and appears under different names. In its most common application, in both the Consumer and Industrial domains in Marketing, Choice refers to the buyer's final selection of the brand or supplier from the consideration set or short list (e.g. Sheth 1973). This has also been variously termed "selection" (e.g. Robinson, Farris and Wind 1967), "behaviour" (e.g. Ryan and Bonfield 1980), "choice

behaviour" (e.g. Park et al 1981), "buying decision" (e.g. Webster and Wind 1972), and "purchase" (e.g. Engel et al 1986). A second application of the term "Choice" occurs in the first stage of two-stage choice models, wherein the buyer first reduces a broader list of brands or suppliers into the consideration set or short list (e.g. Gensch 1987). A third situation where choice is involved is where the buyer must decide to buy or reject an innovation where there is no directly comparable option; Rogers (1962) calls this type of choice "adoption". A fourth situation where choice is involved is where the buyer must make the original go/no go decision concerning a potential purchase. In this dissertation, Choice will refer to the buyer's final selection of a winner from a short list of qualified sellers. Indeed, in this dissertation, the short list will be assumed to be only the best two competing sellers, such that the research respondents will be asked to compare just the Winning Supplier versus the Next Best Choice.

As a further point of clarification, this dissertation will consider the buyer's Choice to be a group outcome, i.e., that it is the end result of a decision-making process conducted by the set of individuals who are making the Choice on behalf of the buying organization. This group may be referred to as a "team", a "centre", or a "network". This dissertation is not concerned with the group process itself by which the individuals' personal preferences are translated into the group's Choice (e.g. Wilson et al 1991). Rather, it assumes that the group process, by whatever means of influence and/or information sharing, results in an overarching and measurable group assessment of an option's overall superiority (cf. "Organizational Preferences", Choffray and Lilien 1980), which then determines the group's Choice.

As a third point of clarification, this dissertation will consider Choice to consist of a dichotomous outcome, such as Choice/Rejection, or Win/Lose, which can be measured dichotomously as 1/0. Some authors have elected to measure Choice as a probability (e.g. Choffray and Lilien 1980)

or as market share (e.g. Moore et al 1979). However, these latter measurement techniques seem to be more suited to situations where the product will be sold in a standard form, where the set of attributes must be finalized prior to launch. In the product context of this dissertation, i.e., technology-based capital equipment, the product offering is normally customized to some degree for every buyer; hence, it becomes more important to the seller to understand the reasons for winning or losing on a buyer by buyer basis. Therefore, the selection of the 1/0 dichotomous measure is more appropriate.

One final point to be made about Choice, which was already mentioned in Chapter 1, is that the buyer's Choice of a winning seller from the short list necessarily implies the buyer's Rejection (either consciously or unconsciously) of the other sellers. Hence, it is equally important to try to improve our understanding of the reasons for the buyer's ultimate rejection of the Next Best Choice. This dissertation will accommodate this important consideration by requesting half of the respondents to provide reasons for Rejection instead of reasons for Choice.

2.1.2 The Link Between Value and Choice

It is a fundamental proposition in this dissertation that a buyer's expectation of Value and the buyer's Choice are closely linked. Indeed, it is proposed that relative Value is the principal determinant of Choice. This view has some support in the Marketing literature. For example, Zeithaml (1988) considers perceived value to be the sole determinant of the buyer's purchase decision; and according to a maximum expected utility model of customer (buyer) choice (Tellis and Gaeth 1990), the buyer chooses the option which offers the highest overall "utility", or value.

The view that a construct named Value precedes the buyer's Choice is not universally held, however. Some authors who have modelled the buyer's decision making cognitive processes have introduced other constructs such

as Preference (e.g. Choffray and Lilien 1980), or Intention (e.g. Ryan and Bonfield 1980). The principal issue here seems to be that of time lapse between Choice and the preceding stage of the buying process. In the context of this dissertation, where the members of the buying team weigh the merits of the competing proposals on the short list, the team's Choice is the immediate outcome of some expectation of overall superior value. A second issue may be simply choice of nomenclature. For example, Lynch (1985) defines "degree of preference" (p.9) as the difference between the buyer's overall evaluations of two alternatives. This is remarkably similar to the definition of Relative Value offered in the next section.

It might also be argued that Value and Choice are not distinct constructs, but instead that Value is the only construct, and Choice its single best measure. According to this perspective, there can be no intervening or mediating variables between Value and Choice, because the buyer's derivation of Value has taken all relevant constraints into account. However, this dissertation will consider the two to be separate constructs, with separate measurement scales. Thus, an empirical investigation of discriminant validity will be able to contribute to the resolution of this discussion.

To conclude, although marketing scholars are not unanimous, the buyer's expectation of Value will be considered to be the principal determinant of the buyer's Choice. In the following section, the definition of Value is discussed in detail.

2.1.3 Value and Relative Value

In the preceding section, the construct named Value was introduced as the principal determinant of the buyer's Choice. This section provides a more thorough investigation of the definition of Value, and concludes with an integrative definition of Relative Value for the purposes of this dissertation.

There are at least three entirely different contexts in which the concept of value surfaces: 1) value in exchange; 2) value in use; and 3) esteem value (De Rose 1989, p.1). In the first context, a buyer or seller says that the value of a product or service is equivalent to its attainable price in the marketplace. For example, the "value in exchange" of a house sold in the marketplace may be determined by the buyer and seller to be \$248,000, given its size, features, location, general market conditions, and any special circumstances of the parties involved. In the second context, i.e., value in use, value refers to the benefits received by the buyer as a consequence the performance of the product or service, net of the costs associated with the acquisition or operation of the product or service. For example, a gas production company may pay \$30 million for the installation of a sour gas plant, but derive a discounted cash benefit of \$50 million dollars over the plant's 25 year life, for a net present "value in use" of \$20 million dollars. In the third context, i.e., esteem value, value refers to the "prestige or psychic gratification" (De Rose 1989, p.1) from possession or acquisition of the product or service. For example, a family heirloom may be considered to be highly valuable, even "priceless", by the family members, yet have no value in exchange or value in use. This dissertation will focus on the meaning of value in the second context, value in use.

Even within the second context, there is by no means a consensus on a definition of value in the marketing literature, and views vary widely. Towards one extreme, Holbrook (1984) describes value non-quantitatively as "an interactive relativistic preference experience." More quantitatively, Zeithaml (1988, p.14) says "perceived value is the consumer's overall assessment of the utility of a product based on perception of what is received and what is given." Similarly, Bobrow and Schafer (1987, p.157) assert that value "can be defined simply in business terms as the benefit a customer receives in a product or service as viewed by the customer, relative to the price paid." And perhaps most quantitatively, Anderson et al (1990, p.1) maintain that "value refers to the perceived worth in

dollars and cents of the economic, technical, service and social benefits received by a customer in exchange for the price paid for an offering, taking into consideration the available alternative suppliers' offerings and prices."

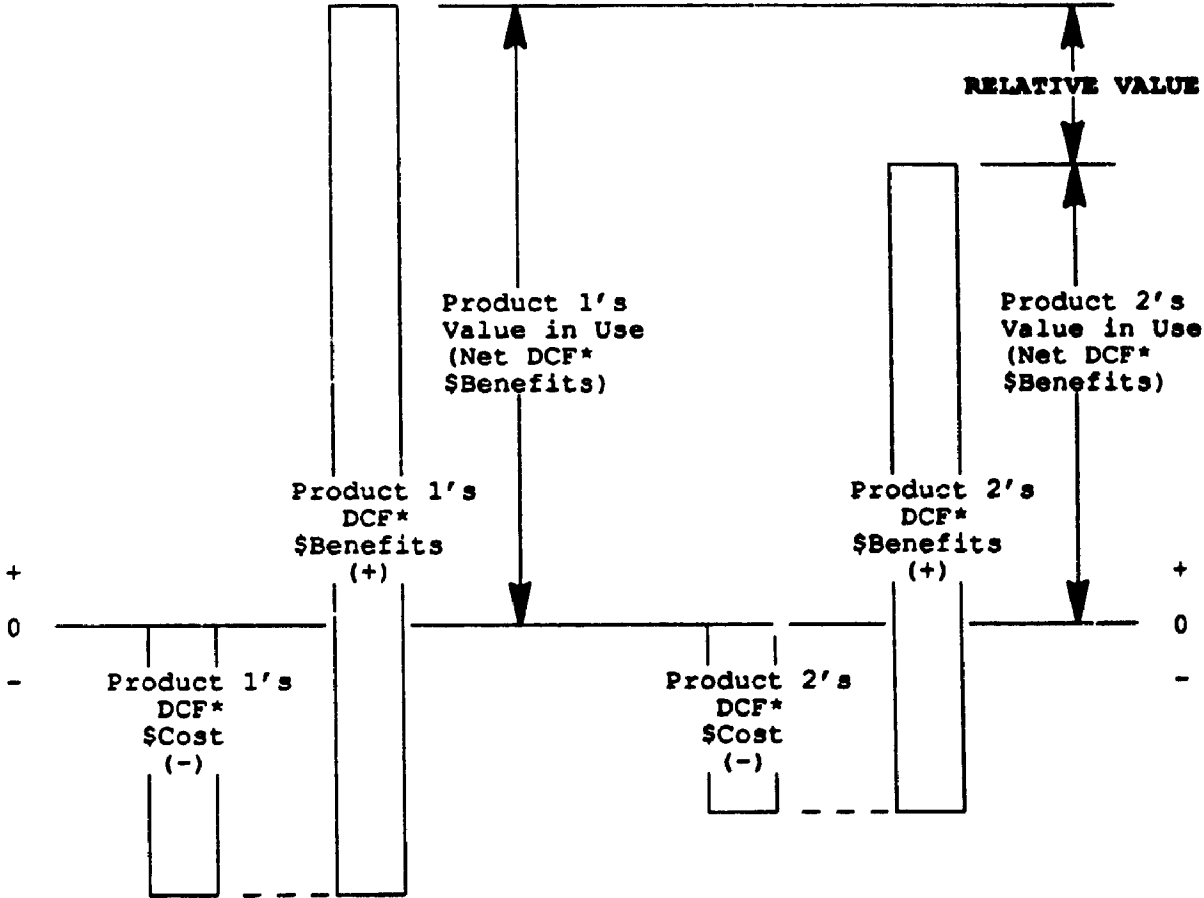
This range of definitions of value raises three questions which require resolution. The first question is whether value should be viewed as an independent overall net benefit for each competing product, as suggested by Zeithaml and Bobrow, or should be viewed as a relative net benefit, obtained by comparing the benefits and costs of each product, as suggested by Holbrook and Anderson. The former view is perhaps the most widely held view of value per se, yet it is the latter perspective which seems to be the more logical determinant of buyer choice. This dilemma can be resolved by introducing a construct named Relative Value, which can be defined as "the buyer's overall expectation of the winning product's net benefit superiority versus the next best choice." Assuming just for the moment that all benefits and costs can be expressed in monetary units, the concept of Relative Value is illustrated in Exhibit 2-A. Relative Value is seen to be the "gap" or "margin of Victory" between Product 1's net benefit and Product 2's net benefit.

The second question is whether Value, or Relative Value, can in fact be measured in purely monetary units. For example, buyers of technology-based capital equipment would probably perform some type of financial benefit-cost analysis for each competing offer; however, the final choice often incorporates non-quantifiable factors such as service and image, as we saw in the Adjeleian decision in Chapter 1. And in such cases the buyer might be able to offer a strong opinion about the winner's "margin of victory", without being able to translate that margin into monetary units.

EXHIBIT 2-A

AN ILLUSTRATION OF THE CONCEPT OF VALUE

(assuming all Benefits and Costs are expressible in \$)



* DCF is an abbreviation for Discounted Cash Flow

Therefore, in this dissertation, Relative Value is viewed as a measurable entity, but not necessarily in monetary units.

The third question is whether Relative Value can be considered to be a perception (as suggested by Zeithaml), an expectation, an assessment, an inference, an estimate, or a judgment. This will be discussed at some length in Section 2.2.8, but it seems vital to capture the future orientation of this construct, i.e., that value is not pre-determined at the time of Choice, but instead consists of an uncertain forward-looking expectation.

Therefore, the working definition of Relative Value embodies three points which are important in the further development of this dissertation. First, Value is determined by the buyer, not the seller. Therefore, it is critical to view the choice situation from the buyer's perspective. Second, Relative Value is the key to buyer Choice, determined by the buyer by comparing competing alternatives. Thus, it's vital to understand that merely improving an buyer's situation versus the status quo is insufficient. The seller must be able to provide a net benefit in excess of that provided by any competitor on the short list. In other words, an option may be perceived by the buyer to be "excellent", but it will lose to an option viewed as "exceptional". For example, in the Adjeleian case presented in Chapter 1, the company Omnitech was offering a system that would improve Adjeleian's current situation, but was deemed to afford lower value than a system more than twice the price. Third, value is not necessarily a monetary entity, as suggested by some of the other authors, and as illustrated in Exhibit 2-A. Some benefits to the buyer, such as "reliability", are not easily quantifiable by the buyer, but play a critical role in the buyer's assessment of value, i.e the margin of victory. Therefore, while some dollar-related measures of Relative Value may be appropriate, it will be important in this dissertation to attempt to discover and/or develop non-dollar measures of Relative Value.

2.1.4 Individual vs. Group Expectation of Relative Value

In section 2.1.1, Choice was introduced as a group phenomenon, the consequence of the buying group's expectation of Relative Value, i.e., the group's expectation of the winning product's overall superiority versus the Next Best Choice. But how exactly is this group expectation derived? This question raises several other questions because, as noted by Wilson et al (1991, p.452): "the mapping of individual preference structure into group utility functions has occupied decision theoretists for the past two centuries." First, is it even possible for a group to have an overall expectation of relative value, or is it a matter of the most influential individual's opinion serving as a proxy? Second, even if the group succeeds in gaining a shared image of an overall expectation of relative value, is that expectation a perfect replica of the most influential party's? Or third, is it a composite entity representing the outcome of a thorough group analysis using the pooled knowledge of the individual participants. This dissertation subscribes to the third view of the group's assessment of Relative Value, i.e., that the buying group does reach a composite, measurable expectation of Relative Value. This is not to say that the process of reaching the composite view is necessarily easy, or that the composite view is necessarily held unanimously.

Regardless of which view is the most accurate reflection of reality, it is widely agreed that the outcome of a group choice process is heavily influenced by individuals within the group. Hence, it would be very useful for Marketing managers to be able to identify a priori those individuals who might be the most influential in the group process, and to focus marketing communications and relationships on those individuals. Is there empirical evidence to suggest which individuals in a buying group, or "buying centre", are the most influential? The available evidence of how buying centre influence varies with informal functional role and formal departmental role will be briefly reviewed. The discussion begins with the definition of a buying centre.

Webster and Wind (1972) define the buying centre as all the members of the organization who are involved in the buying process. It is subject to the influence of the organization through the subsystems of tasks, authority, communication, rewards, technology and people. Spekman and Gronhaug (1986/87, p.53) enrich this definition with these comments: "Buying centres are seen as emerging, quasi-organizational units whose derivation, composition and behaviour are controlled less by formal organisational linkages and more by informal, cross-functional, lateral ties that are likely to take shape during the procurement decision process." In other words, membership is dynamic and resistant to precise definition, and internal influence may be governed more by the informal roles. The number of members in a buying centre is also quite variable, and can be quite large. For example, Patchen (1974, p.202) has shown that there may be 20 or more individuals in a buying centre which is making a purchase decision of "moderate or major importance." The size and dynamism of the buying centre complicate the task of the seller's selling centre enormously, but the selling centre which understands the buying centre better than the competition may have a higher success rate. This suggests the importance of trying to determine more precisely who actually influences the adoption decision.

Webster and Wind originally offered a 5-member informal role typology: 1) the End User(s) of the product; 2) the Buyer who issues the contract or purchase order; 3) the Influencer(s), whose direct or indirect information affects the decision; 4) the Decider(s), with either formal or informal authority to select the final supplier; and 5) the Gatekeeper(s), who control the flow of information to others. This typology has been augmented by other defined roles, such as the Initiator (Engel et al 1986) who first recognizes the need for a product, and the Linking Pin (Wind and Robertson 1982), who facilitates communication across a boundary by virtue of influential membership on both sides. This list of roles is not entirely satisfactory. First, it seems that having the role definition of Influencer is redundant, and therefore unnecessary. As Robinson et al

(1967, p.122) state: " A buying influence is anyone who becomes involved, directly or indirectly, in the problem-solving or decision making activities which constitute the procurement process." Ergo, all members of the buying centre are Influencers. Perhaps Webster and Wind had the role of Technical Expert in mind, from either an in-house technical group or an outside consultant (see Robinson et al 1967, p.122; Johnston and Bonoma 1981a, p.147; Kohli 1989). Second, the role of the Evaluator (Kelly 1974) has been overlooked. The Evaluator assimilates all of the information from the competing selling centres, evaluates the options according to the buying centre's decision criteria, and prepares the data for presentation to the rest of the buying centre. This is a pivotal role, because the Evaluator can filter or slant the results of the analysis to suit personal biases. Finally, the Initiator, while important in launching a purchase decision, ceases to exist immediately by definition, and therefore ceases to be of interest in the study of ongoing relationships. The Initiator might be more effectively labelled as the Change Agent or Champion. In summary, a modified list for the informal buying centre roles is: 1) the Change Agent; 2) the User; 3) the Buyer; 4) the Technical Expert; 5) the Linking Pin; 6) the Gatekeeper; 7) the Evaluator; and 8) the Decider. Having arrived at this conclusion, what evidence exists concerning the relative influence of these roles?

The evidence concerning the relative importance of the informal roles is inconclusive because there does not appear to be a single study which systematically compares the complete list. Kelly (1974) studied 18 organizational purchase of an offset press, of which 6 were first time purchases. This type of purchase is clearly an important piece of capital equipment, but it is unclear as to the degree of perceived complexity. In all eighteen organizations, the Evaluator was judged to be the most influential member of the buying centre, who coincidentally was also the Technical Expert. Buyers were among the least involved. In another study, (Patchen 1974) looked at 33 organizational purchases, of which 20 were judged to be of moderate or major importance to the company. A total of

180 interviews were conducted, an average of 5.5 interviews per decision. There was wide disagreement among the interviewees for each decision about who the most influential party was, with about three individuals named per decision. However, the most frequently mentioned role of the most influential was that of the User, where the definition of User is expanded to include the operator's supervisor or other direct stakeholder. The next most frequently mentioned role was that of the Technical Expert. In summary, the evidence is very sketchy, probably inconclusive. What evidence there is suggests that Technical Experts, Users (Stakeholders) and Evaluators are the most influential informal roles in the buying centre.

One explanation for the shortage of research may lie in the difficulty of identifying which individuals are fulfilling the informal roles. It is far easier to identify personnel by their formal role, i.e., by departmental title; thus, there is a somewhat greater number of studies using departmental comparisons. For example, in their seminal work about organizational buying behaviour, Robinson et al (1967) sequentially discuss the contributions of Marketing, Product Development/Design Engineering, Manufacturing, R&D, staff groups such as Finance and Accounting, general management, and the purchasing agent. All are said to have important roles, with that of the general manager perhaps increasing with purchase importance. Brand (1972) found that Board members, Operating Management, and Production Engineers were the most involved members in important decisions regarding plant equipment, whereas the Buying Department, Design and Development Engineers and Operating Management were the most involved in decisions regarding materials and components. In McMillan's (1973) study of the purchase of complex chemical intermediaries, Purchasing Agents, Scientists, and Managers each viewed themselves as being the most influential, although some influence by other parties was acknowledged. In Wind's (1978) study of the acquisition of a scientific and technical information system, the R&D Manager was consistently the most influential, but other individuals were influential

depending on the purchase phase. For example, the R&D Scientist was influential during need specification and alternative search, while the Purchasing Manager was very influential during supplier negotiations and evaluations. Silk and Kalwani (1982) studied the purchase of lithographic plates. Foremen and the General Manager were the most influential during evaluation, while the General Manager was the most influential during final decision-making. Naumann et al (1984), in a study of the purchase of component parts, found that Engineering was clearly the most influential out of 8 departments. Unfortunately, the difference between managers and specialists was not investigated. The results of this study should probably be discounted, because assessments of influence were from single informants in Purchasing. Finally, Abratt (1986), in a study of industrial buying in high-tech markets, found that over 75% of the membership of the buying centres during proposal acquisition/evaluation were top managers or technical experts. However, Abratt neglected to investigate relative influence. In terms of contingencies, Naumann (1981) found that influence varied by buyclass, which was contradicted by Jackson et al (1984). Bellizi (1979) found variation by stage of purchase and type of product, which was supported by Cooley et al (1977), Jackson et al (1984), and McQuiston (1989). However, Bellizi claimed that executives dominated in capital purchases, whereas Jackson et al concluded that engineers did. Finally, Bellizi (1981) found departmental variation with company size. As with the studies of informal roles, studies using departmental roles shed little conclusive evidence about which personnel are the most influential. On the basis of contradictory evidence about the purchase of important equipment, it seems prudent to draw no conclusions.

In summary, if roles are compared either by informal function or by formal department, it appears no strong conclusions can be made about relative influence. This conclusion is supported by Bonoma (1982), who also concludes that the degree of personal influence is not perfectly correlated with the degree of formal authority. Therefore, it seems likely that the members of the seller's selling centre must detect the most

influential members of the buyer's buying centre on a case by case basis. This task may seem onerous, but it appears to be necessary if the seller is to successfully affect the buyer's group assessment of Value and Choice.

Having spent some time defining and exploring the concepts of Choice and Value, it is now appropriate to examine how the buyer actually derives an overall expectation of Value. There is a considerable spectrum of conceptual models which attempt to describe and/or explain the customer's calculus of value, and a few of them have been already briefly mentioned. In Section 2.2 these models will be more methodically reviewed, and an integrative model proposed.

2.2 MODELS OF VALUE

"Models" refer to the sets of words, mathematical formulae or latent variable networks which attempt to explain the nature of Value, how a customer assesses Value, and what are the indicators of Value. Some elementary models were embodied in various authors' definitions in the preceding section. In the following section, some of the more significant models are presented, ending with a proposed "Relative Expectations" model.

2.2.1 A Benefit-Cost Model

Several authors have proposed elementary mathematical models of value as some benefit-cost ratio. Sheth and Ram (1987) view value as a quantifiable measure equal to the performance-price ratio of an innovation compared to existing alternatives. This is essentially identical to Bobrow and Schafer's (1987, p.157) assertion that value "can be defined simply in business terms as the benefit a customer receives in a product or service as viewed by the customer, relative to the price paid."

These authors fail to demonstrate how this ratio is calculated if there are two or more dimensions of performance with different user salience and/or units of measurement. Further, how are non-quantifiable benefits such as reliability or safety accommodated in the calculation? According to Welter (1989, p.57), "subjective qualitative issues are as important as quantitative ones." And finally, what if the streams of benefits and costs occur at different points in time? Such a simplistic perspective is useful only as an introduction to the notion of value. It has limited application to the purchase of technology-based capital equipment, which might have dozens or hundreds of performance measures, both objective and subjective.

2.2.2 A Life Cycle EVC Model

The Economic Value to the Customer (EVC) model of Forbis and Mehta (1981) partly overcomes the longitudinal shortcoming of the benefit-cost perspective. In this model, the financial benefits and costs of two alternatives are compared on an undiscounted life cycle basis. Life cycle costs include purchase price, start-up costs, and post-purchase costs. Life cycle benefits include immediate benefits and "pantry" benefits (Houston and Gassenheimer 1987). Using this technique, it would be entirely conceivable that a product with a significantly higher purchase price would in fact offer the highest EVC. Another key concept introduced by this model is the notion of comparison between two options.

However, this model still has many of the shortcomings of the benefit-cost model. It does not incorporate the time value of money, it does not explicitly acknowledge risk, it does not incorporate subjective benefits and costs, nor does it accommodate benefits and costs with difference salience to the buyer.

2.2.3 A Net Present Value (NPV) Model

This model is borrowed from the Finance literature because it extends the EVC model presented in the previous section with one key point. According to the Net Present Value (NPV) model (e.g. Kryzanowski et al 1982, p.414), the Net Present Value of a potential capital acquisition is equal to the present value of future net cash flows less the initial investment. Two competing alternatives can be compared to determine which offers the greatest present value by running "incremental economics". The key point that it adds in comparison with the EVC model is the notion of the time value of money. It is, however, still subject to all of the remaining criticisms.

2.2.4 Multiple Attribute Models

Keeny and Lilien (1987) outline several classes of multiple attribute methods by which a consumer's value placed on a product can be estimated. These methods allow both objective and subjective attributes to be compared. The first class is the Expectancy Value class, named after Fishbein's (1967) expectancy value model of consumer choice. The potential buyer provides evaluations of a product for selected attributes, plus importance weights for each attribute. Value for a product is computed as the summation of the evaluation scores multiplied by the importance weights, and the preferred product is inferred to be the one possessing the highest calculated value. Sawyer and Dickson (1984, p.13) modify this approach slightly by defining value as "some ratio of attributes weighted by their evaluations divided by price weighted by its evaluation." The Expectancy Value class is easy to apply, but may exclude or doubly emphasize relevant attributes, may give inaccurate assessments of some importance weights because of multicollinearity, may suffer from the halo effect whereby "a favourable product is inappropriately rated favourably along all scales" (Keeny and Lilien, p.187), and fails to recognize interdependencies between the independent variables.

Preference Regression models regress measures of preferences as the dependent variable against buyer attribute evaluations in order to calculate importance weights (i.e., the regression coefficients). These calculated importance weights then allow a more accurate prediction of preference in the larger population than a prediction using self-reported weights. Conjoint Analysis regresses rank order of preference for several choices as the dependent variable against specified attribute ratings (including price) to determine importance ratings (known as part-worths). The ability of these models to predict actual behaviour is limited by their use of preference as the dependent variable.

As Keeny and Lilien observe, the above classes of models are suitable for consumer product analysis, or for industrial products with few important design dimensions. However, they are not suitable for predicting an industrial customer's assessment of value of a complex technology-based capital acquisition - in this arena, users tend to be small in number, heterogeneous, with widely divergent importance weights for a very large number of attributes. In this case they suggest a model called "Multiattribute Value Analysis." The technique involves the development of a preference function for each individual customer using 3 major steps: the specification of important attributes, both objective and subjective, via in-depth interviews with prospective clients; specification of the form of the preference function, e.g. additive vs. interactive; and estimation of component value functions and scaling factors through indifference studies. Drawbacks of this technique include the expense of developing a preference function for each customer, sensitivity to the knowledge and skill of the interviewer, susceptibility to biased response, or infeasibility where the buyer has no previous experience with any similar technology.

While each of these multiattribute methods has its own drawbacks, there are two serious deficiencies common to the overall category. The first serious deficiency is the focus on attributes rather than benefits.

It is important to emphasize that a focus on benefits instead of attributes is appropriate. For example, Cespedes (1986, p.561) says that a product is "the total package of benefits that customers receive when they buy"; and Kotler (quoted in Review 1991, p.5) concurs that a product is a "bundle of benefits." But what exactly is a benefit, and how is it different from, say, an attribute? Briefly, a benefit is the satisfaction of the buyer's needs or wants. It is the outcome of a match between a product attribute or property, and a buyer's need. For example, an attribute of an automobile may be a 500HP engine, but that does not provide a benefit to a buyer who does not want high acceleration. There are many classes of benefits for the industrial buyer, such as technical, economic, service and social (Anderson et al 1990). And within each class of benefits, there are two sub-classes: the content of what is delivered, i.e., the what; and the way the content is delivered, i.e., the how (see Gronroos 1983, p.25). For example, Xerox' service department may promise to repair any poorly functioning photocopiers (i.e., the what, the content of the service), but it is also the responsiveness of the repair team (i.e., the how, the way the service is delivered) that is a benefit for the buyer. In summary, a satisfactory model of Value would incorporate benefits as determinants of Value, not attributes.

The second deficiency is the notion that the buyer performs a total calculus of value for one product, and compares that total with the total of a second product. This logic may be flawed. In reality, the buyer commonly compares two products on a point by point basis, and then is faced with a complex tradeoff. For example, Product 1 may have superior operating and pollution control characteristics, but Product 2 may be cheaper and easier to operate. In the Adjeleian case presented in Chapter 1, the ARC option was perceived to be functionally superior, but the Systemhouse option was perceived as much less expensive. However, the ARC option was easily deemed to offer higher value because relative functional performance was much more important to Adjeleian. This notion of comparisons on a point by point basis is alluded to by Davidow (1986,

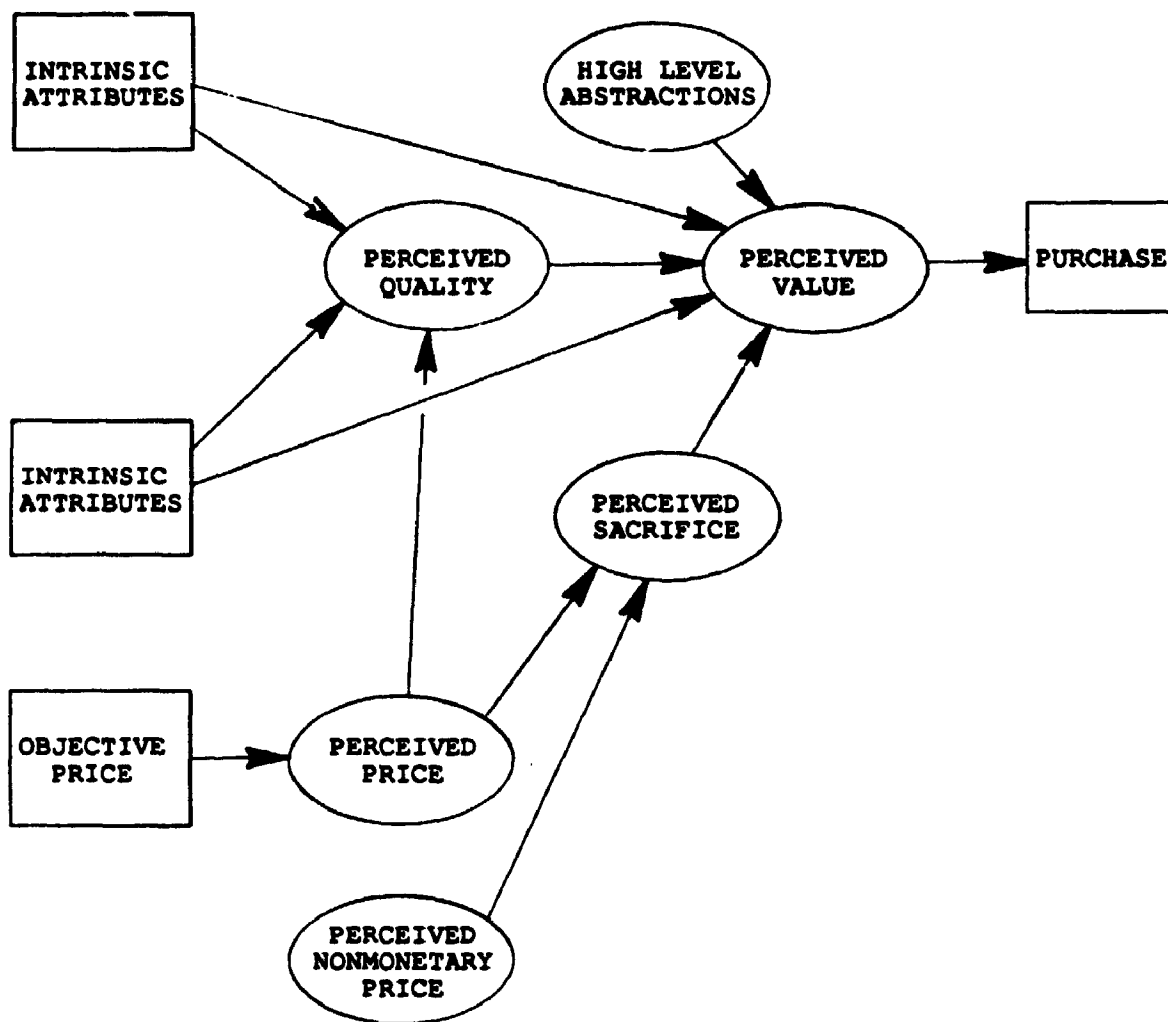
p.38), who observes that "... great companies are not just a little bit better in a few ways, they are significantly better in one or more ways that are important to the customer." In summary, a satisfactory model of Value would incorporate relative benefits as the determinants of Relative Value.

2.2.5 A Maximum Expected Utility Model

The Maximum Expected Utility model (see Tellis and Gaeth 1990, p.36), is an extension of the Expectancy Value models discussed in the previous section. Value for a product is computed as the summation of the attribute evaluations multiplied by the attribute utilities (i.e., the importance weights) multiplied by the objective probability of the attributes' occurrences. In its favour, this model attempts to address the issue of how the customer accommodates risk, which indeed may vary with each attribute. However, in reality, risk is more likely to be characterized by uncertainty than a probability (see Section 2.2.7). For this reason, and for the shortcomings of the multiattribute models discussed in the previous section, the Maximum Expected Utility Model is not fully satisfactory.

2.2.6 A Means-End Model

Zeithaml (1988) has made an important contribution to the understanding of the buyer's assessment of value with her consumer-oriented "Means-End" model (Exhibit 2-B). This model is derived from an extensive review of the literature and a large exploratory study. It shows how multiple attributes, both objective and subjective, contribute to the individual consumer's perceptions of price, quality, "sacrifice" (cost), and value. Eventually, according to Zeithaml, the consumer's perception of value is the principal predictor of the consumer's purchase decision. The "means-end" label is derived from the means-end chain approach to understanding the cognitive structure of consumers; i.e., product

EXHIBIT 2-BZEITHAML'S (1988) MEANS-END MODEL OF CUSTOMER VALUE AND CHOICE

information is retained in memory at several levels of abstraction from perception of product attributes through perceptions of practical and emotional benefits.

According to this model, there are five principal predictors of perceived value: 1) Intrinsic Attributes involving the physical composition of the product (e.g. sweetness, flavour and texture of an orange juice); 2) Extrinsic Attributes, which are non-physical (e.g. price, brand name, level of advertising); 3) Perceived Quality, which is defined as "the consumer's judgement about a product's overall excellence or superiority" (p.3); 4) High Level Abstractions which describe benefits and/or emotional payoffs; and 5) Perceived Sacrifices, which include monetary costs, and non-monetary time, search and psychic costs. Perceived value itself, as noted earlier, is defined as "the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given ... (It) represents a tradeoff of the salient give and get components" (p.14).

There are several significant contributions of this model: 1) objective and perceived attributes are modelled separately; 2) there are interdependent mediating variables, such as perceived quality and perceived sacrifice, between perceived attributes and perceived value; and 3) value is modelled as a perception of reality rather than an objective measure of reality, and therefore becomes subject to change without change of objective reality. These contributions can be transported into the domain of the industrial buyer, as we shall see after the discussion of the risk-return perspective. Unfortunately, this model fails to explicitly address the notion of Value as a relative concept, focuses on attributes rather than benefits as determinants of Value, and does not seem to acknowledge uncertainty.

2.2.7 A Risk-Return Model

The risk-return perspective emphasizes the critical dimension of risk much more than the models already discussed. The proponents of risk-return analysis argue that, *ceteris paribus*, the product with the lowest perceived risk will be seen by the buyer as possessing the highest value. Some buyers will even choose an option with a inferior benefit/cost ratio if it offers lower risk (Engel et al 1986, p.559). The discussion of risk is difficult because the term is defined differently by different authors, or not defined at all. It is not my intention to provide a perfect clarification of the term in this paper, but rather to illustrate some of its dimensions.

One dimension of risk concerns the nature and expected level of loss in the event of a complete failure of the adopted technology. This "downside" (cf. More 1982) includes potential financial, functional, physical (i.e safety), psychological and social losses and damages (Gemunden 1985). A second dimension of risk concerns the variability of the benefit/cost outcomes where the probability functions are known or are readily ascertainable (Abelson 1985, p.232). These can normally be accommodated with an "expected value" analysis.

A third dimension of risk concerns the variability of the benefit/cost outcomes where the probability functions are unknown and cannot be determined, i.e., uncertainty (Abelson 1985, p.232). It is this dimension of risk that proves to be the most troublesome in the purchase of complex technology-based equipment, because the buyer has little or no prior experience on which to base a decision. There are three primary sources of uncertainty (Webster and Wind 1972), concerning: 1) available alternatives and obsolescence; 2) outcomes; and 3) individual reactions. Buyers attempt to minimize uncertainty with several tactics, including avoidance, supplier loyalty, goal reduction, or information search (Webster and Wind 1972, p.19). Clearly, buyer uncertainty is a major

factor in the purchase decision, and reduction of uncertainty represents a major opportunity for sellers to enhance the probability of being chosen. Therefore, in this dissertation, "risk" will be regarded principally as "uncertainty", and reduction of uncertainty will play a major role in the explanation of the effect of B-S Relationships.

It is interesting to examine how some authors have attempted to model the risk/return tradeoff and decision. Two models are presented for discussion. First, examine Holak and Lehmann's (1990) model of purchase intention for innovative products (Exhibit 2-C), which has received empirical support. They show how the five key antecedents of adoption (i.e., relative advantage, complexity, compatibility, communicability, divisibility) are combined with risk to produce a purchase intent. There are some parallels with Zeithaml's means-end model. Complexity and compatibility can be classified as intrinsic attributes, communicability and divisibility as extrinsic attributes, and relative advantage could be considered a high level abstraction. What is important is that purchase intention is primarily modelled as the outcome of a tradeoff between perceived relative advantage and perceived risk, i.e., a risk-return tradeoff. A second model comes from More's (1982) breakdown of the dimensions of risk (see Exhibit 2-D). A buyer's sense of risk is modelled as an outcome of uncertainty about both payoffs and downsides, and the absolute magnitude of the downsides. The accept/reject decision is then a tradeoff between the perceived payoffs and perceived risk. The principal features of both of these risk-return perspectives and Zeithaml's means-end model are incorporated in the "Relative Expectations" model presented in the next section.

2.2.8 A Proposed "Relative Expectations" Model

All of the preceding models contribute to our understanding of the concept of Value, yet each in some way appears to have a deficiency. An ideal model of Value would comprise the following features: 1) it would

EXHIBIT 2-C
HOLAK AND LEHMANN'S (1990) MODEL OF PURCHASE INTENTION

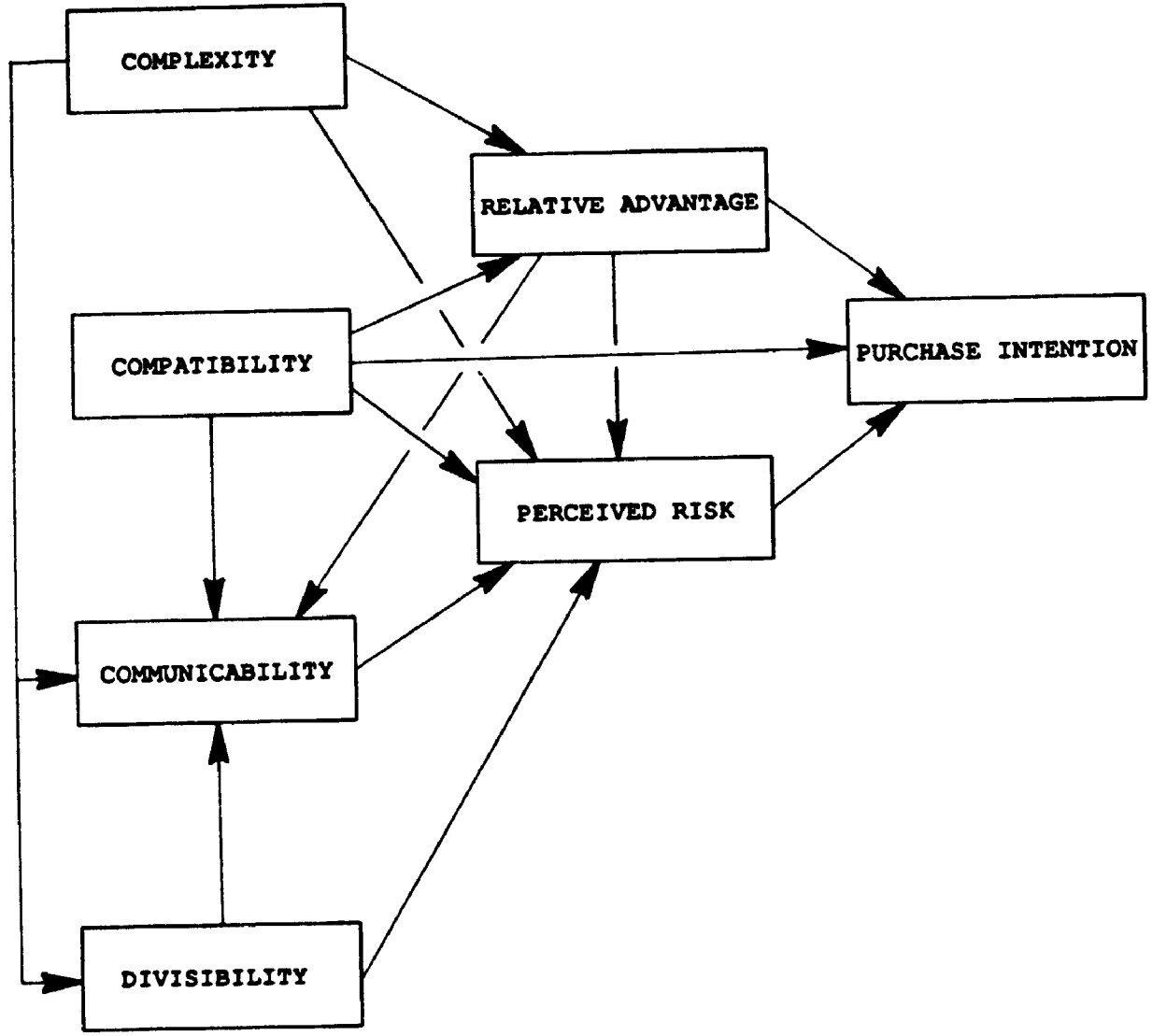
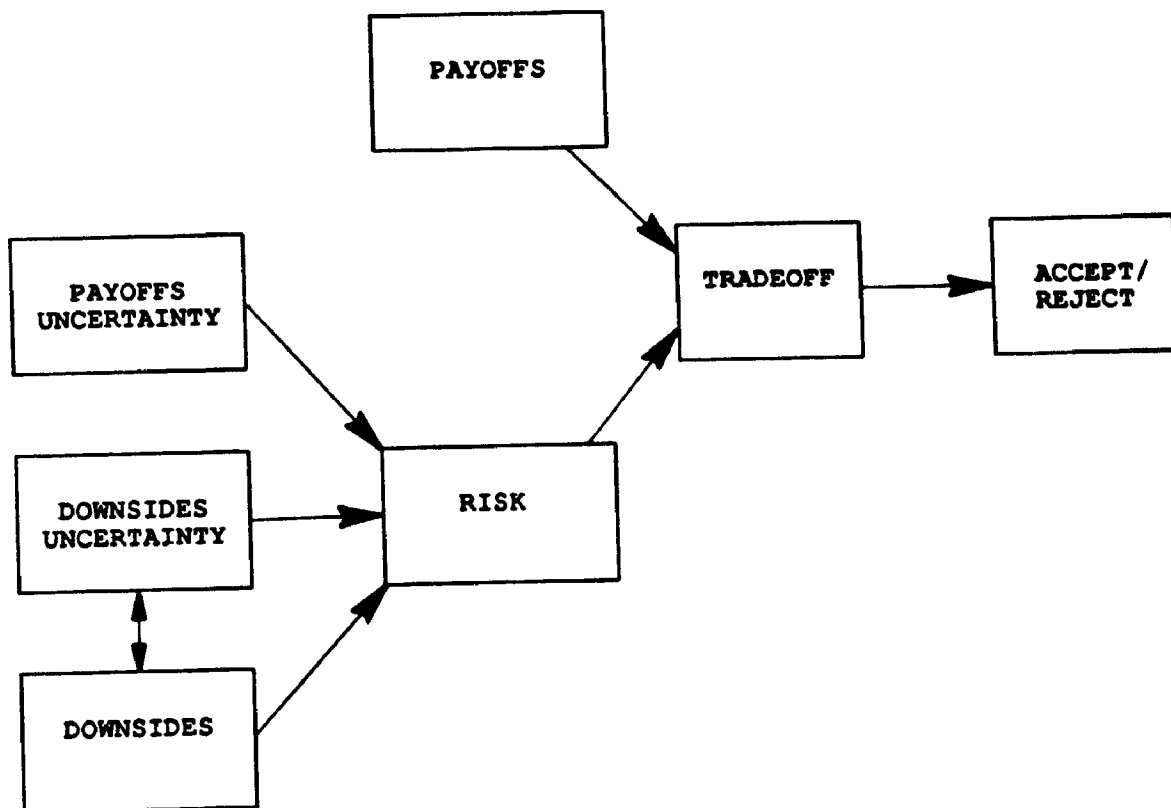


EXHIBIT 2-D
MORE'S (1982) MODEL OF RISKY CHOICE

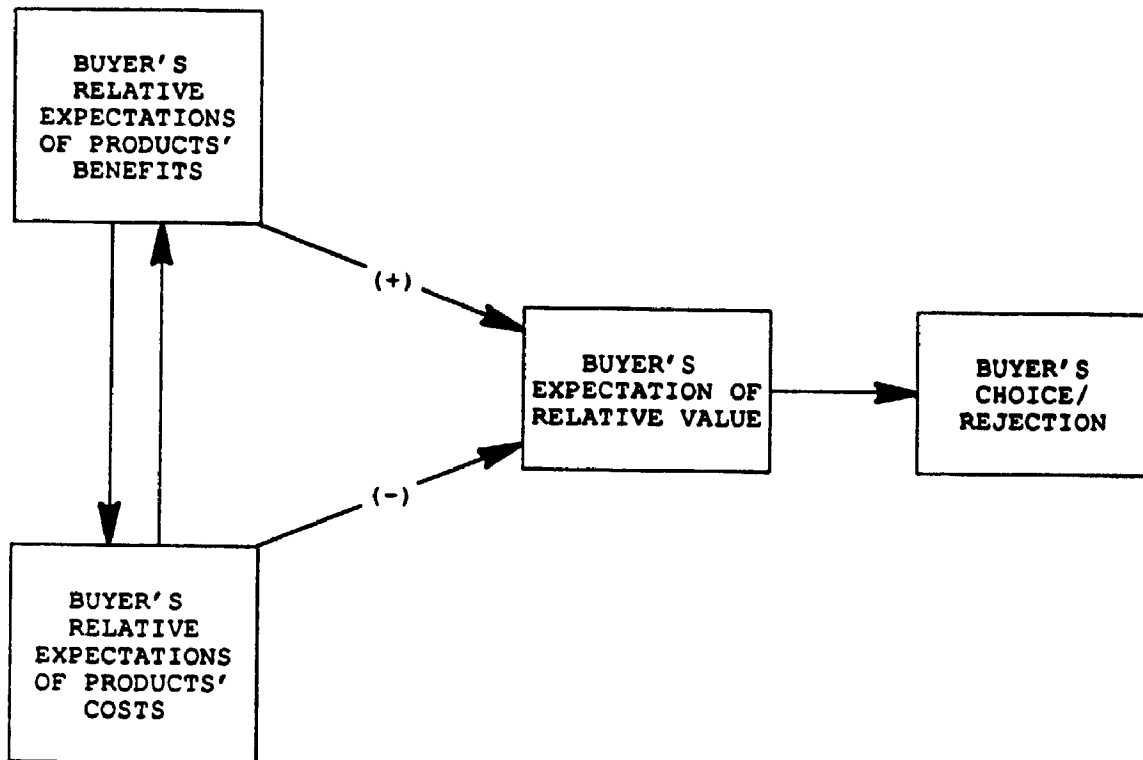


acknowledge that Value is a relative concept, i.e., it represents the degree of the net superiority, or margin of victory, of the winner versus the next best choice; 2) it would focus on relative benefits and costs as the determinants of Value, instead of attributes (review Section 2.2.4 for a definition of "benefit"); 3) it would acknowledge that there may be interdependencies between the relative benefits and/or costs; 4) it would acknowledge that the benefits and costs may not be quantitative; 5) it would attempt to classify or "cluster" the benefits and costs to avoid the problems of double-counting and multicollinearity; 6) it would accommodate benefits and costs of different levels of importance to the buyer; and 7) it would acknowledge the reality of the buyer's uncertainty associated with the purchase decision. The "Relative Expectations" model of Relative Value (Exhibit 2-E) is proposed as a model which satisfies the above requirements.

Recall that the working definition of Relative Value proposed in Section 2.1.3 was "the buyer's expectation of the degree of the winning product's net benefit superiority versus the next best choice." The Relative Expectations model retains this definition for the Relative Value construct, which thus satisfies requirement #1 in the list above. Given its position in the Expectations model, the full and revised definition of Relative Value becomes: "the buyer's expectation of the degree of the winning product's net benefit superiority versus the next best choice, derived from a tradeoff of a set of interdependent relative Expectations of benefits and costs, manifested by Choice."

It might be helpful to comment on the selection of the word "expectation" instead of some other word such as perception, assessment, inference, estimate or judgement. "Expectation" accurately captures the future orientation and uncertainty associated with the process of determining Relative Value from a set of interdependent relative Expectations. Words such as "perception" and "inference" suggest the possibility of a single cue, which seems too simplistic. The word

EXHIBIT 2-E
A PROPOSED "RELATIVE EXPECTATIONS" MODEL
OF RELATIVE VALUE AND CHOICE



"judgement" might imply a dichotomous outcome, when in fact Value is defined as an interval quantity. The words "assessment" and "estimate" do not capture the non-quantitative factors which I believe are involved in the buying group's evaluation process. Therefore, "expectation" appears to be the most appropriate term.

The Relative Expectations model also features a set of interdependent relative benefits and costs as the determinants of Relative Value, which satisfies requirements #2 and #3 above. These benefits and costs are both quantitative and qualitative, and are "clustered" within principal dimensions, which satisfies requirements #4 and #5 above. (The principal dimensions of these benefits and costs will be discussed in some depth in Section 2.3). Furthermore, by integrating Relative Value within a path model, an empirical analysis of the model can identify benefits of different importance to the buyer by assigning different coefficients to each path. This satisfies requirement #6 above.

Finally, the Relative Expectations model attempts to deal with the presence of uncertainty by attaching the term "Expectations" to each of the relative benefits and costs. In a world of uncertainty, where probabilities are difficult to attach to outcomes, buyers often try to anticipate various scenarios. The "Expected Case" scenario is usually the buyer's best guess about the future, and thus it plays an important part in the process of assessing value. Note that this is a different approach to uncertainty than the use of probabilities to calculate a scenario, as in the Expected Utility Model examined earlier. The importance of Expectations in the buyer's evaluation and choice process has already been recognized. For example, Expectations are central in Sheth's (1973) model of organizational buyer behaviour. And the role of Expectations has also been recognized by authors outside of the Marketing domain. For example, Hogarth (1987, p.ix) writes "as a psychologist who recognizes that almost all decisions are based on the *anticipations* people make about the immediate and/or distant future. Anticipations, or predictive judgements

as I call them, lead to choices." The role of Expectations in the model is critical. Expectations by their nature reflect uncertainty, and therefore they are subject to influence and change at all stages in the evaluation process. This observation will be central to the theoretical explanation offered for the ability of B-S relationships to influence the buyer's assessment of Value.

The "Relative Expectations" model of Value and Choice has been proposed as a superior model because it integrates many of the key features of the preceding models. Therefore, it would be reasonable to expect that the ability of this model to predict Choice should be superior to that of its predecessors. Hence, sample evidence will be presented here of the predictive ability of some of the preceding models, as a benchmark for the performance of the Relative Expectations model. The results of three studies, all variations of multiattribute models, have been selected as representative of the results of the available set. Bass and Talarzyk (1972), in their consumer study of brand preference using 1270 respondents, were able to achieve an average 69% probability of correctly predicting the most preferred brand in six product categories, with five brands in each category. The probabilities ranged from 63% to 75% across the product categories. While Preference is only a crude proxy for actual Choice, this does provide an initial benchmark. Moore et al (1979), in their consumer study of brand share using 450 respondents, found that predicted shares of the leading toothpaste brand in five segments averaged 75% of actual shares. The predictions ranged from 50% to 94% across the five segments. Finally, Gensch (1987), in his industrial study of choice from among four competing suppliers of electrical equipment, was able to correctly predict 66% of the 182 buyers' choices using a two-stage disaggregate attribute choice model. These results will prove useful in assessing the predictive ability of the "Relative Expectations" model.

2.3 THE DIMENSIONS OF THE BUYER'S EXPECTED BENEFITS AND COSTS

As mentioned previously in Section 2.2.4 and 2.2.8, the buyer's expectations of benefits can be clustered or classified into several principal dimensions, and each can be sub-classified. It is important to examine these in some detail, because this dissertation will select only a subset of the most important sub-dimensions for inclusion in the research model. It would be an impossible task to attempt to include all possible types of benefits. The construct "Costs" is left as one principal dimension, then divided into sub-dimensions. The discussion begins with an examination of the principal dimensions of the buyer's expected benefits.

2.3.1 The Principal Dimensions of the Buyer's Expected Benefits

Many authors, in both the industrial and consumer fields, have suggested various typologies of customer benefits (review Section 2.2.4 for a definition of "benefit"). For example, Anderson et al (1990) list economic, technical, service and social benefits that apply in the industrial domain. Still in the industrial domain, Dobler et al (1990) suggest that the buyer is seeking operating, engineering, economic and qualitative benefits. In the consumer domain, Maslow (1954) may have initialized classification attempts with his need typology ranging from the physiological to self-actualization. Park et al (1986) suggest that consumers are seeking functional rewards, symbolic rewards (re self enhancement, role position, group membership, or ego identification), or experiential rewards (re sensory pleasure, variety, or cognitive stimulation). Yet another consumer value typology is offered by Hirschman and Holbrook (1986), namely economic value, social value, hedonic value, and deontological value concerning the larger aspects of the cosmos. Finally, Holbrook and Hirschman (1982) describe experiential value as the pursuit of fantasies, feelings and fun. All of these various typologies can be classified into five principal dimensions: functional benefits,

economic benefits, service benefits, social benefits, and experiential benefits (Exhibit 2-F).

The main issue for this dissertation proposal is to decide which of these five are most appropriate for the study of the purchase of technology-based capital equipment. A review of several studies of capital purchasing criteria (e.g. Abratt 1986; Dobler et al 1990; Leenders et al 1985; Lehmann and O'Shaughnessy 1974, 1982; Narasimhan 1983; Rao and Kiser 1980; and Wind, Green and Robinson 1968), leads to the conclusion that social and experiential benefits are not nearly as relevant as functional, economic and service benefits. This is not to say that social and experiential benefits are never important. For example, the wish for an hedonic experience may drive many purchases of executive aircraft. Nevertheless, this dissertation should focus on the functional, economic and service benefits, which are the most important factors in general. There is one final consideration. With the benefit of foresight, the product type that will be studied will be Private Branch Exchange (PBX) telecommunications systems. This type of product is not principally purchased because of its measurable beneficial cashflows to the buyer, as might new production process equipment. Therefore, economic benefits will not be considered. Thus, only functional and service benefits remain in the consideration set, and these will be examined in more detail in the next two sections.

2.3.2 The Sub-Dimensions of Expected Service Benefits

Service is an essential component of technology-based capital equipment. Services such as consultation and problem solving can be provided at any stage of the B-S relationship, from pre-bid through delivery, installation, training, and start-up. The definition and measurement of service benefits, however, is in a relatively undeveloped state compared to, say, the measurement of functional benefits. Recall the important argument presented in Section 2.2.4 that benefits can be of two

EXHIBIT 2-FA DIMENSIONAL ANALYSIS OF THE BUYER'S BENEFIT EXPECTATIONS

	FUNCTIONAL BENEFITS	ECONOMIC BENEFITS	SERVICE BENEFITS	SOCIAL BENEFITS	EXPERIENTIAL BENEFITS
Maslow (1954)	Physiological, Safety			Love, Esteem	Self-Actuali- zation
Holbrook, Hirschman (1982)					Experiential Consumption (e.g. fun)
Hirschman, Holbrook (1986)		Economic Value		Social Value	Hedonic, Deontological Value
Park et al (1986)	Functional Rewards			Symbolic Rewards	Experiential Rewards
Anderson, et al (1990)	Technical Benefits	Economic Benefits	Service Benefits	Social Benefits	
Dobler et al (1990)	Operating, Engineering	Economic	Qualitative		

Note: Functional and Service Benefits are the focus in this dissertation

types: the what, and the how (see Gronroos 1983, p.25). The how type of benefit is critical to buyers because it helps to diminish feelings of uncertainty. This is especially important when dealing with product types such as capital-based technology equipment. Two sets of authors have offered typologies of the determinants of service quality, which can be considered to be the how type of service benefit.

Parasuraman et al (1985) conducted an extensive exploratory investigation of four services businesses, and concluded that service quality has ten dimensions. Briefly, they are:

- 1) Reliability, which involves consistency of performance and dependability;
- 2) Responsiveness, concerning the willingness and readiness of employees to provide prompt and timely service;
- 3) Competence, from possession (and demonstration, I assume) of relevant knowledge and skills;
- 4) Access, to the organization's facilities and personnel;
- 5) Courtesy, of all customer-contact personnel;
- 6) Communication, in clear and complete language;
- 7) Credibility, from company name and reputation, and characteristics of personnel;
- 8) Security, physical, financial, and informational;
- 9) Understanding the Customer, from high-effort learning and individualized attention; and
- 10) Tangibles, of both facilities and personnel.

The same authors then conducted a far more extensive study, and generated a five-dimension scale to measure service quality, called SERVQUAL (Parasuraman et al 1986). Using factor analysis to help interpret the original 97-item instrument, they eventually reduced the scale to 26 items defining these five dimensions:

- 1) Tangibles, i.e., physical facilities, equipment, and appearance of personnel;
- 2) Reliability, i.e., ability to perform the promised service dependably and accurately;

- 3) Responsiveness, i.e., willingness to help customers and provide prompt service;
- 4) Assurance, i.e., knowledge and courtesy of employees and their ability to convey trust and confidence; and
- 5) Empathy, i.e., the caring individualized attention the firm provides its customers.

In a similar but much less extensive study, Crosby et al (1990) tested a causal model of services selling relationship quality, which discovered three significant dimensions:

- 1) Similarity of the salesperson to the buyer, with respect to appearance, lifestyle, and socioeconomic status;
- 2) Service Domain Expertise of the salesperson; and
- 3) Relational Selling Behaviour, such as contact intensity, mutual disclosure, and cooperative intentions.

All of the above dimensions can be classified into five categories:

1) Company Tangibles; 2) Personnel Tangibles; 3) Personnel Intangible Attributes; 4) Personnel Relational Behaviour; and 5) a fifth category called Corporate Intangibles, which is suggested by Gronroos' (1983) mention of the importance of "corporate image" (Exhibit 2-G). It is important to distinguish the personnel attributes from their behaviours, because behaviours can be intentionally varied from one relationship to the next, whereas intangible attributes generally cannot. Of these five categories, it can be argued that Relational Behaviour variables best contribute to the buyer's expectations of service benefits. For example, Bender (1976, p.126) claims that the "behavioural content of customer service will become its essential component." Therefore, this dissertation will focus on Relational Behaviour as a proxy for the measure of service benefits. In Section 3.5 an even more detailed dimensional analysis of these behaviours will be derived.

2.3.3 The Sub-Dimensions of Expected Functional Benefits

The dimensionalization of functional benefits will be approached in the same way as the dimensionalization of service benefits. First, several

EXHIBIT 2-G

SUB-DIMENSIONS OF SERVICE BENEFIT EXPECTATIONS

	WHAT?	HOW?				
	CONTENT	CORPORATION		PERSONNEL		
		TANGIBLES	INTANGIBLES	TANGIBLES	INTANGIBLE ATTRIBUTES	RELATIONAL BEHAVIOUR
Gronroos (1983, p.25)	"Technical Quality" i.e. content		"Corporate Image"			"Functional Quality" i.e. how delivered
Parasuraman et al (1985)		"Tangibles" e.g. equipment		"Tangibles" e.g. appearance	Credibility	Reliability Responsiveness Competence Access Courtesy Communication Understanding Security
Parasuraman et al (1986)		"Tangibles"		"Tangibles"		Reliability Responsiveness Empathy
Crosby et al (1990)				Similarity (Appearance)	Similarity (Lifestyle)	Relational Selling Behaviour

Note: Relational Behaviours are the focus in this dissertation.

authors' typologies of functional benefits are briefly reviewed, and then an integrative typology is proposed. Abratt (1986) found that high-tech products are functionally evaluated on perceived reliability, ease of maintenance, product flexibility, and ease of operation. Bailetti and Yuen (1990) claim that a quality product must be designed for reproducibility (i.e., consistency with specifications), functionality, reliability, maintainability, backward compatibility with previous product releases, and comfortable human-machine interaction. According to Directors and Boards (1985) an information management system must afford continuity with past and future systems, compatibility with other current components, and user congeniality with respect to learning and operation. Garvin (1984) judges product quality according to conformance with specification, perceived quality, technical performance, reliability, features, serviceability, durability, and aesthetics. Kotler and Rath (1984) stress quality of materials and workmanship, performance, durability, and appearance for new product success. Finally, Lehmann and O'Shaughnessy (1974) found that conformance to technical specifications, reliability, ease of maintenance, ease of operation or use, and training time required, were five highly functional benefits highly rated by industrial purchasing agents. The preceding lists can be classified into the four categories of: 1) specification conformance; 2) functionality and features; 3) systems friendliness; and 4) user friendliness (Exhibit 2-H). Because each of these sub-dimensions appears to play an equally important role in buyer choice, all four will be incorporated into the research model.

2.3.4 The Sub-Dimensions of Expected Costs

Zeithaml (1988) divides costs ("price") into monetary costs, and non-monetary or psychic costs which includes time, effort and aggravation. Costs can also be roughly divided according to the Buyphase (Robinson et al 1967), with additional consideration given to Financing. The resulting 2X5 matrix exposes approximately ten sub-dimensions of expected costs

EXHIBIT 2-HSUB-DIMENSIONS OF FUNCTIONAL BENEFIT EXPECTATIONS

WHAT?	HOW?			
	SPECIFICATION CONFORMANCE	FUNCTIONALITY	SYSTEMS FRIENDLINESS	USER FRIENDLINESS
Abratt (1986)		Perceived Reliability	Ease of Maintenance, Product Flexibility	Ease of Operation
Bailetti, Yuen (1990)	Reproducibility (consistency versus specification)	Functionality, Reliability	Maintainability, Backward Compatibility	Human-Machine Interaction
Directors, Boards (1985)			Continuity, Compatibility	Congeniality
Garvin (1984)	Conformance	Perceived Quality, Performance, Reliability, Durability, Features	Serviceability	Aesthetics
Kotler, Rath (1984)		Performance, Durability, Quality of Materials and Workmanship		Appearance
Lehmann, O'Shaughnessy (1974)	Technical Specifications	Reliability	Ease of Maintenance	Ease of Operation or use, Training Time Required

Note: All four dimensions are incorporated in this dissertation.

(Exhibit 2-I). This dissertation will focus on monetary costs, especially in the purchase, implementation and operations phases.

2.4 SUMMARY

In Chapter 2, the concepts of Relative Value and Choice have been reviewed, and these conclusions were reached: 1) the two concepts of Relative Value and Choice are closely linked, such that Choice is the most accurate indicator of Relative Value; 2) Relative Value can be defined as "the buyer's expectation of the winning product's net benefit superiority versus the next best choice, derived from a tradeoff of interdependent relative expectations of benefits and costs"; 3) Relative Value can be most accurately modelled by the "Relative Expectations" model (Exhibit 2-E); 4) buyer benefits can be classified into the five principal dimensions of functional, economic, service, social and experiential; 5) the service and functional benefits are most relevant to this study of the choice of technology-based capital equipment; 6) Relational Behaviour is the most important sub-dimension of service benefits; 7) Specification Performance, Functionality, Systems Friendliness and User Friendliness are all important sub-dimensions of functional benefits; and 8) Costs in the purchase, implementation and operations phases are the most important sub-dimensions of costs. These conclusions will be incorporated in the research model to be derived in Chapter 4.

EXHIBIT 2-I
SUB-DIMENSIONS OF COST EXPECTATIONS

	MONETARY COSTS	NONMONETARY COSTS eg time effort aggra- vation
SEARCH PHASE		
PURCHASE/ACQUISITION PHASE	***	
IMPLEMENTATION (SETUP/ STARTUP) PHASE	***	
OPERATIONS/MAINTENANCE PHASE	***	
FINANCING		

Note: *** indicates the cost focus in this dissertation

CHAPTER 3

BUYER-SELLER RELATIONSHIPS - A LITERATURE REVIEW

Chapter 2 reviewed the literature on Value and Choice to help address the first two research questions, i.e., how are Value and Choice related, and how is Value determined. The third research question remains, i.e., how can buyer-seller (B-S) relationships affect the buyer's expectation of Value, hence Choice. It is the purpose of Chapter 3 to begin to address the third research question.

Therefore, this chapter reviews the literature pertaining to relationships between organizational buyers and sellers. The literature base is broad, reaching into many fields of Marketing, Organizational Behaviour, Sociology and Social Psychology. Buyer-Seller (B-S) relationships are first defined, then several structural and explanatory perspectives are examined. Structural perspectives portray who is involved and their paths of interaction, while Explanatory Perspectives attempt to explain how the parties interact. A unified Persuasion Network perspective is proposed which helps to explain how B-S relationships can affect the buyer's expectation of Value. The key element of the Persuasion Network perspective is proposed to be a special set of the seller's relational behaviours. The chapter concludes with a discussion of the principal dimensions of the set of effective relational behaviours.

3.1 B-S RELATIONSHIPS - A DEFINITION

The topic of B-S relationships is receiving much attention from both researchers and managers, yet advances in our understanding of the field are still hampered by a wide array of definitions and conceptualizations. The purpose of Section 3.1 is to introduce a basic definition of a B-S relationship, enhance it with a variety of parameters discussed by various

authors, and then propose a working definition that is both appropriate and sufficient for the purposes of this dissertation.

3.1.1 A Basic Definition of a Relationship

The use of the term "relationship" by marketing practitioners and researchers is now commonplace, yet succinct descriptions of what constitutes a relationship are scarce. There is a general notion that a relationship involves two parties (individuals, groups or organizations) who exchange resources, that such exchanges are usually voluntary and are beneficial to both parties, and that the parties may feel a commitment to the point of helping each other through difficult circumstances. By way of illustration, Cook (1977, p.64) says that "an exchange relationship consists of voluntary transactions involving the transfer of resources between two or more actors for mutual benefit", and Ford (1989, p.817) says that a relationship is "a pattern of interaction consisting of a number of episodes of social, financial, informational, product or service exchange."

Such brief definitions are insufficient for the purposes of this dissertation. Sections 3.1.2 to 3.1.6 will present a collection of observations from different authors, with the objective of setting the stage for a more refined definition, which will in turn set the stage for a discussion of structural, process and explanatory perspectives.

3.1.2 "Why" - The Necessary Conditions for a Relationship

Many authors have submitted their views on the necessary conditions (i.e., the why) for a relationship. Here is a short list derived from Thibaut and Kelly (1959) and Kotler and Turner (1985):

- 1) There are at least two parties;

- 2) Each party has something that might be of value to the other party (i.e., there is a condition of interdependence);
- 3) Each party is aware of the other party, and is capable of communication;
- 4) Each party is free to accept or reject an offer;
- 5) Each party believes it is appropriate or desirable to deal with the other party; and
- 6) Each party is willing and able to fulfil their obligations according to the agreed terms of exchange.

While this list specifically excludes involuntary relationships and coercive techniques to establish agreements (cf. Levine and White 1961), it does not exclude the use of non-coercive persuasion. This is important for a later argument that persuasion is a plausible explanatory mechanism for B-S relationships.

3.1.3 "What" - The Elements of Exchange

Many authors have offered short lists of the elements exchanged in a relationship (i.e., the what) and from these lists a more comprehensive collection can be compiled:

- 1) Money (Bagozzi 1975, More 1986, Ford 1989);
- 2) Goods (Bagozzi 1975, Roloff 1981, Ford 1989);
- 3) Services, including problem solving (Bagozzi 1975, Roloff 1981, Ford 1989);
- 4) Personnel (Baty et al 1971, More 1986);
- 5) Information, including personal, technical or organizational (Ford 1989, More 1986, Roloff 1981);
- 6) Verbal Signals (Angelmar and Stern 1978, Athos and Gabarro 1978, Bagozzi 1975, Clopton 1984, Ford 1989, Frazier and Summers 1984, More 1986, Roloff 1981, Rosenberg and Van West 1984, Salmond and Spekman 1986, Schermerhorn 1977)

e.g. Promises/Assurances vs. Threats
 Warnings vs. Recommendations/Suggestions/Advice
 Compliments vs. Complaints/Criticisms
 Questions/Requests vs. Answers/Replies
 Rewards vs. Punishments
 Pleasantries vs. Unpleasantries
 Accusations vs. Denials/Rebuttals
 Concessions vs. Demands

- 7) Physical Signals, e.g. appearance, body language, actions (e.g. Crosby et al 1990);
- 8) Emotion, e.g. love, affection and friendship (Bagozzi 1975, Roloff 1981, Ford 1989); and
- 9) Status (Roloff 1981).

It seems reasonable that the exchange of services, personnel, information, verbal signals and physical signals might be the most important exchange elements in B-S relationship during the bid process. Indeed, the argument will be made that it is the seller's exchange of physical signals with the buyer (i.e., relational behaviours) that can affect the buyer's expectation of Value.

3.1.4 "Who" and "Where" - The Structure of a Relationship

The "who" and "where" of a relationship refer to the structure of the relationship, which can be described by the number, nature and location of the participants, and the pattern of their interaction. Key structural perspectives will be the subject of further discussion in Section 3.2.

3.1.5 "How" - the Process of a Relationship

The "how" refers to the process of the relationship, which can be described by two distinct classes of descriptors. The first set, the flow descriptors, refers to the measurable set of flow indicators of the exchange elements between the participants. Key flow descriptors are described in the next paragraph. The second class of descriptors, the explanatory perspectives, refers to the underlying mechanism which explains the flow descriptors. Key explanatory perspectives will be the subject of further discussion in Section 3.4.

Several authors who have written about interpersonal relationships have recorded their observations about key flow descriptors. This is a representative sample:

- 1) direction, scope, complexity, intensity and variability (Arndt 1983);
- 2) width (range of shared activities), depth (proportion of shared decision-making), and closeness (certainty of response) (Ford 1989);
- 3) frequency, formality, and symmetry (Guetzkow 1966);
- 4) formalization, intensity (kind and amount of exchange), reciprocity (directional symmetry), and standardization (Marrett 1971);
- 5) breadth (function of frequency and duration), depth (intensity), and honesty (Wheless and Grotz 1980);
- 6) amount, difficulty and formality (Ruekert and Walker 1987); and
- 7) openness (Salmond and Spekman 1986).

The descriptor called "depth" has received much attention in particular. At least two typologies have been published which attempt to illustrate how buyer-seller relationships may vary with respect to "depth". Depth refers to the definition by Wheless and Grotz (1990) which suggests the degree of intimacy or intensity. Spekman and Johnston (1986) suggest four depth classifications: transaction selling; systems selling; relationship selling; and strategic partnerships. Dwyer, Schurr and Oh (1987) offer only two classifications: discrete transactions vs. relational exchange.

Relationships which employ "transaction selling" are roughly analogous to relationships which consist of discrete transactions, according to the definitions provided by these authors. That is, a transaction is well-defined, short in duration, and dependent more on product attributes than on interpersonal relationships. "Relationship selling" is roughly analogous to "relational exchange", where different transaction boundaries are difficult to distinguish, and transactions are longer in duration with far more emphasis on interpersonal understanding and commitment.

These typologies are of some use in the study of the bid process for technology-based capital equipment. Normatively, one might expect the sale of such a product to require "relational exchange" (RE) because of the purchase complexity. Therefore, variables or dimensions which help to distinguish discrete transactions from RE might suggest dimensions for measuring an "effective" B-S relationship. The Dwyer et al (1986) typology has eight dimensions:

- | | |
|--|---------------------|
| 1) degree of social interaction | (high in RE) |
| 2) degree of contractual regulation | (high in RE) |
| 3) degree of contractual transferability | (low in RE) |
| 4) degree of cooperation | (high in RE) |
| 5) degree of planning for change and conflicts | (high in RE) |
| 6) degree of performance specification | (high in RE) |
| 7) degree of application of power | ("judicious" in RE) |
| 8) extent of sharing benefits and burdens | (high in RE) |

What begins to emerge from the examination of flow descriptors, and from the examination of "depth" in particular, is some support for the importance of the exchange of physical signals, i.e., relational behaviour. This is suggested by descriptors such as intensity (i.e., high degree of social interaction), cooperation, sharing, honesty and openness. This theme will reappear in Sections 3.3 and 3.4, and effective relational behaviours will be examined in detail in Section 3.5.

3.1.6 "When" - The Stages of a Relationship

The stages of a relationship can be discussed in two entirely different contexts: life cycle stages and intra-transactional stages. Ford (1980) has labelled five life cycle stages as pre-relationship, early relationship, development, long-term, and final; Dwyer, Schurr and Oh (1987) suggest awareness, exploration, expansion, commitment and dissolution. This dissertation assumes that the buyer and seller are somewhere in the middle of their life cycle, such that the two parties have had at least one prior transaction, and hope to continue with future transactions. As a parting observation, it is interesting to note that the existence of transactions over time suggests the possibility of inter-

transactional relationships, wherein the buyer and seller may continue to interact without a specific transaction under consideration.

More (1986) outlines nine generic stages of an intra-transactional relationship, beginning with "problem recognition" and ending with "use implementation". More's nine stages are derived from an extensive review of several other authors. The bid proposal process corresponds with More's first eight pre-choice stages: problem definition, need analysis, product concept, technology choice, financial analysis, product design, production/sourcing and unit commitment (i.e., choice). Drawing from the work of Bender (1976), Davidow (1986), Dobler, Burt and Lee (1990), and Page and Siemplenski (1983), More's final "use implementation" stage can be further expanded into 8 post-choice stages: delivery, installation, startup/debug, training, effectuation/enabling, modification/adjustment, maintenance/repair, and disposal. This dissertation will recognize the pre-choice and post-choice stages of a relationship, but will not recognize the sub-stages.

3.1.7 A Refined Definition of a Relationship

In an attempt to arrive at a definition of a B-S relationship which is both appropriate and sufficient for this dissertation, various characteristics of relationships have been examined, such as necessary conditions, elements exchanged, structural and process characteristics of the exchange, and stages of the relationship. Some of these apply well to this dissertation, and some do not. Drawing from the preceding analysis, a working definition of a B-S relationship for the purposes of this paper can be synthesized:

- 1) a B-S relationship is a series of interorganizational exchanges (or transactions) between the members of the selling centre and the buying centre;
- 2) the items of exchange may consist of products (either goods or services), payments, information, personnel, and/or verbal or physical signals;

- 3) the pattern of exchange can be described by an extensive array of structural perspectives, flow indicators and explanatory perspectives; and
- 4) the exchanges span time, i.e., the relationship has a past, a present, and a future.

The flow of physical signals (i.e., the seller's relational behaviour) has been identified as a potential key element of B-S relationships in bid situations. In the balance of this chapter, Structural Perspectives and Explanatory Perspectives are examined in more depth, and a unified Persuasion Network perspective is proposed to explain the contribution of the seller's relational behaviour.

3.2 STRUCTURAL PERSPECTIVES OF RELATIONSHIPS

As stated in Section 3.1, a structural perspective portrays how a relationship appears to an outside observer, without reference to the exchange elements or to the explanation of why an exchange is occurring. Essentially, it describes the number of participants involved, and their pattern of interaction. Descriptions of three of the more widely published perspectives follow.

3.2.1 A Dyadic Perspective

The simplest possible descriptive conceptualization of a relationship is that of the dyad (e.g. Wilson 1978; Bonoma, Bagozzi and Zaltman 1978), which models exchange between two organizational units. These units may be individuals, groups, organizations or super-organizations (Bristor 1990). The dyadic perspective explicitly recognizes the essence of two parties to an exchange, and as such is a more realistic representation of reality than a focus on the individual in a buying decision (Bonoma et al 1978).

In the domain of organizational buying, Wilson (1978) makes a strong case for studying strictly the interpersonal dyad because "individuals, not groups or organizations, process information and make choices" (p.32). There are, however, shortcomings with the interpersonal dyadic perspective. The first is that a single dyad does not represent reality in the purchase of complex technology - based capital equipment. The interorganizational relationship consists of multiple dyads between the members of the selling and buying centres, and evaluations can indeed be made at the group level. A second shortcoming is that the process and consequences of one relationship are in reality often conditional on another relationship of one of the members with a third party. An obvious example is an offer to buy a house which is conditional on the sale of the buyer's current house. This flaw is partially addressed by the Network perspective.

3.2.2 A Network Perspective

The network perspective of interorganizational relationships is an expanded view of the dyadic perspective; or conversely, the dyadic perspective can be considered a special subset of the network perspective (Thorelli 1986). It models exchange between multiple interconnected organizational units, explicitly recognizing the effect of one relationship on a linked relationship. As with dyads, the organizational unit can be the individual (e.g. Hutt and Reingen 1987), the group, or the organization (e.g. Hakansson and Johanson 1989, Thorelli 1986).

Besides recognizing third party effects, the network perspective provides a number of constructs which offer much greater latitude for research. Some examples are anchorage, reachability, density and range (Mitchell 1969), and vertical/lateral involvement, extensivity, connectedness and centrality (Johnston and Bonoma 1981b). Despite these advantages, some authors continue to apply the dyadic perspective instead

of the network perspective in the study of relationships, citing shortage of theory and/or complexity of data collection (e.g. Ruekert and Walker 1987).

3.2.3 An Open Systems Perspective

An open systems perspective has been invoked by some researchers to address a deficiency of the two prior perspectives, which is the explicit recognition of effects from beyond the relationships themselves. The key distinguishing feature, then, of an open systems model is the recognition of the environment of the organization. There are minor discrepancies in the various definitions of an open system. Evan (1972) lists the components as input elements, process elements, output elements and feedback effects, subject to the influence of cultural effects, structural limitations, and environmental interactions. Van de Ven (1976) lists situational factors, process dimensions, structural dimensions and outcome dimensions. Wilson and Moller (1988) list process, individual variables, organizational variables, the environment and atmosphere. Despite these minor disagreements, a system can be thought of as the dyad, or network, involved in a process bathed in an atmosphere, subject to the influence of the environment, the situation, and organizational variables. An example an open system is the IMP Interaction Model (e.g. Turnbull and Valla 1986).

3.3 EXPLANATORY PERSPECTIVES OF RELATIONSHIPS

As stated in Section 3.1, an explanatory perspective attempts to explain the underlying mechanism behind the flow of elements between the participants in the relationship. Such a perspective is not necessarily a single theory, but rather a foundation for possibly several theories. Descriptions of five of the more widely published perspectives follow.

3.3.1 Communications

A communications perspective has been employed by several authors in their study of interorganizational relationships (e.g. Hulbert and Capon 1972; Rothwell and Robertson 1973; Sheth 1976). There is some degree of overlap of the communications perspective with the ensuing persuasion perspective depending on the definition of communications employed. If communication is defined as "the formal as well as informal sharing of information" (Anderson and Narus 1984, p.66), then communication is not necessarily related to the intentional change of an individual's behaviour. However, if communication is defined as "a process in which two or more persons attempt to consciously or unconsciously influence each other" (Emmert and Donaghy 1981, p.47), then communications appears similar to persuasion. I conclude that the communications perspective and the persuasion perspective share some similarities, but that the persuasion perspective may be more precise for studying changes to the buyer's expectation of value.

3.3.2 Persuasion

Persuasion refers to the alteration by one party of the beliefs, the beliefs' salience, and/or the attitudes of a second party in order to influence the second party's behaviour to achieve some desired result. Some authors have argued against this perspective as the key paradigm in Marketing (e.g. Carman 1980, Arndt 1983), but arguably it may be valuable for explaining B-S relationships during the bid process. While there are, without question, multiple uni-directional and bi-directional mechanisms operating within the B-S relationship, it is nevertheless the ultimate objective of the members of the seller's selling centre to persuade the buying centre to choose the seller's product from a short list of alternatives. The use of persuasion absolutely does not mean the use of coercion, nor does it mean the use of exaggeration or lies. Persuasion is

one of several legitimate tools for ensuring success in a bid situation. For example, as quoted earlier in Chapter 1, Spekman and Johnston (1986, p. 519) argue that the competitive advantage of a seller depends "on its ability to influence the buying centre participants' procurement decision process." And Crosby et al (1990) have examined relationship quality in services selling from an interpersonal influence perspective.

Persuasion has two primary operating mechanisms (cf. Petty and Cacioppo 1986). In the simplest form, persuasion consists of sending a message which alters the receiver's beliefs, attitudes, and ultimately behaviour. Alternatively, the persuasive effect of a message can be enhanced (reinforced) by such factors as source characteristics, message characteristics, channel characteristics, and receiver characteristics. The balance of Section 3.3.2 will explain how the seller's relational behaviour can enhance the seller's message, and thus help to persuade the buyer to choose the seller's product. Before proceeding, however, it will be useful to identify a particular persuasion theory that seems most suited to the dissertation context.

The primary difficulty in considering persuasion as the explanatory foundation is the enormous range of confusing and contradictory theories published in the Marketing and Social Psychology literature. In an assessment of decades of persuasion research and thousands of published articles, Petty and Cacioppo (1986, p.125) observe that "Existing literature supports the view that nearly every independent variable studied increased persuasion in some situations, had no effect in others, and decreased persuasion in still other contexts."

McGuire (1985) begins to simplify the literature by organizing persuasion theories into 4 quadrants according to two dimensions of human nature. The two dimensions are: 1) a person's need for stability vs. need for growth; and 2) a person's quest for an ideational (cognitive) end

state vs. an affective end state. Thus, the four major classifications of persuasion theories are the cognitive stability theories (e.g. cognitive dissonance, Festinger 1957), cognitive growth theories (e.g. Tesser 1978), affective stability theories (e.g. Sawyer 1973), and affective growth theories (e.g. Johnson, Cheek and Smither 1983).

Within the family of the cognitive growth theories lies the sub-family of utilitarian theories, which appears to be particularly relevant to the new technology proposal situation. According to McGuire (1985, p.299), "utilitarian theories stress the person's problem-solving aspect, coping with challenges so as to maximize expected gain at minimum cost . . . , (and) imply that persuasive messages should associate compliance with . . . the attainment of the receiver's goals." An excellent example of this sub-family is Tesser's (1978) theory of Self-Generated Attitude Change. Tesser's theory is developed in four steps:

- 1) for various stimulus domains, persons have causal schemas which make some attributes of the stimuli salient and provide rules for inferences regarding other attributes;
- 2) thought, under the direction of a schema, produces changes in beliefs, often in the direction of greater schematic and evaluative consistency;
- 3) attitudes are a function of one's beliefs; and
- 4) therefore, thought changes attitudes, hence behaviour.

This conceptualization is consistent with the integrative model of value presented earlier, i.e., relative perceptions are employed to infer benefit superiorities (beliefs), leading to an expectation of relative value, then choice. Of great importance, Tesser (p.293) places no restriction on the type of stimulus; it could be a visual array, meaningful prose, the natural world, other persons, or the self. In other words, non-message cues are central to self-generated attitude change. This opens the door for the proposition that relational behaviour may serve as a persuasion enhancer.

Has relational behaviour been explicitly recognized as an enhancer in the psychology literature? McGuire (1985) outlines four categories of variables that tend to enhance a message's persuasive impact: source (sender) variables, message variables, channel variables, and receiver variables. The notion of behaviour as an enhancer can be supported by a careful examination of the known enhancers, especially some currently grouped in the channel category.

Source Characteristics

McGuire discusses three principal source characteristics which enhance a message's effect, which are power, credibility, and attractiveness. These are somewhat interrelated, as we shall see. French and Raven's (1959) presentation of five bases of power is one of the most commonly cited power typologies. Party A can influence Party B because of: 1) reward power, i.e., B's perception that A has the ability to reward B; 2) coercive power, i.e., B's perception that A has the ability to punish B; 3) legitimate power, i.e., B's perception that A has a legal or formally designated right to command B; 4) referent power, i.e., B's identification with A; and 5) expert power, i.e., B's perception that A possesses special knowledge or expertise. Credibility is derived from perceived expertise (one of French and Raven's bases of power) and perceived trustworthiness. Some cues for the perception of expertise include high level of education, intelligence, social status, and professional attainment (Hass 1981), which optimally should be reinforced with other cues such as trustworthiness (McGinnies and Ward 1980). Some cues for trustworthiness are apparent sincerity (Wheless and Grotz 1977), arguments against self-interest (Walster, Aronson and Abrahams 1966), and character and judgment integrity (Athos and Gabarro 1978). Attractiveness is derived from: physical attraction (Horai, Naccari and Fatoullah 1974); familiar history (Hendrick and Hendrick 1982); source-receiver similarity

(Simons, Berkowitz and Moyer 1970), which is similar to referent power; and source- receiver complementarity (Athos and Gabarro 1978).

Message Characteristics

McGuire provides a detailed analysis of how message characteristics can affect the persuasive impact of a message. The conclusion is that the persuasive effects for most characteristics are mixed, and dependent on the situation. Among the more commonly debated characteristics are: positive vs. negative appeals; conclusions explicitly drawn vs. ambiguity; opposition arguments acknowledged vs. unacknowledged; weaker pro-arguments presented vs. not presented; primacy vs. recency of basic argument; number of arguments in a message; extremity of position taken; and use of humour. Repetition of a message is a characteristic where conclusions have been easier to draw. Here, the persuasive impact has been found to increase for the first several repetitions (e.g. Fehrenbach et al 1979), but further repetition may detract (e.g. Cacioppo and Petty 1979). There is also a short list of verbal delivery variables which serve as enhancers, such as clarity, forcefulness and speed of delivery. While the effect of forcefulness is situational and interactive (e.g. Miller and Baseheart 1969), clarity and speedier delivery generally have a positive effect by enhancing source credibility (e.g. McCroskey and Mehrley 1969; Miller et al 1976).

Receiver Characteristics

Susceptibility to influence from a message is governed by the individual's suggestibility, conformity and persuadability. These are all dependent on situational variables such as age, gender, and self-esteem.

Channel Characteristics

Channel variables refer to the sensory vehicle (e.g. audio, visual, tactile) and the medium (e.g. face-to-face, telephone, fax, mail, television, radio). Much of the research involves investigations of the effectiveness of the mass media for advertising and/or public campaigning. Roedder et al (1983), for example, found that the effects of television commercials can be measured, "but at magnitudes remarkably small for the resources expended" (McGuire 1985, p.277). Paid political advertisements have been found to have quite small effects on voting choice (Patterson and McLure 1976), and may influence voters against as well as for the advertised candidate (Atkin et al 1973).

McGuire also presents an array of nonverbal behavioural variables as persuasion enhancers. Behaviours such as facial expression, posture, body movements and gestures (kinesics), and use of space (proxemics) have been found to influence the receiver's perceptions of the source's deceptiveness, sincerity and attractiveness, which in turn enhance the persuasive effect of the message. Similarly, auditory variables such as long latency in answering, pauses, hedges, slowness, and lack of synchrony between speech and kinesics, all detract from the source's credibility, which in turn detract from the persuasive effect of the message. These behavioural variables are independent of constant source characteristics such as hair colour, and independent of message characteristics such as content or order. They are variables which can be manipulated by the source according to the particular dyadic persuasion situation.

This phenomenon of relational behaviour enhancing the persuasive effect of a message can be explained by the utilitarian perspective of persuasion that we identified earlier; i.e., the message receiver is actively seeking clues that will contribute to the highest value decision. By seeking clues that contribute to the source's trustworthiness, hence

credibility, the receiver is reducing uncertainty and increasing his/her expectation of value for the potential transaction. It is important that the role of relational behaviour has been established as a message enhancer, even if the supporting research has dealt largely with the enhancement of single messages. If behaviours can influence a single message, then it is plausible that an ongoing series of behaviours can influence an ongoing series of messages, such as those between a seller and a buyer throughout a bid process.

3.3.3 Power-Dependency

The power-dependency paradigm has been widely used in the study of interorganizational relationships, especially with respect to channel relationships (e.g. Cadotte and Stern 1979; Frazier and Summers 1984; Gaski 1984; Hunt and Nevin 1974). The relationship between power and dependence has been explained by Emerson (1962, p.32): "the power of A over B is equal to, and based upon, the dependence of B upon A." This perspective tends to use the constructs of power source, power, dependence and conflict to attempt to explain satisfaction and/or performance of the relationship (cf. Gaski 1984). The use of power is proposed to be positively related to B-S conflict and negatively related to buyer satisfaction, outcomes which may not be desirable in bid situations. Therefore, a power-dependence perspective does not seem to be suitable in the context of this dissertation.

3.3.4 Conflict Resolution/Negotiation

As with communications, there is some intersection between persuasion and conflict resolution. Several styles of conflict management have been identified. Fisher (1981, p.287) calls these avoiding, smoothing, forcing, compromising, and collaborating. Thomas (1983, p.900) offers a similar set: avoidant (neglect), accommodative (appeasement),

competitive (domination), sharing (compromise), and collaborative (cooperative).

The process itself of managing conflict has been termed bargaining (e.g. Matthews et al 1972; Angelmar and Stern 1978; Dwyer and Walker 1981), or negotiation (e.g. Clopton 1984; Graham et al 1988). More (1986) takes a very broad perspective of the concept of negotiation, using it as an umbrella to describe the complete exchange process:

"Negotiation (is) the interorganizational process between members of the developing organization and adopting organization in a particular new product development/adoption situation in which both groups of managers act to enhance their payoffs and reduce their risks in the situation" (p.508).

Carman (1980, p.4) agrees with this broad perspective of negotiation, and defines five process dimensions: exchange, persuasion, authority, moral code and tradition. Therefore, using Carman's definition, we can conclude that persuasion can be thought of as a subset of the conflict resolution/negotiation perspective.

3.3.5 Exchange

The exchange perspective is emerging as a dominant perspective in the generation of marketing theory (Bagozzi 1975). It holds that individuals, groups or organizations seek to fulfil their needs by entering an exchange relationship with an agreeable second party. A utilitarian (economic) exchange is "an interaction whereby goods are given in return for money or other goods and the motivation behind the actions lies in the anticipated use or tangible characteristics commonly associated with the objects in the exchange" (Bagozzi 1975, p.36); in contrast, symbolic (social) exchange refers to "the mutual transfer of psychological, social, or other intangible entities" (Bagozzi 1975, p.36); and mixed exchange involves some economic and some social exchange. Blau (1964) offers further points of contrast between economic and social

exchange: social exchange leaves the time period for repayment unspecified, it is based on trust rather than the legal system, and the rate of exchange is not well defined. B-S proposal relationships appear to fall in the mixed exchange category - both parties are definitely seeking economic benefit, while the buyer in particular is seeking psychological benefits such as assurance and certainty.

Roloff (1981) summarizes five important exchange perspectives: Homans' (1974) operant psychology approach; Blau's (1964) economic approach; Thibaut and Kelly's (1959) theory of interdependence; Foa and Foa's (1976) resource theory; and Walster, Berscheid and Walster's (1976) equity theory. These works have been adopted by several Marketing researchers. For example, Anderson and Narus (1984) have used concepts from the work of Thibaut and Kelly in their examination of channel relationships; Gatignon and Robertson (1986) have used concepts from Homans and Blau to model interpersonal communication; and Huppertz et al (1978) have applied equity theory to retail buyer-seller exchange. Therefore, it is clear that the application of exchange theory can be important to the development of Marketing.

A brief overview of one of the many perspectives of exchange will permit a comparison of the persuasion perspective with exchange. In general, exchange theorists are concerned with how to predict an individual's choice of exchange behaviour, based on that individual's expectation of value to be obtained. Thibaut and Kelly (1959) expand on this basic notion with a presentation of power strategies; i.e., how to exert power to increase personal value from a relationship, and how to build power to protect yourself from the other party's exertion of power. Among the power-building strategies suggested by Thibaut and Kelly is one which is relevant to the seller in the proposal situation. Recall an earlier suggestion that the buyer generally possesses the power in a proposal situation; therefore, the seller might be interested in building

power. Thibaut and Kelly (p.121) suggest that the party wishing to build power can increase by persuasion the other party's expectation of value of the relationship. This is exactly the proposition of this dissertation.

Thibaut and Kelly's approach to exchange leads to this conclusion: the persuasion approach to B-S relationships is in fact a subset of the exchange perspective. Hence, by studying persuasion in the domain of B-S relationships, this research will make a contribution to the development of the broader exchange perspective.

3.4 UNIFIED PERSPECTIVES OF RELATIONSHIPS

This section examines "unified perspectives", which combine a structural perspective with an explanatory perspective. By describing how a relationship is structured and how it works, a researcher provides a comprehensive view of a relationship. In previous sections three major structural perspectives and five major explanatory perspectives were discussed, which suggests a minimum potential number of 15 combinations of unified perspectives. In the following sections only five of these will be discussed, including four from the literature, and a proposed "Persuasion Network".

3.4.1 Communications Network

In this perspective, the interorganizational exchange of information is examined among the members of a network. As described by Rogers and Agarwala-Rogers (1976, p.110), a communications network is "a small pocket of people who communicate a great deal with each other, or a multitude of such pockets that are linked by communication flows." Rogers and Agarwala-Rogers were speaking within the intra-organizational context, but this description is well suited to the inter-organizational context as well. Rothwell and Robertson (1973), in their study of technological

innovation, discovered the importance of a communications network. They conclude (p.204) that "the overall pattern of the innovation process can be thought of as a complex net of communications paths linking the various stages ..., both intra-organizationally and extra-organizationally", and observe that this "net" is critical to successful innovation. This perspective may be considered a special case of the exchange network perspective, which is described next.

3.4.2 Exchange Network

Cook (1977, p.62) may have initiated this perspective by describing organizational interactions as "networks of exchange relations", thus combining the network description with the exchange explanation. The exchange network perspective has been adopted by several Marketing researchers. For example, Hutt and Reingen (1987) study organizational buying behaviour with the view that influence is exchanged within a network during an organizational purchasing process. As a further example, Hakansson and Johanson (1986, p.3) offer this view of industrial relationships:

"Firms are embedded in networks of interaction relations between industrial actors using more or less heterogeneous resources in performing more or less interrelated industrial activities ... Through interactions, firms exchange resources, products, and services."

This perspective may be viewed as a subset of systems/exchange because the network is a subset of the more comprehensive systems perspective.

3.4.3 Political Economy

This perspective has been described as a power/authority network, or a power/authority system, depending on the author. Arndt (1983 p.47) takes the latter view, saying that "political economy emphasizes the interplay of power, the goals of the power wielders, and the productive economic

exchange systems." Achrol, Reve and Stern (1983) also use this perspective to help develop a framework for the development of channel theory. Benson (1975, p.229) takes the former view, saying "the interorganizational network may be conceived as a political economy concerned with the distribution of two scarce resources, money and authority." While interesting, this perspective is not particularly helpful for explaining how the seller can change the buyer's expectation of value. As noted before, the application of power is associated with conflict and dissatisfaction, which may not be desirable in a competitive bid situation.

3.4.4 Systems/Exchange

Carman (1980, p.6) proposes the Systems/Exchange perspective as "the basic paradigm of the discipline of marketing", and provides a list of the essential components:

- 1) the goals of the system under study;
- 2) the environment and constraints within which the system exists;
- 3) the control mechanism for the system;
- 4) the actors that comprise the system, including number, description, and internal structure;
- 5) the resources, relative size and relative power of each actor;
- 6) the functions performed by the actors;
- 7) the linkage between actors;
- 8) the description of goods exchanged;
- 9) the ways in which the goods are evaluated by each party;
- 10) transaction cost functions;
- 11) the level of information available to the actors; and
- 12) the rules governing exchanges.

Carman's reasoning for the establishment of such a paradigm is given as (p.6): "the specification of the systems paradigm must precede employment of the social exchange theory paradigm. Before building theory

with the social exchange framework, one needs to specify the units of analysis and all of the constructs of both the systems and social exchange paradigms." It is difficult to argue with Carman's proposition that theory must be built and tested with respect to specific units of analysis; it is also difficult to argue with Carman's choice of Systems to represent the descriptive view, and Exchange to represent the explanatory view, because both are the broadest concepts in their respective categories. Carman, however, fails to present even fundamental propositions to illustrate the application of this perspective.

3.4.5 A Proposed "Persuasion Network" Perspective

Section 3.2.2 suggested that the network perspective most succinctly represented the structure of the relationship between competing sellers and a buyer in a bid situation. Further, Section 3.3.2 supported the view that persuasion most succinctly described the important explanatory mechanism in the B-S relationship, because the ultimate mission of the seller is to persuade the buyer to choose the seller's product. Therefore, the concept of a "persuasion network" may be the most appropriate unified perspective of B-S relationships for this dissertation. See Exhibit 3-A. Section 3.3.2 also supported the notion of relational behaviours as effective enhancers of a seller's messages. Section 3.5 will identify in detail the key dimensions of the most effective relational behaviours of the seller towards the buyer.

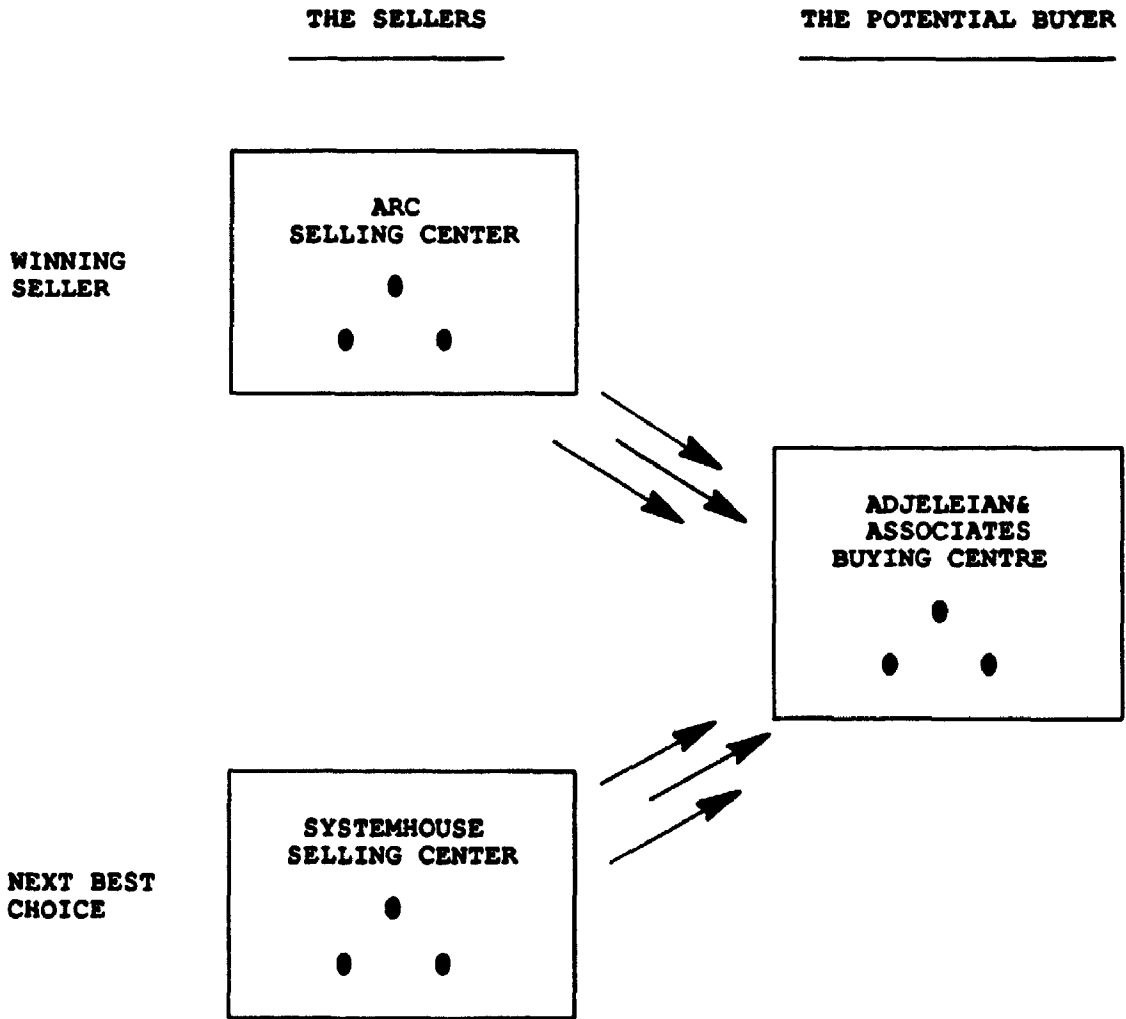
3.5 EFFECTIVE BEHAVIOURS IN PERSUASION NETWORK RELATIONSHIPS

Before proceeding with a detailed analysis of effective relational behaviours, it would be useful to briefly review why behaviours might be valuable to study. There are, without question, many factors that can influence the buyer's expectation of value and choice, such as the seller's "5 P's", the buyer's prior experiences with the seller's product

EXHIBIT 3-A

A PERSUASION NETWORK PERSPECTIVE OF B-S RELATIONSHIPS

(Derived from Adjeleian & Associates Case Study, Chapter 1)



and people, and the buyer's awareness of the seller's reputation for product and people. Review Exhibit 1-A. The people factor can then be divided into tangibles (e.g. appearance), intangible attributes (e.g. intelligence), and relational behaviours (e.g. reliability). Review Exhibit 2-G. Of these, several writers have suggested the critical nature of relational behaviour. For example, Bender (1976, p.126) has claimed that the "behavioural component of customer service will become its essential component."

Assuming that the study of behaviour is important, other authors have then suggested that behaviours operate as a persuasion enhancer. For example, Swan, Trawick and Silva (1985) offer a behaviour-trust-influence causal sequence. First, they say (p. 203) that "customer trust is a key factor that influences the ability of a salesperson to influence a prospect." Then they say (p.204) "to gain a customer's trust, the salesperson should behave as a dependable, honest and competent person."

This explanation of how behaviours serve as powerful persuasion will be addressed in much further detail in Section 4.2. The balance of Section 3.5 will identify those behaviours that various authors have reported as influential, and will attempt to dimensionalize the resulting list. These dimensions will be important because they will eventually form the basis for relationship constructs in the research model.

The trade and academic literature is replete with references to behaviours by the members of the selling team which may enhance the team's ability to make the sale. The references are widely scattered, however, and there have been few attempts to systematically consolidate and empirically test them. In the following sections, five different fields of Marketing will be explored in order to identify the most important behavioural dimensions.

3.5.1 From The Technology Marketing Literature

More (1984) suggests that the seller's proactiveness in the development process, flexibility during negotiation, continuous contact, and quick response to negative buying centre feedback, will help to ensure the seller's success. Jackson (1985) advises that the seller show consistent concern for the customer's needs, demonstrate agility with respect to technological advances, provide consistent short-term attention and care to the buyer, and address the buyer's feelings of exposure. Davidow (1986) emphasizes tailoring the product to suit the customer's needs, and agrees with More about the need for quick response to customer concerns. Smilor (1989) seconds Davidow's recommendation for adaptability. Shaw et al (1989) advises single-point responsibility, availability of qualified technical personnel, and demonstrations of credibility, competency and commitment.

3.5.2 From The Buyer-Seller Relationship Literature

Peters (1989) suggests that the seller can mitigate the buyer's uncertainty with actions including flexibility, responsiveness, adaptiveness, empathy, reliability, and speed. Hutt, Johnston and Ronchetto (1985) note that the customer derives value from the seller's technical assistance and problem-solving ability. Rosenberg and Van West (1984) stress collaboration, attentiveness, dedication, dependability, honesty, flexibility and timeliness. Clopton (1984) observes that open and accurate exchange of information may also increase the likelihood of reaching an agreement.

In the buyer-seller literature, the emphasis focuses on how behaviour reduces the buyer's inference of uncertainty, rather than how it increases the buyer's inference of trustworthiness. In the words of Hakansson, Johanson and Wootz (1977, p.324): "the (buyer's) perceived

uncertainty can be either increased or decreased depending on the contents of the influence tactics."

3.5.3 From The Sales Management Literature

In an extensive review of effectiveness of sales interactions, Weitz (1981) specifically addresses the topic of how the behaviour of sales representatives may affect actual sales results. He reports that the effects of behavioural dispositions, according to the available empirical results, are equivocal. He then proposes four classes of behaviours which may improve effectiveness: adapting to customers, establishing influence bases, applying influence, and controlling the sales interaction. Swan, Trawick and Silva (1985, p.204) also provide support for the notion of behaviour having influence: "the salesperson should behave as a dependable, honest and competent person" because (p.203) "customer trust is a key factor that influences the ability of a salesperson to influence a prospect." Trustworthiness is derived from actions, such as: dependable behaviour, honest behaviour, demonstration of competence, reliable behaviour, fulfilment of promises and commitments, and customer orientation. Michaels and Day (1985) expand the notion of customer orientation with a list of relational behavioural descriptors such as: low sales pressure, attentive to needs, helpful, customer first, problem-solving, honesty and accuracy of information. Williams and Spiro (1985, p.435) add empathy for the customer to this list. Williams and Seminerio (1985) summarize seven annual studies conducted by Purchasing magazine to discover the top ten attributes of industrial sales representatives. The clear number one factor over all seven years, i.e., thoroughness and follow through with the customer, is arguably behavioural.

In conclusion, there is good evidence in the sales literature for the notion that behaviour can enhance persuasion. The evidence suggests that appropriate behaviour enhances the buyer's inference of the seller's

trustworthiness, which in turn reduces uncertainty, and thus enhances the buyer's expectation of value.

3.5.4 From The Services Marketing Literature

Parasuraman, Zeithaml and Barry have produced compelling empirical studies of various behaviours in relationships, grounded in the domain of services. In their first empirical report on the subject of service relationship quality, Parasuraman et al (1985) found that reliability, responsiveness, communication, competence, courtesy, understanding and access tend to improve the customer's perceptions of service quality. In a second report (1986), they reduce the list to four dimensions, of which three are behavioural: reliability, which is the demonstrated ability to perform the promised service dependably and accurately; responsiveness, which is a demonstrated willingness to help customers and provide prompt service; and empathy, which is caring, individualized attention that a firm provides to its customers. Some of these dimensions have received support from various other authors in the field of services marketing. For example, responsiveness is a behaviour favoured by Cravens et al (1988, p.303). Crosby et al (1990) have empirical support for three slightly different relational behaviours. They found that the service sales rep's contact intensity, mutual disclosure and cooperative intentions contributed significantly to the customer's perception of relationship quality.

3.5.5 From The Customer Service Literature

Each of the three dimensions identified in the services marketing literature has also received support in the customer service literature. For example, responsiveness is a behaviour promoted by Christianson (1989), Lovitt (1989), Kasper and Lemmink (1989), Evans (1990), and Phillips et al (1990). Regarding truthfulness and accuracy (i.e.,

reliability), Coppett (1988 p.281) states: "Perhaps no other single attribute of customer service has as great a potential to bolster or damage a company's image." Kasper and Lemmink (1989 p.201) promote availability and general attitude, which could be considered as part of the seller's empathy. Regardless of which behavioural dimension is considered to be the most important, Bender (1976) claims that the "behavioural content of customer service will become its essential component" (p.126). Thus, companies must "use the findings of the behavioural sciences to create and sustain smooth relations with customers" (p.127).

3.5.6 From The Intra-Relationships Literature

The volume of literature concerning relationships among an organization's groups (e.g. Marketing/R&D, Marketing/Production) is large and growing, yet surprisingly there are few references to effective behaviours. One exception is the work of Gupta and Wilemon (1988) concerning the Marketing/R&D interface. They have discovered four adjectives to describe a credible Marketing Manager in his/her relationships with R&D: 1) Cooperative, open and trustworthy; 2) Competent and helpful; 3) Friendly and Social; and 4) Fair and easy to work with.

3.5.7 A Dimensional Summary

In the preceding six sections a long list of various B-S relational behaviours has been compiled, which various authors have suggested might influence an buyer's choice. How can this list be simplified and reconciled? There appear to be four categories of effective relational behaviours: Attention, Collaboration, Intensity, and Reliability (Exhibit 3-B).

EXHIBIT 3-BA DIMENSIONAL ANALYSIS OF RELATIONAL BEHAVIOUR

	ATTENTION	COLLABORATION	INTENSITY	RELIABILITY
More (1984)		Flexibility	Proactiveness, Quick Response, Continuous Contact	
Peters (1989)	Empathy	Flexibility, Adaptiveness	Responsiveness, Speed	Reliability
Rosenberg, Van West (1984)	Attentiveness	Collaboration, Flexibility	Dedication	Timeliness, Dedication, Dependability
Swan, Trawick Silva (1985)		Likeability, Friendliness		Honesty, Dependability, Reliability, Fulfillment of Promises
Michaels, Day (1985)	Attentive, Discuss Needs, Customer First	Low Pressure, Helpful, Long term Satisfaction, Problem-Solving Approach,		Honesty, Accuracy of Information
Williams, Seminario (1985)				Thoroughness, Followthrough
Parasuraman Zeithaml, Berry (1985)	Access, Understand- ing/Knowing the Customer	Courtesy, Communication	Responsiveness	Reliability, Competence
Parasuraman Zeithaml, Berry (1986)	Empathy		Responsiveness	Reliability
Crosby, Evans Cowles (1990)		Cooperative Intentions, Mutual Disclosure	Contact Intensity	
Gupta, Wilemon (1988)		Cooperative, Open, Friendly and Social, Fair and Easy to Work With		Competent

Attention refers to the "caring, individualized attention the firm provides its customers" (Parasuraman et al 1986, p.15). It is captured by behavioural variables such as displayed empathy, attentiveness to specific problems and needs, willingness to listen to suggestions, accessibility (ease of contact), a willingness to place the customer needs ahead of the seller's needs, personal care, concern about customer satisfaction, and understanding.

Collaboration refers to the seller's willingness to work together to meet the customer's needs. It is captured by seller's behaviours such as collaboration, cooperation, interest in long term relations, easiness to work with (low pressure), mutual problem-solving, willingness to help, flexibility, adaptability, courtesy, communication, friendliness, and sociability.

Intensity refers to the level of effort being displayed by either party. Intense behaviour might be indicated by variables such as promptness, responsiveness, contact frequency, initiative, extra effort, commitment, dedication, desire, hunger, enthusiasm and proactiveness.

Reliability refers to a party's ability to deliver complete and accurate work according to agreements, such that a requirement for backup expertise is minimized. Reliable behaviour might be indicated by variables such as: dependability (punctuality), timeliness, dedication, honesty, accuracy, completeness, truthfulness, competency, fulfilment, thoroughness and meticulousness, followthrough, openness, and continuity.

This 4-factor behavioural typology is an extension of the Parasuraman et al (1986) empirically verified 3-behaviour typology of empathy, responsiveness and reliability. A fourth dimension, collaboration, appears to have been overlooked in their research. The different labels are more descriptive, and each dimension captures more of

the variables which have been discussed in the literature. The validity of this typology remains to be tested by this dissertation research.

3.6 SUMMARY

Chapter 3 has presented a literature review of selected properties of B-S relationships. After an analysis of three structural perspectives and five explanatory perspectives, a unified "persuasion network" perspective was offered as the perspective which most succinctly captures the essence of effective B-S relationships in a bid situation. Further, the seller's relational behaviour was identified as an effective element in the relationship. Finally, effective relational behaviours were classified into the four dimensions of Attention, Collaboration, Intensity and Reliability. Chapter 4 will integrate these dimensions of effective relational behaviour with the Relative Expectations model of buyer Value and Choice developed in Chapter 2, and provide a more detailed theoretical explanation.

CHAPTER 4

CONCEPTUAL INTEGRATION, EXPLANATION, AND HYPOTHESES

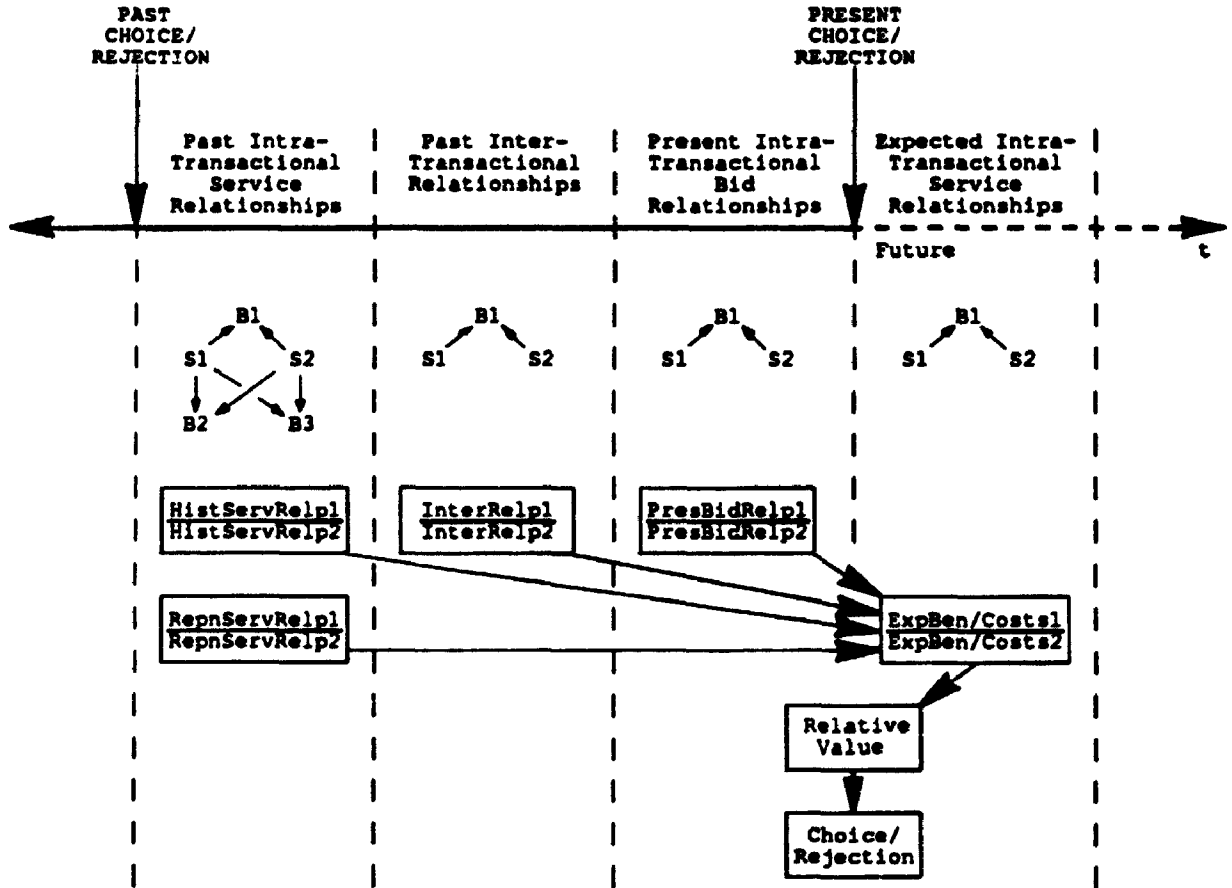
Thus far two sets of concepts have been discussed: Relative Value and Choice; and B-S Relationships. It was suggested that these two concepts can be conceptually linked, whereby B-S Relationships operating as a Persuasion Network can affect the buyer's expectation of Relative Value, hence Choice. But exactly how can these conceptual links be modelled and explained? And what testable hypotheses can be derived? The first purpose of this chapter is to fully integrate the concepts of B-S Relationships, Relative Value and Choice with an overarching conceptual model and a theoretical explanation. The second purpose is to derive a focused research model and isolate testable hypotheses.

4.1 AN INTEGRATIVE OVERARCHING CONCEPTUAL MODEL

An "integrative overarching conceptual model" is a model which attempts to synthesize many of the more important concepts of the previous two chapters. The model is anchored with a timeline, which is a reminder that a relationship must be considered in its temporal entirety, i.e., a relationship does not consist solely of today's intra-transactions, but it also consists of past intra-transactions and inter-transactions, and expectations about future intra-transactions. The model is then completed by showing how the seller's relational behaviour can influence the buyer's expectation of value. From this overarching model a more manageable subset is then extracted. This "focused" conceptual model serves as the conceptual foundation for the eventual dissertation research model.

The overarching model is presented in Exhibit 4-A. The top third of the model consists of a timeline, which illustrates: 1) past intra-transactional post-choice service relationships; 2) past inter-

EXHIBIT 4-A
AN INTEGRATIVE CONCEPTUAL MODEL



transactional relationships, e.g. problem-seeking, inquiries about future contracts, and relationship "maintenance"; 3) present intra-transactional bid relationships; and 4) expected intra-transactional Benefits and Costs, including post-choice service relationships.

The centre of the model illustrates the persuasion networks of participants: the Buyer (B1) who is conducting the bid; the buyer's eventual first choice of seller (S1), i.e., the winning supplier; the buyer's next best choice of seller (S2); and some of the sellers' other previous customers (B2 and B3). Recall that this dissertation restricts the consideration of competing sellers to the buyer's eventual first choice and the next best choice, even though there are commonly more than two competitors on the final short list. Not only does this simplify the research, but it also reflects an assumption that the final choice is made between the top two competing sellers. With hindsight, not a single respondent argued with this assumption.

The bottom third of the model is shown in the form of a latent variable model, wherein constructs (latent variables) are linked in a hypothetical causal network. It proposes that the buyer's relative perceptions of all the phases of the B-S relationships have a persuasive effect on the buyer's Relative Expectations of benefits and costs, hence the buyer's overall expectation of Relative Value, hence Choice. Notice that the past intra-transactional relationships have been divided into two camps - the buyer's own History with the sellers, and the Reputations of the sellers from third party sources. This has been done to emphasize that sellers cannot ignore their records with other customers. It is also critical to emphasize that all of the antecedents of the buyer's choice are defined in relative terms, comparing the buyer's perceptions and expectations of S1 with the perceptions and expectations of S2. As noted earlier, a buyer's expectation of value and choice are dependent on relative rather than absolute perceptions and expectations.

The notion of the quality of past relationships having an effect on future success is widely documented. For example, Crosby et al (1990 p.70) claim that a buyer can have confidence about future performance of a seller's representative "because the level of past performance has been consistently satisfactory." McDonald and Gieser (1987 p.39) also support this notion that perceptions of prior relationships influence the expectations of future relationships. Parkinson (1985 p.50) cites the importance of "quality of previous transactions", and Swan et al (1985 p.206) cites the importance of "prior experience". So do Leenders et al (1985 p.379), who claim that "satisfactory past relationships with the equipment supplier weigh heavily in the placing of future orders."

It would be possible to expand this model by adding other influencers of the buyer's evaluation criteria (review Exhibit 1-A), or by adding perceptions of the sellers' behaviours from even further in the past. However, the purpose of this overarching model is to focus on only the most relevant constructs, from which a manageable research model can be drawn. In the next section, this conceptual model is first pared, then expanded, to give an "intermediate" model.

4.2 TOWARDS A RESEARCH MODEL

Each of the five determinant constructs of Relative Value in the overarching conceptual model can be further dimensionalized into several sub-constructs. If too many of these sub-constructs remain in a model to be subjected to an empirical test, then the necessary measurement instrument (e.g. questionnaire) may become infeasibly large. The challenge, then, is to focus the overarching model by dropping only the least important construct(s). The focused intermediate model can then be fine tuned into a research model.

4.2.1 An Intermediate Model

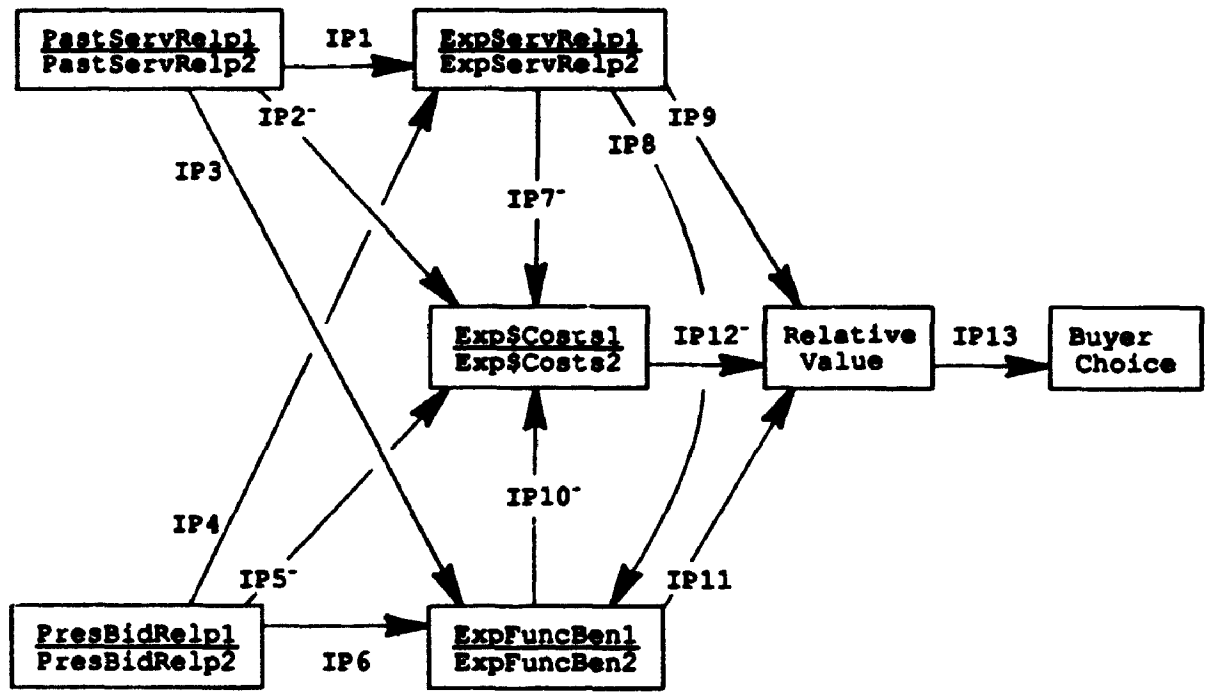
One construct that will be dropped from the intermediate model is the construct which captures the past inter-transactional relationships, because inter-transactional behaviour has not been supported in any literature to date as a key choice criterion. This does not imply that it is necessarily unimportant. A second modification will also be made. The two constructs capturing both the buyer's own history of, and the sellers' reputations for, past intra-transactional relationships, will be amalgamated into a single construct called Past intra-transactional relationships. This reflects a strong possibility that respondents may be unable to differentiate between the two.

With the previous two simplifications made, it is then possible to expand the Benefit/Cost construct into the three important dimensions identified in Chapter Two: 1) expectations of relative Service benefits; 2) expectations of the equipment's relative Functional benefits; and 3) expectations of relative \$Costs. Furthermore, recall that the key dimension of service benefits identified in Chapter 2 was that of the relational behaviours of the seller's representatives embedded within the post-choice B-S service relationship.

These modifications to the overarching model are reflected in an Intermediate Conceptual Model (Exhibit 4-B). The model has 7 constructs which are linked by 13 intermediate propositions. Note that several interdependencies have been introduced among the buyer's expectations of benefits and costs. The 13 intermediate propositions (IP's) are:

- IP1) The buyer's relative perceptions of past B-S service relationships affect the buyer's relative expectations of B-S service relationships.
- IP2) The buyer's relative perceptions of past B-S service relationships affect the buyer's relative expectations of financial costs.
- IP3) The buyer's relative perceptions of past B-S service relationships affect the buyer's relative expectations of functional benefits.

EXHIBIT 4-B
AN INTERMEDIATE CONCEPTUAL MODEL
(Derived from Exhibit 4-A)



Note: "IP" is an abbreviation for "Intermediate Proposition"

- IP4) The buyer's relative perceptions of present B-S bid relationships affect the buyer's relative expectations of B-S service relationships.
- IP5) The buyer's relative perceptions of present B-S bid relationships affect the buyer's relative expectations of financial costs.
- IP6) The buyer's relative perceptions of present B-S bid relationships affect the buyer's relative expectations of functional benefits.
- IP7) The buyer's relative expectations of B-S service relationships affect the buyer's relative expectations of financial costs.
- IP8) The buyer's relative expectations of B-S service relationships affect the buyer's relative expectations of functional benefits.
- IP9) The buyer's relative expectations of B-S service relationships affect the buyer's overall expectation of relative value.
- IP10) The buyer's relative expectations of functional benefits affect the buyer's expectations of financial costs.
- IP11) The buyer's relative expectations of functional benefits affect the buyer's overall expectation of relative value.
- IP12) The buyer's relative expectations of financial costs affect the buyer's overall expectation of relative value.
- IP13) The buyer's overall expectation of relative value principally determines the buyer's choice.

4.2.2 Explanations for Intermediate Propositions

The intermediate conceptual model (Exhibit 4-B) links the buyer's relative perceptions of B-S relationships with the buyer's relative expectations of benefits and costs. Furthermore, several interdependencies were introduced among the buyer's expectations of relative benefits and costs. In all, there were 13 intermediate propositions linking the seven constructs. In this section, theoretical explanations will be provided for each intermediate proposition.

Explanations for IP2, IP3, IP5, IP6

The explanation of these four propositions is the most complex, and therefore it will be addressed first. Recall from the presentation of the persuasion perspective in Section 3.3.2 that McGuire (1985) summarized four classes of persuasive enhancers: source, message, channel and

receiver characteristics. Within the channel class lay a group of behavioural enhancers. Following this behavioural cue, a search of several Marketing literatures then exposed a large array of behaviours which have been deemed to influence the buyer's choice. Refer to Section 3.5.

How behaviours operate as persuasion enhancers can be explained by invoking Tesser's (1978) theory of Self-Generated Attitude Change. In challenging situations, the individual consciously seeks informational clues, and processes these cues in some cognitive schema to achieve evaluative consistency, which will help the individual to achieve his/her goals. Thus, in bid situations, the buyer seeks cues from a seller's relational behaviours to reduce uncertainty, which increases the buyer's relative expectations of benefit, which then increases the buyer's overall expectation of relative value. A theoretical model of how behavioural cues are employed in the buyer's estimation of relative value is shown in Exhibit 4-C. This explanatory model has nine paths labelled E1 to E9, and each of these is now supported with evidence extracted primarily from the Marketing literature.

Path E1 posits that "expected relative benefit is affected by expected relative advantage." The role of relative advantage is clear. It has been named as the most important determinant of the purchase of new products (cf. Engel et al 1986, p.532; Holak and Lehmann 1990; Cooper and Kleinschmidt 1987).

Path E2 posits that "expected relative benefit is inversely affected by inferred relative uncertainty." The role of uncertainty in the purchase of technology-based capital equipment is equally clear. For example, Smilor (1989 p.122) attributes delayed or cancelled purchases to uncertainty stemming from incomplete understanding and/or information. As Abelson (1985, p.270) explains, "individuals deal with ill-defined decision problems by attempting to reduce their uncertainty."

EXHIBIT 4-C

AN EXPLANATION OF HOW RELATIONAL BEHAVIOUR ENHANCES THE BUYER'S ASSESSMENT OF VALUE

(explains IP2, IP3, IP5, IP6 in Exhibit 4-B)

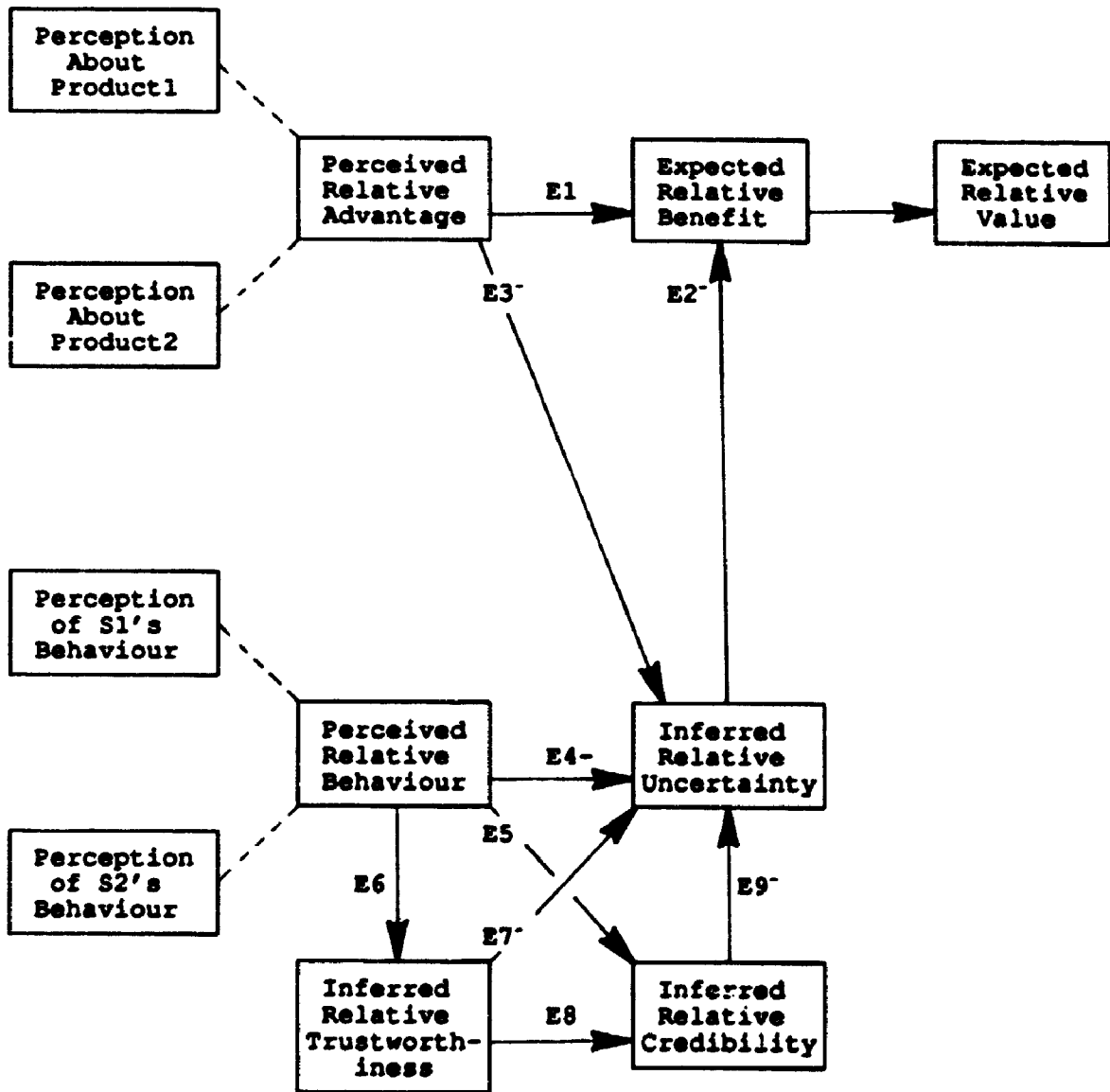
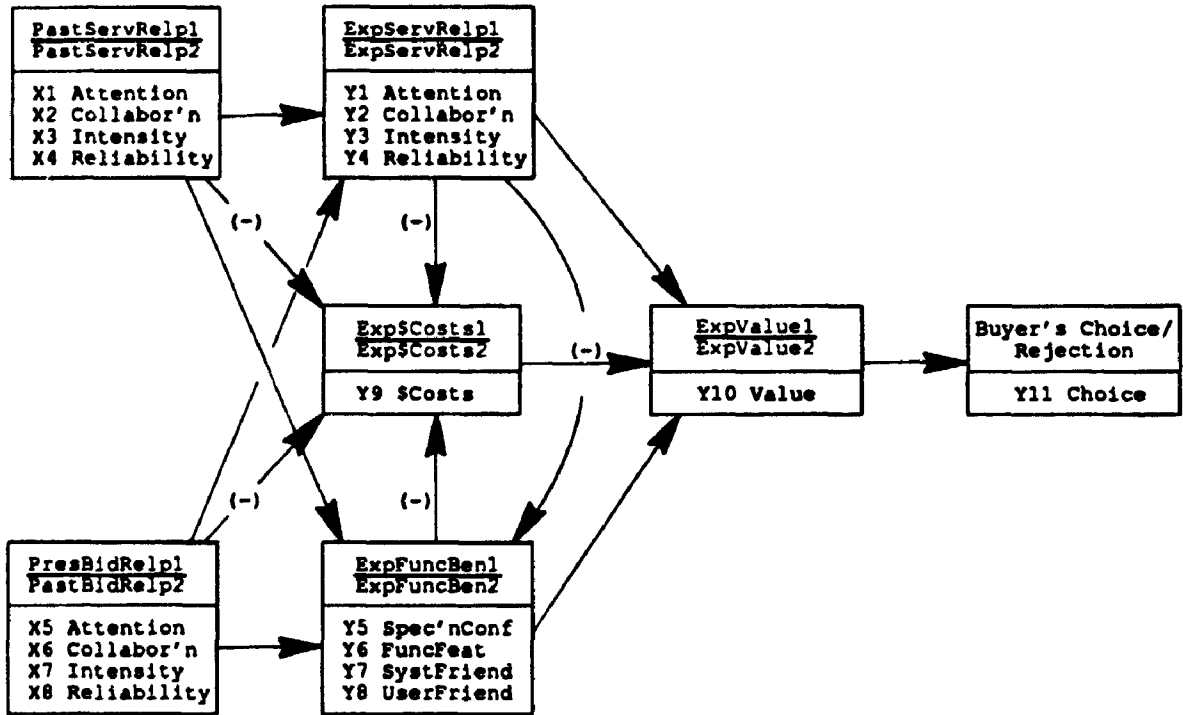


EXHIBIT 4-D

AN INITIAL RESEARCH MODEL

(dimensionalized version of Exhibit 4-B)

(Note: for specific hypotheses, see Exhibit 4-E)



comes from Crosby et al (1990), who observe that behaviour increases sales effectiveness by increasing trust: "cooperative versus competitive behaviour has been linked to perceptions of trust and satisfaction in negotiation contexts" (p.71). Swan, Trawick and Silva (1985, p.204) also provide support for the notion of behaviour increasing trust: "to gain a customer's trust, the salesperson should behave as a dependable, honest and competent person" because (p.203) "customer trust is a key factor that influences the ability of a salesperson to influence a prospect." They go on to say that trustworthiness is derived from actions such as: dependable behaviour, honest behaviour, demonstration of competence, accurate and reliable information, fulfilment of promises and commitments, evidence of customer orientation such as adaptation and availability, and likeability and friendliness.

Path E7 posits that "inferred of relative uncertainty is inversely affected by inferred relative trustworthiness." Support for E7 comes from Crosby et al (1990), who extend their discussion of the importance of trust by linking trust with the reduction of uncertainty. They say (p.70) that "the cultivation of the buyer's trust is particularly important where uncertainty and risk are inherent."

Path E8 posits that "inferred relative credibility is affected by the inferred relative trustworthiness." Support for E8 comes from Kotler and Turner (1985, p.603), in their discussion of persuasive enhancers. They note that perceived trustworthiness is a key determinant of source credibility.

Path E9 posits that "inferred relative uncertainty is inversely affected by inferred relative credibility." References which specifically address this hypothesis were not found, yet it seems reasonable that perception of credibility would reduce uncertainty in the same manner that perception of trustworthiness would reduce uncertainty. See the discussion of E7.

The series of discussions above has provided an explanation for the Intermediate Propositions IP2, IP3, IP5 and IP6 in Exhibit 4-B, i.e., the conceptual links between the seller's relational behaviours and the buyer's expectations of benefits and costs. Principally, perceptions of certain behaviours reduce the buyer's assessment of uncertainty, which increases the expectation of benefit (and reduces the expectation of costs).

Explanation for IP1 and IP4 (Exhibit 4-B)

These two propositions state that the buyer's relative expectations of relational behaviours are affected by the buyer's relative perceptions of past relational behaviours. The explanation for these propositions is uncomplicated - cognitive inference that the past behaviour of a seller's representative might be an indicator of the future behaviour of the seller's representative. This is not an unreasonable inference. For example, companies such as IBM go to great lengths to train all of their representatives to appear and behave in a relatively uniform professional manner.

Explanation for IP7, IP8, IP10 (Exhibit 4-B)

These three propositions state that there are interdependencies among the buyer's expectations of relative benefits and costs. The explanation is again cognitive inference, but in a slightly different manner than the explanation in the previous paragraph. In this case, the buyer links dissimilar beliefs. For example, expectations of higher service may lead to expectations of lower startup and/or maintenance costs, and to expectations of higher equipment reliability. And expectations of higher equipment reliability may lead to expectations of lower operating and maintenance costs. Inferences of this nature have been shown to be important in product evaluations (e.g. Huber and McCann 1982).

Explanations of IP9, IP11, IP12, IP13 (Exhibit 4-B)

These four propositions link the buyer's expectations of relative benefits and costs with the buyer's overall expectation of relative value, and link the buyer's overall expectation of relative value with choice. The explanations for these propositions have been provided in detail in the derivation of the "Relative Expectations" model in Section 2.2.8.

Having provided the theoretical explanations for the intermediate conceptual model in Exhibit 4-B, the next step is to develop the model into a more testable form. First, each of the multi-dimensional constructs in the intermediate model will be divided into unidimensional sub-constructs, which is undertaken in the following section.

4.2.3 Sub-Constructs of the Intermediate Constructs

The five principal antecedent constructs of relative value in the intermediate model (Exhibit 4-B) are multi-dimensional, in the sense that each comprises several components which may be perceived more than slightly differently by the buyer. For example, it is possible that a seller's representative may display several behaviours suggesting Intensity, yet display no behaviours which suggest Reliability. The analysis of latent variable models is most efficient when each construct is uni-dimensional. Therefore, multi-dimensional constructs should be divided into multiple "sub-constructs" as an important part of the development of a research model. One of the consequences of doing so is a large increase in the number of paths (hypotheses) linking the sub-constructs.

The sub-constructs for the Past, Present and Expected Relationships constructs will correspond to the four principal dimensions of relational behaviour identified in Section 3.5.7: Attention, Collaboration, Intensity

and Reliability. Each of these sub-constructs can be measured by some or all of their associated variables (Section 3.5.7).

The sub-constructs for Expected Functional Benefits will correspond to the four principal dimensions identified in Section 2.3.3: Conformance to Specification, Functionality and Functional Features, Systems Friendliness, and User Friendliness. Each of these sub-constructs can be measured by some or all of their associated variables (Exhibit 2-H).

The designation of sub-constructs for Expected Financial Costs proved to be difficult. Without question, this construct is multi-dimensional (Exhibit 2-I), and generation of several variables for each dimension is feasible. However, the decision was made (which in retrospect should be reversed in later research) to consider this construct as uni-dimensional, and to consider Purchase Costs, Implementation Costs and Maintenance Costs as variables rather than sub-constructs.

The construct Relative Value, in this dissertation, will be considered uni-dimensional, to be measured by a set of variables which may reflect the buyer's estimation of a degree of superiority or margin of victory. Therefore, no sub-constructs for Relative Value will be considered. With all of the sub-constructs now explicitly identified, the next step is to formulate a research model. The model is presented and discussed in the following section.

4.3 AN INITIAL RESEARCH MODEL AND HYPOTHESES

A research model must explicitly identify all of the constructs (and in this case, sub-constructs) to be measured, and the exact nature of their proposed causal relationships, i.e., hypotheses. Thus, the literature reviews, conceptual integration and identification of key constructs and sub-constructs have successfully laid the foundation for the proposal of an initial research model and hypotheses. The term

"initial" is used because the research model will undergo minor modifications as a result of a pre-test.

4.3.1 An Initial Research Model

The initial research model is illustrated in Exhibit 4-D, which is simply a dimensionalized version of the intermediate model in Exhibit 4-B. It shows the three original uni-dimensional constructs Y9, Y10 and Y11, and the 16 "sub-constructs" X1-X8 and Y1-Y8, which will hereinafter all be called "constructs". The general nature of their hypothetical causal relationships is indicated by the paths, consistent with the intermediate propositions among the constructs in the intermediate model (Exhibit 4-B). Detailed hypotheses will be discussed in the following section. The full construct names (with abbreviations shown in brackets), and construct descriptions, are:

Exogenous Constructs:

X1 PastServRelp Attention (abbr. PastServAtten)

The buyer's relative perception of the sellers' past service relationship Attention.

X2 PastServRelp Collaboration (abbr. PastServCollab)

The buyer's relative perception of the sellers' past service relationship Collaboration.

X3 PastServRelp Intensity (abbr. PastServIntens)

The buyer's relative perception of the sellers' past service relationship Intensity.

X4 PastServRelp Reliability (abbr. PastServReliab)

The buyer's relative perception of the sellers' past service relationship Reliability.

X5 PresBidRelp Attention (abbr. PresBidAtten)

The buyer's relative perception of the sellers' present bid relationship Attention.

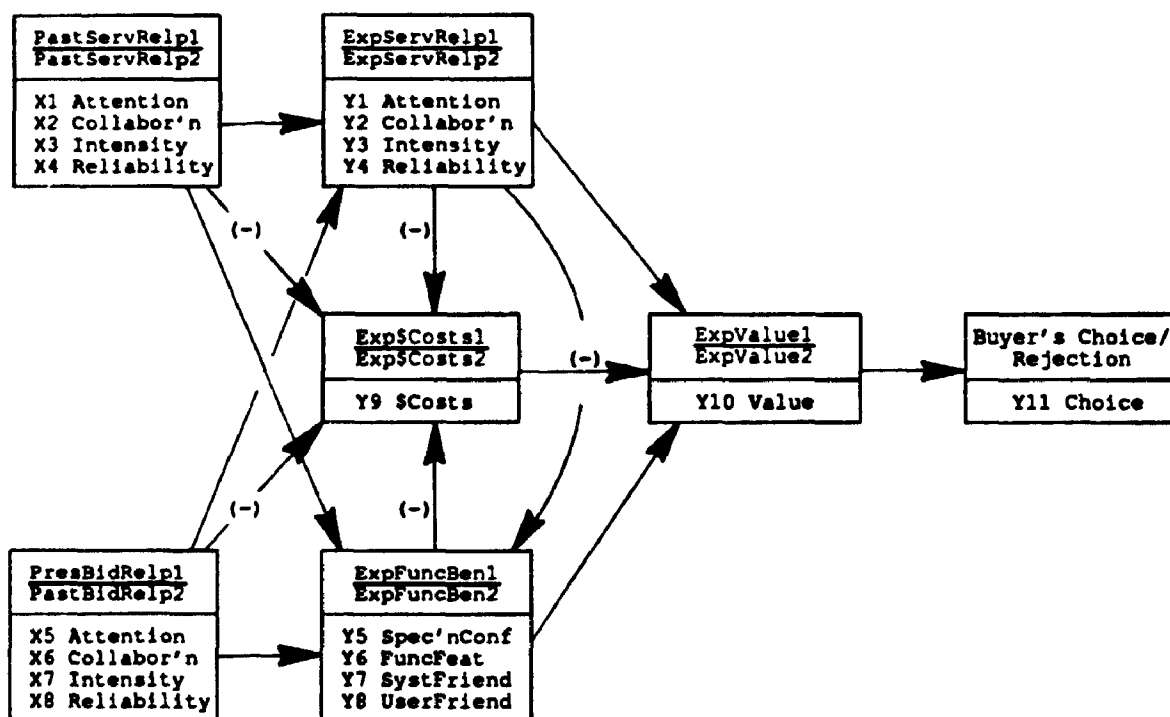
X6 PresBidRelp Collaboration (abbr. PresBidCollab)

The buyer's relative perception of the sellers' present bid relationship Collaboration.

EXHIBIT 4-DAN INITIAL RESEARCH MODEL

(dimensionalized version of Exhibit 4-B)

(Note: for specific hypotheses, see Exhibit 4-E)



X7 PresBidRelp Intensity (abbr. PresBidIntens)

The buyer's relative perception of the sellers' present bid relationship Intensity.

X8 PresBidRelp Reliability (abbr. PresBidReliab)

The buyer's relative perception of the sellers' present bid relationship Reliability.

Endogenous Constructs:

Y1 ExpServRelp Attention (abbr. ExpServAtten)

The buyer's relative expectation of the sellers' service relationship Attention.

Y2 ExpServRelp Collaboration (abbr. ExpServCollab)

The buyer's relative expectation of the sellers' service relationship Collaboration.

Y3 ExpServRelp Intensity (abbr. ExpServIntens)

The buyer's relative expectation of the sellers' service relationship Intensity.

Y4 ExpServRelp Reliability (abbr. ExpServReliab)

The buyer's relative expectation of the sellers' service relationship Reliability.

Y5 ExpFuncBen SpecConf (abbr. ExpSpecConf)

The buyer's relative expectation of the sellers' equipment's Conformance to Specification.

Y6 ExpFuncBen FuncFeat (abbr. ExpFuncFeat)

The buyer's relative expectation of the sellers' equipment's Functionality and Functional Features.

Y7 ExpFuncBen SystFriend (abbr. ExpSystFriend)

The buyer's relative expectation of the sellers' equipment's Systems Friendliness.

Y8 ExpFuncBen UserFriend (abbr. ExpUserFriend)

The buyer's relative expectation of the sellers' equipment's User Friendliness.

Y9 Exp\$Costs

The buyer's relative expectation of the sellers' equipment's Financial Costs.

Y10 Relative Value

The buyer's overall expectation of Relative Value.

Y11 Choice

The buyer's Choice.

4.3.2 Initial Research Hypotheses

A research model also identifies all of the specific hypotheses to be tested, which are the proposed causal relationships among the constructs. The general relationships in Exhibit 4-D can be further disaggregated into 82 individual hypotheses. However, these are too numerous to illustrate, so a matrix (Exhibit 4-E) has been created which itemizes each hypothesis. In the matrix, the independent constructs are listed across the top, and the dependent constructs are listed down the side.

Two examples will assist in the interpretation of the hypotheses represented in the matrix: 1) Hypothesis H14 says that "X2 affects Y7", i.e., "The buyer's relative perception of the sellers' past service relationship Collaboration (PastServCollab) affects the buyer's relative expectation of the sellers' equipment's Systems Friendliness (ExpSystFriend)"; 2) Hypothesis H68 says that "Y4 inversely affects Y9", i.e., "The buyer's relative expectation of the sellers' service relationship Reliability (ExpServReliab) inversely affects the buyer's relative expectation of the sellers' equipment's Financial Costs (Exp\$Costs)."

4.3.3 Appropriate Level of Analysis

The analysis of Marketing phenomena can be made at an individual, group, or organizational level of analysis (Bristor 1990). It is appropriate to analyze the initial research model (Exhibit 4-D) wholly at the group level. Thus the buyer's choice refers to the buyer's group choice, and the determinants of choice refer to the group's composite expectation of Value, Expectations and Perceptions. This, arguably, reflects the reality of an organization's purchase of technology-based capital equipment. Buying teams typically have multiple members who

participate in a group decision-making process. This group process generally serves to pool multiple sources of expertise, and to effectively neutralize any aberrant individual estimations, although there may be exceptions. A formidable challenge stemming from the decision to pursue a group level analysis is how to select the key informant(s) from the buying team. This is addressed in Section 5.1.3.

4.4 SUMMARY

Chapter Four presented an overarching integrative conceptual model which joined the conceptual development of Chapter Two with that of Chapter Three. It effectively linked the competing sellers' Past and Present Intra- and Inter-Relationships with the buyer's Expectations of Benefits and Costs, which in turn were linked with the buyer's expectation of Value and Choice. This model was then slightly pared to help develop a more manageable model for this dissertation.

A Research Model with nineteen constructs was then created by disaggregating each of the conceptual model's multi-dimensional constructs into its sub-constructs, which had been derived earlier in Chapters Two and Three. A set of eighty-two hypotheses describing the relationships among these sub-constructs was then presented in matrix format. Chapter 5 will present a research methodology which is both appropriate and feasible for testing the research model.

CHAPTER 5

EMPIRICAL METHODOLOGY

This chapter describes in detail the empirical methodology employed to test the Research Model (review Exhibits 4-D and 4-E). It begins with a research overview, traces the development of the measurement instrument (i.e., a survey questionnaire), discusses revisions to the research model, and concludes with a description of the final survey procedures.

5.1 METHODOLOGICAL OVERVIEW

The planning of a research methodology which is appropriate for a particular research model is not a linear process. The research context, the data collection method, and the analytical tool are all interdependent, and one does not necessarily determine the other. However, some combinations are more complementary than others. Section 5.1 outlines the principal points of the methodology selected for this dissertation.

5.1.1 The Research Context

As noted previously in Section 1.1.2, it is reasonable to select a research context which enhances the likelihood of discovering the hypothesized effects. Hence, some contextual factors which might introduce variability in the relationships between the constructs, which in turn might decrease or eliminate the possibility of discovering statistically significant relationships between the constructs, were controlled. In this research, three such factors were considered in the context specification.

First, the product type was constrained to that of technology-based capital equipment. In particular, the product was constrained to private branch exchange (PBX) telecommunications equipment offered by a single

supplier (Bell Canada). Product type was constrained for two reasons: 1) the importance of purchase criteria has been found to vary by type (Lehmann and O'Shaughnessy 1974); and 2) McQuiston (1989) found that the degree of buying centre members' participation and influence varied with product novelty, complexity and importance. The product type was specified as technology-based capital equipment for two reasons: 1) the size and importance of the purchase might improve the accuracy of the respondents' information (Nisbett and Wilson 1977); and 2) the complexity of the purchase might necessitate highly effective B-S relationships because of the degree of interaction required for informing, persuading, training and service.

Second, because of the comparative nature of the research model, the ideal context would allow a comparative measurement of the behaviours of competing sellers. Therefore, a competitive bid situation was specified, wherein the buyer might best be able to make explicit comparisons between the offerings of competing sellers. (No attempt was made to separate formal bid situations from informal bid situations).

Finally, the geographical context was limited to a single region (i.e., Ontario), because some research (e.g. Graham et al 1988) has shown that regional culture influences the effect of bargaining behaviours.

The prescription of such a narrow context, while increasing the likelihood of attaining statistical significance for the research hypotheses, will limit the generalizability of any significant findings. Thus, significant findings will require replication in other contexts and across contexts before they can be considered conclusive.

5.1.2 Questionnaire-Based Survey

Data collection requires three decisions. The first decision concerns the general method, be it single case study, multiple case study,

lab experiment, field experiment, and/or survey. The second decision concerns the type of measurement instrument, be it personal interview, photographs, tapes, journals, interviewer-administered questionnaires, self-administered questionnaires, electromechanical instrumentation, and so on. The third decision concerns the time frame, be it cross-sectional (single-point) vs. longitudinal.

This research used a data collection method which has been successfully applied to numerous studies in Marketing, i.e., the cross-sectional survey, using a respondent-administered mail questionnaire, preceded by a questionnaire pre-test. The choice of this method was largely influenced by the nature of the hypothetical network of the Research Model (Exhibit 4-D). Such a causal network, where multiple interdependent constructs are measured by multi-item scales, lends itself to causal model analysis using such tools as PLS or LISREL. These tools in turn require multiple observations, with interval or ratio data. These data requirements in turn suggest the application of the survey questionnaire, which is appropriate for gathering large amounts of interval-scaled field data.

The measurement instrument ultimately consisted of a 130-item mail-out self-administered questionnaire. There were in fact two versions produced, one for those buyers who chose the key seller's product, and one for those who rejected the key seller's product in favour of a competitor's. Two versions were necessary because the wording for the questions was slightly different. For example, in the questionnaire sent to the buyers where Bell won, the questions typically began: "In comparison with the losing supplier, Bell's system was ... ". In contrast, in the questionnaire to be sent to the buyers where Bell lost, a typical question began: "In comparison with the winner supplier, Bell's system was".

There are limitations associated with the choice of a survey-based technique for this research. A self-reported retrospective study might be subject to inaccurate reports from several causes, including faded memory of the respondents, a tendency by the respondents to provide answers which are consistent with their past choices, or which are consistent with their current levels of satisfaction or dissatisfaction, or which are consistent with the respondents' perceptions of "right" answers, or which are partly fabricated to compensate for a lack of knowledge. Each of these criticisms is valid, and much of the balance of this chapter describes the efforts to minimize these potential effects.

The choice of the research context, as described in the previous section, makes a large contribution to the minimization of such inaccuracies. As Nisbett and Wilson (1977, p.251) note, inaccuracies are reduced by the "salience of the events at the time they were encountered." Thus, the context of a recent major capital purchase tends to enhance the salience of events. Nisbett and Wilson also note (p.251) that inaccuracies are reduced by "the strength of the network of verbal associations that spontaneously call the events to mind." Therefore, considerable effort was paid to instructions and cues in the questionnaire to enhance the accuracy of respondents' answers. These are described fully in the sections to come.

5.1.3 Use of Key Respondents

Organizational buying centres typically have multiple members, and indeed may have 10 or more as noted in Section 2.1.4. Further, also noted in Section 2.1.4, the influence of the individuals in a buying centre varies unpredictably by technical function, informal role, and level of authority. This presented a significant challenge to this research project: i.e., to determine which individual(s) should be selected from each buying centre to answer the questionnaire on behalf of the

organization. There was a range of alternatives, varying from the selection of a single key respondent, to the selection of a small subset, to a census of the entire group.

A single key informant was selected, even though the use of key informants to report on group or organizational phenomena has received some criticism. For example, Phillips (1981) analyzed key informant data from 506 wholesale-distribution companies, and concluded (p.408) that "informant reports on organizational characteristics often fail to serve as highly valid indicators of the concepts they intend to represent." Phillips suggested two reasons for this failure. First (p.409), "asking key informants to make complex social judgments about organizational characteristics may place unrealistic demands on them as respondents, thereby increasing random measurement error." And second (p.410), "distortions in key informant reports may be attributable to systematic sources of error such as bias or ignorance."

However, John and Reve (1982) found significantly different results. Using a LISREL analysis of key informant data from 99 wholesaler-retailer dyads, they concluded (p.522) that "key informants from different firms within channel dyads provided reliable and valid data about the structural form of the relationship ..." The structural variables under examination included Interaction, which is similar enough to relational behaviour to warrant optimism about the use of key informants. John and Reve attributed their positive results to two factors, the first being careful development of valid measurement scales, and the second being careful selection of the key informant.

John and Reve chose their key informants to conform to Campbell's (1955) two recommendations that informants: 1) occupy roles that make them knowledgeable about the issues being researched; and 2) be able and willing to communicate with the researcher. Hence, they chose the top decision makers within each retailing and wholesaling establishment. In my

opinion, John and Reve overcame Phillips' negative results simply by seeking the most qualified individuals, and by asking them for information about which they were knowledgeable. The same principles were applied in this research project.

Even when such principles were extended to this research, however, there was still a choice about which key informant in the buying centre should be selected. The Decider was certainly an option, in keeping with John and Reve's conclusion. The Evaluator was another option, because the Evaluator might be the most knowledgeable about all of the various decision factors. The most powerful Influencer might yet be a third option, the "Most Involved" a fourth. The specification of the key informant turned into a two-stage process. In the first stage, the "key contact" identified by the seller was contacted by telephone, and was asked to identify the person most knowledgeable about the final purchase decision. In almost every case, the key contact was either the Decider or a principal Influencer, so the key contact was usually retained as the respondent. In some cases the key contact had been reassigned within the buying organization, or had transferred to another, but was still willing to participate. In other cases the key contact recommended another individual, who was then contacted. Finally, in a very few cases, the key contact simply could not be traced, and in these cases the buying site was dropped from the study.

5.1.4 "Satisfaction" Introduced to Diminish Halo Effect

As mentioned in Section 5.1.2, there is a possibility that respondents' answers might be biased by their actual choice of supplier. Keeney and Lilien (1987, p.187) have called this the "halo effect", whereby the chosen product may be inappropriately rated favourably on all dimensions. Similarly, if the seller's product was rejected, the buyer might tend to evaluate the seller's product unfavourably on all dimensions.

There is also the possibility of respondents providing inaccurate responses depending on their level of current satisfaction with the seller's performance. This possibility arises from a phenomenon known as cognitive dissonance, whereby, among other effects, dissatisfied customers may tend to adjust their perceptions of previous evaluations to conform with current evaluations.

Both of these types of inaccurate responses are versions of what Hogarth (1987) calls "hindsight bias". According to Hogarth (p.144), "The knowledge that an event has occurred seems to restructure memory. Our memory of the past is not a memory of the uncertainties of the past, rather it is a reconstruction of past events in terms of what actually occurred." Unfortunately, he does not provide tested advice for reducing such bias by specific research procedures.

However, reducing potential hindsight bias was an important part of this research. Thus, this study was introduced as a Customer Satisfaction audit. Besides serving as an incentive for the respondent to complete the questionnaire, this tactic was intended to influence the respondent to provide more honest answers, i.e., to give praise where praise was due, and criticism where criticism was due. And by measuring Satisfaction, respondents' answers could then be checked for statistical differences depending on level of satisfaction.

5.1.5 The Analysis Program: Partial Least Squares (PLS)

The Research Model can be classified as a "latent variable model", wherein constructs ("latent variables") are linked in a theoretical network. Each construct represents a complex phenomenon, and thus cannot be measured directly by a single item. Instead, each construct is measured or incorporated by multiple items, in this case a multiple-item scale of questions in a questionnaire.

The analysis of such a latent variable model could be done in an elementary, but piecemeal, fashion using well-established "first generation" (Fornell 1984) multivariate tools as factor analysis, path analysis, or discriminant analysis. However, several "second generation" (Fornell 1984) tools have recently been created which can analyze a latent variable model in its entirety, to produce item loadings on the constructs, path coefficients, variance explained, and error. These tools permit flexible interplay between the theoretical latent constructs or variables (LVs) and the empirical manifest variables (MVs).

Two second generation tools are eminently suited for the analysis of the Research Model: 1) Partial Least Squares (PLS), developed and updated by Wold (e.g. 1982); and 2) LISREL, developed and updated by Jöreskog and Sörbom (e.g. 1981). However, as Lohmoller (1989, p.216) demonstrates, there are important differences in the results of PLS and LISREL analysis applied to the same database (e.g., up to 20% or more in the estimation of item loadings and path coefficients). These differences are large enough to potentially affect conclusions about managerial relevance and statistical significance. The differences occur because each tool employs a different algorithm, each with a focus on a different objective function. Thus, the choice of PLS vs. LISREL needed to be consciously considered. Two arguments favoured the use of PLS.

First, the data requirements are much less rigorous for PLS than for LISREL. LISREL requires complete multivariate normal intervally-scaled data, and arguably a minimum sample size of several hundred (Fornell 1983; Fornell and Bookstein 1982). This is because LISREL employs Maximum Likelihood (ML) estimation. In contrast, because PLS employs Ordinary Least Squares (OLS) logic, PLS makes no demands for data distributions, and its results are reliable for much smaller sample sizes. In this research project, many scales were largely original, with unknown data distributions, and the useable sample size for the Research Model was

expected to be less than 200. Therefore, the application of PLS seemed more appropriate.

Second, Lohmoller (1989, p.220) demonstrates that PLS is a better tool when the objective of the analysis is to predict the dependent construct. This is because PLS' programmed objective is to minimize residual variance, hence maximize explained variance: "PLS accomplishes the estimation (of residual variance) via an iterative procedure in which each step involves a minimization of residual variance with respect to a subset of the parameters, given a fixed-point constraint of the other parameters" (Fornell, Lorange and Roos 1990, p.1250). In contrast, LISREL's programmed objective is "to reproduce the observed-variable covariance matrix as closely as possible and to determine the goodness-of-fit of the model with the data" (Fornell 1983, p.443). Hence, LISREL might best be applied to the refinement of advanced theory and measurement scales. The objective in this research was to develop new theory and maximize variance explained in the buyer's Choice. Again, PLS seemed to be the better choice. While PLS has yet to be established as a routine analytical tool in Marketing research, there have been several successful prior applications to serve as precedents (e.g. Barclay 1991; Fornell and Robinson 1983; and Zinkhan, Joachimsthaler and Kinnear 1987).

5.1.6 Estimated Sample Size Requirements

One advantage of PLS is its ability to derive parameter estimates from "small" sample sizes. But how small is "small"? There have been several PLS analyses reported for small sample sizes: e.g. 1) Bristor (1987) employed a sample of 50 to analyze a latent variable model with 6 LVs and 31 MVs; 2) Meissner and Uhle-Fassing (1982) employed a sample of 13 to analyze a model with 5 LVs and 21 MVs; and 3) Wold (1980) employed a sample of only 10 to analyze a model with 2 LVs and 27 MVs. However, the mere fact that an analysis can be mathematically completed does not guarantee that the answers are in fact accurate.

There do not appear to be any firm guidelines, but there are two series of discussions which may help. In the first series, some authors have proposed guidelines for an a priori estimate of minimum acceptable sample size. For example, Barclay (1986) suggests a minimum number of cases equal to 10 times the most complex regression in the PLS model. This regression can either be the number of formative indicators for an individual construct, or the number of predictor constructs for a dependent construct. In the Research Model, the most difficult regression is the 12 predictor constructs for Expected Financial Costs. Hence, the minimum number of observations required for the analysis of the Research Model would be $n=120$. Some researchers argue for less. For example, Hui and Wold (1982) suggest a 5:1 ratio for PLS modelling, and Tabachnik and Fidell (1989 p.603) suggest a 5:1 ratio in factor analysis.

However, the second series of discussions holds that the only valid assessment of sample size sufficiency may be a post hoc inspection of the results of the analysis. For example, Bristor (1987) suggests that if the PLS analysis does not converge within 500 iterations, then one problem might be insufficient sample size. Bristor also suggests that stable and significant jackknifed estimates for the path coefficient t 's (see Fenwick 1979; Fornell and Barclay 1983) might indicate a sufficient sample size.

In summary, for the latent variable model in this research, a priori rules of thumb suggested a minimum required sample size of about 120. But this in itself would not guarantee sufficiency, because a post hoc examination of the results may still indicate unstable parameters. Furthermore, given typical response rates of 30-40% in industrial surveys, a minimum mailout of $n=300$ seemed to be necessary. The context defined in Section 5.1.1, and the minimum mailout size of about 300, had direct implications for the selection of a key cooperative seller. The methodology for recruiting an appropriate seller is described in the next section.

5.1.7 Recruiting a Key Seller

It would be very difficult to conduct a survey of buyers of a particular type of technology-based capital equipment without any cooperation from the selling side. Therefore, a single key seller was enlisted to supply a bid list for a particular product. There were three reasons for this. First, as explained earlier, by focusing on a single product from a single seller, many factors could be held constant which might otherwise decrease the probability of discovering statistically significant path coefficients. Furthermore, by gaining the total commitment of a single seller, it was anticipated that sufficient pressure could be brought to bear on the seller's customers and near-customers that non-response could be minimized. Both the seller and its customers, of course, had to be first convinced of the importance of this research. Finally, by gaining the total commitment of a key seller, it was hoped that sufficient financial support to cover the costs of a thorough and meticulous research program could be gained.

Thus, there were several important characteristics of the key seller:

- 1) the seller should be actively selling an advanced technology product, in the price range greater than \$100,000 (e.g. CAD/CAM systems, robotics, office work-stations, flight simulators, computer systems, private branch exchanges), which involved substantial interorganizational interaction;
- 2) the product must have been frequently, if not usually, sold via a competitive bid process;
- 3) the seller must have submitted about 300 bids in a North American region in the past two years, with a roughly equal proportion of wins and losses;

- 4) the seller had perhaps achieved unequal sales success among its sales teams, which might enhance the possibility of discovering variance in relational selling behaviour.

Prior to approaching potential key sellers, however, two types of potential benefits from participation were identified in order to attract a seller's cooperation. The first type of benefit would accrue directly from the Win/Loss Analysis that is the foundation of the research model. In other words, the seller would learn in detail which factors contribute to being chosen vs. rejected in every case. Furthermore, if the seller's relational behaviours were indeed shown to affect the buyer's expectation of value, then the seller would learn precisely which behaviours are most critical to being chosen. The second type of benefit would accrue from the fact that Customer Satisfaction was to be measured in the questionnaire to help validate the study and provide an incentive for the buyers to complete the questionnaire. Thus, the seller would receive a brief Customer Satisfaction Audit, which would indicate the factors most important to the customer's overall assessment of satisfaction.

Having developed these persuasive arguments, the first potential candidate was identified and approached. This candidate was Northern Telecom Canada Ltd., a large multinational telecommunications company based in Mississauga, Ontario. This company had an established record of cooperation with university studies, as well as a stated policy of cooperation. Furthermore, the company's product line of Private Branch Exchanges (PBX), selling at an average price of about \$200,000, satisfied the requirement of a type of technology-based capital equipment which represented an important purchase for the customer. Finally, it was anticipated that the company had participated in a sufficient number of competitive PBX bids within the Ontario region to satisfy the sample size requirement.

The initial meeting with a Northern Telecom (NT) representative took place in Toronto on February 18, 1991. At this meeting, the NT representative disclosed that Bell Canada actually served as the distributor for NT's PBX equipment; thus, Bell Canada would be the most appropriate key seller. At a subsequent meeting on March 11, 1991, a Proposal for Joint Research (see Appendix A) was submitted to the Bell Canada representative. Following brief negotiations concerning Bell's obligations, potential benefits, and conditions of confidentiality, Bell Canada agreed to support the project to the fullest possible extent. Bell would provide full access to their PBX bid lists from the previous two years for the Ontario region, would print the pre-test and final questionnaires, would provide in-house pre-test respondents, would provide personalized introductory memos for the final test, would provide office space and free telephone facilities, and would reimburse any incidental out-of-pocket expenses.

The single point of caution concerned the size of the bid list for the Ontario region in the previous two years. The number of bids for PBX and related equipment amounted to just over 200 sites, which implied that a response rate of over 60% would be required to achieve the necessary 120 responses for a PLS analysis. Several options were considered: 1) a highly intensive promotional campaign to boost response rates; 2) broadening the geographical domain into the United States or Quebec; and 3) including bid sites over two years old. The first option was chosen, with the latter two options remaining as fallback possibilities. Broadening the geographical base would introduce cultural effects, while going further into the past might prove too difficult for respondents.

In parallel with the development of the research partnership, an initial draft of the questionnaire was being prepared. In the following section, an account of this procedure is presented.

5.2 INITIAL DEVELOPMENT OF THE QUESTIONNAIRE

When developing a questionnaire, it is good practice to borrow scales with demonstrated validity from previous empirical studies. It was not possible to do this for this study for two principal reasons. First, each construct in this study required relative measures, comparing the winner with the next best choice. In spite of an abundance of studies regarding decision-making in the business-to-business context, no scales with relative measures for any of the constructs were discovered. Second, even absolute scales for many of the constructs, especially Value and (the behavioural dimensions of) B-S Relationships, were not discovered. Therefore, the questionnaire used for the final data collection could not borrow existing scales from previous studies. Thus, the development of the questionnaire required several stages in an attempt to maximize the ultimate effectiveness of the instrument. Even prior to a pre-test, the questionnaire was subjected to a cycle of revisions, as described next.

5.2.1 Initial Approach to Questionnaire Development

The initial draft of the questionnaire (Appendix B) contained 132 items, most of which were intended to measure the constructs in Exhibit 4-D, plus others to measure Satisfaction, Documentation, respondent demographics, and qualitative critique (Exhibit 5-A). The derivation of these items is given following an explanation of more general issues regarding overall format.

In the most general terms, the intent behind the development of the questionnaire was to give the potential respondent the highest possible impression of a serious and meticulous study (see Dillman 1978). This was in turn expected to increase both response rate and seriousness devoted to the answering of individual questions. Thus, the construction of the questionnaire began with an 8½"x11" format, an attractive font, and a cover showing the logos of all participating organizations.

EXHIBIT 5-ACONSTRUCT MEASUREMENT (INITIAL DRAFT)

Construct (Exhibit 4-D)	Questionnaire Item (Appendix B)
X1 PastServAtten	15, 17, 11, 14, 1
X2 Collab	9, 20, 2, 6, 3
X3 Intens	18, 19, 8, 4, 5
X4 Reliab	13, 16, 12, 10, 7
X5 PresBidAtten	23, 26, 36, 24, 29
X6 Collab	32, 31, 22, 30, 25
X7 Intens	37, 41, 38, 35, 40
X8 Reliab	39, 27, 28, 33, 34
Y1 ExpServAtten	82, 88, 74, 72, 77
Y2 Collab	71, 73, 75, 84, 76
Y3 Intens	86, 70, 89, 83, 87
Y4 Reliab	78, 81, 79, 80, 85
Y5 ExpSpecConf	67, 58, 62, 64
Y6 FuncFeat	52, 63, 56, 55
Y7 SystFriend	60, 59, 57, 68, 69, 53
Y8 UserFriend	61, 66, 54, 65
Y9 ExpSCosts	90, 91, 92, 93, 94, 95
Y10 Value	99, 100, 101, 102, 103, 104, 105, 106, 107
Other	
Bid Documentation	42, 43, 44, 45, 46, 47, 48, 49, 50, 51
Financial Return	96, 97, 98
Satisfaction @ Install'n	108, 109, 110, 111, 112, 113, 114
Satisfaction @ Present	115, 116, 117, 118, 119, 120, 121, 122
Satisfaction Overall	123, 124, 125, 126, 127
Source for Reputation	21
Company Size	128
Buying Centre Size	129
Bell's Selling - Good	130
Bell's Selling - Bad	131
Document'n Improvements	132

Other decisions were taken to enhance the willingness and ability of the respondents to take part. For example, the scope of the questionnaire was restricted to the comparison of the winning supplier versus the next best choice. While more than two competitors are often involved in a competitive bid situation, the questionnaire might be viewed as simpler to complete if only two suppliers were to be rated. Also, the overall length of the questionnaire was kept to a length that would require no more than forty-five minutes to complete. This time constraint was based on an estimate of the time that the target respondents might be willing to sacrifice.

The next decision was in response to Nisbett and Wilson's (1977) advice to increase accuracy of response with sufficient instructional manipulation to make the topic salient in the mind of the respondent. Thus, two introductory pages were devoted to an explanation of the study and instructions, and distinct headings and brief paragraphs were used to introduce each new section within the questionnaire.

Next, attempts were made to combat the "halo effect" mentioned earlier in Section 5.1.4. In order to encourage answers as honest as possible, unaffected by the respondent's actual purchase decision or state of satisfaction, two tactics were used. First, the study's title introduced the element of satisfaction, which might suggest the sponsors' receptiveness for criticism. Second, the respondents were then encouraged to reflect both the "good and bad" with their answers, giving "praise where praise is due, and criticism where criticism is due." These were intended to help the respondent recall and communicate both the positive and negative experiences associated with the purchase process.

Similarly, the sections of the questionnaire were arranged from past to present to help prevent the possibility of a halo developing during the answering of the questionnaire itself. For example, if the questions relating to current satisfaction were asked first, there might be a

tendency to answer all answers thereafter in a manner consistent with the satisfaction responses. However, if the questions pertaining to the present were placed at the end, the respondent would be more likely to make the latter answers consistent with his/her current reality than with previous answers in the questionnaire.

Several tactics were employed to prevent any intentional or unintentional cheating. First, the questions within each of four clusters of constructs (X1-X4, X5-X8, Y1-Y4, Y5-Y8) were randomly scrambled to prevent patterned responses. For example, the items measuring Attention, Collaboration, Intensity and Reliability were intermingled. Second, the scrambling was done differently for X1-X4, X5-X8 and Y1-Y4, to prevent easy backchecking among the relationships questions. Finally, a large proportion of items, about one-third, was reverse-ordered to prevent automatic response.

After the more general format issues come the more specific item format issues. All but 7 of the items were measured by Likert-type scales anchored by "Strongly Disagree" and "Strongly Agree." Of these, all were 7-point scales except the 5-point scales measuring documentation quality and satisfaction. Seven-point scales were chosen for the former because this is widely accepted as a comfortable yet informative standard in consideration of the respondent's limited information processing capacity (Miller 1956). Less detailed information was deemed sufficient for the latter because they were not explicitly part of the Research Model. An interesting feature of each item was the direct comparison that the respondent could draw between the winning and losing suppliers. It has been more common in marketing research to collect information on two suppliers with independent scales, and then to draw comparisons. However, in a comparative study, it was considered more effective to ask about direct comparisons rather than to ask about two independent assessments.

5.2.2 Initial Derivation of Questionnaire Items

The second topic in section 5.2 concerns the derivation of the content of the items themselves. The five items each for Attention, Collaboration, Intensity and Reliability (for constructs X1-X4, X5-X8 and Y1-Y4) were drawn directly from the dimensional analysis of effective relational behaviour presented in Exhibit 3-B, with just two additions. The concept of "extra effort" was added to the measurement of Intensity, and the concept of "complete" information was added to Reliability to complement "accurate" information. The measurement scale for each behavioural construct was arbitrarily limited to five items - it seemed fair to measure each behavioural dimension with an equal number of items, yet more than five might introduce respondent fatigue, and fewer than five might result in poor measurement reliability.

The four items for Technical Conformance, four items for Functionality, six items for Systems Friendliness, and four items for User Friendliness (constructs Y5-Y8) are drawn directly from the dimensional analysis presented in Chapter 2 (review Exhibit 2-H), with only minor modifications. The idea of conformance to specifications was expanded to differentiate between schedule, operational, safety and regulatory requirements. The concept of aesthetics was not included in the User Friendliness construct because it did not seem relevant in the particular context of telecommunications systems. Ideally, each construct should have had more than four items at the initial stage of development; however, the literature search failed to uncover other seemingly appropriate variables.

The six-item \$Costs construct (Y9) was intended to capture the base delivery price for the system, plus all other initial costs associated with shutdown, renovations, training and startup. In reality, pricing and initial costs vary widely from contract to contract, and what constitutes a base price in one instance may be quite different in another. In any case, it would be the respondent's perception of base price that mattered,

thus the wording was left sufficiently relaxed to accommodate a range of interpretations. Throughout the development, pre-test and final test of the questionnaire, there was never a single inquiry about the meaning of the base price question. The initial endpoints of Q90's ordinal scale, i.e., 15% Less Expensive and 15% More Expensive, were judgements based on personal experience and conversations with Bell personnel about norms in the industry. These were later revised.

The measurement of Relative Value (construct Y10) was expected to be one of the principal contributions of this dissertation, thus the development of this scale required considerable attention. Recall the definition presented near the conclusion of Chapter 2, that Relative Value is the customer's expectation of the degree of the winning product's superiority versus the next best choice. In other words, relative value represents the margin of victory in the mind of the customer, having considered the whole range of evaluation criteria. The challenge, then, was to develop a series of items that would reflect the customer's assessment of margin of victory. The scale began with four items that allowed the customer to reflect upon the winner's overall superiority concerning functional efficacy, user benefits, service benefits, and need satisfaction. The next item then attempted to allow the customer to accommodate financial considerations with a comparative question concerning "more for the money." The sixth item was derived from personal experience, where final choices were ultimately made based on relative confidence in the ability of the top two suppliers. Items 7 to 9, concerning difficulty of choice, were based on the hypothesis that choices would be relatively quick where the margin of victory was wide, and relatively slow where the margin of victory was narrow. Other studies of value (e.g. Anderson et al 1990) have used questions such as "how much would you be willing to pay?" to estimate how much a customer might value a product. This is not consistent with the notion of assessing the margin of victory. In fact, a higher price depletes value by eroding the margin. By taking such a "marginal" approach with the measurement of Relative

Value in this dissertation, there were large risks attached. However, the extra insight that might be gained from the verification of such an approach made the risk bearable.

No question concerning the buyer's Choice, construct Y11, was included in the questionnaire. The single-item dichotomous measure, 1 when Bell was chosen and 0 when Bell was rejected, would be known and verified prior to the mailout.

Ten items concerning the quality of bid documentation were included at the request of Bell's Business Sales and Service proposal support group, as part of the cooperative agreement between Bell and the university. The items were derived from an internal Bell document being developed as an instrument to measure customer satisfaction.

As discussed earlier, the measurement of Satisfaction was introduced to help position the study as a Customer Satisfaction Audit. Three clusters of items were proposed to measure satisfaction during Installation, satisfaction with the system At Present, and Overall satisfaction. Items for the first two clusters were derived somewhat arbitrarily from the items measuring the service, functional and financial evaluation criteria. The five items for the Overall satisfaction cluster were arbitrarily composed, but included the important potential outcomes of future invitations to bid and positive word of mouth.

The last page of the questionnaire included a short series of demographic questions about the respondent's company's size and buying centre size, plus open-ended questions concerning especially good or bad performance from Bell. The latter were specifically requested by Bell's management, to add a little "colour" to the statistical analysis.

5.2.3 Revisions to the Questionnaire

The first draft described in the previous section was not developed in isolation from criticism. A fellow doctoral candidate and Bell's sponsoring managers had critiqued a preliminary edition, thus the official "first draft" already had the benefit of third party review. However, the first draft was then subjected to a more formal review by a panel of five business professors including the three involved in the thesis committee. Their comments were received and reviewed, and all compelling suggestions were then incorporated in the version released for the pre-test. The important changes are outlined below.

Largely on the basis of comments from the faculty committee, several changes were made to the first draft of the questionnaire. The version actually used for the pre-test is shown in Appendix C, and the matching of questions with constructs is shown in Exhibit 5-B. Some of the most important changes and justification are as follows.

In the final test, the questionnaire was to be sent to bid sites where Bell both won and lost bids for their PBX systems; thus, Bell was going to be rated as both a winning supplier and a losing supplier. Therefore, two versions of the questionnaire were created for the pre-test. In version 1 (Appendix C), the pre-test respondents were to be asked to rate the winning supplier versus the next best choice (losing supplier); hence, scale scores could be expected to be generally higher than neutral. In version 2, the respondents were to be asked to rate the losing supplier versus the winning supplier; hence, scale scores could be expected to be generally lower than neutral. Version 2 was identical to Version 1 except for a reversal of wording in the introductory paragraphs.

On the Introduction page, more effort was placed on the description of the bid situation in order to enhance the salience of the situation in the mind of the respondent. In addition, a time scale was introduced to

EXHIBIT 5-BCONSTRUCT MEASUREMENT (REVISED FOR PRE-TEST)

Construct (Exhibit 4-D)	Questionnaire Item (Appendix C)
X1 PastServAtten	15, 17, 11, 14, 1
X2 Collab	9, 20, 2, 6, 3
X3 Intens	18, 19, 8, 4, 5
X4 Reliab	13, 16, 12, 10, 7
X5 PresBidAtten	22, 25, 35, 23, 28
X6 Collab	31, 30, 21, 29, 24
X7 Intens	36, 40, 37, 34, 39
X8 Reliab	38, 26, 27, 32, 33
Y1 ExpServAtten	84, 90, 76, 74, 79
Y2 Collab	73, 75, 77, 86, 78
Y3 Intens	88, 72, 91, 85, 89
Y4 Reliab	80, 83, 81, 82, 87
Y5 ExpSpecConf	69, 60, 64, 66
Y6 FuncFeat	54, 65, 58, 57
Y7 SystFriend	62, 61, 59, 70, 71, 55
Y8 UserFriend	63, 68, 56, 67
Y9 Exp\$Costs	92, 93, 94, 95, 96, 97
Y10 Value	101, 102, 103, 104, 105, 106, 107 108, 109, 110
Other	
Bid Documentation	41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53
Financial Return	98, 99, 100
Satisfaction @ Install'n	111, 112, 113, 114, 115, 116, 117
Satisfaction @ Present	118, 119, 120, 121, 122, 123, 124, 125
Satisfaction Overall	126, 127, 128, 129, 130
Question Difficulty	
Question Tedium	
Order Effect	
Time Spent on Answers	
Type of Purchase	
Value of Purchase	
Questionn'e Suggestions	

help the respondent understand the longitudinal ordering and grouping of the questions to come.

Within the body of the questionnaire, the title of each section was capitalized and placed in bold lettering to help the respondent recognize the new content and longitudinal context. The introduction to each section was extended for similar reasons. More white space was added between sections, again to help the respondent recognize change. For example, the questions regarding documentation (Q41-Q53) were given a full single page instead of a half page. Finally, the Difficulty of Choice questions (Q108-Q110) were given a separate section; they were not asking about product-to-product comparisons as were questions Q101-Q107, and they possessed a slightly different grammatical structure.

There were revisions to several individual items as well. First, all reverse ordered items were replaced with positively ordered items; the effort required to interpret a reverse ordered comparison threatened to make the questionnaire significantly more difficult to complete, which might have jeopardized the ultimate response rate. Second, three of the documentation questions (Q47, Q48 and Q51 in Appendix B) were split in two to eliminate items with double meanings. Third, the Price scale (Q92 in Appendix C) was converted to an interval scale from an ordinal scale, and its endpoints were increased to -25% and +25% to reflect advice from Bell managers. Fourth, the measurement of Relative Value was augmented with a new item about political benefits (Q104 in Appendix C), in response to a suggestion from a potential pre-test respondent. For the pre-test only, a last page of general questions was replaced by questions mainly concerning difficulties and time consumed in completing the questionnaire, and suggestions for improvements.

All of the stakeholders in this research project had now had at least one round of input into the creation of the test instrument.

Therefore, the instrument was judged to be ready for a pre-test among respondents who might be reasonably similar to Bell's PBX customers.

5.3 PRE-TEST OF THE QUESTIONNAIRE AND RESEARCH MODEL

There were two primary objectives of the pre-test. The first was to discover if the respondents experienced any substantial difficulty in comprehending or completing any of the questions. The second objective was to analyze the pre-test data using PLS, in order to confirm the internal consistency and discriminant validity of the scales (see Sections 6.3.2 and 6.3.4). A third, less critical, objective was to test the hypotheses of the research model, which might then permit model modification prior to the final test. Given the abundance of new scales, and their relatively unusual comparative nature, the emphasis was to be placed on scale refinement.

5.3.1 Procedures to Generate the Respondent List

There were several options for generating the pre-test respondent sample: 1) use a subset of the sampling frame for the final test; 2) use a sample of Bell's bid sites from other geographical regions, or sites older than two years; 3) use a sample of buyers of other types of expensive capital equipment such as mainframe computers; or 4) use a manager-specified non-random sample of buyers of capital equipment from within the ranks of Bell and Northern Telecom. The latter option was chosen largely because both Bell and Northern Telecom senior managers were willing to choose appropriate candidates and apply internal pressure to gain their cooperation.

Even though such a sample did not exactly represent the target population, the two main objectives of this pre-test were not at risk. Recall the two main objectives of this pre-test: to check for respondent difficulty, and to check for the scales' internal consistency and

discriminant validity. It was plausible that Bell's volunteers would be similar to the final test respondents with respect to education and technological expertise, and thus similar in their ability to provide valid responses.

Having agreed to the choice of a Bell/Northern Telecom pre-test sample, the next challenge was to determine an appropriate number. As noted in Section 5.1.5, PLS can produce answers using as few as a dozen respondents for relatively complex models. However, any number less than the 25 or so needed to produce jackknifed t-tests of significance might appear to be too small. Therefore, 34 personnel were identified by Bell and Northern Telecom managers, with the understanding that there would be a high intensity campaign to gain the respondents' full cooperation.

There was a genuine attempt by Bell's and NT's sponsoring managers to identify personnel with some recent experience in purchasing capital equipment in the Bell/NT environment. Therefore, most of the individuals either were currently employed, or had recently been employed, in Systems Engineering, Operations, or Product Development. Some Sales Directors were included as a matter of internal courtesy to keep relevant sales managers informed.

5.3.2 Procedures to Enhance the Response Rate

The procedures used to enhance the pre-test response rate conformed to the recommendations and spirit of Dillman's (1978) Total Design Method for mail questionnaires. First, the questionnaire was meticulously word-processed and copied, and bound in a high-quality plastic cover with a coil back.

Then, on April 9, twenty-four introductory letters were sent out to Bell's respondents from a senior Bell manager (Appendix D), and on April 12, ten were sent to Northern Telecom's respondents from a senior NT

manager (Appendix E). On April 22, all respondents were called by the researcher to field any questions regarding the study, and to solicit cooperation. On April 25, a numbered pre-test questionnaire was mailed to each respondent, with a letter of explanation from the researcher attached (Appendix F). Every questionnaire was accompanied by a self-addressed return envelope, to be returned via Bell's in-house mail system. A second wave of phone calls and questionnaires for all non-respondents followed in mid-May. Data collection was officially terminated at the end of May.

5.3.3 Response Analysis

A brief pre-test response analysis is shown in Exhibit 5-C. It shows that of the 34 initial respondents, 6 considered themselves unqualified to participate by virtue of no recent involvement in a capital purchase decision. This emphasized the future importance of personal contact with, and qualification of, potential respondents for the final test. From the twenty-eight qualified pre-test respondents, 22 useable responses were received, for an overall qualified response rate of 79 per cent. A follow-up study of the reasons for non-response was not conducted.

The response rate was unevenly divided between Bell and Northern Telecom. Bell's response rate was 90%, versus 50% for Northern Telecom. It is possible that Bell's respondents felt a deeper and more urgent need to participate, because the results of the study could be of some immediate help for Bell. In contrast, because Northern Telecom moves its PBX products through several other value-added distributors besides Bell, the need to participate may not have been quite as strongly felt by the Northern Telecom respondents.

Recall the two objectives of the pre-test: to ascertain any difficulties encountered by the respondents, and to establish the internal consistency and discriminant validity of the measurement model. The former is addressed here, while the latter is addressed in the following section.

EXHIBIT 5-C
PRE-TEST RESPONSE ANALYSIS

	<u>Total</u>	<u>Bell</u>	<u>Northern Telecom</u>
Questionnaires Delivered	34	24	10
Less: Respondents not Qualified	(6)	(4)	(2)
Equals: Qualified Respondents	28	20	8
Less: Unuseable Responses	(1)	(1)	0
Non-Respondents	(5)	(1)	(4)
Equals: Qualified Responses	22	18	4
Qualified Response Rate	79%	90%	50%

Exhibit 5-D summarizes some of the feedback from the pre-test respondents. Even though 27% felt that some questions were too difficult, and 50% felt that the repetitive nature of the relationships questions made the questionnaire tedious, only 4 respondents failed to complete every question. Furthermore, the average time to complete was a reasonable 32 minutes, and only two respondents specifically complained of questionnaire length. Therefore, the questionnaire was judged to be appropriate with respect to ease of understanding and use by respondents. In other words, the instrument appeared to be reasonably "user friendly."

One respondent commented that the purchase decision he was describing had occurred three years prior, and memory was proving to be a bit of a problem. This was one indication that the two year window specified for the final test might be manageable for the respondents. (In fact, during the later round of respondent qualification calls for the final test, only one potential respondent declined for reasons of poor recollection).

There were a few qualitative suggestions which proved helpful: 1) to add the time line to the top of each page to serve as a constant reminder to the respondent; 2) to highlight the phrase "winning supplier" or "losing supplier" at the beginning of each series of questions; and 3) to increase the amount of white space per page by decreasing the number of questions per page. These were accommodated.

5.3.4 Trial Analysis of the Disaggregated Construct Measurement Model

The second objective of the pre-test was to ascertain the internal consistency and discriminant validity of the measurement model. What is the "measurement model"? In latent variable modelling terminology, it refers to the sets of items which measure the constructs, together with their statistical relationships with their constructs. It is mandatory that the measurement model be validated prior to the investigation of the

EXHIBIT 5-D
PRE-TEST RESPONDENTS' CRITIQUES

Pre-Test Respondent No.	Missing Data?	Questions Difficult?		Questions Tedious?		Time to Complete? (minutes)
		Yes	No	Yes	No	
1			✓		✓	20
2	3		✓	✓	✓	20
3		✓	✓		✓	35
4			✓		✓	30
5			✓		✓	15
6	1		✓		✓	35
7			✓	✓		30
8			✓		✓	30
9		✓	✓	✓		15
10			✓	✓		30
11		✓	✓	✓		40
12	22*	✓	✓	✓		65
13	9		✓		✓	15
14			✓		✓	30
15			✓		✓	40
16		✓	✓	✓		45
17		✓	✓	✓		20
18			✓	✓		45
19			✓	✓		45
20			✓	✓		20
21			✓		✓	30
22			✓	✓		40
Total		6 (27%)	16 (73%)	11 (50%)	11 (50%)	
Mean						32
Range						15--65
S.D.						12.5

* was unfamiliar with Reputation of one supplier

path coefficients between constructs. A complete validation requires several steps (see Section 6.3), but there are two readily accessible indicators.

The first indicator of a valid measurement model is that the set of items measuring each construct is internally consistent. In other words, the loading of every item on its own construct is uniformly high, and preferably greater than 0.7 (see Section 6.3.2 for a more detailed discussion). Exhibit 5-E shows this was the case for 12 of the 19 constructs, before the deletion of any troublesome items. With the deletion of the sixteen poorest loading items (loading < 0.7), it appeared as if the measurement model might conform with the standard for internal consistency. Therefore, an internally consistent measurement model appeared attainable without substantial revisions.

However, an investigation of discriminant validity raised several concerns. For good discriminant validity, an item should have a low cross-loading on every other construct, preferably close to zero. Not only were average cross-loadings relatively high (review Exhibit 5-E), but for 20 items their highest cross-loadings were in fact higher than their loadings on their own construct. This caused problems with the PLS analysis of the model; indeed, an analysis could not be completed within the 100-iteration constraint, and an error message stated "MV-COVARIANCE IS NOT POSITIVE DEFINITE". In other words, the PLS program could not distinguish between at least one pair of constructs.

It appeared unlikely that a model with 19 constructs with poorly discriminating scales could ever be successfully analyzed with PLS. Therefore, a research advisor suggested the tactic of aggregating measures, and analyzing a model with a substantially reduced number of aggregated constructs. For example, an aggregate construct named "Past Relationships" could be measured with aggregate items named "Past Attention", "Past Collaboration", "Past Intensity", and "Past

EXHIBIT 5-EPRE-TEST ANALYSIS OF INITIAL CONSTRUCT MEASUREMENT MODEL

- Notes: 1) Construct names correspond with Exhibit 4-D
 2) Question numbers correspond with Appendix C
 3) PLS computation aborted at 100 iterations because "MV-covariance not positive-definite"; therefore, loadings may be slightly imprecise
 4) * indicates a loading <0.7
 5) ** indicates a cross-loading > loading

Construct	Question No.	Reflective Loading of Question	Average Cross-Loading	Highest Cross-Loading
X1 PastServAtten	15	.652*	.362	.673** on X6
	17	.853	.414	.855** on X2
	11	.786	.403	.688 on X4
	14	.900	.451	.848 on X3
	1	.536*	.310	.515 on X4
X2 PastServCollab	9	.947	.341	.760 on X3
	20	.776	.385	.685 on X1
	2	.489*	.236	.485 on X1
	6	.411*	.144	.318 on X1
	3	.863	.315	.732 on X3
X3 PastServIntens	18	.854	.327	.756 on X2
	19	.423*	.194	.497** on X1
	8	.905	.447	.853 on X1
	4	.859	.397	.774 on X1
	5	.835	.414	.773 on X1
X4 PastServReliab	13	.802	.401	.651 on Y4
	16	.600*	.389	.566 on X1
	12	.649*	.172	.538 on X8
	10	.827	.514	.736 on X1
	7	.874	.489	.706 on X1
X5 PresBidAtten	22	.701	.337	.688 on X6
	25	.853	.514	.748 on X7
	35	.953	.650	.893 on Y1
	23	.811	.519	.756 on X7
	28	.862	.651	.816 on Y3

cont.

EXHIBIT 5-E (cont.)

Construct	Question No.	Reflective Loading of Question	Average Cross-Loading	Highest Cross-Loading
X6 PresBidCollab	31	.924	.628	.806 on Y2
	30	.903	.553	.844 on X5
	21	.698*	.343	.633 on Y3
	29	.868	.574	.763 on X7
	24	.828	.483	.753 on X5
X7 PresBidIntens	36	.887	.543	.802 on X5
	40	.781	.354	.730 on X5
	37	.926	.521	.844 on X5
	34	.879	.405	.815 on X5
	39	.882	.603	.885** on Y3
X8 PresBidReliab	38	.875	.442	.644 on X4
	26	.813	.556	.801 on X6
	27	.766	.393	.698 on X4
	32	.826	.652	.852** on Y3
	33	.610*	.381	.675** on X4
Y1 ExpServAtten	84	.796	.536	.848** on Y3
	90	.841	.593	.809 on Y3
	76	.890	.604	.909** on Y2
	74	.777	.516	.781** on X5
	79	.911	.654	.869 on Y2
Y2 ExpServCollab	73	.815	.526	.821** on Y1
	75	.807	.538	.750 on X5
	77	.883	.611	.880 on Y11
	86	.815	.606	.800 on Y3
	78	.891	.555	.753 on Y1
Y3 ExpServIntens	88	.927	.635	.854 on Y1
	72	.753	.454	.774** on X7
	91	.962	.660	.911 on Y1
	85	.779	.581	.769 on Y4
	89	.942	.643	.846 on Y1
Y4 ExpServReliab	80	.896	.525	.776 on X8
	83	.813	.386	.599 on Y6
	81	.687*	.196	.492 on X4
	82	.821	.562	.779 on Y6
	87	.774	.552	.745 on Y3

cont.

EXHIBIT 5-E (cont.)

Construct	Question No.	Reflective Loading of Question	Average Cross-Loading	Highest Cross-Loading
Y5 ExpSpecConf	69	.933	.599	.878 on Y7
	60	.891	.578	.813 on Y11
	64	.869	.350	.617 on Y7
	66	.782	.278	.591 on Y6
Y6 ExpFuncFeat	54	.942	.645	.921 on Y7
	65	.841	.477	.805 on Y7
	58	.871	.526	.797 on Y7
	57	.903	.587	.854 on Y1
Y7 ExpSystFriend	62	.778	.361	.691 on Y6
	61	.927	.499	.891 on Y6
	59	.865	.624	.872** on Y6
	70	.890	.537	.830 on Y6
	71	.925	.509	.828 on Y6
	55	.851	.465	.849 on Y6
Y8 ExpUserFriend	63	.845	.535	.723 on Y6
	68	.869	.489	.688 on Y5
	56	.828	.520	.837 on Y6
	67	.876	.514	.739 on Y7
Y9 Exp\$Costs	92	.676*	.214	.261 on Y10
	93	.824	.352	.520 on Y11
	94	.684*	.175	.375 on X6
	95	.724	.216	.420 on Y3
	96	.416*	.389	.696** on X1
	97	.883	.312	.546 on X5
Y10 Value	101	.735	.585	.830** on Y7
	102	.691*	.598	.843** on Y3
	103	.771	.623	.835** on Y6
	104	.021*	.155	.432** on Y8
	105	.899	.668	.852 on Y2
	106	.783	.545	.741 on Y11
	107	.922	.627	.852 on Y11
	108	.830	.518	.915** on Y11
	109	.874	.541	.925** on Y11
	110	.931	.590	.983** on Y11
Y11 Choice	n.a.	1.000	.557	.904 on Y10

Reliability". Each of these aggregate items would in turn be formed by a weighted summation of the relevant questionnaire items. In the following section, the results of such an attempted analysis are briefly described.

5.3.5 Trial Analysis of the Aggregated Construct Measurement Model

Some trial and error was necessary, but without much difficulty a five-construct aggregate model was successfully defined and analyzed. The loadings and cross-loadings of the trial aggregated measurement model are shown in Exhibit 5-F. Each of the aggregated scales shows impressive internal consistency, i.e., all measures have uniformly high loadings. In addition, discriminant validity is much improved; in all cases, a measure's loading on its own construct is higher than its highest cross-loading. As a result of improved discriminant validity, PLS was able to produce a complete analysis of the aggregated structural model in only five iterations (Exhibit 5-G). Furthermore, many of the resulting path coefficients were much greater than zero, which suggested that many of the research model's hypotheses might receive strong empirical support in the final test.

In this paragraph, the "trial and error" mentioned at the beginning of the previous paragraph is more fully elaborated, beginning with the procedure used to define the trial research model. Even with carefully selected aggregated measures, PLS was still unable to distinguish between some pairs of constructs in the full research model (review Exhibit 4-D). Therefore, some constructs were deleted sequentially or revised until PLS was able to complete an analysis. The two constructs removed (temporarily) were Choice and Present Relationships, which could not be distinguished from Relative Value and Past Relationships, respectively. Also, the three items measuring Financial Return were incorporated as one of the measurement dimensions of Relative Value. The incorporation of Return into the Value construct can be conceptually defended, as it is an outcome of the buyer's consideration of \$Costs, Functional Benefits and Service

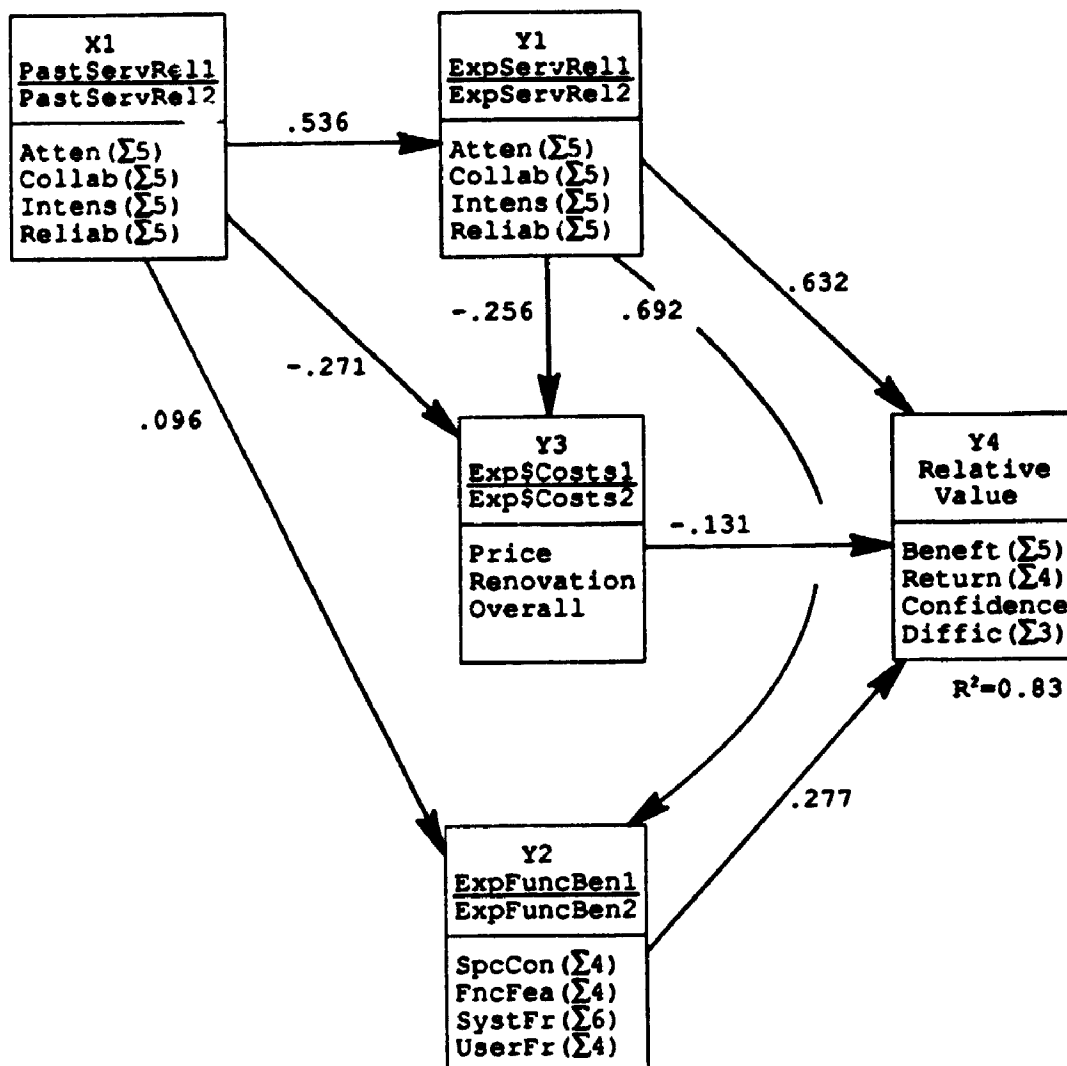
EXHIBIT 5-FPRE-TEST ANALYSIS OF TRIAL AGGREGATED CONSTRUCT MEASUREMENT MODEL

- Notes: 1) Constructs refer to Exhibit 5-G
2) Question numbers refer to Appendix C

Aggregate Construct to be Measured	Aggregated Items (Weighted Summations of Questionnaire Items)	Aggregate Item Loading	Average Cross-Loading	Highest Cross-Loading
PastServRel	Atten $\Sigma(15, 17, 11, 14, 1)$	.965	.448	.518
	Collab $\Sigma(9, 20, 2, 6, 3)$	.876	.340	.377
	Intens $\Sigma(18, 19, 8, 4, 5)$	.892	.314	.405
	Reliab $\Sigma(13, 16, 12, 10, 7)$	.813	.472	.638
ExpServRelp	Atten $\Sigma(84, 90, 76, 74, 79)$	.968	.610	.862
	Collab $\Sigma(73, 75, 77, 86, 78)$	.928	.602	.883
	Intens $\Sigma(88, 72, 91, 85, 89)$	.944	.620	.802
	Reliab $\Sigma(80, 83, 81, 82, 87)$	.813	.518	.706
ExpFuncBen	SpecConf $\Sigma(69, 60, 64, 66)$	.911	.460	.676
	FuncFeat $\Sigma(54, 65, 58, 57)$	.972	.547	.786
	SystFriend $\Sigma(62, 61, 59, 70, 71, 55)$	.959	.489	.774
	UserFriend $\Sigma(63, 68, 56, 67)$	.922	.522	.710
Exp\$Costs	Price 92	.696	.141	.256
	Renovations 93	.880	.385	.446
	Overall Implementation 97	.934	.314	.402
Value	Benefits $\Sigma(101, 102, 103, 104, 105)$	.894	.621	.836
	\$Return $\Sigma(98, 99, 100, 106)$	.878	.503	.745
	Confidence 107	.947	.583	.870
	Difficulty $\Sigma(108, 109, 110)$	.911	.562	.775

EXHIBIT 5-G

PRE-TEST ANALYSIS OF TRIAL AGGREGATED STRUCTURAL MODEL



Benefits. Some experimentation was also required for the measure of the \$Costs construct. In the end, only three individual items could provide an internally consistent scale for \$Costs, which suggested that some revisions to the cost items were necessary.

It is also important to note that some of the experimentation involved the items measuring Documentation. It was discovered that eleven of the items defined two dimensions of documentation quality; items 42-44 defined Content, and items 41 and 45-52 defined Communication. This discovery had implications for adjustments to the research model, as discussed below.

In summary, the experimentation with the aggregated measurement model and structural model using the pre-test data proved very helpful in guiding model and questionnaire revisions. These revisions are discussed in the following section.

5.3.6 Revisions to the Research Model and Hypotheses

As a result of the analysis of the pre-test research data, and subsequent experimentation, the initial research model (Exhibit 4-D) was revised. First, the model was re-conceptualized to an aggregate level, because PLS was unable to distinguish between many of the original 19 constructs. For example, Past Relationships was changed from four distinct constructs to a single aggregate construct. Each aggregate construct would be measured by a set of aggregated items, each of which would in turn be a weighted summation of individual items (review Exhibit 5-F).

Second, three items measuring \$Return were incorporated as one of the aggregate dimensions of Relative Value. This was precipitated by the success of this tactic in the pre-test trial of the aggregated measurement model. As discussed earlier, this can be conceptually defended by noting

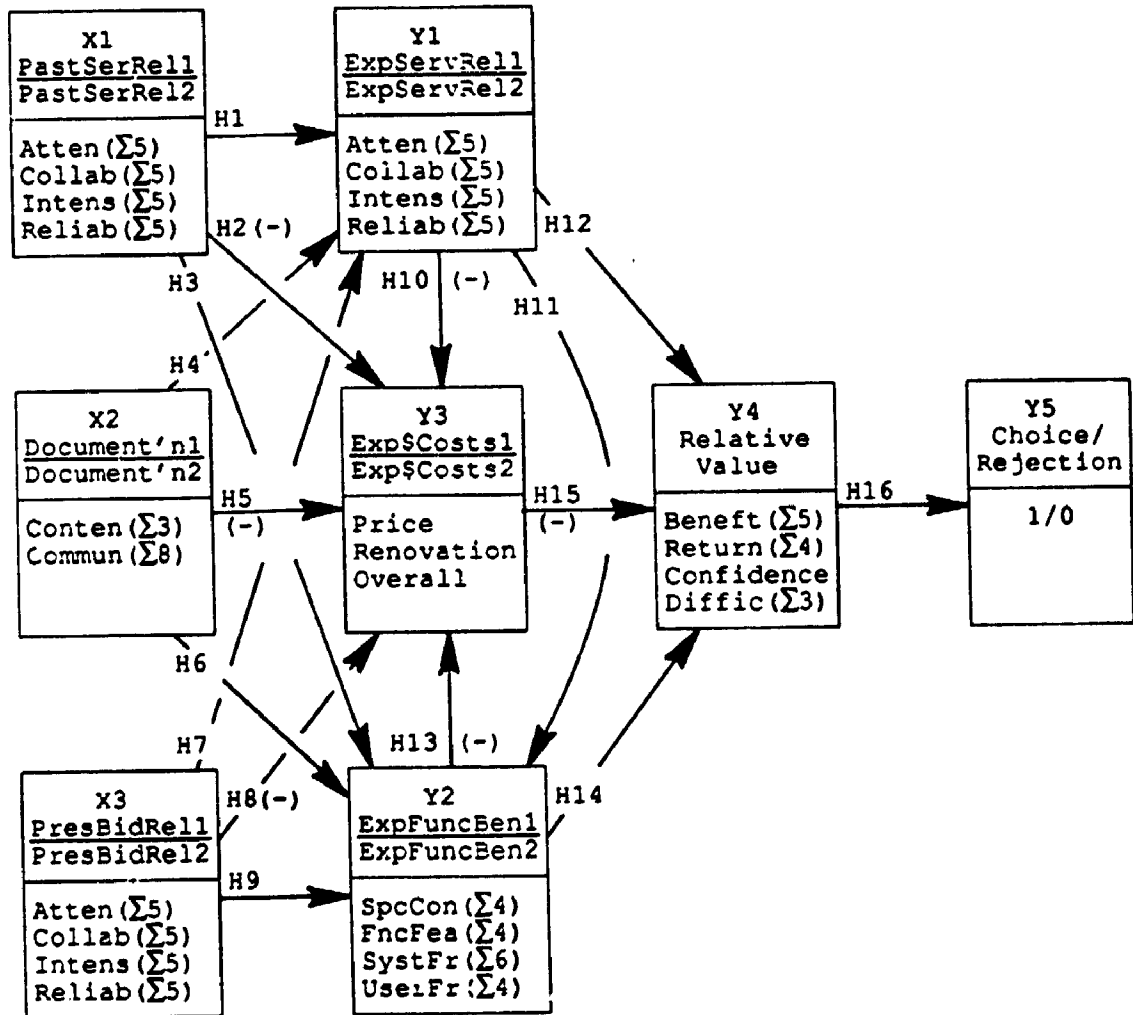
that perception of return is an outcome of an interactive consideration of \$Costs, Functional Benefits and Service Benefits.

Third, a construct called Documentation was opportunistically added to the research model. It was modelled as an exogenous construct like Past and Present Relationships, and can be explained using the argument of self-generated attitude change. Better documentation might reduce uncertainty in the mind of the buyer, thus increasing the perception of relative advantage. Through experimentation, it was discovered that this construct had two aggregate dimensions, which were named Content and Communication.

These revisions are illustrated in the Revised Research Model presented in Exhibit 5-H. Note that the constructs Choice and Present Relationships, which were temporarily removed in the trial analysis, have been reinstated. The sixteen revised research hypotheses can be stated as follows:

- H1: The buyer's relative perception of past B-S service relationships affects relative expectations for post-purchase B-S service relationships.
- H2: The buyer's relative perception of past B-S service relationships inversely affects relative expectation. for the equipment's financial costs.
- H3: The buyer's relative perception of past B-S service relationships affects relative expectations for the equipment's functional benefits.
- H4: The buyer's relative perception of the bid documentation affects relative expectations for post-purchase B-S service relationships.
- H5: The buyer's relative perception of the bid documentation inversely affects relative expectations for the equipment's financial costs.
- H6: The buyer's relative perception of the bid documentation affects relative expectations for the equipment's functional benefits.
- H7: The buyer's relative perception of present B-S bid relationships affects relative expectations for post-purchase B-S service relationships.
- H8: The buyer's relative perception of present B-S bid relationships inversely affects relative expectations for the equipment's financial costs.

EXHIBIT 5-H
REVISED RESEARCH MODEL



- H9: The buyer's relative perception of present B-S bid relationships affects relative expectations for the equipment's functional benefits.
- H10: The buyer's relative expectations of post-purchase B-S service relationships inversely affect relative expectations for the equipment's financial costs.
- H11: The buyer's relative expectations of post-purchase B-S service relationships affect relative expectations for the equipment's functional benefits.
- H12: The buyer's relative expectations of post-purchase B-S service relationships affect the buyer's expectation of relative value.
- H13: The buyer's relative expectations of the equipment's functional benefits inversely affect relative expectations for the equipment's financial costs.
- H14: The buyer's relative expectations of the equipment's functional benefits affect the buyer's expectation of relative value.
- H15: The buyer's relative expectations of the equipment's financial costs inversely affect the buyer's expectation of relative value.
- H16: The buyer's expectation of relative value determines the buyer's choice.

5.3.7 Revisions to the Questionnaire

The qualitative and quantitative analyses of the pre-test response data disclosed some necessary revisions to the questionnaire. Some of the more important changes are noted here. The two final versions of the questionnaire are shown in Appendix G (Bell Wins) and Appendix H (Bell Loses).

There were two format changes. First, at the recommendation of the pre-test respondents, the time scale originally introduced on the Introduction page was also placed at the top of every page in order to provide maximum assistance to the final respondents. Second, again at the request of the pre-test respondents, "Bell" was highlighted at the beginning of every set of questions.

Because the pre-test disclosed the advantage of merging the three "\$Return" questions within the Relative Value construct, some minor changes were then necessary. The poor-loading item measuring salvage value

was deleted, a new item measuring payback was added, and the three were relocated within the Overall Evaluation section. Within the Overall Evaluation section, the poor-loading item measuring political advantage was deleted.

The remaining changes tended to be very minor. Among them, an item measuring documentation effectiveness was deleted because such an assessment would be impossible for a respondent to make. The items within the \$Costs section were carefully reworded so that there were no reverse scales. At the request of a pre-test respondent, an item measuring invoicing procedures was inserted within the Present Satisfaction section. Remaining revisions were of a minor cosmetic nature. With these touch-ups complete, the questionnaire was ready to be engaged in the principal test.

5.4 FINAL TEST OF THE REVISED QUESTIONNAIRE AND RESEARCH MODEL

This final section of Chapter 5 completes the discussion of the research methodology, paving the way for the presentation of the analysis in Chapter 6. Several topics are discussed concerning the final test procedures.

5.4.1 Revised Sample Size Requirements

Because the revised research model was considerably reduced in complexity, as described in the Section 5.3.6, the minimum sample size needed to be reviewed. In the revised model, the most difficult formative regression was the five-construct prediction of \$Costs. Using the 10:1 rule of thumb for PLS analysis, the minimum sample size would then be 50 respondents; with the 5:1 rule of thumb, it would be 25 respondents. Using the 10:1 rule of thumb, and assuming a 30% response rate, a list of 170 bid sites would then be sufficient. Recall that a priori estimates of sample size would not necessarily guarantee stable and accurate results.

A final assessment could only be made after an inspection of the distributions of the jackknifed path coefficients.

5.4.2 Procedures to Generate the Respondent List

With the agreement of Bell management, the target bid sites were restricted to the following conditions: 1) the organization was within the Ontario region; 2) the organization had received at least one competitive bid proposal for PBX and/or related telecommunications equipment from Bell since January 1, 1989; and 3) the value of the bid was at least \$50,000.

A comprehensive census list of suitable bid sites was assembled by Bell's staff using three internal sources of data: 1) chiefly, the bid files of the Business Sales and Service (BSS) Bid Support Group; 2) as a cross-check, BSS' quarterly Win/Loss reports; and 3) the bid files from Bell's "government group".

Each entry on the bid list contained the name and address of the organization, the name and phone number of the organization's principal contact during the bid proposal, a description of the proposed system(s), the dollar value of Bell's bid, the date of the proposal's submission, and the bid's outcome. The assembled list was reviewed for completeness with Bell management on June 4, 1991. The "raw" list showed 251 bid proposals.

From June 11 to June 13, using Bell's Toronto office facilities, the researcher then telephoned the office of each bid's principal contact to verify the information on the bid list. A personal conversation with the principal contact was not necessary, provided the receptionist or co-worker was able to verify the information. In several cases the contact had moved on to another position, either within the same organization or elsewhere; follow up calls were made until contact was established, or else the person could simply not be traced. As a result of this round of phone calls, the "raw" list of 251 was reduced to a "qualified" list of

216 sites, each with complete information. The attrition was due to: 1) failed contact - 12 sites; 2) duplicate listings - 8 sites; 3) bid cancelled - 7 sites; 4) bid not competitive (i.e., single-sourced) - 3 sites; 5) bid too long ago for memory - 3 sites; and 6) outright refusal to participate - 2 sites. Of the 216 qualified sites, Bell had been successful in 73, for a 34% success rate. This was judged to be an adequate percentage for the purpose of generating variance in the dependent constructs.

With 216 qualified sites in hand, the next hurdle was to gain the cooperation of every principal contact. The following section describes the procedures used to maximize participation.

5.4.3 Procedures to Enhance the Response Rate

These procedures are consistent with the philosophy of Dillman's (1978) Total Design Method, wherein every potential respondent is treated as a special individual. Because the qualified list was only 216, full efforts were made to recruit every candidate. Procedures are described in chronological order.

June 27, 1991: Mr. Terry Mosey, Bell's General Manager of Business Sales and Service for the Ontario region, mailed a personalized and personally signed letter of introduction to every candidate (example in Appendix I).

July 5-12, 1991: Mr. David Large, principal researcher, telephoned every candidate to discuss the study, verify the most appropriate candidate, and to solicit cooperation. The most appropriate candidate was defined as the "most knowledgeable" individual. Usually this was the original contact, but in some cases a second individual was recommended. In no case did the second individual ever recommend a third individual. As an incentive to gain participation, the candidates were assured of

confidentiality, and were offered a personalized certificate of participation, and a copy of an executive summary at the end of the study. In this round of calls there were no outright refusals to participate; however, a particular division of an Ontario ministry, which had received 59 of the qualified proposals, indicated that full participation was unlikely.

July 17, 1991: Mr. David Large mailed a complete package to every candidate, except for the candidates in the hesitant Ontario ministry. The mailing envelope was personally typed on a typewriter, and was personally stamped with stamps. The package consisted of: 1) a personalized and personally signed letter of introduction (example in Appendix J), which emphasized the importance of the study, the value of everyone's participation, the guarantee of absolute confidentiality, the importance of being absolutely honest, and the offer of an executive summary; 2) a professionally printed questionnaire in a coloured blue cover; 3) a stamped pre-addressed return envelope; and 4) a personalized certificate of participation, professionally printed in full colour on parchment (example in Appendix K).

July 31, 1991: Mr. David Large met with the manager of the hesitant Ontario ministry, in the manager's Toronto office. The manager agreed to complete to have twenty questionnaires completed by his staff.

August 12, 1991: Mr. David Large telephoned Ms. Gail Misener, President of the Canadian Meridian SL-1 Users Association (CMSLUA), to solicit her organization's cooperation in identifying any other bid sites not already identified. Ms. Misener agreed to cooperate, and faxed a list of the Ontario chapter heads to Mr. Large.

August 15, 1991: Mr. David Large conducted the first round of follow up telephone calls to all non-respondents.

August 26, 1991: Mr. David Large mailed packages to the five CMSLUA chapter heads soliciting their cooperation. Each package contained a personalized cover memo (example Appendix L), a generic cover memo for the membership, a participation qualification page, and both versions of the questionnaire. The chapter heads promised to announce the study at the next chapter meetings.

August 28, 1991: Mr. David Large conducted the second round of follow up calls to all non-respondents.

September 20, 1991: Mr. David Large conducted the third and final round of follow up calls to all non-respondents.

In summary, every reasonable effort was employed to elicit cooperation from every candidate. The effectiveness of this campaign can be judged by the response achieved, which is the first topic of Chapter 6.

CHAPTER 6

PRINCIPAL ANALYSIS AND RESULTS

The purpose of data analysis is to investigate whether or not: 1) the measurement instrument has effectively captured the theoretical constructs (construct validity); 2) the research hypotheses are supported by the data (internal validity); and 3) the results can be generalized to the sampling frame and/or other populations (external validity). Chapter 6 will explore each of these types of validity and many of their associated statistical tests. This chapter begins with a response analysis of the data, which will indicate if the validity tests can even proceed.

6.1 RESPONSE ANALYSIS

Section 5.4.2 described the procedures used to generate a potential respondent list of 216 bid sites, and Section 5.4.3 described the procedures used to enhance the response rate. In Section 6.1 the response outcome is described, and justification is given for the elimination of a substantial segment of the original respondent list.

6.1.1 Gross Response Analysis

Of the 216 questionnaires issued, 126 were returned, and of these 18 were unuseable. The 108 useable responses constituted a 50% gross response rate. As shown in Exhibit 6-A, half of the useable responses were received within three weeks of the initial mailout, while the remainder were received over the following eight weeks. The three rounds of follow up phone calls were effective at boosting responses.

There were various reasons for known non-response, including individuals being too busy, and at least three questionnaires being lost

EXHIBIT 6-A
GROSS RESPONSE LOG⁽¹⁾

Weeks After Mailout	Number of Questionnaires Returned	Number of Questionnaires Unusable	Number of Questionnaires Useable	Comments
1	12	1(2)	11	
2	29		29	
3	14		14	
4	12	1(3)	11	1st round of follow up calls
5	18		18	
6	5		5	2nd round of follow up calls
7	21	16(4)	5	
8	4		4	
9	2		2	3rd round of follow up calls
10	6		6	
11	3		3	
Total	126	18	108	

- (1) 216 questionnaires were issued.
- (2) All questions were completed, but there was no discrimination between items within sections; i.e., all answers were the same.
- (3) Only about 50% of the questions were completed.
- (4) 17 were received from one organization, but all were answered identically except for the one question about price premium; therefore, there was essentially only one useable response, and 16 unusable.

in the mail. However, the principal source of non-response stemmed from managers' decisions in two public sector organizations to withhold full cooperation by their staff, in spite of extensive campaigns to gain their cooperation. As a consequence, of 66 qualified bid sites within those two organizations, only two useable responses were received. Hence, if these two organizations are removed from consideration, the useable response rate jumps to 71 per cent. In the following two sections, arguments are made in favour of such a removal.

6.1.2 Gross Response Analysis by Segment

It is a fundamental concept in Marketing that a large group of buyers may not be homogeneous in terms of key purchase criteria and/or purchase process. In other words, a large group of buyers may in fact consist of a set of segments, where the buyers within one segment display similar buyer behaviour, but where the buyer behaviour across segments is substantially different. The implication is that a research model tested with data from one segment may display very different results from a model tested with data from another segment. Therefore, it was prudent to examine the response data prior to model analysis to determine if segments were in fact present.

There were several a priori reasons to suspect the presence of segments. First, it has been reported that public sector organizations exhibit different buying behaviour from private sector organizations (e.g. Forbis and Mehta 1981, p.46), whereby public sector organizations may tend to emphasize price, while private sector organizations place more emphasis on life cycle costs. About two thirds of the qualified list was comprised of public sector organizations, including: federal and provincial ministries; provincial utilities, universities, colleges, hospitals and health care organizations; and municipal transportation, school boards, libraries and art galleries. Second, Bell managers suspected that buying decisions made with the assistance of hired consultants were different

from those made without a consultant's help. About 20% of the qualified list had employed consultants. Finally, two public sector organizations had issued about one-third of all tenders on the list of qualified bid sites, and they appeared to have radically different purchase criteria. In particular, Bell had achieved a win rate of 3% and 0% with these two organizations, versus an average of 47% for all other sites. Therefore, for the three reasons just described, it seemed reasonable to partition the list of respondents into 5 segments as shown in Exhibit 6-B.

An inspection of the response data reveals important differences between some of the partitioned segments. Segment X, which consists of the two high-frequency public sector organizations mentioned previously in Section 6.1.1, appears very different from all other segments. These differences are described more completely in Section 6.1.3, and a case will be presented for the elimination of Segment X from further consideration. To a lesser degree, there are differences between Segments 1-4. Section 6.1.4 will discuss these differences, and will present an approach for an overall analysis and segmented analyses.

6.1.3 Elimination of High Frequency Public Sector Buyers

Section 6.1.2 provided justification for a multi-segment inspection of the responses. Five segments were identified, labelled Segment X and Segments 1 to 4, and some important differences were indeed noted between segments. In particular, Segment X, consisting of 2 high-frequency public sector buying organizations, had features which appeared to clearly distinguish it from Segments 1-4. In this section, an argument will be presented for the elimination of Segment X from the data set.

Exhibit 6-C shows a comparative response analysis of Segment X versus the other four segments combined. There are three factors which suggest that the buying organizations in Segment X are substantially different from those in the other segments:

EXHIBIT 6-BGROSS RESPONSE ANALYSIS BY SEGMENTConsultant Not Employed

Consultant Employed

Public Sector Organ'n #1	<u>Segment X</u>	
	qualified sites=59 Bell wins=-2, rate="2-3%" useable resp=1, rate=2% premium wins=0, rate=0% Bell wins=0, rate=0%	
Public Sector Organ'n #2	-----	
	qualified sites=7 Bell wins=0, rate=0% useable resp=1, rate=14% premium wins=0, rate=0% Bell wins=0, rate=0%	
All Other Public Sector Organ'ns	<u>Segment 1</u>	<u>Segment 3</u>
	qualified sites=58 Bell wins=29, rate=50% useable resp=38, rate=66% premium wins=9, rate=24% Bell wins=21, rate=55%	qualified sites=10 Bell wins=7, rate=70% useable resp=4, rate=40% premium wins=1, rate=25% Bell wins=3, rate=75%
All Private Sector Organ'ns	<u>Segment 2</u>	<u>Segment 4</u>
	qualified sites=52 Bell wins=27, rate=52% useable resp=40, rate=77% premium wins=13, rate=32% Bell wins=21, rate=53%	qualified sites=30 Bell wins=8, rate=27% useable resp=24, rate=80% premium wins=1, rate=4% Bell wins=7, rate=29%

Note: In this table, "premium" refers to a higher bid price

EXHIBIT 6-CCOMPARATIVE RESPONSE ANALYSIS - SEGMENT X VS. OTHERS

	<u>Segment X</u> <u>Alone</u>	<u>Segments 1-4</u> <u>Combined</u>	<u>Overall</u>
# of Qualified Sites	66	150	216
# of Buying Organizations	2	111	113
Avg # Sites/Buying Organization	33	1.3	1.9
Bell's Wins	2	71	73
Bell's Win Rate	3%	47%	33%
Useable Responses	2	106	108
Useable Response Rate	3%	71%	50%
Premium Awards	0	24	24
Premium Award Rate	0%	23%	22%

1) The two organizations in Segment X received an average of 33 bid proposals each, versus an average of 1.3 for the organizations in the other segments. Thus, Segment X organizations might be described as "frequent" buyers of PBX and related equipment, whereas the other organizations might be classified as "infrequent" buyers. As a consequence, for Segment X organizations there might be substantially less uncertainty surrounding the purchase of telecommunications equipment, hence more emphasis on low price, and less influence from B-S relationships during the bid process.

2) Bell's success rate in Segment X was about 3%, versus an average of 47% in the other four segments. This suggested that Segment X organizations had purchase criteria which Bell might have been unable or unwilling to satisfy. Because Bell has, and intentionally promotes, the image of a high price/high service seller, this suggested that low price might have been Segment X's dominant purchase criterion. This hypothesis was supported by the purchasing manager in Organization #1, by first claiming that all bids in his department were awarded to the lowest price qualified bidder, and then claiming that Bell was higher priced almost without exception.

3) Based on the 2 useable responses from the two Segment X organizations, and a personal interview with the purchasing manager of Organization #1, Segment X organizations were deemed to award 0% of their contracts to premium (i.e., higher bid price) bidders; in contrast, the organizations in the other segments awarded an average of 23% of contracts to premium bidders, ranging up to 32% in Segment 2. Again, this supported the notion that low price might be the dominant purchase criterion in Segment X.

Because the buying behaviour in Segment X's two organizations appeared to be substantially different from that in the other segments, and because the low useable response rate (2 responses) rendered a

separate valid analysis impossible, it seemed justifiable to eliminate Segment X from the analysis for the balance of the dissertation.

The elimination of Segment X did not, however, ensure that the balance of the organizations in Segments 1-4 had homogeneous buyer behaviour. The possibility of differences between segments, plus an approach for analyzing any such differences, are discussed in the following section.

6.1.4 Net Response Analysis

In Section 6.1.3, justification was provided for the elimination of Segment X, leaving four potential respondent segments. Thus, the net useable response rate for the remaining set of four segments, defined as the number of useable responses as a percentage of qualified sites, was 71% (review Exhibit 6-C). The analysis in the balance of Chapter 6 is performed with the assumption that there are no differences among the research model relationships for Segments 1-4. Thus, the revised research model (review Exhibit 5-H) was tested with a set of empirical data with $n=106$, representing a useable response rate of 71 per cent.

However, the remaining organizations may have had different buying behaviour between segments, i.e., different emphasis on different buying criteria, and/or different susceptibility to the various sources of influence (see Exhibit 5-D). For example, the premium award rate among those organizations which employed consultants was 7%, versus 28% for those which did not employ consultants. This suggested a variation in emphasis on price. In Section 7.1, the research model will be tested with subsets of the data and compared across segments. Any significant differences in path coefficients will suggest the presence of different segments.

EXHIBIT 6-DNET RESPONSE ANALYSIS - SEGMENTS 1-4Consultant Not Employed

Consultant Employed

Low Frequency Public Sector Organ'ns	<p style="text-align: center;"><u>Segment 1</u></p> qualified sites=58 Bell wins=29, rate=50% useable resp=38, rate=66% premium wins=9, rate=24% Bell wins=21, rate=55%	<p style="text-align: center;"><u>Segment 3</u></p> qualified sites=10 Bell wins=7, rate=70% useable resp=4, rate=40% premium wins=1, rate=25% Bell wins=3, rate=75%
Low Frequency Private Sector Organ'ns	<p style="text-align: center;"><u>Segment 2</u></p> qualified sites=52 Bell wins=27, rate=52% useable resp=40, rate=77% premium wins=13, rate=32% Bell wins=21, rate=53%	<p style="text-align: center;"><u>Segment 4</u></p> qualified sites=30 Bell wins=8, rate=27% useable resp=24, rate=80% premium wins=1, rate=4% Bell wins=7, rate=29%

Total Qualified Sites = 150

Useable Responses = 106

Useable Response Rate = 71%

6.1.5 Data Sufficiency for PLS Analysis

Can the results of the PLS analysis be applied with confidence to the sample of 106 respondents? The issue is whether or not the sample size of 106 is "big enough". The issue of minimum required sample size was discussed in Section 5.1.6 and 5.4.1; the approximation of 10-to-1 for the most complex regression suggested that a minimum of 50 respondents would be required. Because there were 106 useable responses from a potential list of 150 qualified sites (Section 6.1), the minimum requirement was exceeded, and analysis could proceed. However, the issue will be re-examined in Section 6.4.6.

6.2 REFINING THE CONSTRUCT MEASUREMENT MODEL

Even though there were deemed to be a sufficient number of responses to proceed with an analysis, the raw database required refinement prior to a comprehensive PLS analysis. The first step was to enter substitutions for missing data, because PLS cannot accommodate cases with missing data.

6.2.1 Substitutions for Missing Data

Of the 106 useable responses, 32 contained missing data. Three types of missing data were noted: 1) 24 single entries were missing for random questions; 2) 7 entries were missing for the question concerning price premium (Q90); and 3) 6 series of questions were not answered at all. The series not answered were: Q1-Q20 concerning Reputation for Service (not answered once); Q52-Q69 concerning Expectations of Technical Performance (not answered three times); and Q70-Q89 concerning Expectations of Service (not answered twice).

How were these missing data to be treated? Tabachnik and Fidell (1989 p. 60) observe:

"If only a few data points are missing in a random pattern from a large data set, the problems are usually not serious and almost any procedure for handling them yields similar results ... Unfortunately, there are as yet no firm guidelines for how much missing data can be tolerated for a sample of a given size."

They then offer these various solutions: 1) delete the cases with the missing variables; 2) estimate the missing data using prior knowledge or a well-educated guess; 3) substitute a mean for that item using all other cases; 4) substitute a mean for that item using all cases of a similar group, e.g. just the Public Sector buyers; or 5) estimate a value by regressing other related variables. Deleting the cases with missing data was not an attractive option because the number of cases was small, but the other options proved helpful when making the final decisions. Indeed, the different types of missing data were handled in different ways.

In the case of the 24 random missing data points, it seemed likely that each question was not answered either through oversight or through lack of information. For example, in one case the question concerning conformance to safety standards (Q62) was probably left blank through lack of information. In such cases, a value was entered which was the researcher's best estimate of what the respondent would have provided with full information, i.e., the mean of the other items in the missing item's scale.

The 7 missing values for price premium (Q90) presented an entirely different problem. In this case, it was likely that the information was withheld because of concerns about confidentiality. This was confirmed in conversations with five of the seven respondents (two respondents were unavailable). With further assurances of confidentiality, four of the five respondents contacted provided an answer "to the nearest 5%", which was judged to be satisfactory. The three other missing values were estimated by applying a simple correlation coefficient to the respondent's answer to with Q94 (lower overall cost to implement). It had been observed that Q90 and Q94 were highly correlated, and thus this correlation coefficient was

applied as the most accurate way to estimate Q90. This technique is an elementary application of the regression method suggested by Tabachnik and Fidell (1989).

The missing series were handled with a combination of estimates based on knowledge and best guesses. The single missing Reputation for Service series was caused by the respondent's unfamiliarity with one of the two finalist suppliers. With the respondent's permission, the neutral values (i.e., 4's) were entered. All three missing Expectations of Technical Performance series arose in cases where the two finalist suppliers were offering the identical hardware manufactured by Northern Telecom; thus, in these three cases, the buyers did not feel there were any technical differences. With the respondents' permission, the neutral values (i.e., 4's) were entered. The two respondents were not consulted regarding the two missing Expectations of Service series. These might have been caused by respondent fatigue or by lack of differences in expectations. The substitution of neutral values was judged to be the least disruptive solution.

6.2.2 The Disaggregated Measurement Model

After making all necessary substitutions for missing data, the next step was to analyze and refine the "disaggregated" measurement model. This refers to the complete set of scales similar to the set of scales previously analyzed in Exhibit 5-E. Such an analysis would require an examination of all loadings and cross-loadings. Then, if the outcome were proven satisfactory, an analysis of the aggregated measurement model using summed scales could proceed.

A satisfactory disaggregated measurement model with 18 sub-constructs and 3 constructs quickly emerged (Exhibit 6-E). With only one exception, every questionnaire item loaded onto its sub-construct or construct with $\lambda \geq 0.7$; and with only one exception, every item loading

EXHIBIT 6-EDISAGGREGATED MEASUREMENT MODEL: REFINED LOADINGS

- Notes: 1) Construct names correspond with Exhibit 5-H
 2) Question numbers correspond with Appendices G and H
 3) PLS computation completed in five iterations
 4) * indicates a loading <0.7
 5) ** indicates a cross-loading > loading

Sub-Construct or Construct	Ques- tion No.	Weight of Ques- tion	Loading of Ques- tion	Average Cross- Loading	Highest Cross- Loading
X11 PastServAtten	15	.184	.733	.378	.659 on X13
	17	.263	.848	.463	.718 on X13
	11	.273	.866	.494	.816 on X12
	14	.241	.817	.430	.784 on X13
	1	.253	.825	.418	.747 on X13
X12 PastServCollab	9	.282	.794	.452	.700 on X11
	20	.260	.790	.460	.775 on X11
	2	.239	.736	.386	.583 on X11
	6	.271	.817	.457	.716 on X13
	3	.237	.732	.370	.584 on X13
X13 PastServIntens	18	.192	.853	.434	.802 on X11
	19	.231	.849	.480	.793 on X11
	8	.250	.891	.495	.807 on X13
	4	.278	.864	.500	.834 on X12
	5	.216	.823	.418	.698 on X11
X14 PastServReliab	13	.296	.871	.402	.550 on X13
	16	.258	.735	.412	.676 on X34
	12	.313	.809	.342	.522 on X22
	10	.257	.779	.368	.671 on X11
	7	.163	.610*	.255	.538 on X13
X21 DocnContent	42	.436	.898	.551	.742 on X22
	43	.372	.885	.495	.827 on X22
	44	.355	.788	.469	.599 on X22
X22 DocnCommun'n	41	.257	.779	.368	.671 on X11
	45	.163	.610*	.255	.538 on X13
	46	.148	.878	.459	.688 on X21
	47	.135	.786	.406	.595 on X21

cont.

EXHIBIT 6-E (cont.)

Sub-Construct or Construct	Ques- tion No.	Weight of Ques- tion	Loading of Ques- tion	Average Cross- Loading	Highest Cross- Loading
X22 (cont.)	48	.141	.803	.454	.696 on X21
	49	.159	.836	.532	.764 on X21
	50	.136	.836	.392	.624 on X21
	51	.169	.892	.470	.779 on X21
X31 PresBidAtten	22	.201	.836	.394	.731 on X32
	25	.215	.826	.398	.744 on X32
	35	.306	.876	.581	.872 on X33
	23	.216	.889	.447	.794 on X32
	28	.226	.858	.457	.810 on X32
X32 PresBidCollab	31	.247	.919	.483	.874 on X31
	30	.240	.897	.469	.811 on X31
	21	.194	.851	.382	.773 on X31
	29	.258	.852	.482	.745 on X31
	24	.219	.777	.404	.724 on X31
X33 PresBidIntens	36	.215	.850	.495	.753 on X31
	40	.220	.788	.455	.640 on X31
	37	.252	.883	.546	.805 on X31
	34	.205	.820	.483	.732 on X32
	39	.268	.900	.579	.785 on X34
X34 PresBidReliab	38	.294	.856	.547	.811 on X33
	26	.190	.839	.401	.679 on X32
	27	.243	.815	.419	.662 on X14
	32	.262	.879	.493	.760 on X32
	33	.218	.732	.389	.585 on X33
Y11 ExpServAtten	82	.212	.867	.500	.835 on Y13
	88	.238	.877	.536	.829 on Y13
	74	.241	.926	.553	.901 on Y12
	72	.217	.866	.489	.864 on Y12
	77	.222	.883	.490	.828 on Y12
Y12 ExpServCollab	71	.241	.891	.560	.866 on Y13
	73	.219	.897	.514	.850 on Y11
	75	.210	.752	.459	.665 on Y11
	84	.255	.896	.584	.865 on Y13
	76	.223	.910	.530	.918 on Y11**

cont.

EXHIBIT 6-E (cont.)

Sub-Construct or Construct	Ques- tion No.	Weight of Ques- tion	Loading of Ques- tion	Average Cross- Loading	Highest Cross- Loading
Y13 ExpServIntens	86	.233	.894	.538	.862 on Y12
	89	.224	.858	.554	.804 on Y11
	83	.235	.902	.556	.880 on Y11
	70	.220	.787	.489	.745 on Y12
	87	.236	.910	.540	.828 on Y12
Y14 ExpServReliab	78	.235	.875	.531	.813 on Y12
	81	.238	.850	.470	.694 on Y13
	79	.229	.856	.443	.600 on Y12
	80	.268	.864	.583	.833 on Y11
	85	.207	.800	.450	.737 on Y13
Y21 ExpSpecConf	67	.342	.831	.525	.791 on Y22
	58	.331	.814	.483	.674 on Y23
	62	.257	.820	.363	.585 on Y22
	64	.276	.851	.381	.614 on Y24
Y22 ExpFuncFeat	52	.274	.882	.449	.745 on Y23
	63	.281	.876	.510	.814 on Y23
	56	.279	.888	.496	.772 on Y23
	55	.289	.918	.495	.786 on Y23
Y23 ExpSystFriend	60	.227	.815	.456	.703 on Y24
	59	.201	.822	.490	.670 on Y24
	57	.228	.857	.530	.824 on Y22
	68	.192	.865	.412	.716 on Y22
	69	.176	.844	.427	.783 on Y22
	53	.167	.836	.410	.798 on Y22
Y24 ExpUserFriend	61	.278	.860	.375	.674 on Y22
	66	.290	.894	.465	.741 on Y21
	54	.290	.854	.480	.771 on Y22
	65	.278	.913	.415	.678 on Y21
Y3 Exp\$Costs	90	.285	.708	.216	.521 on Y5
	100	.438	.810	.368	.689 on Y4
	94	.482	.920	.412	.752 on Y4
Y4 Relative Value	98	.299	.882	.563	.764 on Y5
	101	.267	.854	.425	.791 on Y3
	102	.293	.903	.484	.795 on Y3
	103	.281	.867	.532	.717 on Y5
Y5 Choice	Y/N	1.000	1.000	.503	.790 on Y4

exceeded its maximum cross-loading. These conditions indicated satisfactory internal consistency and discriminant validity. Indeed, discriminant validity was good enough to permit a complete PLS analysis using the disaggregated measurement model. The analysis was completed in only 5 iterations, with no errors reported.

There were two important implications arising from the successful disaggregated analysis. First, even though the cross-loadings tended to be high for items within clusters of sub-constructs (e.g. PastServAtten, PastServCollab, PastServIntens and PastServReliab), the results indicated that the respondents could distinguish between the closely related behaviours of Attention, Collaboration, Intensity and Reliability. Second, even though cross-loadings in some cases were high for items across clusters (e.g. PastServReliab and PastBidReliab), the results indicated that respondents could also distinguish between the various temporal stages of a B-S relationship.

The satisfactory measurement model did not emerge totally without challenge, and several cycles of PLS analysis were required. The challenges lay in particular with the two constructs Expected \$Costs and Relative Value. In the initial analysis, \$Costs was measured by the 5 items Q90-Q94. The first cycle showed, however, that Q100 (operating and maintenance costs) loaded more highly on \$Costs than on its target sub-construct \$Return. In retrospect this seemed logically consistent, because in the PBX business maintenance contract prices were quoted as part of the bid. Therefore, in the second cycle, \$Costs was measured by 6 items (Q90-Q93, Q100, and Q94), which loaded .478, .715, .759, .855, .670, and .813, respectively. The unexpectedly low loadings for Q90 and Q100 suggested the possibility of a bi-dimensional scale. Indeed, follow up cycles exposed two scales, consisting of: 1) Q90, Q100 and Q94; and 2) Q91, Q92 and Q93. Because the explained variance of the construct Relative Value was greater using the former three items, they were selected as the most favourable measures of \$Costs. This also explains the presence of only three measures

of \$Costs in Exhibit 6-E, which is fewer than originally desired. The latter three items were discarded.

Other challenges were encountered with the measurement of the Relative Value construct. According to the revised research model in Exhibit 5-P, Relative Value was to be measured by 4 sub-constructs: Benefits, measured by Q95-Q98; Return, measured by Q99-Q102; Confidence, measured by Q103; and Easy Choice, measured by Q104-Q106. However, items Q95-Q97 concerning functional, service and user benefits loaded less than 0.4, and were discarded. Item Q100 concerning operating and maintenance costs, as noted above, loaded most highly on \$Costs and was thus reassigned. Items Q104-Q106 concerning Choice Difficulty loaded most highly on Choice, and were dropped because they were judged to be conceptually different from the desired dependent construct. Thus, only 4 items remained out of the original 12: Q98 concerning need satisfaction, Q101 concerning return on investment, Q102 concerning more for the money, and Q103 about confidence. Each of these four items loaded at 0.85 or greater, so the scale was finally judged to be satisfactory.

It was interesting, and promising, that none of the other scales required any refinement in spite of their originality and potential for poor discriminator. This was evidence of the value of peer review of the measurement model, and the pre-test.

6.2.3 The Aggregated Measurement Model

Having confirmed a satisfactory disaggregated measurement model, the next step was to define a procedure for aggregating measures in order to test the aggregated research model (Exhibit 5-H). For example, a single measure was required for PastServAtten, instead of the 5 original items Q15, Q17, Q11, Q14 and Q1.

In multivariate analysis, e.g. factor analysis, one accepted way of combining multiple measures into a single overall "factor score" is to apply factor weights to each measure (e.g. Kleinbaum and Kupper 1978, p.402). These overall factor scores can then be used "in other statistical procedures ... to produce a more powerful or more interpretable basic analysis" (Gorsuch 1983, p.359). Hence, using the weights produced by PLS (Exhibit 6-E), a single aggregate measure for PastServAtten was created as follows:

$$\text{PastServAtten}_i = (.184 \times \text{Q15}_i) + (.263 \times \text{Q17}_i) + (.273 \times \text{Q11}_i) \\ + (.241 \times \text{Q14}_i) + (.253 \times \text{Q1}_i)$$

Using a similar procedure, aggregate measures were created for all the items measuring the aggregate constructs X1 (PastServRelp), X2 (Documentation), X3 (PresBidRelp), Y1 (ExpServRelp), and Y2 (ExpFuncBen). Using these aggregate measures, plus the three single items for \$Costs and four single items for Relative Value, the aggregated research model was re-analyzed with PLS. The resulting measurement model, showing the weights and new loadings for each of the eight constructs, is shown in Exhibit 6-F. An analysis of the loadings and cross-loadings is shown in Exhibit 6-G.

In all cases except for \$Costs the loadings were uniformly high and greater than 0.8; in the case of \$Costs, one item loaded at 0.697. In all cases, the loadings were much higher than the average cross-loadings, and higher than the highest cross-loading. These results indicated a satisfactory measurement model; indeed, as will be discussed in Section 6.3, the measurement model was found to display strong reliability, internal consistency and discriminant validity.

6.2.4 Data Consistency with PLS Assumptions

Prior to a detailed examination of Construct (measurement) validity, it was necessary to investigate whether the data appeared to be consistent with the assumptions of PLS. If the data were found to be inconsistent,

EXHIBIT 6-F
AGGREGATED MEASUREMENT MODEL: REFINED LOADINGS AND WEIGHTS

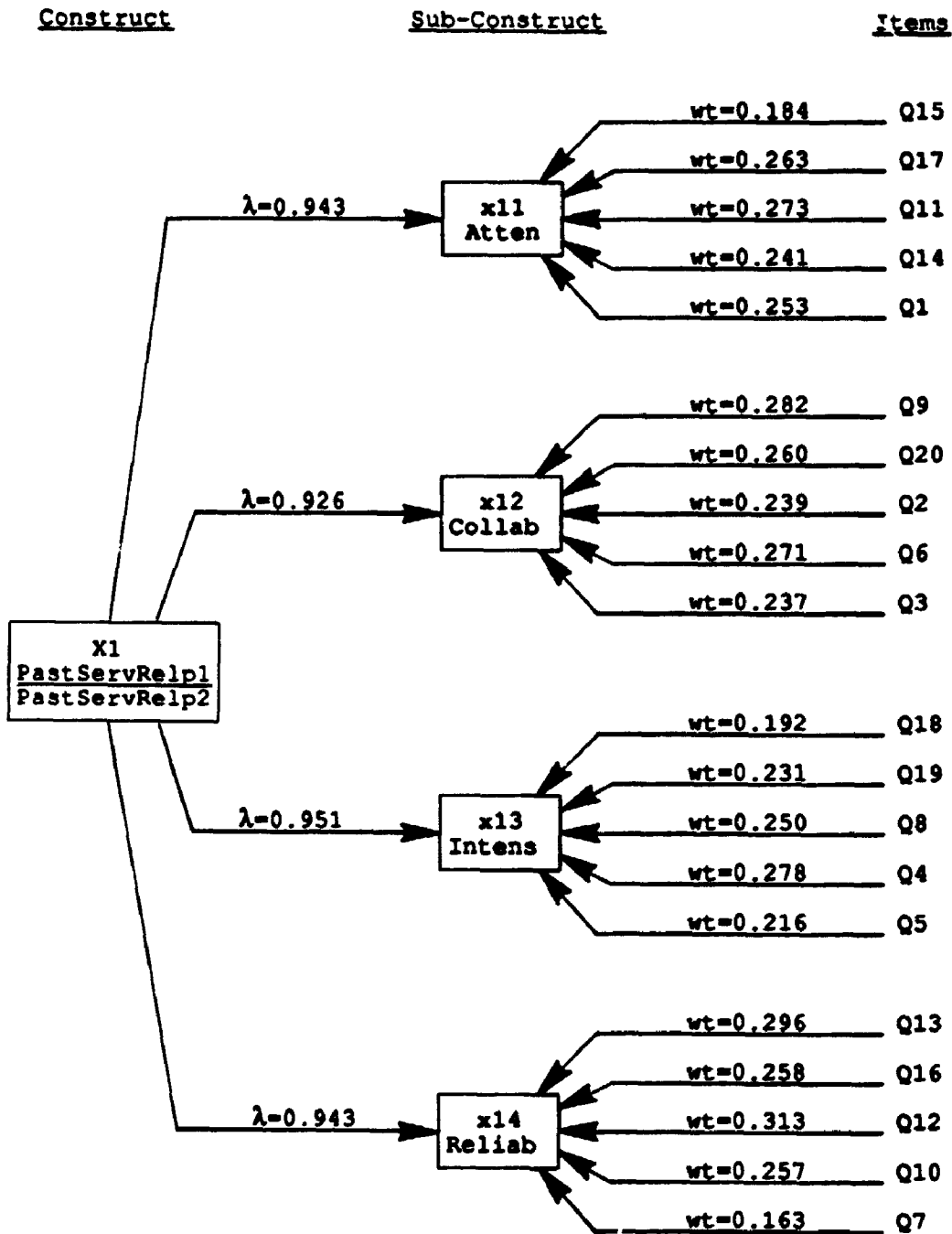


EXHIBIT 6-F (cont.)

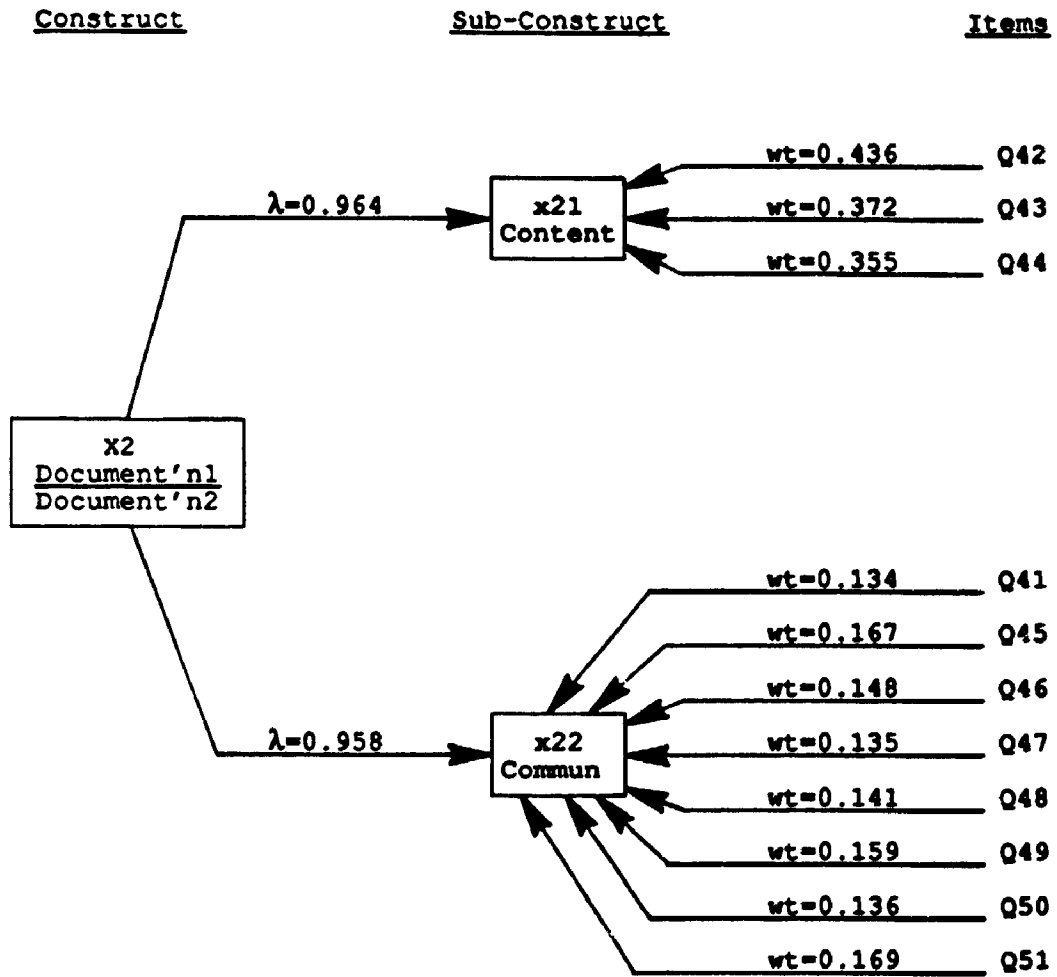


EXHIBIT 6-F (cont.)

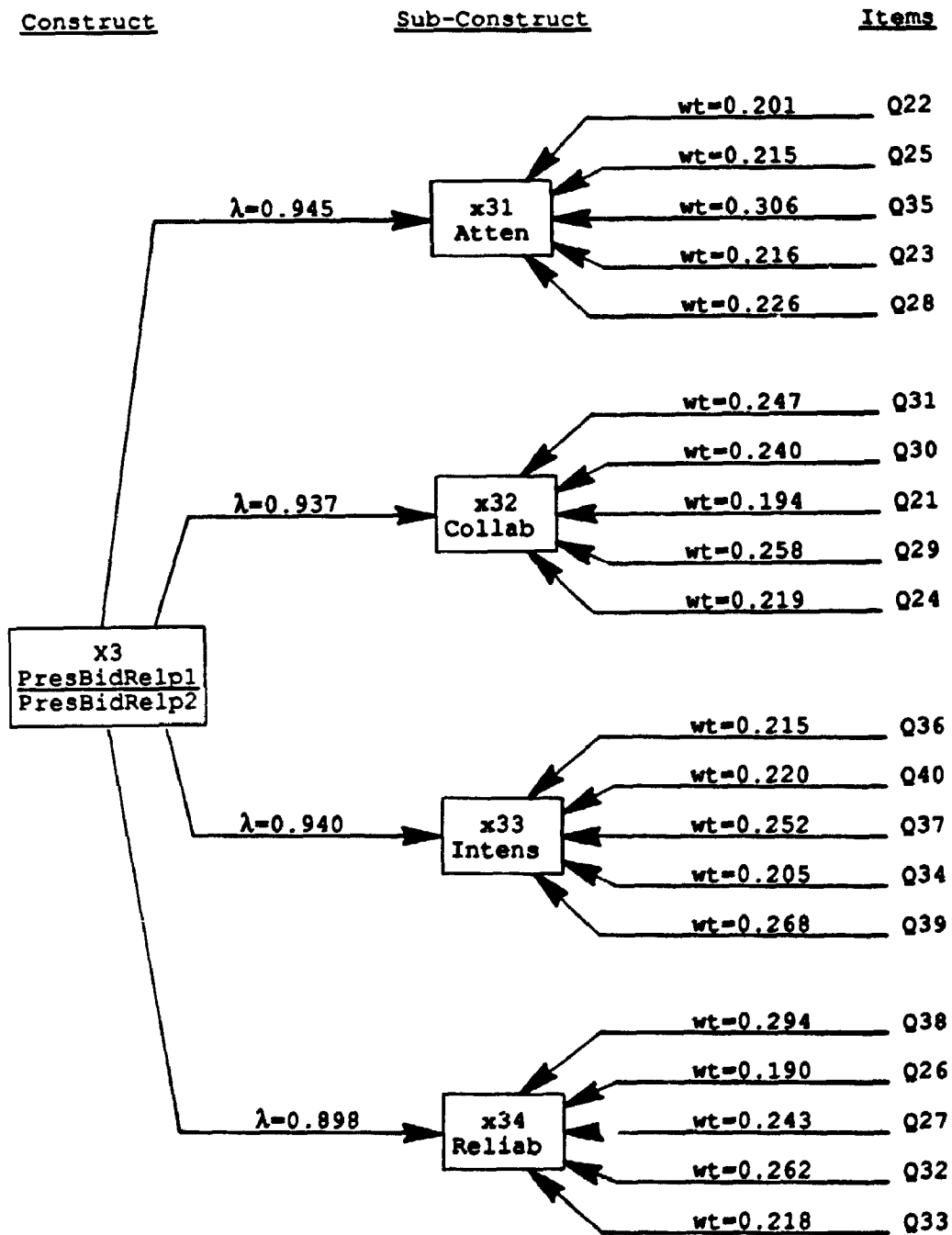


EXHIBIT 6-F (cont.)

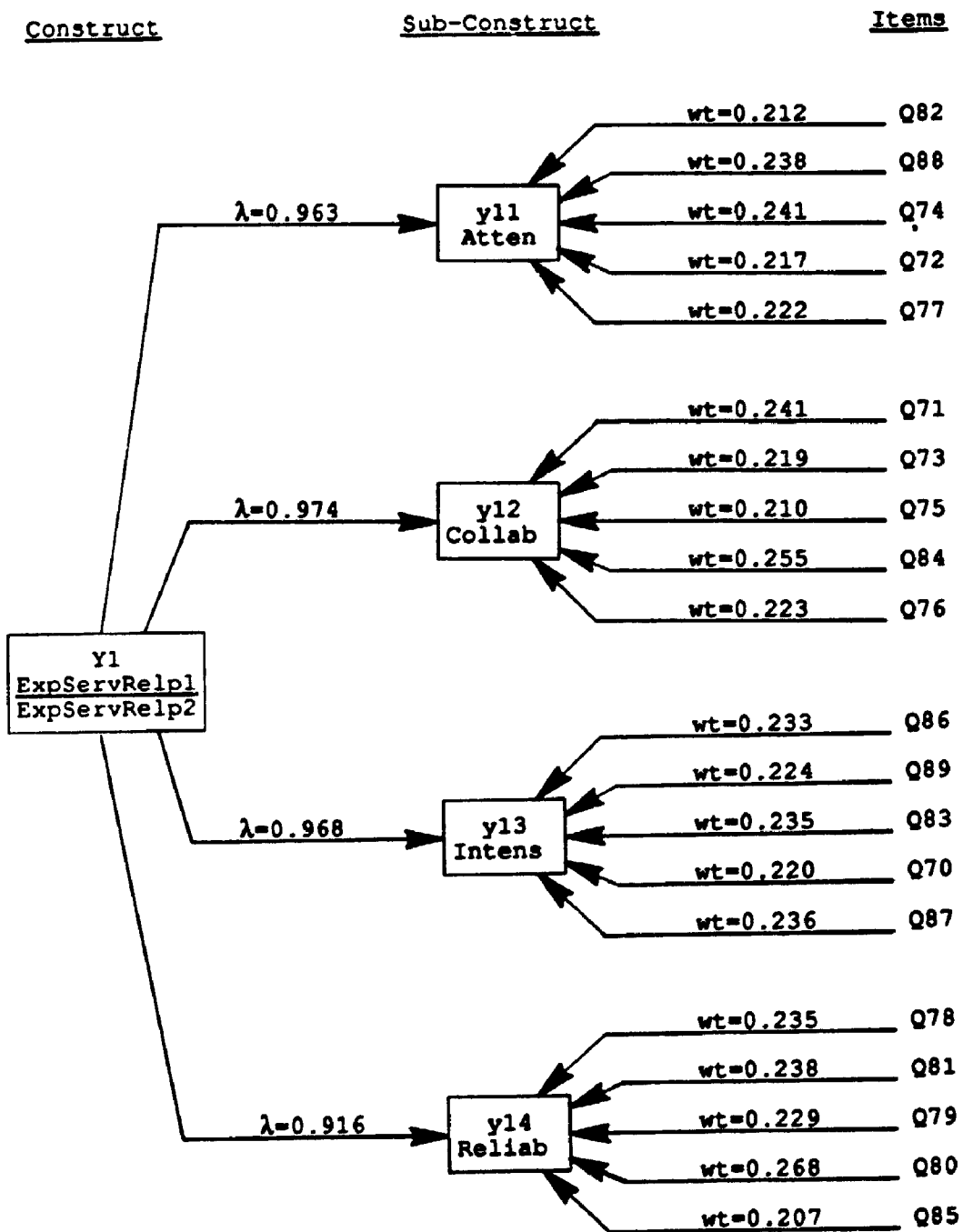


EXHIBIT 6-F (cont.)

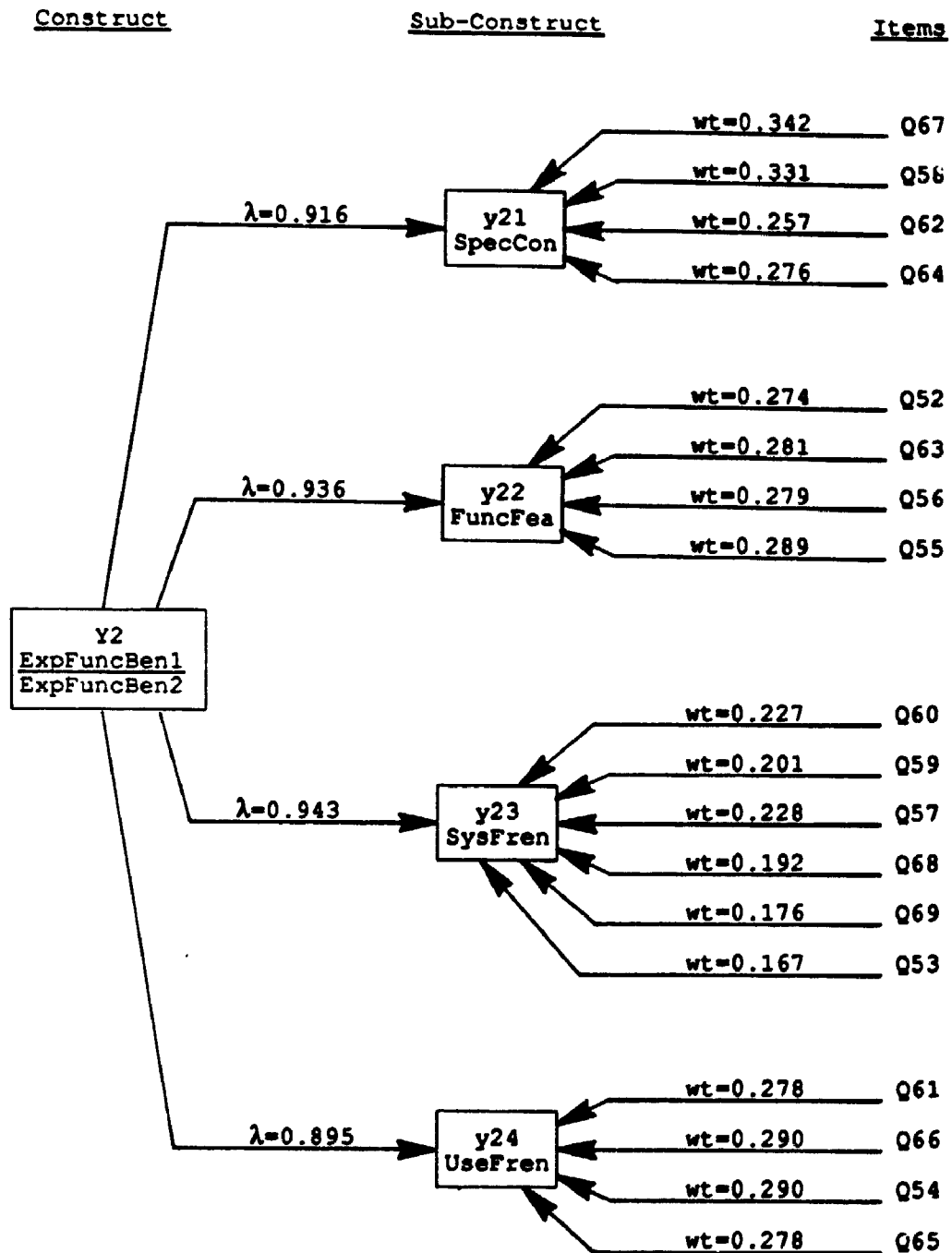


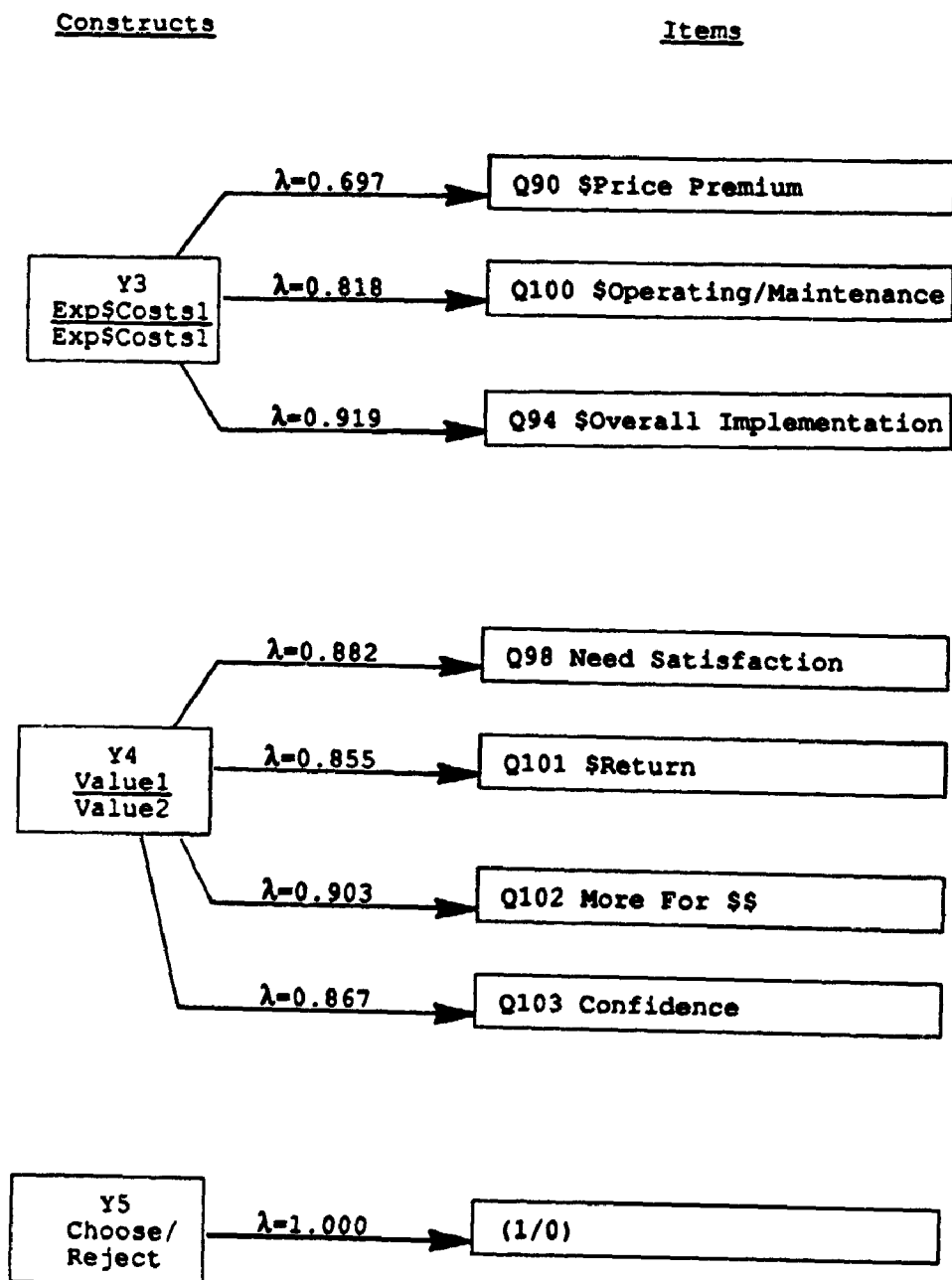
EXHIBIT 6-F (cont.)

EXHIBIT 6-G

AGGREGATED MEASUREMENT MODEL - REFINED
LOADINGS AND CROSS-LOADINGS

Construct	Items (or sub-constructs)	Item's Loading	Average Cross-Loading	Highest Cross-Loading
X1 PastServRelp	Attention ($\Sigma 5$)	.943	.455	.725 on X3
	Collabor'n ($\Sigma 5$)	.926	.475	.712 on X3
	Intensity ($\Sigma 5$)	.951	.476	.661 on X3
	Reliability ($\Sigma 5$)	.829	.402	.623 on X2
X2 Document'n	Content ($\Sigma 3$)	.964	.600	.652 on Y1
	Communic'n ($\Sigma 8$)	.958	.527	.617 on Y1
X3 PresBidRelp	Attention ($\Sigma 5$)	.945	.474	.682 on X1
	Collabor'n ($\Sigma 5$)	.937	.449	.654 on X1
	Intensity ($\Sigma 5$)	.940	.552	.707 on X1
	Reliability ($\Sigma 5$)	.898	.492	.718 on X1
Y1 ExpServRelp	Attention ($\Sigma 5$)	.963	.586	.733 on Y4
	Collabor'n ($\Sigma 5$)	.974	.613	.757 on Y4
	Intensity ($\Sigma 5$)	.968	.625	.759 on Y4
	Reliability ($\Sigma 5$)	.916	.603	.727 on X2
Y2 ExpFuncBen	SpecConform ($\Sigma 4$)	.916	.523	.612 on Y4
	FuncFeat ($\Sigma 4$)	.936	.541	.671 on X2
	SystFriend ($\Sigma 6$)	.943	.557	.639 on Y5
	UserFriend ($\Sigma 4$)	.895	.484	.575 on Y4
Y3 Exp\$Costs	\$Price	.697	.287	.521 on Y5
	\$Op/Maint	.818	.427	.689 on Y4
	\$Total Implem'n	.919	.495	.752 on Y4
Y4 Rel Value	Need Satisf'n	.882	.625	.764 on Y5
	\$Return	.855	.498	.794 on Y3
	More For \$\$	.903	.561	.796 on Y3
	Confidence	.867	.585	.727 on Y1
Y5 Choose/ Reject	1/0	1.000	.575	.790 on Y4

then the application of PLS would be invalid.

As was noted previously in Section 5.1.5, PLS does not make many rigorous assumptions for its input data. There are no requirements for normal distributions, and data can even be of the nominal or ordinal variety. However, PLS applies Ordinary Least Squares (OLS) in its estimation algorithms, and thus the OLS assumption of uncorrelated residuals on the manifest variables must be checked. Lohmöller (1989, p.55) corroborates this requirement by suggesting that the fit of the outer (measurement) model "can be judged to be satisfactory if ... the residual covariances are low enough." Inspection of the Outer Residual Covariance matrix in the PLS output revealed that the covariances were randomly scattered with respect to sign, and the values appeared low. The SUMMARY OF ANALYSIS indicated that the root mean square of the outer model residual covariance was 0.035. Thus, the assumption of uncorrelated error did not appear to be violated.

A second PLS assumption (Lohmöller 1989, p.28) regarding the outer (measurement) model is that the residuals of the manifest variables are uncorrelated with their own latent variable:

$$\text{cov}(\epsilon_j; \eta_j) = 0$$

An inspection of the COV(E,ETA) matrix in the PLS output revealed that the values appeared randomly scattered with respect to sign, and were quite low. The SUMMARY OF ANALYSIS indicated that the root mean square of COV(E,ETA) was 0.046. Thus, the second assumption did not appear to be violated.

Finally, Lohmöller (1989, p.55) suggested that the fit of the total model could be judged as satisfactory if "the covariance ... of inner and outer residuals is low enough." An inspection of the COV(E,U) matrix in the PLS output revealed that the values appeared to be randomly scattered

with respect to sign, and were quite low. The SUMMARY OF ANALYSIS indicated that the root mean square of $COV(E,U)$ was 0.044. Thus, the requirement for low inner/outer residual covariance did not appear to be violated.

In summary, the investigation of the data's consistency with PLS assumptions supported the conclusion that the minimal requirements had not been violated. Therefore, an investigation of construct (measurement) validity using the aggregated measurement model appeared warranted.

6.2.5 Discussion Regarding Measurement Model Findings

At the completion of the refinement of the measurement model, five of the eight constructs were being measured by aggregated multiple item scales, whereas \$Costs and Relative Value were being measured by simple multiple item scales. The scales of the latter two constructs proved to be particularly difficult to refine, showing evidence of multidimensionality, but lacking a sufficient number of items to explore an aggregated scale. This represents an opportunity for scale development in future research.

Perhaps the most important discoveries to emerge from the scale refinement were 1) the clarity with which the respondents could distinguish between the phases of a relationship (i.e reputation, current, expected); and 2) the clarity with which the respondents could distinguish between the behavioural dimensions of the relationship in each phase (i.e attention, collaboration, intensity and reliability). These discoveries may have applications for all managers who are concerned with the quality of inter- and intra-organizational relationships - in new product development, sales and marketing, sales support, after-sales on-site service, professional services, the customer service department, etc.

6.3 CONSTRUCT (MEASUREMENT) VALIDITY

Construct validity refers to the extent to which each theoretical construct and/or sub-construct has been successfully operationalized (Kidder and Judd 1986, p.28), or in other words, the extent to which each construct and/or sub-construct has been effectively measured by its measurement instrument. A thorough assessment of construct validity requires several steps, and an explanation of each step follows.

6.3.1 Face Validity

Face validity "refers to the extent to which, on the face of it, a measure's items appear to tap the construct of interest" (Kohli and Zaltman 1988, p.203). A qualitative judgment must be made that a large portion of the construct has been accurately tapped by the multiple items, and that every item belongs. This also includes the elimination of wording and/or items which may produce biased responses.

Several steps were taken to assure maximum face validity. First, a broad-based review of the marketing relationships literature and purchasing literature helped to identify an extensive set of potential measurement items. Second, reviews of the draft instrument by peers, Bell managers, and faculty members helped to eliminate irrelevant, poorly-worded, confusing or ambiguous questions. Third, the positioning of the study as a Customer Satisfaction Audit, and the explicit requests for honest answers backed by guarantees of confidentiality, were expected to encourage respondents to provide more honest and accurate responses (this could be statistically checked - see Section 6.3.5). Fourth, the questions for all of the constructs were randomly ordered on the page, which was intended to minimize patterned responses. Finally, the pre-test with Bell's purchasing professionals, including a trial PLS analysis, served as a last opportunity to modify or drop ineffective items. As a result of

this series of checks and procedures, the questionnaire items were judged by the researcher to possess satisfactory face validity.

6.3.2 Internal Consistency

Following the subjective assessment of a construct's face validity, there are several statistical indices which help to assess whether or not the construct's measurement scale is internally consistent. A scale is internally consistent if it is both unidimensional and reliable (Venkatraman and Grant 1986), or in other words, if each of the scale's items has a uniformly high loading on the construct. In such a case, the items are showing agreement with each other, and measurement error for each item is low; thus, there can be confidence that the scale has captured a close approximation of the construct's true measure.

Several indices are available to confirm a scale's internal consistency. One of the most widely used indicators is Cronbach's reliability coefficient Alpha, which is calculated using a scale's average inter-item correlation (Nunnally 1978, p.211). A value of 0.7 or above is considered acceptable in the early stages of a research program (Nunnally 1978, p.245).

A second indicator is Fornell and Larcker's (1981) reliability coefficient. It is similar to Cronbach's Alpha, and is calculated as follows:

$$\rho_{FL} = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + (\sum \epsilon_i)}$$

where ρ_{FL} = Fornell and Larcker's coefficient
 λ_i = item loading on construct
 ϵ_i = item's error variance

A more conservative third indicator is the scale's average variance extracted (Fornell and Larcker 1981, p.46). According to Fornell and

Larcker (1981, p.46), the average variance extracted for a scale should be greater than 0.5, which indicates that the items can explain more variance than the error associated with the measure of that construct. It is calculated as follows:

$$\rho_{avg} = \frac{(\sum \lambda_i^2)}{n}$$

where ρ_{avg} = average variance extracted
 λ_i = item loading on construct
 n = number of items in construct

Exhibit 6-H summarizes Cronbach's α values, Fornell and Larcker's coefficient values, and average variance extracted, for all eight constructs. All of the Cronbach coefficients, and Fornell and Larcker coefficients, exceed the minimum threshold suggested by Nunally. Furthermore, all values for average variance extracted are well in excess of the minimum 0.50. Therefore, internal consistency of the scales was judged to be satisfactory.

6.3.3 Convergent Validity

Frequently in the social sciences, a subsequent test to internal consistency or reliability is "convergent validity". Convergent validity "requires that the measure of a construct correlates strongly with other maximally different measures of the construct" (Kohli and Zaltman 1988, p.203). In other words, the scale (set of items) being considered must correlate highly with an entirely different scale which has been used to measure that same construct in a separate study. However, such an analysis is not feasible when only one scale exists for the construct. Therefore, convergent validity will not be assessed in this analysis.

EXHIBIT 6-H
CONSTRUCT INTERNAL CONSISTENCY MEASURES

Construct	Items (or sub-const)	Item's Loading	Cronbach's Alpha	Fornell and Larcker Reliability	Average Variance Extracted
X1 PastServRel	Attention	.943	.934	.953	.835
	Collab'n	.926			
	Intensity	.951			
	Reliab'y	.829			
X2 Document'n	Content	.964	.917	.960	.924
	Commun'n	.958			
X3 PresBidRelp	Attention	.945	.948	.963	.865
	Collab'n	.937			
	Intensity	.940			
	Reliab'y	.898			
Y1 ExpServRelp	Attention	.963	.968	.977	.913
	Collab'n	.974			
	Intensity	.968			
	Reliab'y	.916			
Y2 ExpFuncBen	SpecConf	.916	.941	.958	.851
	FuncFeat	.936			
	SysFriend	.943			
	UseFriend	.895			
Y3 Exp\$Costs	\$Price	.697	.756	.856	.666
	\$Op/Maint	.818			
	\$TotImpl	.919			
Y4 Rel Value	NeedSatis	.882	.898	.930	.769
	\$Return	.855			
	MoreFor\$\$	.903		
	Confidence	.867			
Y5 Choose/Reject	1/0	1.000	1.000	1.000	1.000

6.3.4 Discriminant Validity

Discriminant validity "requires that the correlation between measures designed to capture the same construct be greater than correlations involving those measures and other constructs" (Ruekert and Churchill 1984, p.226). One way to begin assessment of discriminant validity in this situation is to examine each construct's scale's cross-loadings in the PLS loading and cross-loading table. In this table, the loadings of an individual item should be higher on its own construct than on another construct. A review of Exhibit 6-G shows that all items load most highly on their own constructs.

A second technique is suggested by Fornell and Larcker (1981, p.46). Two constructs satisfy the requirements for discriminant validity if the squared correlation between the two constructs' scales is less than the average variance extracted for either construct. The matrix in Exhibit 6-I shows average variance extracted on the diagonal, and squared inter-construct correlations in the off-diagonals. By examining the row and column corresponding to a diagonal entry, all squared inter-construct correlations can be compared with average variance extracted. For example, the average variance extracted for construct Y2 is 0.851. It exceeds the squared correlation with X1 (.218), X2 (.412), X3 (.294), Y1 (.367), Y3 (.239), Y4 (.449), and Y5 (.341). This is true for all other constructs.

In conclusion, because all constructs' scales had higher loadings than cross-loadings, and all constructs showed higher variance extracted than squared inter-construct correlations, the discriminant validity of the scales was judged to be satisfactory.

6.3.5 "Halo" Effect

In a retrospective study such as this, where respondents have been asked to make comparisons of competitors after their choice of supplier,

EXHIBIT 6-ICONSTRUCT CORRELATION AND VARIANCE-COVARIANCE MATRICESConstruct Correlation Matrix (from PLS output)

	X1	X2	X3	Y1	Y2	Y3	Y4	Y5
X1								
X2	.623							
X3	.743	.670						
Y1	.586	.661	.573					
Y2	.467	.642	.542	.606				
Y3	-.272	-.444	-.326	-.567	-.489			
Y4	.425	.600	.476	.776	.670	-.803		
Y5	.357	.518	.435	.681	.584	-.661	.790	

Construct Variance-Covariance Matrix

- Notes: 1) The diagonal entries are the "average variance extracted" values from Exhibit 6-H.
- 2) The off-diagonal entries are the squares of the construct correlations shown above.

	X1	X2	X3	Y1	Y2	Y3	Y4	Y5
X1	.835							
X2	.388	.924						
X3	.552	.397	.865					
Y1	.343	.437	.328	.913				
Y2	.218	.412	.294	.367	.851			
Y3	.074	.197	.106	.321	.239	.666		
Y4	.181	.360	.227	.602	.449	.645	.769	
Y5	.127	.268	.189	.464	.341	.437	.624	1.000

there are two potential sources for "halo" bias in the respondents' answers. In the first case, a respondent's eventual choice might colour all reported item scores. For example, a system rated favourably overall, and chosen, might be rated equally favourably on all individual items. Hence, if all items were in fact rated equally favourably, then the constructs' scales would not likely pass the test for discriminant validity. Because all scales did pass the tests for discriminant validity without difficulty, this first halo effect did not appear to be a problem.

A related type of bias might stem from the respondent's satisfaction at the time of completing the questionnaire. Dissatisfied respondents might rate the seller's system less favourably than how they might have rated the seller's system at the time of choice. Exhibit 6-J summarizes a series of t-tests performed on all the measurement variables, grouped first by the variable Choice (0 if Bell lost, 1 if Bell won), and then by the respondent's overall Satisfaction (Q122). Respondents were grouped as "satisfied" if their satisfaction score was 6 or 7 on the scale, and grouped as "dissatisfied" if their satisfaction score was 5 or less. This dividing value was arbitrarily selected to keep the groups of roughly equal size (there were few responses less than 4). The results of the t-tests showed that the respondents' answers were biased. In the case where Bell eventually lost the bid (Choice = 0), dissatisfied respondents rated Bell more favourably on all variables except three, and in one case significantly greater. In the case where Bell eventually won the bid (Choice = 1), dissatisfied respondents rated Bell less favourably on all variables except three, and in twelve cases significantly less.

The implications of the discovery of biased responses need to be carefully considered, because such bias could threaten a claim of construct validity. However, the evidence seems to suggest that an individual respondent, if biased at all, tends to be biased uniformly for all answers. For example, in the Choice = 0 group, dissatisfied respondents tend to rate Bell uniformly more favourably; and in the

EXHIBIT 6-J

t-TESTS FOR BIAS ARISING FROM DISSATISFACTION

- Notes: 1) For Choice=0, Grp1 Sat \geq 6 n=35, Grp2 Sat $<$ 6 n=19
 2) For Choice=1, Grp1 Sat \geq 6 n=30, Grp2 Sat $<$ 6 n=22
 3) * indicates $\alpha < 0.05$ (2-tail)

Variable	Choice=0 (loss)			Choice=1 (win)		
	Mean Grp1	Mean Grp2	α	Mean Grp1	Mean Grp2	α
PastAtten	4.06	4.71	.087	5.47	4.85	.066
PastCollab	4.45	5.03	.164	5.77	5.10	.039*
PastIntens	3.69	4.42	.107	5.23	4.62	.055
PastReliab	5.31	5.15	.722	6.28	5.51	.031*
DocCont	4.07	4.28	.634	5.92	5.55	.259
DocCommun	4.56	4.90	.381	6.13	5.57	.090
PresAtten	3.81	4.50	.036*	5.39	4.72	.044*
PresCollab	3.97	4.46	.201	5.38	4.58	.014*
PresIntens	3.65	4.05	.291	5.33	4.83	.122
PresReliab	4.46	4.86	.333	5.86	5.11	.034*
ExpAtten	3.28	3.80	.118	5.61	4.92	.036*
ExpCollab	3.51	4.01	.105	5.92	5.10	.008*
ExpIntens	3.47	3.93	.147	5.94	5.19	.011*
ExpReliab	3.80	4.34	.105	6.21	5.41	.009*
SpecConf	3.63	4.29	.059	5.19	5.02	.628
FuncFest	3.30	3.50	.647	5.09	5.27	.589
SysFriend	3.57	4.00	.218	5.77	5.93	.670
UseFriend	3.42	3.75	.375	4.97	5.06	.794
\$Price	19.85	25.26	.518	-3.53	0.14	.271
\$Op/Maint	5.45	4.73	.133	3.33	4.14	.029*
\$TotImpl	5.94	6.05	.787	3.03	3.77	.115
NeedSatis	2.57	2.74	.642	5.37	5.18	.522
\$Return	2.29	2.89	.116	4.53	4.04	.114
MoreFor\$\$	2.23	2.42	.615	5.33	4.05	.000*
Confident	2.54	2.95	.279	5.70	4.91	.033*

Choice = 1 group, dissatisfied respondents tend to rate Bell uniformly more negatively. This notion about uniformity is supported to some extent by the results of the internal consistency analysis in Section 6.3.2; this analysis generally showed very high consistency coefficients for all constructs. Therefore, within each Choice group, the bias seems to be consistent both positively and negatively; and because the satisfied and dissatisfied groups are of roughly equal size, the "true" value for each variable probably lies somewhere between the reported means for the satisfied and dissatisfied respondents. As a consequence, a claim of construct validity for the study as a whole remains viable.

6.3.6 Discussion Regarding Construct Validity Findings

Section 6.3 has examined the several facets of construct validity, and has concluded that measurement of all the constructs has been satisfactory. This may be attributed to several factors: 1) a broad literature review exposed a thorough set of construct dimensions and potential questionnaire items; 2) the questionnaire design employed several tactics to strengthen validity, such as the satisfaction disguise, the written instructions encouraging honesty, and the ordering of questions from past to present; and 3) the research execution procedures also employed several tactics to strengthen validity, such as peer reviews of the instrument, the random ordering of the questions, the pre-test, and personal conversations with the respondents guaranteeing confidentiality and encouraging honesty. As a consequence of achieving satisfactory construct validity within the measurement model, it was then possible to examine the internal validity of the structural model. This is discussed in the following section.

6.4 INTERNAL (HYPOTHESIS) VALIDITY

Internal validity refers to the extent to which we can reach causal conclusions about the effect of the independent construct on the dependent

construct (Kidder and Judd 1986, p.28), or in other words, the extent to which the hypotheses are supported by the data. As with construct validity, an assessment of internal validity involves several considerations.

6.4.1 Path Estimation and Significance

Path coefficients produced by PLS analysis are similar to the standardized beta coefficients produced in multiple regression analysis. In regression, the magnitudes of the beta coefficients indicate the degree of contribution of the predictor variables to the prediction of the variance of the dependent variable. In PLS analysis, the magnitudes of path coefficients indicate the degree of contribution of the independent constructs to the prediction of the variance of the dependent construct. Hence, a large estimated path coefficient (approaching 1.0) indicates strong prediction, which supports the validity of the hypothesized relationship.

A second factor to consider is the sign of the path, either positive or negative, which indicates a direct or inverse relationship respectively. The estimated sign must conform with the expected sign in order for the hypothesis to be supported.

A third factor is the level of statistical significance associated with the estimate, i.e., the path estimate should be shown to be statistically different from zero. For PLS analysis, a t-statistic can be produced from jackknifed estimates of the path coefficients, using a program developed by Fornell and Barclay (1983). Jackknifing (see Fenwick 1979) is a repetitive procedure whereby multiple estimates of a parameter can be generated by successively dropping a specified proportion of a database. The distribution of the set of parameter estimates is then used to calculate a mean and standard error, and thence to an approximate t-statistic. For the analysis being presented in this chapter, a subset of

a single observation was specified as the subset to be dropped in the jackknife. Therefore, distributions with $n=106$ were used to generate the t-statistics for the tests of path significance.

Exhibit 6-K summarizes the path magnitudes, signs and level of statistical significance associated with each hypothesis in the structural model. Of the 16 coefficients, 15 were substantially and statistically different from zero; however, of the 15, 2 had signs opposite to expectations. Therefore, 13 of the 16 hypotheses received support, but H2, H3, and H8 did not. In the next section, the results for each hypothesis are discussed at more length.

6.4.2 Support for Hypotheses

The extent to which the research hypotheses are empirically supported or refuted represents the chief finding of this dissertation. The essential empirical findings have been presented in Exhibit 6-K and summarized in the previous section. However, because of the importance of these findings, each hypothesis will be re-stated herein, and the extent of its empirical support clearly noted. In the following summary, a t-value greater than 2.0 indicates a 2-tailed $\alpha < 0.05$, which is considered to be statistically significant. Tentative explanations will be provided for those three hypotheses which did not receive support.

H1: The buyer's relative perceptions of past B-S service relationships affect relative expectations for post-purchase B-S service relationships.

SUPPORTED Path=0.204, $t=8.64$, $\alpha_{2-tail} < 0.001$

H2: The buyer's relative perceptions of past B-S service relationships inversely affect relative expectations for the equipment's financial costs.

REJECTED Path=0.164, $t=6.13$, $\alpha_{2-tail} < 0.001$, but unexpected sign

H2 originally suggested that the seller's past service relationship service would have an inverse relationship with the buyer's expectations

EXHIBIT 6-K
STRUCTURAL MODEL - SUPPORT FOR HYPOTHESES?

Hypothesis	Path Coeff.	Jack-knife t df=105	Signif. (2-tail $\alpha < .05$)	Support for Hypothesis
H1 X1 (PastServRel) → Y1 (ExpServRel)	.204	8.64	✓	✓
H2 " → Y3 (Exp\$Costs)	.164	6.13	✓	X ⁽¹⁾
H3 " → Y2 (ExpFuncBen)	-.093	-7.00	✓	X ⁽¹⁾
H4 X2 (Document'n) → Y1 (ExpServRel)	.445	20.78	✓	✓
H5 " → Y3 (Exp\$Costs)	-.098	-5.59	✓	✓
H6 " → Y2 (ExpFuncBen)	.374	24.80	✓	✓
H7 X3 (PresBidRel) → Y1 (ExpServRel)	.141	3.77	✓	✓
H8 " → Y3 (Exp\$Costs)	.000	0.98	X	X
H9 " → Y2 (ExpFuncBen)	.206	8.58	✓	✓
H10 Y1 (ExpServRel) → Y3 (Exp\$Costs)	-.465	-26.63	✓	✓
H11 " → Y2 (ExpFuncBen)	.295	12.81	✓	✓
H12 " → Y4 (Rel Value)	.375	44.53	✓	✓
H13 Y2 (ExpFuncBen) → Y3 (Exp\$Costs)	-.220	-9.36	✓	✓
H14 " → Y4 (Rel Value)	.203	22.25	✓	✓
H15 Y3 (Exp\$Costs) → Y4 (Rel Value)	-.491	-67.06	✓	✓
H16 Y4 (Rel Value) → Y5 (Choice)	.790	248.95	✓	✓

(1) sign of path coefficient opposite to expectations

of total costs; i.e., as the buyer's perception of the seller's past relationships improved, the expectations of total costs would decline because of a reduction of uncertainty in the mind of the buyer, and because improved service would decrease implementation difficulties and operational downtime. However, the results indicate a positive relationship. This may be due to an industry-specific pricing policy, whereby the buyer pays for ongoing service calls at a rate fixed in the original contract, either on a flat rate or pay-as-you-go basis. Hence, a reputation for higher level of service may lead the buyer to infer higher fixed service costs.

H3: The buyer's relative perceptions of past B-S service relationships affect relative expectations for the equipment's functional benefits.

REJECTED Path= -0.093, $t = -7.00$, $\alpha_{2-tail} < 0.001$, but unexpected sign

H3 originally suggested that the buyer's expectation of functional benefits would be positively related with past service relationships, largely because of a reduction of uncertainty. However, the results indicate a small negative relationship. This may arise from an inference that if high level of service is necessary, then the system may be technically deficient.

H4: The buyer's relative perceptions of the bid documentation affect relative expectations for post-purchase B-S service relationships.

SUPPORTED Path=0.445, $t=20.78$, $\alpha_{2-tail} < 0.001$

H5: The buyer's relative perceptions of the bid documentation inversely affect relative expectations for the equipment's financial costs.

SUPPORTED Path=-0.098, $t=-5.59$, $\alpha_{2-tail} < 0.001$

H6: The buyer's relative perceptions of the bid documentation affect relative expectations for the equipment's functional benefits.

SUPPORTED Path=0.374, $t=24.80$, $\alpha_{2-tail} < 0.001$

H7: The buyer's relative perceptions of present B-S bid relationships affect relative expectations for post-purchase B-S service relationships.

SUPPORTED Path=0.141, $t=3.77$, $\alpha_{2-tail} < 0.001$

H8: The buyer's relative perceptions of present B-S bid relationships inversely affect relative expectations for the equipment's financial costs.

REJECTED Path=0.000, $t=0.98$, $\alpha_{2-(t,1)} = 0.3$ n.s.

H8 originally suggested that there would be an inverse relationship between expected total costs and the level of service by the seller during the bid process, because of a reduction of uncertainty in the mind of the buyer. The results indicated no support for this hypothesis, by virtue of a null path coefficient. One possible explanation for this is that the buyer simply cannot make a logical connection between the behaviours of the selling team, and costs which are out of the control of the selling team.

H9: The buyer's relative perceptions of present B-S bid relationships affect relative expectations for the equipment's functional benefits.

SUPPORTED, Path=0.206, $t=8.58$, $\alpha_{2-(t,1)} < 0.001$

H10: The buyer's relative expectations of post-purchase B-S service relationships inversely affect relative expectations for the equipment's financial costs.

SUPPORTED, Path= -0.465, $t= -26.63$, $\alpha_{2-(t,1)} < 0.001$

H11: The buyer's relative expectations of post-purchase B-S service relationships affect relative expectations for the equipment's functional benefits.

SUPPORTED, Path=0.295, $t=12.81$, $\alpha_{2-(t,1)} < 0.001$

H12: The buyer's relative expectations of post-purchase B-S service relationships affect the buyer's expectation of relative value.

SUPPORTED, Path=0.375, $t=44.53$, $\alpha_{2-(t,1)} < 0.001$

H13: The buyer's relative expectations of the equipment's functional benefits inversely affect relative expectations for the equipment's financial costs.

SUPPORTED, Path= -0.220, $t= -9.36$, $\alpha_{2-(t,1)} < 0.001$

H14: The buyer's relative expectations of the equipment's functional benefits affect the buyer's expectation of relative value.

SUPPORTED, Path=0.203, $t=22.25$, $\alpha_{2-(t,1)} < 0.001$

H15: The buyer's relative expectations of the equipment's financial costs inversely affect the buyer's expectation of relative value.

SUPPORTED, Path= -0.491, $t = -67.06$, $\alpha_{2,t(1)} < 0.001$

H16: The buyer's expectation of relative value determines the buyer's choice.

SUPPORTED, Path=0.790, $t = 248.95$, $\alpha_{2,t(1)} < 0.001$

In summary, the PLS path estimates and jackknifed estimates of the t-statistic provided strong support for 13 of the 16 hypotheses. All of the hypotheses involving the Relative Expectations model, i.e., H10-H16, received strong support. Three of the hypotheses involving the exogenous influencers, H2, H3 and H8, were not supported. However, all three exogenous constructs were shown to exert strong influence on at least one endogenous construct. In particular, the effect of Past B-S Service Relationships on the buyer's Expectations, and the effect of Present B-S Bid Relationships on the buyer's Expectations, were supported. Thus, the positive effect of Buyer-Seller relationships on the buyer's expectation of Relative Value, and thus Choice, has been confirmed.

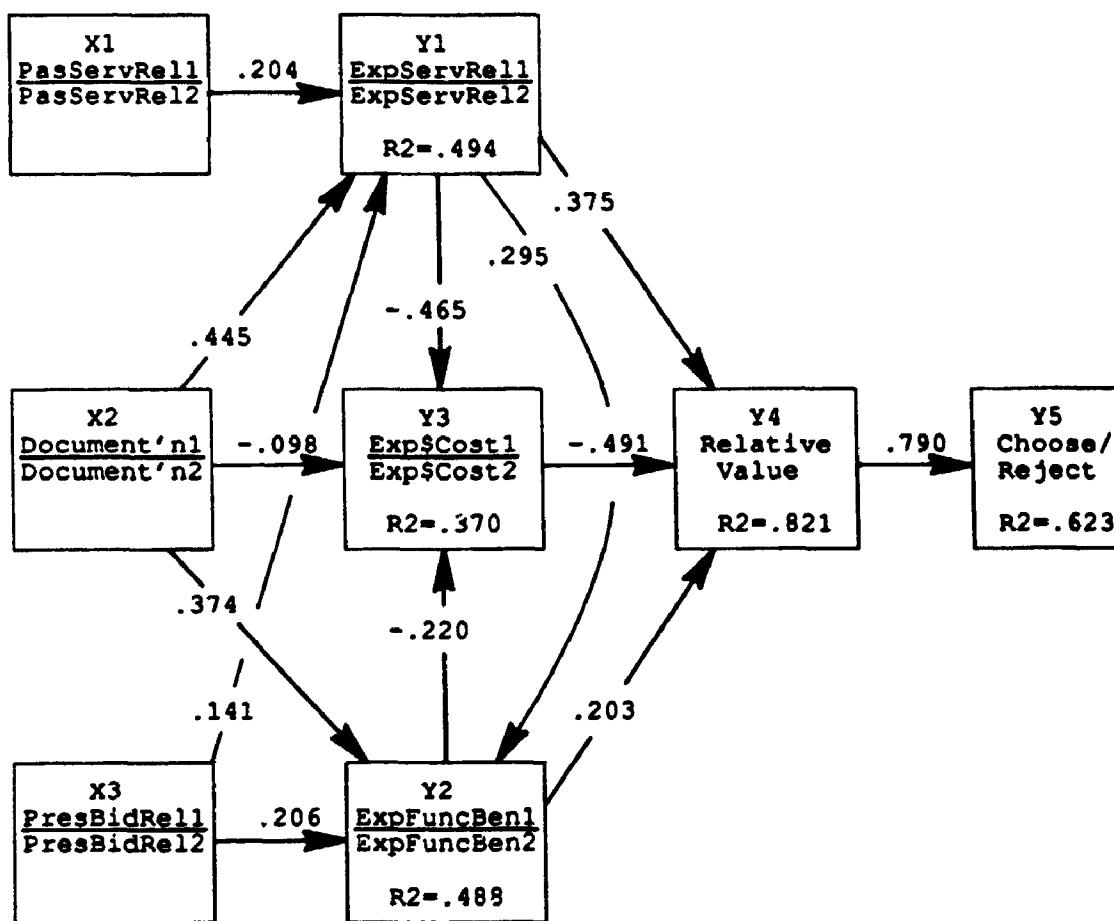
6.4.3 Variance Explained

Confidence in the model as a whole can be further enhanced by the amount of variance explained in the endogenous constructs, particularly Relative Value and Choice. The research model was originally developed with the objective of explaining most of the variance in Relative Value and Choice, whereas the prediction of the buyer's Expectations was initially limited to the important dimensions of the B-S relationship. Thus, the amount of variance explained in Relative Value and Choice should be much greater than for the three Expectations. This was confirmed by the results of the PLS analysis. Exhibit 6-L shows the structural model and PLS path estimates, plus variance explained for the five endogenous constructs Y1-Y5. The amount of variance explained for the buyer's

EXHIBIT 6-L

STRUCTURAL MODEL - SUPPORTED HYPOTHESES AND VARIANCE EXPLAINED

(N=106)



expectation of Relative Value was a very substantial 0.821, about double that of any of the Expectation constructs.

The amount of variance explained for Choice was a relatively disappointing 0.623. This was disappointing because, according to the definition of Relative Value, Choice reflects the buyer's expectation of Relative Value. Therefore, variance explained might have been expected to be much higher, perhaps approaching unity. It was possible, however, that this lower value might have been the result of the binary measurement of Choice with a 1-0 scale. Regression with an ordinaly-scaled dependent variable is not normally recommended for regression analysis, and thus PLS analysis with an ordinal dependent may not be appropriate. A more common approach is to use discriminant analysis; thus, a discriminant analysis of Relative Value on Choice was tried, and is reported in Section 7.2. Very briefly, the four variables used to measure Value were able to successfully predict 88% of the buyer's choices.

Thus, on the basis of variance explained in Relative Value, and on the percentage of Choice explained by Relative Value, confidence in the internal validity of the structural model was considerably enhanced.

6.4.4 Unexplained Correlations

The possibility of missing paths arises when there are large unexplained correlations between constructs. In this case, there were large correlations present between the three exogenous constructs, with no corresponding hypothetical relationship: 0.623 between X1 and X2, 0.743 between X1 and X3, and 0.630 between X2 and X3. One possible explanation for these correlations lies in the order of answering of the questionnaire, e.g. answers about construct X1 may have influenced the answers about X2. Every effort was made to minimize this methods effect by beginning each section of questions with a clear description of context.

Also, the questions were ordered from the past to present to promote consistency with the present versus consistency with previous answers.

A second explanation may be the halo effect, whereby an offering rated favourably overall may be rated favourably on every dimension. Every effort was made to minimize this eventuality by explicitly positioning the study as a satisfaction study, and by repeated coaxing the respondents to provide the bad with the good. Moreover, the investigation of discriminant validity in Section 6.3.4 suggested that respondents had been successful in distinguishing between constructs.

A third explanation for the correlations may be spurious correlation, whereby the three exogenous constructs might all be explained by another unidentified construct. For example, "Degree of Company Training" might explain uniformly high or low performance on all three exogenous constructs in the research model. However, it was beyond the feasible scope of this research project to account for such effects.

In summary, the high correlations between the exogenous constructs X1-X3 have several explanations, including a methods effect, a halo effect, and spurious correlation. Every effort was made to minimize the first two effects, thus spurious correlation may be the most plausible explanation. Regardless of the actual explanation, the values of the previously reported path coefficients and variance explained would not be affected by the addition of any additional hypotheses among the exogenous constructs. Therefore, the internal validity of the research model was judged to be unthreatened by unexplained correlations between the exogenous constructs.

6.4.5 Data Sufficiency for PLS Analysis (Revisited)

In Section 6.1.5 the observation was made that the number of useable responses (n=106) exceeded an estimated requirement of n=50 for a

satisfactory PLS analysis. However, as Bristor (1987) has pointed out, the true test may come after the fact: 1) was the sample large enough to permit the discovery of significant paths; and 2) did the jackknife analysis of the data show stable and normal frequency distributions of the path coefficients? The answer to the first question was clearly affirmative, as 15 out of 16 path coefficients were determined to be highly statistically different from zero (see Section 6.4.2). The answer to the second question was also clearly affirmative. All frequency distributions of the jackknifed path estimates appeared stable and normal (see Exhibit 6-M for example distributions). Thus, the sample size of 106 seemed "big enough" for the PLS results to be applied with confidence to the 106 respondents.

6.4.6 Discussion Regarding Internal (Hypothesis) Validity Findings

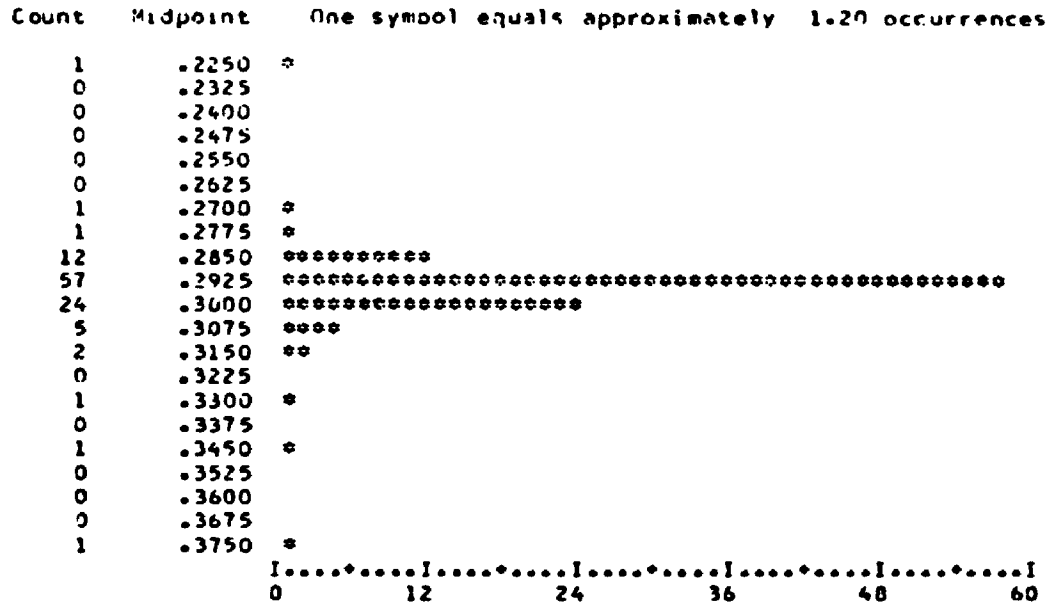
Section 6.4 has presented three indicators for assessing the internal validity of the Research Model: estimates of path magnitudes and significance, estimates of variance explained, and unexplained correlations. All three indicated that the structural model was valid to a great extent: 13 of the 16 hypotheses were supported by substantial and significant path coefficients, 82% of the variance of Relative Value was explained, and the presence of unexplained correlations between the exogenous constructs was judged to be unthreatening. Therefore, internal validity was substantially confirmed.

The single most important finding in this chapter was the empirical support for thirteen of sixteen hypotheses (review Section 6.4.3). This finding is strong support for the validity of the Relative Expectations model of Relative Value and Choice. Furthermore, this finding is strong support for the effect of B-S Relationships on the buyer's Expectations, which in turn affect the buyer's expectation of Relative Value and

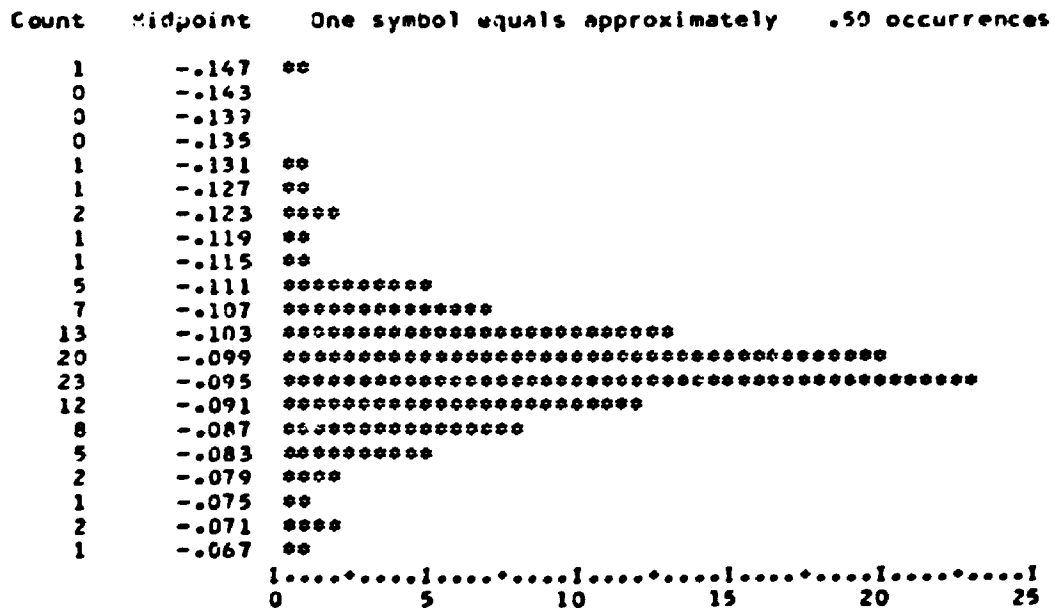
EXHIBIT 6-M

EXAMPLE FREQUENCY DISTRIBUTIONS OF JACKKNIFED PATH ESTIMATES

Frequency Distribution for H11 (path = .295)



Frequency Distribution for H5 (path = -.098)



subsequent Choice. These and other results are discussed in greater length in Section 8.1, after the result of the complementary analyses in Chapter 7 are available. Before proceeding to Chapter 7, however, the issue of external validity of the findings must first be addressed.

6.5 EXTERNAL (GENERAL) VALIDITY

External validity refers to the extent to which we can make generalizations from the research sample and setting to other populations and settings (Kidder and Judd 1986, p.28), or in other words, the extent to which there may be broader application of conclusions regarding internal validity. The following discussions focus on generalization first to the sampling frame, and then to other populations and/or contexts.

6.5.1 Generalizability to the Sampling Frame

Can the results of the PLS analysis be applied with confidence to the set of 150 qualified respondents? The issue is whether or not the non-respondents were significantly different from the respondents. Or in other words, was there non-response bias? The high response rate of 71% suggested that non-response bias was not likely a problem; nevertheless, two checks were made.

As a first step, Bell's win rate among the respondents was compared with the win rate among non-respondents, using a simple t-test of proportions. If the win rates were significantly different, this might suggest an overly favourable or unfavourable set of respondents, which in turn might bias the outcome of the analysis. The win rate was 43.2% among non-respondents, and 49.1% among respondents. Using the pooled variance estimate, the t-value was .65, and $\alpha(2\text{-tail})$ was 0.515. This supports the null hypothesis that the two win rates were equal.

As a second check, t-test comparisons were made of responses made by the first half of respondents versus responses made by the second half of respondents. This capitalizes on the proposition by Armstrong and Overton (1977, p.397) that "persons responding later are assumed to be more similar to nonrespondent." Thus, if no differences were observed between responses of the early versus late respondents, then the nonrespondents could be assumed to be similar to the respondents. Exhibit 6-N summarizes the comparison of first half versus second half responses. For the 32 variables listed, only three comparisons were significantly different at $\alpha < 0.05$ (2-tail). This evidence supports the null hypothesis that first half responses were similar to second half responses, and furthermore, that non-response bias may not be an issue. In summary, the evidence suggests that the results can be generalized with confidence to the sampling frame of 150 qualified bid sites.

6.5.2 Generalizability Across Populations and Contexts

Can the results be generalized with confidence to other populations and/or contexts? This study focused on a single company's bid list from a concentrated geographical territory, in a competitive bid environment, on a single technology-based capital equipment product type. All of these controlled factors have been shown to influence, or could plausibly influence, the effect of sales behaviour and/or importance of decision criteria. Therefore, any results from this study regarding support or non-support for the hypotheses should not be generalized across populations (e.g. selling to Japanese customers), or across contexts (e.g. repeat buying situation, or commodity product type).

However, the behavioural typology of Attention, Collaboration, Intensity and Reliability was derived from a broad literature base, and was supported in both the pre-test and the principal test. Therefore, it is reasonable to suggest that this typology may indicate a set of

EXHIBIT 6-N
FIRST HALF VERSUS SECOND HALF RESPONSE COMPARISONS

Variable	Mean First Half	Mean Second Half	α (2-tail)
Past Attention	4.96	4.51	.090
Collabor'n	5.20	4.93	.303
Intensity	4.53	4.37	.531
Reliability	5.61	5.59	.948
Doc'n Content	4.83	5.05	.441
Present'n	5.16	5.39	.395
Pres Attention	4.85	4.28	.025*
Collabor'n	4.84	4.33	.044*
Intensity	4.59	4.29	.260
Reliability	5.25	4.88	.155
Exp Attention	4.37	4.38	.977
Collabor'n	4.60	4.62	.965
Intensity	4.54	4.69	.605
Reliability	4.77	5.05	.335
Exp SpecConf	4.55	4.40	.606
FuncFeat	4.28	4.23	.874
SystFrien	4.73	4.79	.850
UserFrien	4.28	4.23	.879
Exp \$Price	13.13	7.09	.175
\$Oper'nMaint	4.64	4.26	.253
\$OverallImpl	5.08	4.30	.049*
Value NeedSatisf	3.92	3.94	.956
ROI	3.26	3.53	.388
MoreFor\$\$	3.26	3.77	.147
Confidence	3.98	4.02	.918
Bid Age (Quarters)	5.57	5.51	.906
Public/Private	0.38	0.43	.557
Consult/No Consult	0.26	0.26	1.000
Choose/Reject	0.49	0.49	1.000
Bid Amount (\$000)	293.72	847.70	.358
Overall Satisfac	5.36	5.58	.394
Size (Employees)	2.47	2.58	.523

* indicates $\alpha < 0.05$

effective relational behaviours wherever the reduction of uncertainty in a target party is important.

6.5.3 Discussion Regarding External Validity

Section 6.5 has assessed the potential for external validity for this research. Conclusions regarding the validity of the hypotheses can be generalized with confidence to the sampling frame of 150 qualified sites. However, conclusions regarding the hypotheses should not be generalized across populations or contexts. It remains for future researchers to test the Research Model in different populations and contexts to determine which hypotheses are supported or not supported.

In spite of the cautions attached to the application of the hypothesis findings, the behavioural typology of Attention, Collaboration, Intensity and Reliability, which was derived from a broad literature base and empirically supported in both the pre-test and principal test, may indicate effective relational behaviours wherever the reduction of uncertainty in a target party is important.

In the Chapter Seven, the findings of Chapter Six will be augmented by a series of "complementary analyses". These analyses will approach the data with different perspectives and tools, and will help to improve our understanding.

CHAPTER 7

COMPLEMENTARY ANALYSIS AND RESULTS

Chapter 6 presented a complete PLS analysis of the research model, using all 106 useable responses. The results showed strong support for thirteen of the sixteen hypotheses, and a good ability to explain the variance of the key dependent constructs Relative Value and Choice. These results might be considered sufficient in themselves to provide the answers to the research questions posed in Chapter 1. However, by pushing the analysis slightly further, even more interesting and useful results are exposed, which serve to enhance and enrich our understanding of the effect of buyer-seller relationships. Chapter 7 presents this "complementary" analysis and results, beginning with an investigation of variations between buyer segments. A second line of investigation uses discriminant analysis as an alternative to PLS to explore the relationship between Relative Value and the dichotomous construct Choice/Rejection.

7.1 COMPARATIVE ANALYSIS ACROSS BUYER SEGMENTS

One of the most important concepts in Marketing is that of buyer, or customer, segmentation. It posits that a population of customers, including organizational customers, may not be homogeneous with respect to specific needs, the priority attached to each specific need, or the buying process. It posits further that such a non-homogeneous population can be sub-divided into smaller groups, or segments, which are maximally homogeneous with respect to needs and priorities within each segment, and maximally heterogeneous between the segments.

With respect to the analysis performed in this dissertation, segments can be identified by variations in the magnitude of the path coefficients. This is because the magnitude of a path coefficient between

a predicting construct and predicted construct is approximately equivalent to the importance or priority that the customer attaches to the predicting construct. Hence, if segments in the response sample are identified by virtue of path coefficient variations, then conclusions regarding the internal validity of the research model become segment-dependent.

The importance of the discovery of segments would extend beyond a scientific discussion of internal validity - there would also be important implications for the Marketing manager. By first understanding the population as a series of segments, the Marketing manager can then precisely tailor an offering for each segment which will fulfil each customer's needs better than the competition's offering.

Therefore, for both scientific and managerial reasons, it is an important element of this dissertation to investigate whether or not segments exist in the response sample. The process of identifying segments begins with the specification of descriptors which might help discriminate among segments. For example: 1) buying centres which include consultants, who have been employed to facilitate the buying decision on behalf of the buying organization, may have different buying priorities from those buying centres which do not employ consultants; 2) public sector organizations may have different buying priorities from private sector organizations; or 3) large organizations may have different priorities from small organizations. Other descriptors which may help to discriminate between segments are also certainly possible.

Section 7.1 will focus on the effectiveness of the first two descriptors in their ability to discriminate between segments. These were identified a priori by Bell managers as two principal descriptors of interest, because Bell's sales results appeared to be different within these groups even though similar sales tactics were being employed. While it would be possible to investigate several other descriptors, it is judged to be sufficient for this dissertation to illustrate the principle

of segmentation using the two descriptors which have been identified as potentially the most effective.

7.1.1 "No Consultant" Buyers vs. "With Consultant"

In the telecommunications industry it is relatively common for a buying organization to employ a consultant to help with the buying decision, especially when a purchase is made infrequently. For example, of the 106 buying centres in this study, 28 employed consultants; and of these, 25 consultant-made recommendations were accepted by the client organization.

Prior to the commencement of data collection, Bell's managers expressed an interest in seeing a separate analysis for decisions guided by consultants, because they felt that different buying criteria were being employed. An initial inspection of the response analysis (review Exhibit 6-D) revealed that Bell's sales results did in fact appear to be different when a consultant was employed by the buying organization. For example, Bell's overall win rate when consultants were employed was 38%, whereas it was 51% when consultants were not employed; and Bell's premium price win rate was only 7% when consultants were employed, whereas it was 28% when consultants were not employed. This evidence suggests that consultants may place a much higher emphasis on lower price, which in turn may stem from a much lower level of uncertainty about functional and service issues.

In order to investigate this potential difference, the set of 106 responses was first divided into 2 groups: the 78 responses from buying organizations which did not employ consultants (the "No Consultant" group); and the 28 responses from consultants which were employed to help with the buying decision (the "With Consultant" group). A complete PLS analysis was performed for each group, using the aggregated measurement model and the same item weights employed for the overall analysis. The

results exhibited strong construct and internal validity. A jackknife analysis was also conducted for path significance. Using the standard errors from the jackknife analysis, it was also possible to check for significant differences between the path coefficients of the two groups. The principal results of the analysis are summarized in Exhibit 7-A, and selected highlights are modelled in Exhibit 7-B.

For the "No Consultant" group, thirteen of sixteen hypotheses were validated, which were the same as the thirteen validated in the principal analysis. For the "With Consultant" group, eleven of the sixteen hypotheses were validated, with two others (H11 and H13) possessing substantial path coefficients of the hypothesized sign. Hence, in general terms, the research model possesses strong internal validity for both groups.

The most interesting findings arise from an inspection of the differences in path coefficients between the two groups. Six of the nine paths involving the effects of the exogenous constructs were found to have significantly different magnitudes. Three conclusions can be drawn: 1) the effect of Past Service Relationships on Expectations is much stronger for the "No Consultant" group; 2) the effect of Documentation on Expectations is much stronger for the "With Consultant" group; and 3) the effect of Present Bid Relationships is about the same for both groups. These conclusions may reflect a more objective approach by the consultants, wherein hard evidence and current relationships carry more weight than the supplier's past reputation.

Only two of the seven hypotheses involving the endogenous constructs were found to be significantly different, leading to two conclusions: 1) the Relative Expectation model applies about equally well to both groups; and 2) the "With Consultant" group does not seem to place a higher priority on lower price. This second conclusion is surprising given the a priori expectation that Consultants placed a higher priority on lower

EXHIBIT 7-A

PATH COMPARISONS: "NO CONSULTANT" VS "WITH CONSULTANT" SEGMENTS

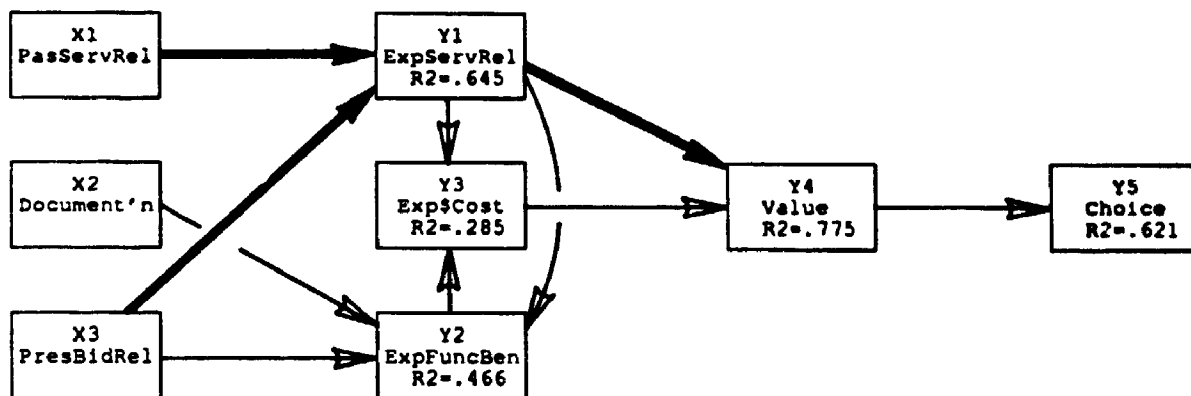
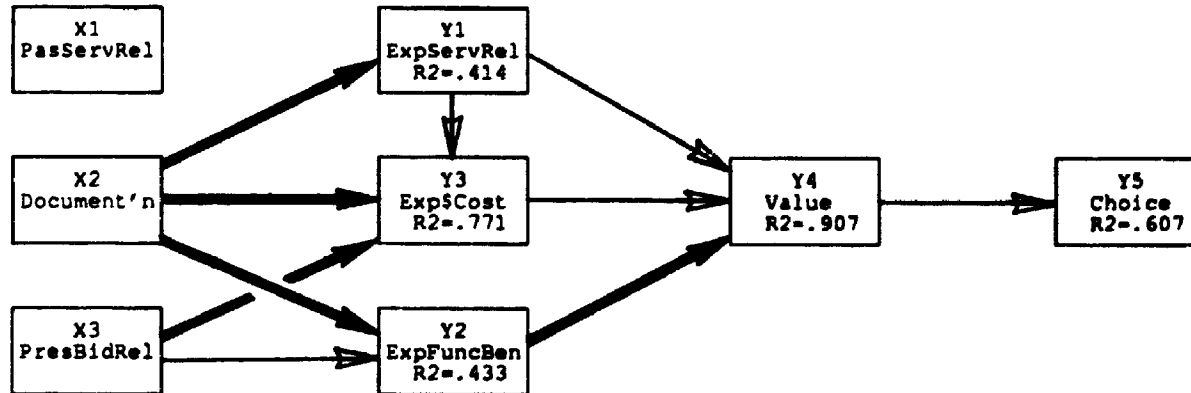
Hypothesis	All n=106	"No Consultant" n=78		"With Consultant" n=28		t _{acc} (1) df=104
	Path Coeff.	Path Coeff.	SE	Path Coeff.	SE	
H1 X1 (PastServRelp) → Y1 (ExpServRelp)	.204*	.384*	.02526	-.187	.09220	8.25**
H2 " → Y3 (Exp\$Costs)	.164	.025	.04350	.152	.06230	0.82
H3 " → Y2 (ExpFuncBen)	-.093	-.025	.03712	-.158	.11873	1.41
H4 X2 (Document'n) → Y1 (ExpServRelp)	.445*	.141*	.02338	.711*	.02913	13.32**
H5 " → Y3 (Exp\$Costs)	-.098*	-.025*	.02085	-.386*	.05080	7.82**
H6 " → Y2 (ExpFuncBen)	.374*	.268*	.01758	.493*	.09167	3.64**
H7 X3 (PresBidRelp) → Y1 (ExpServRelp)	.141*	.342*	.02613	-.098	.09035	6.35**
H8 " → Y3 (Exp\$Costs)	.000	.142	.04245	-.255*	.04932	5.16**
H9 " → Y2 (ExpFuncBen)	.206*	.205*	.04358	.222*	.09375	0.19
H10 Y1 (ExpServRelp) → Y3 (Exp\$Costs)	-.465*	-.523*	.02990	-.412*	.08161	1.59
H11 " → Y2 (ExpFuncBen)	.295*	.310*	.02081	.186	.09162	1.92
H12 " → Y4 (Rel Value)	.375*	.408*	.01603	.334*	.03419	2.20**
H13 Y2 (ExpFuncBen) → Y3 (Exp\$Costs)	-.220*	-.217*	.02916	-.172	.06224	0.73
H14 " → Y4 (Rel Value)	.203*	.148*	.01475	.250*	.02566	3.51**
H15 Y3 (Exp\$Costs) → Y4 (Rel Value)	-.491*	-.497*	.01133	-.498*	.03249	0.04
H16 Y4 (Rel Value) → Y5 (Choice)	.790*	.788*	.00424	.779*	.01921	0.67

* significant @ 2-tail $\alpha < 0.050$, with hypothesized sign

** significant @ 2-tail $\alpha < 0.050$

$$(1) t_{acc} = \frac{PC_1 - PC_2}{\sqrt{\left[\frac{(n_1-1)SE_1^2 n_1 + (n_2-1)SE_2^2 n_2}{n_1 + n_2 - 2} \right] \left[\frac{1}{n_1} + \frac{1}{n_2} \right]}}, \quad df = n_1 + n_2 - 2$$

EXHIBIT 7-8

MODEL COMPARISONS: "NO CONSULTANT" VS "WITH CONSULTANT" SEGMENTS"No Consultant" Segment"With Consultant" Segment

- Notes: 1) Only selected paths are shown, which are both significant and greater than 0.20.
 2) A heavy path indicates a path which is significantly greater than the corresponding path for the other segment.

price. It suggests to Bell managers that pricing policy may not have to be adjusted; instead, using the conclusions drawn about the exogenous constructs, more emphasis might be placed on the quality of the Documentation when dealing with consultants.

7.1.2 "Public Sector" Buyers vs. "Private Sector"

In the organizational buying literature, the public sector buying process is often described as being longer and more meticulous than the private sector's, and often with more emphasis placed on lower price because of the responsibility to the general public (see Forbis and Mehta 1981, p.46). Indeed, Bell's win rate among the two public sector organizations dropped from the principal analysis was only about 2%, whereas it was about 50% for all other buying organizations. And both of these organizations cited Bell's high price as the dominant criterion for rejection. Therefore, it seemed reasonable to analyze the remaining public sector respondents for differences.

To help investigate these potential differences, the set of 78 "No Consultant" responses was divided into two groups: a group of 38 "Public Sector" responses, and a group of 40 "Private Sector" responses. (The "With Consultant" responses were set aside because they were shown to have significant differences in Section 7.1.1). A complete PLS analysis was performed for each group, using the aggregated measurement model and the same item weights employed for the overall analysis. The results exhibited strong construct and internal validity. A jackknife analysis was also conducted for path significance. Using the standard errors from the jackknife analysis, it was also possible to check for significant differences between the path coefficients of the two groups. The principal results of the analysis are summarized in Exhibit 7-C, and selected highlights are modelled in Exhibit 7-D.

EXHIBIT 7-C

PATH COMPARISONS: "PUBLIC" VS "PRIVATE" SEGMENTS (NO CONSULTANT ONLY)

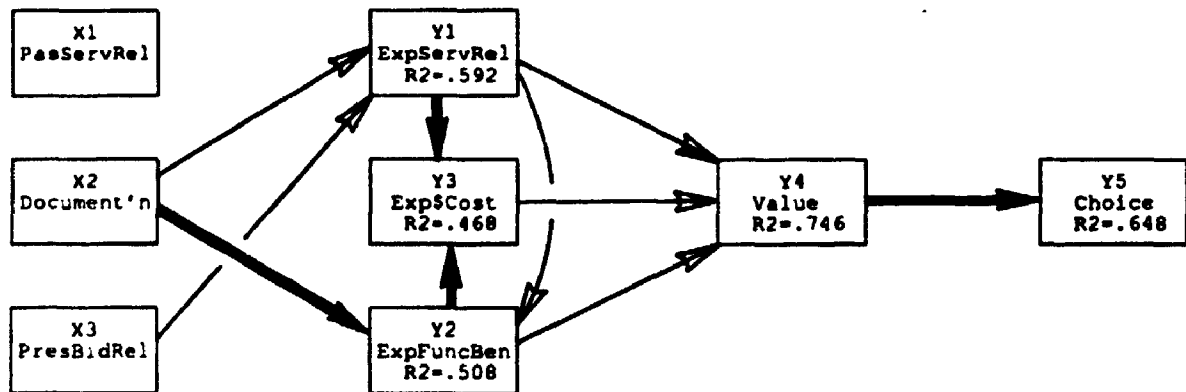
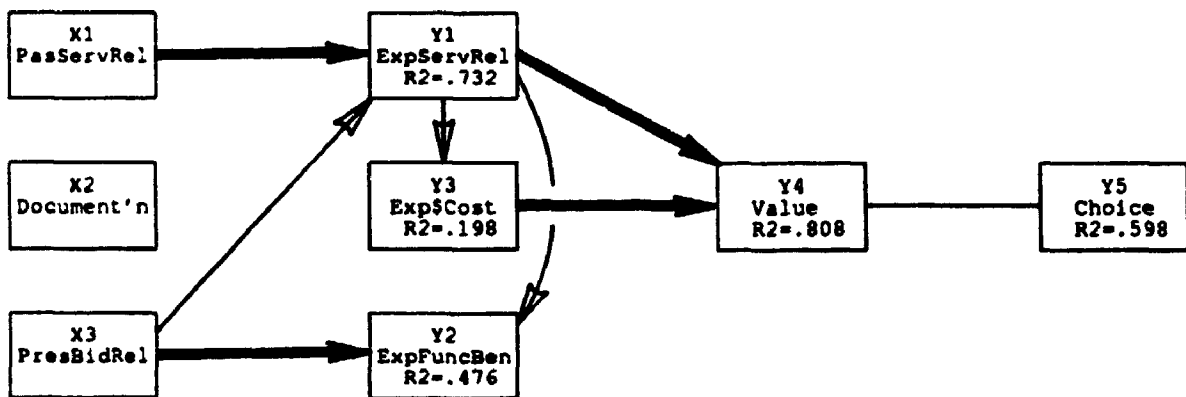
Hypothesis	No Consultant n=78	"No Consultant Public Sector" n=38		"No Consultant Private Sector" n=40		t _{stat} (1) df=76
		Path Coeff.	Path Coeff.	SE	Path Coeff.		SE
H1 X1 (PastServRelp) → Y1 (ExpServRelp)	.384*	.155*	.08346	.516*	.03534	3.98**
H2 " → Y3 (Exp\$Costs)	.085	.289	.07443	-.076	.11135	2.73
H3 " → Y2 (ExpFuncBen)	-.025	.020	.04303	-.102	.10215	1.10
H4 X2 (Document'n) → Y1 (ExpServRelp)	.141*	.250*	.06601	.098*	.04990	1.84
H5 " → Y3 (Exp\$Costs)	-.025*	.001	.05200	.054*	.04744	0.75
H6 " → Y2 (ExpFuncBen)	.268*	.471*	.04526	.037*	.04328	6.93**
H7 X3 (PresBidRelp) → Y1 (ExpServRelp)	.342*	.421*	.07561	.313*	.03150	1.32
H8 " → Y3 (Exp\$Costs)	.162	.175	.08052	-.091*	.10427	2.02
H9 " → Y2 (ExpFuncBen)	.205*	.022	.04951	.437*	.12469	3.09**
H10 Y1 (ExpServRelp) → Y3 (Exp\$Costs)	-.523*	-.601*	.05645	-.362*	.08698	2.30**
H11 " → Y2 (ExpFuncBen)	.310*	.263*	.03876	.353*	.05151	1.40
H12 " → Y4 (Rel Value)	.408*	.362*	.03819	.459*	.02791	2.05**
H13 Y2 (ExpFuncBen) → Y3 (Exp\$Costs)	-.217*	-.465*	.04441	.037	.07717	5.64**
H14 " → Y4 (Rel Value)	.148*	.207*	.04544	.114*	.01574	1.93
H15 Y3 (Exp\$Costs) → Y4 (Rel Value)	-.497*	-.445*	.03107	-.525*	.02234	2.09**
H16 Y4 (Rel Value) → Y5 (Choice)	.788*	.805*	.00769	.773*	.00930	2.65**

* significant @ 2-tail $\alpha < 0.050$, with hypothesized sign

** significant @ 2-tail $\alpha < 0.050$, with at least one $|PC| > 0.3$

$$(1) \quad t_{stat} = \frac{PC_1 - PC_2}{\sqrt{\left[\frac{(n_1-1)SE_1^2 n_2 + (n_2-1)SE_2^2 n_1}{n_1 + n_2 - 2} \right] \left[\frac{1}{n_1} + \frac{1}{n_2} \right]}}, \quad df = n_1 + n_2 - 2$$

EXHIBIT 7-D

MODEL COMPARISONS: "PUBLIC" VS "PRIVATE" SEGMENTS (NO CONSULTANT ONLY)"Public" Segment (No Consultant)"Private" Segment (No Consultant)

- Notes: 1) Only selected paths are shown, which are both significant and greater than 0.20.
 2) A heavy path indicates a path which is significantly greater than the corresponding path for the other segment.

For the "Public Sector" group, eleven of the sixteen hypotheses were validated, and for the "Private Sector" group, thirteen were validated. Hence, in general terms, the research model possesses strong internal validity for both groups.

As with the consultant analysis, the most interesting findings arise from an inspection of the differences in path coefficients between the two groups. Three of the nine paths involving the effects of the exogenous constructs were found to have significantly different magnitudes. Three conclusions can be drawn: 1) the effect of Past Service Relationships on Expectations is much stronger for the "Private Sector" group; 2) the effect of Documentation on Expectations is much stronger for the "Public Sector" group; and 3) the effect of Present Bid Relationships is about the same for both groups. These conclusions may reflect a more objective approach by the Public Sector, wherein hard evidence carries more weight because of potential public scrutiny.

Five of the seven paths involving the endogenous constructs were found to have significant differences, but one in particular was especially interesting. The results showed that the private sector buyers were more sensitive to price than the public sector buyers, which is opposite to the initial expectation. This cannot be explained in isolation, but can be explained in light of a second interesting result. This second result is that all seven paths in the Public Sector model were found to be significant, whereas only five were found to be significant in the private sector model. This suggests that public sector buyers may be more critical, considering all factors in their buying decisions. Hence, a higher price may be more likely to be paid by some public sector buyers, provided that there is thorough justification from functional and service considerations. The differences in paths just discussed, however, does not negate the validity of the Relative Expectations model; in all cases except one, the paths were found to be significant. Therefore, three

conclusions can be drawn: 1) the Relative Expectations of model applies about equally well to both groups; 2) some "Public Sector" buyers may be more thorough in their evaluations; and 3) some "Public Sector" buyers do not seem to place a higher priority on lower price. This last conclusion is surprising given the a priori expectation that Public Sector buyers place a higher priority on lower price. Similar to the outcome of the consultant analysis, it suggests to Bell managers that pricing policy may not have to be adjusted; instead, using the conclusions drawn about the exogenous constructs, more emphasis might be placed on the quality of the Documentation when dealing with public sector buyers.

7.1.3 Discussion Regarding Findings of Comparative Analysis

By dividing the response sample into groups and performing separate analyses, many significant differences between corresponding paths in the research models have been discovered. This general finding supports the hypothesis that there might be different buyer segments within the response sample.

However, some of the specific findings refute some of the a priori expectations. For example, it was expected that "With Consultant" buyers might be more price sensitive than "No Consultant" buyers; instead, no significant differences were found in the magnitude of the paths between Expected Price and Relative Value, which suggests no difference in priority. Similarly, it was expected that "Public Sector" buyers might be more price sensitive than "Private Sector" buyers; instead, the opposite appears to be true.

Other findings also emerged from the comparative analyses which helped differentiate between segments: 1) the Expectations of the "No Consultant" buyers and the "Private Sector" buyers tend to be more affected by the sellers' Past Service Relationships than the "With Consultant" or "Public Sector" buyers; 2) the Expectations of the "With

Consultant" buyers and the "Public Sector" buyers tend to be more affected by Documentation than the "No Consultant" buyers or "Private Sector" buyers; and 3) Expectations of all groups were substantially and about equally affected by the Present Bid Relationships. Such findings may serve to guide the seller's Marketing manager in terms of which elements of the communications program to emphasize during the bid process.

One last finding of note was that the hypotheses involving the endogenous constructs, i.e., the Relative Expectations model, were largely supported within each segment. Of the twenty-eight possible hypotheses within the comparative analyses, twenty-five were found to be statistically significant. This reinforces the claim of internal validity for the research model originally stated in Chapter 6.

It was useful to perform the comparative analyses across buyer segments. Significant differences were discovered even though the response sample is relatively small, and relatively homogeneous. In summary, it might be said that the specific findings are perhaps not as important as the general finding of significant differences. This can only serve to underscore a critically important Marketing truism, which is to "Know Your Customer!"

7.2 A DISCRIMINANT ANALYSIS OF RELATIVE VALUE ON CHOICE

In Chapter 6 the research model, including the hypothesized relationship between Relative Value and Choice, was analyzed in its entirety using PLS. PLS, however, may not be the most appropriate tool for the analysis of the Relative Value/Choice relationship, because Choice is a dichotomous variable. PLS is based on Ordinary Least Squares regression, and Morrison (1972) has shown that regressions with discrete dependent variables produce understated variance explained (R^2). He found that with a 7-valued discrete dependent variable, the understatement is only about 0.02. However, for a 3-valued discrete dependent variable, the

understatement may be more than 0.10, and perhaps more than 0.20 for a 2-value variable. (In retrospect, then, the R^2 of 0.623 achieved for Choice may have been very close to the maximum attainable using PLS). This understating effect is illustrated in Exhibit 7-E, where a simple array of X-values has been regressed against several arrays of Y-values. The R^2 drops from 1.000 for the 8-interval Y-scale to 0.762 for the 2-interval Y-scale. Regression analysis does appear to understate R^2 for a 2-interval dependent variable. Therefore, in order to better gauge the ability of Relative Value to predict Choice, it would be more appropriate to use an analytical tool which has been designed to accommodate discrete dependent variables, i.e., Discriminant Analysis.

Discriminant Analysis is an analytical tool which uses linear combinations of independent "discriminating" variables to classify observations into different specified groups. In this case, the independent variables will be the four variables used to measure Relative Value, and the dependent groups will be Choices and Rejections. Because discriminant analysis uses probability distributions to assist in the classification process, it assumes that the independent variable measurements are extracted from multivariate normal populations, and that the population covariance matrices of the groups are similar. These assumptions did not appear to be violated: the frequency distributions of the four discriminating variables appeared normal, with means ranging from 3.4 to 4.0; and a Bartlett test for homogeneity of variance indicated that the null hypothesis of homogeneity could not be rejected at $\alpha < 0.05$. Therefore, Discriminant Analysis was judged to be appropriate for the analysis of the database.

There are three phases in the application of Discriminant Analysis: 1) the Derivation of the discriminant function and assessment of statistical significance; 2) the Validation of the function, which examines its ability to accurately predict the classification of observations in a holdout sample; and 3) the Interpretation of the

EXHIBIT 7-ER² AND n-VALUED DISCRETE DEPENDENT VARIABLES

X	Y1 (n=8)	Y2 (n=4)	Y3 (n=2)	Y4 (n=2)
8	8	4	2	1
7	7	4	2	1
6	6	3	2	1
5	5	3	2	1
4	4	2	1	0
3	3	2	1	0
2	2	1	1	0
1	1	1	1	0
R ²	1.000	0.953	0.762	0.762

function, which examines the nature of the variables which load most highly on the discriminant function. Section 7.2.1 briefly describes the findings of these three phases.

7.2.1 Findings of Discriminant Analysis

The key analytical results of the Discriminant Analysis of Relative Value on Choice are summarized in Exhibit 7-F. The Derivation of the single discriminant function was accomplished without difficulty using the four Relative Value variables and a randomly selected sample of 60% of the database. There is no hard and fast rule for the size of the analytical sample, with authors suggesting anywhere from 50% to 75% of the total database. A proportion of 60% was selected as an approximate median. The function was highly significant at 0.0000, with a canonical correlation squared of 0.646. The canonical correlation is the correlation of the discriminant scores with the values assigned to the two dependent groups, and thus the square is roughly equivalent to a regression R^2 . It is, therefore, very similar to the PLS R^2 of 0.623 derived in Chapter 6. The significant result indicates that the function has been able to successfully discriminate between the two groups.

The Validation step of the analysis indicates that the function was able to correctly predict the classification of 88.1% of the observations in the holdout sample. This is substantially higher than the maximum prior probability of 62%, which could have been achieved simply by classifying all observations as Wins. Authors have tended to promote this holdout "hit rate" as the equivalent of a regression R^2 , as opposed to the square of the canonical correlation. Therefore, with a hit rate of 88.1%, which is also 42% higher than the maximum prior probability, the function can be considered an accurate predictor of Choice versus Rejection.

The Interpretation phase of this analysis is less important in this case, perhaps, than in most other cases. In most cases, a large array of

EXHIBIT 7-FDISCRIMINANT ANALYSIS OF VALUE ON CHOICE (ALL DATA)Derivation

Canonical Correlation	0.804
Canonical Correlation ² (Between SS / Total SS)	0.646
Wilks' Lambda (Within SS / Total SS)	0.354
Chi-Squared	62.292
Significance	0.0000

Validation

Number of cases include ' in derivation	64	(60% of total)
Number of Losses	38	(proportion 59.4%)
Wins	26	(" 40.6%)
Number Classified Correctly	60	(93.8%)
Number of Holdout Cases	42	(40% of total)
Number of Losses	16	(proportion 38.1%)
Wins	26	(proportion 61.9%)
Number Classified Correctly	37	(88.1%)

Interpretation

Value Variable	Std'd Canon'l Discrim Func'n Coefficients	Correlation with Canonical Discrim Func'n (Loadings)	Variable's PLS Cross-loading on Choice
Need Satisfaction	0.54576	0.79317	0.764
Confidence	0.38671	0.74656	0.717
More for the Money	0.46524	0.64036	0.693
Overall ROI	-0.03948	0.49392	0.586

independent variables might be entered, with only a subset achieving significance; hence, interpretation of the significant variables becomes necessary. Here, however, only a small number (four) of independent variables was specified, with the full expectation that all would load to a significant degree on the discriminant function (i.e., greater than 0.3); indeed, all four achieved a loading of 0.49 or higher. Thus, the elementary interpretation is that Relative Value, defined by a set of four variables, can accurately predict the seller's Choice versus Rejection.

7.2.2 Discussion Regarding Findings of Discriminant Analysis

There are two interesting parallels between the results of the PLS analysis and the Discriminant Analysis. The first is that the Discriminant Analysis determined a canonical correlation of 0.804, which when squared gives 0.646. Because the square represents the quantity of Between Sum of Squares divided by the Total Sum of Squares, it should compare favourably with the R^2 produced by the PLS analysis. Indeed, the PLS analysis gave an R^2 of 0.623 for Choice. The second parallel is that the discriminant loadings for each variable are approximately equal to the PLS cross-loadings of the Relative Value variables on Choice. It is reassuring that the two methods provided similar results where they might be expected.

However, there was one point of departure between the two sets of results that is quite important. In the classification phase of the Discriminant Analysis, it was determined that the four Relative Value variables can accurately determine the Choice/Rejection classification of 88.1% of the observations in a holdout sample. In contrast, the PLS analysis indicated an R^2 of only 62.3% for the Choice construct. Hence, the application of Discriminant Analysis has more greatly substantiated the validity of the Relative Value/Choice relationship than has the PLS analysis. Therefore, the application of Discriminant Analysis to the investigation of the Relative Value/Choice relationship has been highly informative.

CHAPTER 8

CONCLUSIONS

There are three principal purposes of this concluding chapter: 1) to summarize the principal findings of Chapters Six and Seven; 2) to discuss the contributions of these findings to the science and practice of Marketing; and 3) to discuss the limitations of this research and implications for future research directions. This chapter begins with the summary of principal findings.

8.1 SUMMARY OF PRINCIPAL FINDINGS

In Section 1.4, three research questions were posed: RQ1) How are the buyer's expectation of Value and Choice related; RQ2) How is Value determined; and RQ3) How can B-S relationships affect the buyer's expectation of Value? The principal findings of this research will be presented in an order such that these research questions are addressed first. Then, additional findings arising from the complementary research will be presented, which will enhance and enrich our understanding of the answers to the research questions.

8.1.1 Support for the "Relative Expectations" Model of Customer Value and Choice

In order to begin to address the first two research questions, a literature review of the concepts of Customer Value and Choice was conducted. In the literature, Choice was discovered to be a term applied to many situations, and named differently in different situations, such as Decision or Buyer Behaviour. In this dissertation, Choice was defined to be the organizational buyer's selection from a short list of competing sellers products in a bid situation.

In this context, there was some support for the position that Choice is the logical outcome of the buyer's expectation of Value, which suggests that Choice and Value are two distinct constructs. However, it might also be argued that the two are not distinct constructs, but rather that Choice is simply the most accurate measure of the construct Value. In this dissertation, the two were defined as separate constructs, with Value being the chief determinant of Choice.

There were found to be highly diverse views of the concept of Value, beginning with its definition, and varying from the quantitative to the non-quantitative, from the absolute to the relative, and with respect to the factors the buyer considers in deriving an overall expectation of value. Following a close examination of the many definitions of value, and in light of evidence that relative value is key to a buyer's choice, a working definition of Relative Value for purposes of this research was developed: "the buyer's expectation of the degree of a product's net benefit superiority versus the next best choice, derived from a tradeoff of a set of interdependent expectations of relative benefits and costs."

Consistent with this definition, a "Relative Expectations" conceptual model was developed (review Exhibit 2-E), and a subset was incorporated into the eventual research model (review Exhibit 5-H). A key feature of the research model was that the buyer's Expectations of relative Service benefits were to be measured by the buyer's expectations of relative relational behaviour, because many authors have suggested that the behavioural dimension of service is the most important.

The subset of the "Relative Expectations" model within the research model incorporated seven hypotheses, labelled H10-H16, including several interdependencies among the buyer's relative expectations (Exhibit 5-H). When the research model was analyzed using PLS and all qualified responses (n=106), all seven hypotheses were found to have substantial, highly significant paths with the expected signs (review Exhibit 6-K).

Furthermore, the PLS analysis indicated that the model could predict 82.1% of the variance of the construct Relative Value (Review Exhibit 6-L), and discriminant analysis of a 40% holdout sample indicated that the model could correctly predict 88.1% of customer Choice (Review Exhibit 7-F). This compares very favourably with the predictive ability of other models of choice discussed in Section 2.2.8, which generally were able to predict about 65% to 75% of choice. These results indicate strong support for the internal validity of the "Relative Expectations" model.

A complementary analysis of the model across customer segments revealed similar support. For example, in the "No Consultant" segment (n=78), all seven hypotheses were fully supported, and Value achieved an R^2 of 0.775; in the "With Consultant" (n=28) segment, all seven hypotheses had substantial path coefficients with the expected sign, five were found to statistically significant, and Value achieved an R^2 of 0.907 (review Exhibits 7-A and 7-B). In the "Public" sector segment (n=38), all seven hypotheses received full support, and Value achieved an R^2 of 0.746; in the "Private" sector segment (n=40), six of the seven hypotheses received full support, and Value achieved an R^2 of 0.808 (review Exhibits 7-C and 7-D). Thus, support for the model was consistently strong.

In summary, in this dissertation Relative Value was defined as "the buyer's expectation of the degree of a product's net benefit superiority versus the next best choice, derived from a tradeoff of a set of interdependent expectations of relative benefits and costs." Further, it was posited that Choice is the logical outcome of the buyer's expectation of Relative Value. These propositions were modelled in the "Relative Expectations" model of Relative Value and Choice, and the model was empirically tested using data from a set of 106 buying organizations. The empirical results show strong support for the "Relative Expectations" model, even within buyer segments. Therefore, I conclude that the "Relative Expectations" model of Relative Value and Choice possesses a

high degree of validity, subject to certain limitations discussed in Section 8.3.

8.1.2 Support for the Behavioural Dimensions of a B-S Relationship

The topic of interorganizational Buyer-Seller Relationships was reviewed in Chapter 3. The review clearly illustrated the complexity of interorganizational B-S relationships, but eventually this working definition was synthesized:

- 1) a B-S relationship is a series of interorganizational exchanges (or transactions) between the members of the selling centre and the buying centre;
- 2) the exchanges span time, i.e., the relationship has a past, a present, and a future;
- 3) the items of exchange may consist of products (either goods or services), payments, information, personnel, and/or verbal or physical signals; and
- 4) the pattern of exchange can be described by an extensive array of structural perspectives, flow indicators and explanatory perspectives.

In light of this working definition and the bidding context of the research, I have proposed that B-S relationships could be most appropriately viewed with a "Persuasion Network" perspective, wherein members of the competing selling centres do their best to favourably influence the members of the buying centre. I have also proposed that the most effective influential element of the relationship is the set of signals emanating from the relational behaviour of the members of the selling centre towards the members of the buying centre. Furthermore, I have proposed that both the seller's past relational behaviour and the seller's present relational behaviour during the bid process affect the buyer's expectations for future relational behaviour. Finally, I have proposed that a seller's effective relational behaviour consists of four mutually exclusive behavioural dimensions: Attention, Collaboration, Intensity, and Reliability (review Section 3.5.7). In essence, then, I have proposed to reduce the complexity of a B-S relationship into a simple

set of four behavioural patterns, with a perceived past phase, a perceived present phase, and an expected future phase. Thus, it was an important objective of the research to verify the validity of this behavioural typology.

When the research model was analyzed using PLS and all qualified observations (n=106), the results showed strong support for the validity of the four-dimensional typology of relational behaviour. In the analysis of the Disaggregated Measurement Model (review Exhibit 6-E), fifty-nine out of the sixty behavioural variables loaded higher than 0.7 on their own constructs, and fifty-nine out of sixty loaded higher on their own construct than on another construct. The uniformly high loadings indicated high internal consistency, i.e., that the questions were reliable measures of the behaviours. The low cross-loadings indicated high discriminant validity, i.e., that respondents could distinguish between the four types of behaviours, and could also distinguish between past, present and expected behaviours. These supportive findings were magnified by the analysis of the Aggregated Measurement Model (review Exhibit 6-G); all twelve behavioural variables loaded higher than 0.80 on their own constructs (ten out of twelve loaded higher than 0.90), and all twelve loadings were at least 25% higher than their maximum cross-loadings. As final evidence of high internal consistency and discriminant validity, the PLS program was able to complete the analysis of the research model in only 4 iterations. Thus, the results of the analysis have provided strong support for the four-dimensional behavioural typology of B-S relationships. These results also support the behavioural typology proposed by Parasuraman et al (1986), but provide a much richer description of each dimension (review Exhibit 3-B).

In summary, in this dissertation I have proposed that the essence of a B-S relationship can be defined by a four-dimensional behavioural typology: Attention, Collaboration, Intensity and Reliability. Further, I have proposed that a B-S relationship exists over time, such that a buyer

can distinguish between past relational behaviour and present relational behaviour, and can hold distinct expectations about future relational behaviour. The results of the analysis have provided strong support for these propositions, and I conclude that the four-dimensional behavioural typology possesses high validity.

8.1.3 Support for the Effect of B-S Relationships on Customer Value and Subsequent Choice

This section addresses what is really the central issue of this dissertation, i.e., do B-S relationships have an effect on the buyer's expectation of Value and Choice, and if so, what is the nature of the effect? Prior to considering the principal findings, it is important to recall how B-S relationships have been defined. As originally discussed in Chapter 2, and as briefly reviewed above, the complex B-S relationship has been simplified to a set of four behavioural dimensions, with a past phase, a current phase, and an expected future phase.

According to the research model (review Exhibit 5-H), the relative expectation of the B-S relationship was hypothesized to have a direct effect on the buyer's expectation of Relative Value. The results of the principal PLS analysis show a path coefficient of 0.375 between relative Expectation of the B-S Relationship and Relative Value, which indicates that the relative Expected B-S relationship does have a direct, positive, significant effect on the buyer's expectation of Relative Value (review Exhibit 6-L). In other words, the buyer's expectation of Relative Value, thus likelihood of subsequent choice, increases as relative expectations of the selling centres' Attention, Collaboration, Intensity and Reliability increases. The magnitude of the B-S direct effect is slightly lower than the magnitude of the Expected \$Cost effect (-.491), but almost double that of the Expected Functional Benefits effect (.203). This indicates the very high priority placed by the buyer on the future B-S relationship. The buyer's relative expectation of the relationship was

also found to have highly significant effects on the buyer's relative expectations of functional benefits and monetary costs, indicated by path coefficients of .295 and -.465 respectively; and these in turn had significant effects on the buyer's expectation of Relative Value. Therefore, I conclude that the buyer's relative Expectations of the B-S relationship have an important effect on the buyer's expectation of Relative Value, both directly and indirectly. Section 8.1.4 will discuss how this effect varies between buyer segments.

The research model (review Exhibit 5-H) also hypothesized that the relative reputations stemming from past B-S relationships have an indirect effect on the buyer's expectation of Relative Value, via their effects on all of the buyer's relative expectations. Of the three hypotheses involving past relationships, however, only one was shown to have a significant effect on the buyer's expectations (Exhibit 6-L); i.e., there was a significant path coefficient of 0.204 between Past B-S relationships and Expectation of future B-S relationships. In other words, the seller's past relational behaviours can affect the buyer's expectations of future relational behaviours, which can in turn affect the buyer's expectation of Relative Value. Therefore, I conclude that the seller's past relationships do have an important indirect effect on the buyer's expectation of Relative Value. Section 8.1.4 will discuss how this effect varies between buyer segments.

Finally, the research model (review Exhibit 5-H) also hypothesized that the buyer's relative perceptions of present bid relationships have an indirect effect on the buyer's expectation of Relative Value, by reducing the uncertainty component of the buyer's relative expectations. Of the three hypotheses involving present relationships, two were shown to have a significant effect on the buyer's expectations (Exhibit 6-L); i.e., there was a significant path coefficient of 0.206 between Present relationships and Expectation of functional benefits, and a significant path coefficient of .141 between Present relationships and Expectation of

future relationships. In other words, the seller's current relational behaviours can affect the buyer's expectations of future relational behaviours and functional benefits, which can in turn affect the buyer's expectation of Relative Value. Therefore, I conclude that the seller's Present relationships do have an important indirect effect on the buyer's expectation of Relative Value. Section 8.1.4 will discuss how this effect varies between buyer segments.

8.1.4 Variation of B-S Relationship Effects Among Buyer Segments

The complementary analysis presented in Chapter 7 shows some interesting variations of the effects of the B-S relationship among buyer segments. Many of the variations are statistically different; however, some are managerially important and some are not. The discussion will begin with an examination of the effects of the Expected relationship.

In the comparison of the "No Consultant" segment versus the "With Consultant" segment (review Exhibit 7-A), the direct effect of the Expected relationship on Value was .408 for the "No Consultant" segment, and .334 for the "With Consultant" segment. This was found to be significantly different, yet managerially the results are the same, i.e., that the buyer's relative expectations of the relationship are critically important in the expectation of Relative Value. In both segments, the effects of the Expected relationship remained strong on the buyer's expectations of functional benefits and costs, thus maintaining a substantial indirect effect on Value. The results were very much the same in the comparison of the "Public" versus "Private" segments (review Exhibit 7-C). I conclude that the direct effect of the Expected relationship on the buyer's expectation of Relative Value remains consistently strong across buyer segments.

Variations in the effect of Past relationships were more pronounced. For example, the effect of the Past relationship on the Expected

relationship was a significant .384 for the "No Consultant" segment, and an insignificant -.187 for the "With Consultant" segment (review Exhibit 7-A). The difference was found to be highly statistically significant, and, I suggest, managerially relevant. The results indicate that some buyer segments, possibly those who are less certain about the technology being purchased, are more prone to seek clues from past relationships. This hypothesis is supported by the observation that the "With Consultant" segment places a much greater emphasis on the quality of the bid documentation, i.e., the more current, more objective cues. A similar interesting difference was observed in the comparison of the "Public" versus "Private" segments. The effect of the Past relationship on the Expected relationship was .516 for the "Private" segment, but only .155 for the "Public" segment (review Exhibit 7-C). The difference was found to be highly statistically significant, and also, I suggest, managerially relevant. The results indicate that some buyer segments, possibly those who might be subject to critical public scrutiny, are less prone to seek clues from past relationships. This hypothesis is supported by the observation that the "Public" segment places a much greater emphasis on the quality of the bid documentation, i.e., the more current, more objective cues. I conclude that the indirect effect of past relationships on the buyer's expectation of Relative Value can be very important in some buyer segments, possibly those where the buyers feel a high degree of uncertainty about the technology being purchased, or those where the purchase decision will not be subject to rigorous public scrutiny. Other segments may also be less subject to the effect of past relationships, which suggests the importance of ongoing market research to enhance the seller's understanding of the various market segments.

Variations in the effect of Present relationships were also pronounced, but in patterns which are difficult to explain. For example, the effect of the Present relationship on the Expected relationship was significantly greater for the "No Consultant" segment, but the effect on the buyer's Expected Costs was significantly greater for the "With

Consultant" segment (review Exhibit 7-A). And the effect of the Present relationship on the Expected relationship was greater for the "Public" segment, but the effect on the buyer's Expected Functional benefits was significantly greater for the "Private" segment (review Exhibit 7-C). These results indicate, however, that all buyer segments seek clues from present relationships. I conclude that the indirect effect of Present relationships on the buyer's expectation of Relative Value is very important in all buyer segments.

8.2 CONTRIBUTIONS

It is the ultimate purpose of a dissertation in the field of Marketing to make contributions to both the science and practice of Marketing. In view the Summary of Principal Findings in Section 8.1, it is possible to claim that some contributions have indeed been made.

8.2.1 Contributions to the Science of Marketing

What is meant by the term "science"? Webster's (1976) definitions of science help to illustrate how perspectives may differ. On one hand, science can be thought of as the outcome of a process, i.e., "a department of systematized knowledge ... covering general truths or the operation of general laws especially as obtained and tested through scientific method." On the other hand science can be thought of as the process itself, i.e., "a system or method based or purporting to be based on scientific principles." This dissertation contributes to both of the outcome and process views of Marketing science.

The focus of the outcome view of Marketing science is on the body of knowledge derived from scientific research. I suggest that this dissertation has contributed to the body of Marketing knowledge in six ways. However, these contributions are not presented as radical additions or departures; rather, they are presented as extensions to the work of

previous researchers, with the short-term intent of stimulating discussion and debate, and the longer term intent of improving our collective understanding of key Marketing principles.

The first contribution to Marketing knowledge is an enhanced and empirically supported definition of the concept of Relative Value. The term "Value" is used widely by Marketers, but a review of the marketing literature revealed a wide array of definitions and conceptualizations. Furthermore, there was some support for the notion that relative value was key in choice situations. Therefore, this dissertation attempted to synthesize a definition of Relative Value, and empirically test it. The synthesized definition was: "the buyer's expectation of the degree of a product's net benefit superiority versus the next best choice ... indicated by choice." This is a different definition from some others in current circulation. Consider the recent definition of Value offered by Gross (1992): "That hypothetical price for the offering at which the customer's usage system would be at an overall economic break-even relative to the best alternative known to the customer." At that break-even price, say P_{BE} , Gross would argue that the customer's expectation of Value would be measured as $\$P_{BE}$. However, I would argue that the customer's expectation of Value would be \$0, because there is no relative net benefit remaining. Furthermore, I would argue that the customer's expectation of Relative Value, i.e., the customer's degree of preference, need not be measured in dollar terms. Consider the nature of the four reflective indicators used to operationalize the Value construct: relative need satisfaction; relative return on investment; relatively more for the money; and relative confidence. Each of these indicators loaded 0.85 or higher on Value, yet only two involved any mention of money. And even the words "more" and "return" need not necessarily refer to money. Therefore, it might be a serious error for marketers to focus on the issue of price when the issue is really the creation of value, i.e., degree of preference. The validity of any definition is in part measured by how well it is supported with empirical evidence. By my definition, the customer's

choice is the ultimate indicator of Relative Value. Using discriminant analysis and a 40% holdout sample, the four indicators of Relative Value were able to correctly predict 88.1% of customer's choices. This is evidence that my enhanced definition of Relative Value possesses a high degree of validity, and, therefore, can be offered as a contribution to Marketing knowledge.

A second contribution to Marketing knowledge is the "Relative Expectations" model of how the buyer actually derives an overall expectation of Relative Value (Exhibit 2-F). It synthesizes four key elements extracted from the other conceptual models reviewed in Chapter 2. First, it focuses on generic benefits to the buyer rather than specific technical attributes of the product, which makes its applications more universal. Second, it models the buyer's process of deriving Value as comparative rather than absolute. Third, it captures the notion that the buyer makes decisions using impressionable and interdependent expectations, rather than indisputable facts. This third element is key to the subsequent argument that B-S relationships can affect the buyer's expectation of Relative Value, hence choice. And fourth, it proposes that the buyer's Expectations of Relative Service Benefits can be measured by the buyer's Expectations of Relative Relational Behaviour. This is based on some authors' suggestions that the behavioural dimension of service is the most important, and is also key for the argument that past and present behaviours can affect some expectations. As with the definition of Relative Value, this enhanced model of the buyer's Expectation of Relative Value is best validated with empirical evidence. The results of the principal PLS analysis showed strong support for all hypotheses within the selected subset of the Relative Expectations model, with an R^2 of 0.821 for the Relative Value construct. Furthermore, support for the model was consistently strong within all buyer segments. This is evidence that the Relative Expectations model of the buyer's expectation of Relative Value possesses a high degree of validity, and, therefore, can be offered as a contribution to Marketing knowledge.

The third contribution to Marketing knowledge is the empirical support of the effect of B-S relationships on the buyer's expectation of Relative Value and subsequent Choice. While the role of relationships has been advocated in the marketing literature for some time, there has been a shortage of conceptual and empirical evidence to support or refute the proposition. If the essence of a relationship is conceived to be the set of interpersonal behavioural patterns between the members of the selling centre and the members of the buying centre, then this dissertation has shown that the buyer's relative Expectations for the B-S relationship have a large, significant and direct effect on the buyer's overall expectation of Relative Value, and subsequent Choice. Furthermore, this dissertation has shown that the sellers' Past and Present relationships have significant and direct effects on the buyer's relative Expectations for the relationships, and the buyer's relative Expectations for the products' functional performance; thus, the sellers' Past and Present relationships have an important indirect effect on the buyer's overall expectation of Relative Value. Therefore, an important contribution of this dissertation is the conceptualization and empirical support for the effect of B-S relationships on the buyer's expectation of Relative Value and Choice.

A fourth Contribution to Marketing knowledge is the Persuasion Network perspective of B-S relationships in the context of winning bids (review Section 3.4.5). That the structural form of the B-S relationship is a Network is relatively clear. Not only is there a complex set of interpersonal interactions between the members of the winner's selling centre and the buying centre, but there is also a complex set of interactions involving the members of the loser's selling centre. And furthermore, the effect of the relationships involving one selling centre are dependent on the relative quality of the relationship involving the other selling centre. That the operative process in the B-S relationship is Persuasion is perhaps more controversial. Persuasion may have fallen from grace in marketing circles, because it perhaps carries negative connotations associated with coercion, annoyance, exaggeration, or even

untruths, to the extent that the buyer "victim" will regret a purchase. However, if Persuasion is viewed properly in a more positive light, it becomes a process whereby the seller can use non-coercive means to more accurately and honestly convey the potential benefits of his/her offering to the buyer, to the extent that the buyer freely and willingly chooses the seller's offering instead of the competitor's. Thus, if the behavioural patterns of the selling team create expectations which can be subsequently satisfied by the behavioural patterns of the service and maintenance team, then Persuasion has a real and legitimate place in the execution of a Marketing plan. The principal analysis in this dissertation, as noted above, in fact indicated that the seller's Past and Present relationships have significant and direct effects on the buyer's Expectations for the relationship and the buyer's Expectations for the product's functional benefits. B-S relationships do appear to be persuasive to the extent that they have a direct effect on the buyer's Expectations, hence an indirect effect on the buyer's expectation of Value and Choice. Therefore, in the context of being chosen in a bid situation, the Persuasion Network perspective of B-S relationships has empirical support, and thus is presented as a contribution to Marketing knowledge.

The fifth contribution to Marketing knowledge is the four-dimensional behavioural typology of the B-S relationship: Attention, Collaboration, Intensity, and Reliability. This typology was proposed following a thorough search of what constituted effective behaviour in the fields of Sales, Service and New Product Development. Essentially, it adds the dimension of Collaboration to the three dimensions of Empathy, Responsiveness and Reliability discovered by Parasuraman et al (1986), and deepens the number of indicators corresponding to each dimension. The principal PLS analysis showed that this typology possessed a high degree of internal consistency and discriminant validity in all three past, present and expected phases of the B-S relationship. Because of the broad base of marketing literature used to derive the typology, and because of its demonstrated validity across the temporal phases of a relationship,

this typology may have far-reaching applications to all facets of interpersonal interactions both between organizations and within organizations. Therefore, it is offered as a contribution to Marketing knowledge.

A sixth and final contribution to Marketing knowledge is the four-dimension typology of Functional Benefits (Conformance to Specification, Functional Features, System Friendliness and User Friendliness), and the two-dimension typology of Bid Documentation (Content and Communication). The principal PLS analysis confirmed the internal consistency and discriminant validity of these typologies, and thus they are offered as a modest contribution.

In addition to contributions to the body of Marketing knowledge, this dissertation makes a modest contribution to the process of Marketing research, specifically with respect to the application of PLS. The contribution is the notion of the "2-stage" construct. In a normal application of PLS, each construct is operationalized with a set of indicators, and then the hypothesized relationships among all constructs are analyzed in a single stage of analysis. However, in the analysis stage of this dissertation I discovered the usefulness of a 2-stage approach. For example, the initial research model involved 20 constructs and some 82 hypotheses (review Section 4.3); this arose because each of the 4 Relationship dimensions and each of the 4 Functional dimensions stood as single constructs. Thus, for example, there were some 16 hypotheses defining the relationship between Present B-S Relationship and Expectations of Functional Benefits. However, by first analyzing the "disaggregated" model and learning each item's factor weight on its construct, then items could be aggregated for a second stage of analysis. For example, Present Relationship Attention was a stand-alone construct with four items in the first stage disaggregated model, but became a single indicator of Present B-S Relationship in the second stage aggregated model (review sections 5.3.4 and 5.3.5). Thus, Present B-S

Relationship could be called a "2-stage construct." There were some advantages in creating 2-stage constructs. First, the research model was much reduced in complexity, down to 8 constructs and 16 hypotheses; this permitted faster computer analysis of the PLS program because of fewer parameters and stronger discrimination. Second, and more importantly, the explanation of the research model and presentation of results became much simpler. Therefore, the notion of 2-stage constructs may find applications in other Marketing research projects, and is thus noted as a contribution to Marketing science.

8.2.2 Contributions to the Practice of Marketing

Just as it was the objective of this dissertation to contribute to the science of Marketing, it was also an objective of this dissertation to contribute to the practice of Marketing, with marketing managers as the specific target audience. The managerial problem associated with this dissertation was "How to manage B-S relationships to favourably affect the buyer's choice in bid situations." The findings of this dissertation have helped answer this question.

The first contribution to marketing management is strong empirical reinforcement for the notion that the customer's expectation of Value is relative, i.e., the seller's offering is assessed by the buyer in relation to the competitors' offerings. This means that an the offering which is perceived to be excellent by the buyer will always lose to an offering which is perceived to be outstanding. The implication for marketing managers is that when performance and/or satisfaction ratings are requested from current or past customers, they must be requested in relative terms. Otherwise, a marketing manager might be caught in the annoying situation of having excellent performance ratings but declining share.

The second contribution to marketing managers stems from the support for the concept that the buyer's overall expectation of Relative Value is derived principally from a broad interdependent set of relative Expectations. While relative Expectation of \$Costs were found to be the most important (negative) determinant of the buyer's expectation of Relative Value consistently across all buyer segments, the relative Expectation of the B-S service relationship ranked a close second. The implication for marketing managers is that Price is not the sole purchase criterion in competitive bid situations. Indeed, in some of Bell's customer segments, up to one third of the bids were awarded to sellers submitting a premium price. This represents confirmation for those managers who maintain that a premium price strategy can be viable for specific customer segments, when supported by a top quality service relationship.

A third contribution to the practice of Marketing is the confirmation of large and significant effects of the Past and Present B-S Relationships on the buyer's set of Expectations, which in turn leads to effects on the buyer's expectation of Value and Choice. While this positive effect of good B-S relationships has been assumed by many practitioners for some time, to date there has been little empirical support. The phenomenon occurs because a buyer's Expectation is formed from a combination of objective "fact" and a second component of uncertainty. Thus, a buyer's Expectation can be affected to a substantial degree by the uncertainty-reducing elements of Past and Present B-S Relationships such as Attentiveness and Reliability. The implications for marketing managers are threefold: 1) selling team members must be hired, trained and re-trained in accordance with effective relational behaviours; 2) service team members must also be hired, trained and re-trained in accordance with effective relational behaviours; 3) if past service relationships are important in a new bid situation, then it is the marketer's best interest to make sure that the customer service department is doing its utmost to eliminate sources of dissatisfaction within the

existing customer base. In fact, given the strong link between quality service relationships and future success in bid situations, it could be argued that the Marketing and Customer Service departments are no longer separable in a selling organization.

The fourth contribution to marketing managers is a broader and deeper understanding of what constitutes "effective" relational behaviours by the members of the selling and service teams. This dissertation has identified four principal dimensions of an effective behavioural typology: Attention, Collaboration, Intensity and Reliability. Furthermore, each of these dimensions can be described by a series of specific behaviours (review Exhibit 3-B). This typology, then, is a specific guide for managers who are involved in recruitment and training of sales and service personnel. Furthermore, this typology may have broader applications in the areas of new product development teams, and the management of the marketing function's intra-organizational relationships with other functional groups.

A fifth and final contribution to marketing managers stems from the observation that the effects of B-S relationships do vary between segments. For example, in one sub-segment observed in this dissertation, the effects of documentation quality on the buyer's Expectations were in fact greater than the effects of relationship quality. The specific characteristics of the sub-segment where the differences were observed are not as important as the observation that differences do in fact exist. This type of information is important because managers must often make resource allocation tradeoffs. The implication of this observation for marketing managers is clear: managers must be vigilant about important differences between segments, and therefore must conduct ongoing research to expose the differences.

8.2.3 Contributions to the Science of Psychology

The field of Social Psychology is largely concerned with the understanding and prediction of how human cognitive processes and subsequent behaviour are affected by interactions with social groups. As such, Social Psychology has been a fertile source for the development of the field of Marketing, and some findings in the field of Marketing have also contributed to the field of Social Psychology. This dissertation, which has investigated the effects of the seller's relational behaviours on the buyer's Expectations and subsequent behaviour (i.e., Choice), may also be of some value. This is possible because not all choices are necessarily related to commercial choices by consumers and businesses. For example, it is possible that the choice of a spouse or partner may be highly affected by the patterns of interpersonal behaviour displayed by the courting party. The following discussion will focus on what I consider to be the three most useful contributions of this dissertation to the field of Social Psychology.

The first contribution is the notion of the "Relative Expectations" model of the decider's expectation of Relative Value and Choice. If a Benefit is defined as "that which satisfies a need", and if need satisfaction motivates most individuals (Maslow 1954), then it is plausible that "expectations of superior benefits" drive most individuals' decisions. The typology of benefits derived in this dissertation is clearly not transferrable to, say, a choice of partner decision, but perhaps it can serve as a directional indicator.

The second contribution is confirmation that relational behaviours do serve as persuasion enhancers, i.e., they do have an effect on the decider's ultimate choice. This supports the sprinkling of references in the persuasion literature that behaviour can serve as an enhancer, but it also extends the scope of the effect. In other words, persuasion enhancement is normally attributed only to those signals which directly

accompany the message, e.g. the courtesy of the sales rep. However, in this case the persuasion enhancement can be attributed to a much broader set of interpersonal behaviours, spanning time. The findings also support a specific explanation for how behaviours can serve as a persuasion enhancer. Tesser's (1978) theory of Self-Generated Attitude Change was invoked to explain that in difficult decision situations, the decider actively seeks clues; here, it was posited that clues from the seller's relational behaviour could alleviate the decider's feelings of uncertainty about a seller's offering, thus boosting the decider's Expectations and expectation of Value. The results were largely consistent with this hypothesis, and thus Tesser's theory has received some empirical support.

A third and final contribution to the field of Social Psychology lies in the confirmation of the four-dimensional typology for effective behaviours: Attention, Collaboration, Intensity and Reliability. Because this typology was derived from an inspection of a wide array of marketing and communications literature, this typology may also have direct application in the field of Psychology. For example, it may help to explain a person's choice of spouse or partner, or possibly a researcher's choice of research colleague.

8.3 LIMITATIONS AND DIRECTIONS

No matter how well a research project is designed and executed, it will always be subject to certain limitations pertaining to context, conceptual development, methodology and analysis. It is important to recognize these limitations in order to judge the generalizability of the results, but the limitations also indicate which directions for future research may prove most valuable. In this section of Chapter 8, some of the more significant limitations of this research project are reviewed, together with implications for future research.

8.3.1 Contextual Limitations and Directions

The research context of this dissertation was intentionally confined in order to maximize the probability of discovering significant effects of the B-S relationship. Some of the more important restrictions were: 1) a single product type, i.e., a Private Branch Exchange (PBX) system, which can be described as technology-based capital equipment; 2) a single geographic customer segment, i.e., Ontario, Canada; 3) a moderately homogeneous demographic customer segment, i.e., medium to large size companies in a modified rebuy or new task buying situation; and 4) a single stage in the bid process, i.e., the final choice stage, as opposed to the buyer's go/no go decision stage, the bidder qualification stage, or the short list stage. Now that the effect of B-S relationships has been clearly established within these boundaries, it would be appropriate to expand the research context.

In the business-to-business sales arena, it would be useful to replicate the full study across product types (e.g. raw materials), geographic segments (e.g. North America), demographic segments (e.g. straight rebuys) and bid stages. Variations in the importance of specific Expectations, or variations in the effect of Past and Present B-S relationships, might be expected as the context varies. For example, as the product type becomes simpler, or as the purchase situation moves towards the straight rebuy, the effect of B-S relationships might be expected to diminish. Such replications could be accomplished either with a series of confined studies, or with a large randomized study.

Still in the business-to-business arena, but in the field of new product development, it might also be useful to replicate the full study. The objective would be to study how the developer-adopter relationships throughout the product development process affect the early adopter's expectation of Value and the adopt/reject decision.

This study might also be replicated in the consumer marketing domain, either in whole or in part. A partial study of only the Relative Expectations model could be undertaken in almost any consumer choice situation. A full study, including the effects of B-S relationships, might be more useful in the case where a consumer is making a relatively large or difficult purchase such as first house, first car, or first home entertainment centre.

8.3.2 Conceptual Limitations and Directions

The conceptual limitations of this research project fall into four categories: 1) missing constructs from the Relative Expectations portion of the research model; 2) imperfectly dimensionalized constructs in the Relative Expectations model portion; 3) missing constructs from the Cues portion of the research model; and 4) imperfectly dimensionalized constructs in the Cues portion. Each of these categories will be discussed in sequence, with respect to both limitations and potential directions for research.

Of the complete Relative Expectations model proposed in Chapter 2 (review Exhibit 2-F), only a subset was extracted for the eventual research model (review Exhibit 5-H). The Economic Benefits construct was not included because the product type involved in the dissertation research (i.e., PBX) was not considered to be a cash generating acquisition. The Experiential Benefits construct was not included for a combination of reasons - the purchasing literature did not indicate that experiential criteria were relatively important in the business-to-business arena, and the size of the model had to be kept within practical limits. However, it would be a very useful study to test the complete Expectations model, with all five Expectations constructs predicting Relative Value. If the Experiential construct were shown to have a significant effect on the customer's expectation of Value, that would

represent an important contribution to both the fields of Marketing and Purchasing.

Of the four key constructs included in the Expectations model portion of the research model, I believe in retrospect that three of them were imperfectly dimensionalized. In the final analysis, Relative Value was simply measured by a four-item scale (review Exhibit 6-F). However, it might be better conceptualized as a "2-stage" construct (see Section 8.2.1), with three dimensions in the first stage, and each measured in turn by several indicators in the second stage, similar to the ExpFuncBen construct. The first principal dimension might be Need Satisfaction, measured with items such as overall need satisfaction, functional need satisfaction, and service need satisfaction. The second dimension might be Economic Value, measured with items such as ROI, more for the money, and net present value. The third dimension might be Risk Reduction, measured by items such as confidence, certainty, comfort. Similarly, the \$Cost construct might be better captured as a 2-stage construct. The three items used to measure \$Cost in this dissertation (review Exhibit 6-F) were representative of the three dimensions, but measured only a portion of each. The first principal dimension might be Acquisition (FOB site), measured with items such as price, taxes, duty and freight. The second dimension might be Installation, measured by site preparation, installation, startup/debug, downtime and training. The third dimension would be Operation, measured by operating costs, maintenance, repairs, and accidents. Finally, the Service Benefit construct in this dissertation was appropriately captured as a 2-stage construct, and the essence of service as a set of four behavioural dimensions was portrayed. However, several other potential principal dimensions such as Corporate Tangibles (e.g. facilities), Agent Tangibles (e.g. appearance), and Agent Intangibles (e.g. personality) were absent. A fruitful dimension for future research would be to complete the conceptualization of the key constructs in the Expectations model, and to subject the complete model to an empirical test.

APPENDIX C
EXECUTION PLAN

<u>Task</u>	<u>Timeframe</u>	<u>Responsibility</u>
Bid list and pre-test list to D. Large	fax or mail by March 25	Bell
Application for University Interaction funding, approximately \$5,000	by March 18	?
Draft questionnaires and cover memos to Bell and NT for review	fax or mail by March 18	D. Large
Reviewed questionnaires and cover memos to D. Large	fax or mail by April 1	Bell, NT
Pre-test phone introductions	by April 1	D. Large
Copy pre-test memos and questionnaires	by April 8	D. Large
Pre-test mailouts	on April 8	D. Large
Analysis of pre-test	by April 29	D. Large
Final drafts of cover memos and questionnaires to Bell and NT for final review	fax on May 6	D. Large
Final approval from Bell/NT	phone confirmation by May 13	Bell, NT
Bid list phone introductions	by May 20	D. Large
Final printing of memos and questionnaires	by May 20	?
Mail-out of Bell memos	by May 27	Bell
Mail-out of questionnaires	by May 29	D. Large
Second wave of questionnaires	by June 17	D. Large
Receive final questionnaires	by July 5	D. Large
Analyze data	by July 26	D. Large
Final presentation and report	by September 30	D. Large

8.3.3 Methodological Limitations and Directions

In retrospect, there were five methodological issues which may have limited the effectiveness of this research: 1) the use of a cross-sectional instrument; 2) the use of key informants; 3) the use of a small sample; 4) the timing of the questionnaire release; and 5) the use of agree/disagree endpoints on the item scales. Each issue will be discussed in sequence, together with suggestions for future research.

The use of a cross-sectional questionnaire, i.e., where questions are asked at a single point in time about events at various points in time, opens the research to criticism. The need to complete a dissertation expediently is not a valid excuse when it introduces concerns. For example, how can respondents recall their perceptions at a time up to three years in the past, and how can their memories not be tainted by subsequent events? Chapter 5 described in some depth the extent to which these concerns were acknowledged as valid, and the extent to which measures were taken to minimize them. Subsequent PLS analysis demonstrated satisfactory discriminant validity among the constructs, and thus to some degree the concerns have been reduced. And also notice that a report on the buying group's expectations cannot be reported until after the group has met, discussed the available information, and arrived at a decision. However, even though a cross-sectional methodology can be vigorously defended, a replicative longitudinal study might prove to be less susceptible to criticism. Therefore, a longitudinal study, in which the buying centre's perceptions of Past and Present Relationships were measured prior to the group's final purchase decision, would be a worthy direction for future research.

In this dissertation a key informant was engaged to report on his/her perceptions of the buying centre's evaluation of the competing proposals. In the discussion of methodology in Chapter 5, arguments were presented both for and against the engagement of key informants. Their

engagement was deemed acceptable if the key informant had played the role of key decision maker; hence, the key decision maker was sought for this research. However, questions can linger about the validity of a key informant's set of responses, especially about the group's perceptions. Therefore, a future direction for research would be to obtain responses from at least a majority of the members of the buying centre, and to generate some kind of average response measures.

In the field of business-to-business research, the issue of response sample size repeatedly surfaces. In this research, the response set was 106, which is sufficiently large for a valid PLS analysis. However, many would argue that the set is too small and too restricted to allow generalization to populations beyond the research sample. Furthermore, if the sample is subdivided for the purpose of comparing segments, many segment sizes become too small for a valid analysis. Therefore, a fruitful direction for future research would be a replication with a much larger sample, including a much broader range of products.

The timing of the mailout of the questionnaire created some problems. Originally, the questionnaires were to be released in late May and early June, prior to the onset of summer vacations. Because of longer than expected delays in the development and pre-test of the questionnaire, it was not actually released until July, in the middle of vacation season. Hence, there were major delays in many responses, data gathering did not officially end until September, and the response rate of 71%, though good, was possibly lower than what otherwise might have been. Therefore, as a suggestion for research practice rather than a research direction, I would recommend issuing questionnaires by mid-May at the latest for a summer research project.

The final methodological limitation concerns the use of "strongly disagree" and "strongly agree" for the endpoints of most of the questions. The interpretation I was expecting from the respondents was that "strongly

disagree" would mean that Bell's performance was much worse than the competition's. To a great extent I think that the respondents' interpretation was consistent with my expectation. However, in a telephone conversation with a respondent who had chosen from two competitors offering the identical technical equipment, "strongly disagree" on questions of functional superiority was taken to mean "the same as". Such mis-interpretation adversely affects the accuracy of the results, and therefore should be eliminated in future research. There are two potential solutions: either clarify the correct interpretation in the introductory instructions, or change the wording of the endpoints to something like "much worse than" and "much better than".

8.3.4 Analytical Limitations and Directions

In addition to the principal PLS analysis and jackknifing to ascertain path significance, several steps of complementary analyses were also performed to enrich the basic conclusions. Nevertheless, there was one area where the analysis could be extended in future research: sensitivity analyses for the effects of other segmentation variables such as company size. In the complementary analyses, differences were investigated among segments in the response sample, using two segmentation variables. One variable might be termed the buying centre's "self-assurance", with two categories "consultant not employed" and "consultant employed". The other variable might be termed "sector", with the two categories "public sector" and "private sector". Some interesting and significant differences were found between the segments, especially with respect to cue effects. These variables were chosen a priori at the request of the sponsoring organization because the managers suspected that there were in fact differences in the buying process. Other possible segmentation variables were measured but not used to check for differences, such as company size by employees, purchase size by dollars, and buying centre size by number of members. A fruitful direction for

research might be to hypothesize why and how these might be useful segmentation variables, and to conduct empirical checks.

8.4 CONCLUDING THOUGHTS

This dissertation has been all about the importance of interpersonal B-S relationships in the field of business-to-business marketing, and in particular in the context of winning bids for technology-based capital equipment. Empirical evidence supports the hypothesis that the quality of the B-S relationship does positively affect the buyer's expectation of Relative Value, and thus the buyer's subsequent Choice. Specifically, the degree to which the Seller's people have displayed Attention, Collaboration, Intensity and Reliability in their interpersonal relationships with the buyer's people in the past, and the degree to which they display similar relational behaviours in the present, will favourably affect the buyer's evaluation and Choice in competitive bid situations.

In short, B-S relationships make a difference. Marketing researchers will not be surprised by this result, but some of the specific findings may prove useful as guidance for future research. Likewise, marketing managers will not be surprised, but again some of the specific findings may prove useful as guidance for the hiring, training and deployment of their personnel. And above all, our customers will benefit.

APPENDIX A

Proposal for Joint Research

WINNING BIDS FOR ADVANCED TECHNOLOGY SYSTEMS:
HOW THE SELLING TEAM'S BEHAVIOR INFLUENCES THE
CUSTOMER'S ASSESSMENT OF VALUE AND CHOICE

A Proposal for Joint Research Between

The University of Western Ontario
School of Business Administration

and

Bell Canada

and

Northern Telecom Canada Limited

Submitted by:

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March 11, 1991

INTRODUCTION

David Large is a doctoral candidate in Marketing at Western's School of Business. In order to complete the requirements for his Ph.D. dissertation, he is proposing to conduct a managerially relevant joint research project with Bell Canada and Northern Telecom Canada Limited.

Specifically, Mr. Large's dissertation will focus on the topic of "Winning Bids for Advanced Technology Systems". He is proposing that the customer's assessment of value and choice may be influenced by the selling team's behavior, in addition to technical, financial and service considerations.

Bell and Northern Telecom are highly appropriate companies to participate in this research project, because Bell sells an advanced technology system (the NT PBX) in sufficient numbers to satisfy the strict requirements of dissertation research. Bell/NT involvement in the research project would include the supply of Bell's recent bid list for the NT PBX, the identification of a key informant from each customer, assistance in convincing each informant to complete a questionnaire, and a financial contribution to help cover stationery and communications expenses.

These are the anticipated benefits for Bell and Northern Telecom in return for their involvement:

- 1) a detailed Win/Loss Analysis for the particular system chosen, showing the relative importance of Technical, Financial and Service factors in bids won and lost;
- 2) the identification of patterns of behavior by Bell's selling teams which can contribute to a higher percentage of victory in bid situations; and
- 3) a detailed analysis of current levels of Customer Satisfaction on important technical, financial and service dimensions.

The following pages cover the essential elements of the research proposal, including:

- Appendix A - Research Overview
- Appendix B - Research Model
- Appendix C - Execution Plan
- Appendix D - Estimate of Out-of-Pocket Expenses
- Appendix E - First Draft of Questionnaire

APPENDIX ARESEARCH OVERVIEW

MANAGEMENT PROBLEM: From the seller's perspective, how to get chosen more frequently in bid situations

RESEARCH MODEL:

Dependent Variable: Customer Choice

Customer's Principal Evaluation Criteria:

- 1) Expected Technical Performance
 - Expected Specification Conformance
 - Expected Functional Features
 - Expected Systems Friendliness
 - Expected User Friendliness
- 2) Expected Financial Benefits/Costs
 - Expected \$Price
 - Expected \$Return
- 3) Expected Post-Purchase Service Behavior
 - Expected Service Attention
 - Expected Service Collaboration
 - Expected Service Intensity
 - Expected Service Reliability

Behavioral Influencers:

- 1) Selling Behavior
 - Selling Attention
 - Selling Collaboration
 - Selling Intensity
 - Selling Reliability
- 2) History of Service Behavior
 - History of Service Attention
 - History of Service Collaboration
 - History of Service Intensity
 - History of Service Reliability

METHODOLOGY:

Data Collection: Self-administered survey questionnaire

Sampling Frame: Bell's recent bid list for NT's PBX system

Sampling Method: Divide the bid list into customers who adopted and those who rejected the Bell's PBX; identify the key informant in each; send questionnaire to each informant.

Appendix A (cont.)

Questionnaire Disguise: In order to prevent bias in the informants' responses, the questionnaire will be presented as a "customer service and satisfaction study", rather than a "selling team behavior" study.

Questionnaire Pre-Test: Yes, by about 30 volunteer key informants

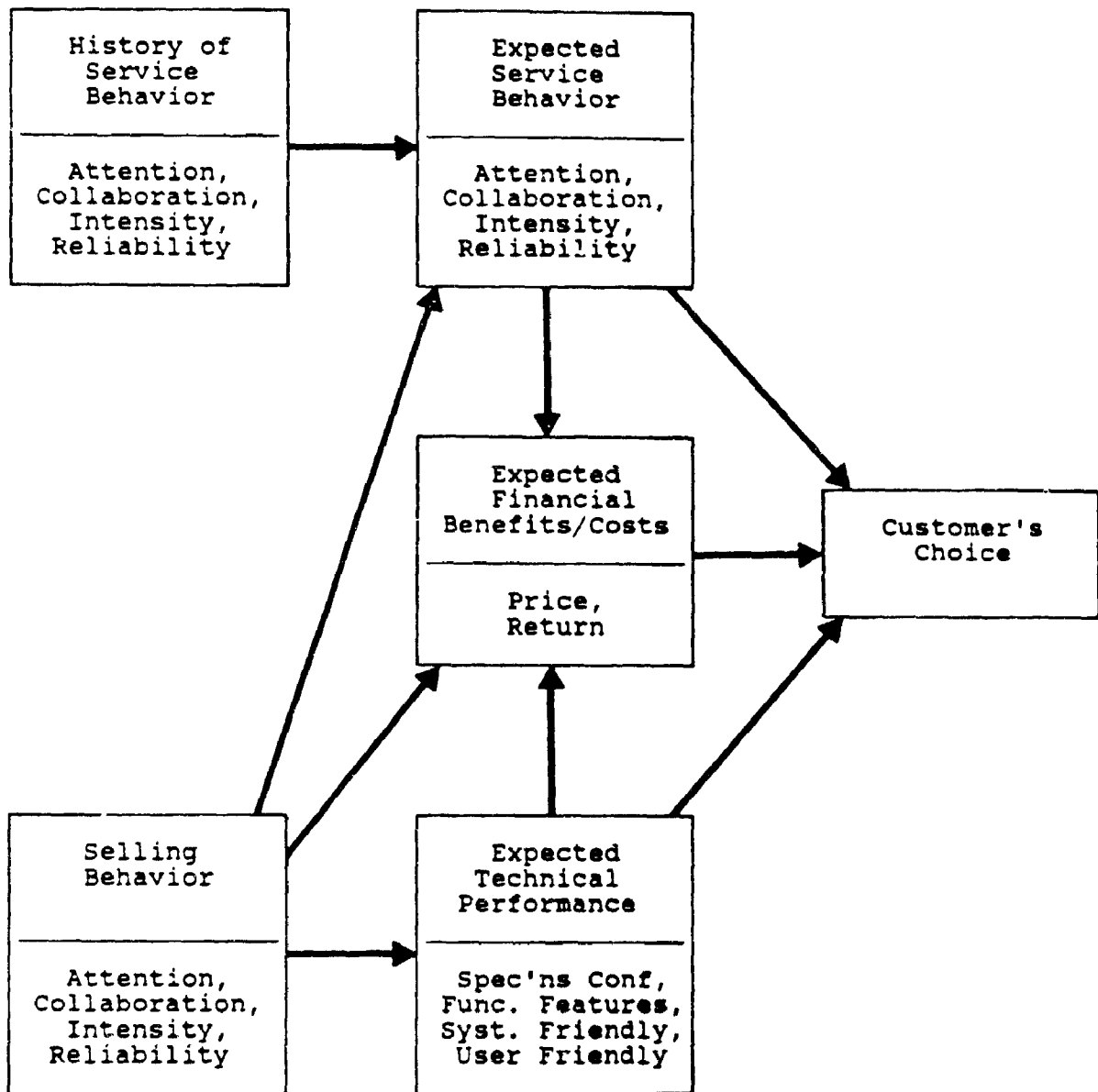
ANALYSIS: Partial Least Squares (PLS)

CONTRIBUTIONS:

Managerial: Normative behaviors for the members of Bell's selling and service teams

Academic: Enhanced conceptualizations of customer value and B-S relationships; support for the notion of behavior as a persuasion enhancer

APPENDIX B
RESEARCH MODEL



N.B. Each variable shown above is measured as the customer's comparison of Bell vs. the Next Best Choice

APPENDIX C
EXECUTION PLAN

<u>Task</u>	<u>Timeframe</u>	<u>Responsibility</u>
Bid list and pre-test list to D. Large	fax or mail by March 25	Bell
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APPENDIX D
ESTIMATE OF OUT-OF-POCKET RESEARCH EXPENSES

<u>Item</u>	<u>\$ Estimate</u>
1) Final printing of memos and questionnaires (300 copies @ \$5)	1,500
2) Phone calls (250 @ \$4)	1,000
3) Envelopes, postage (300 @ \$3)	900
4) Car trips to Toronto (3 @ 350 km return \$0.25/km)	300
5) Courier expenses	250
6) Misc. (final word processing, photocopying)	250
7) Contingency	800
	<hr/>
TOTAL	\$5,000

APPENDIX EFIRST DRAFT OF THE PROPOSED QUESTIONNAIRE

Note: This version will be mailed to the companies who bought NT's system from Bell. A slightly modified version will be sent to those who rejected Bell's bid.

KNOWING AND SATISFYING CUSTOMERS OF ADVANCED TECHNOLOGY SYSTEMS:CUSTOMER QUESTIONNAIRE

A Study Co-Sponsored by:

Bell

Bell Canada

nt

Northern Telecom Canada Limited



National Centre for Management Research and Development



Western Business School

Return Questionnaire in Pre-Paid Envelope to:

David W. Large, Research Director
 School of Business Administration
 The University of Western Ontario
 London, Ontario, Canada N6A 3K7

General Information for Respondents

The health of the Canadian economy will depend to a large extent on the ability of Canadian companies to develop and sell advanced technology systems to customers worldwide. In order to be successful, the developers of these systems must learn how to understand their customers, and how to satisfy their customers better than their competitors.

Therefore, the four organizations shown on the cover of this questionnaire are conducting a joint study on how to better understand and satisfy customers of advanced technology systems. Part of the study consists of sending a questionnaire to a select set of companies who have recently purchased (or rejected) a Bell PBX system in a bid competition. Because we are consulting only a select group of companies in this particular study, your participation is very important.

Bell's records indicate that your company recently decided to buy a Bell PBX system. Further, you have been identified as an important individual in the purchase decision. We'd like you to tell us about your company's level of satisfaction with Bell's system, which factors are contributing to your level of satisfaction, and which factors may have contributed to your original purchase decision.

It is important that you tell us both the good and bad. In other words, give Bell praise where praise is due, and criticism where criticism is due, because this is the only way we can learn how to improve. (It would be unusual for Bell to better on all factors). Your answers will be completely confidential, known only to the Research Director. Bell and Northern Telecom will receive only the aggregate results of the analysis.

Instructions:

Before beginning this questionnaire, please spend a small amount of time thinking about your current satisfaction level, and about the factors that led to your purchase decision. Then, set aside about thirty undisturbed minutes for answering our questions. Your contribution to this important study is very much appreciated.

Indicate your responses to the questions by circling the appropriate number. The numbers mean:

1. Strongly Agree
2. Agree
- ~~3. Slightly Agree~~
4. Neither Agree nor Disagree
- ~~5. Slightly Disagree~~
6. Disagree
7. Strongly Disagree
- ~~8. Don't Know~~

Customer Satisfaction

Think about your level of satisfaction during and after the implementation of Bell's system, and answer the following:

Overall Satisfaction

1. In general, we're satisfied with our Bell purchase.
2. I would invite Bell to participate in future tenders.
3. I would recommend Bell to other divisions or companies.

Components of Satisfaction

1. During the system's implementation, we were satisfied with Bell's attentiveness to our problems and requests.
2. During the system's implementation, we were satisfied with Bell's collaborative attitude.
3. During the system's implementation, we were satisfied with Bell's level of effort to make the system operational.
4. During the system's implementation, we were satisfied with Bell's competence and dependability.
5. During the system's implementation, we were satisfied with Bell's general level of service.
6. After the system was operational, we were satisfied that it met our specifications.
7. After the system was operational, we were satisfied with its operating performance.
8. After the system was operational, we were satisfied with how well it meshed with our existing operations and procedures.
9. After the system was operational, we were satisfied with its user friendliness.
10. After the system was operational, we were satisfied with the total installed cost to our company.
11. After the system was operational, we were satisfied with our financial returns.

Difficulty of Choice

Think about how difficult the final choice was between Bell and your next best choice, and make the following comparisons:

1. In comparison with our next best choice, Bell's system better met our most important needs.
2. In comparison with our next best choice, Bell's system provided more benefits.
3. In comparison with our next best choice, Bell's system generated more enthusiasm.
4. In comparison with our next best choice, Bell's system offered better overall value.
5. The choice was easy to make.
6. We deliberated at length before deciding.
7. We felt comfortable with our choice.

Expected Level of Service

Think about the expectations for level of service you developed for Bell and your next best choice before making your choice, specifically for the post-purchase period including delivery, installation and start-up, and make the following comparisons:

Expected Attention

In comparison with our next best choice, we expected that Bell's people:

1. Would be more interested in our problems and needs.
2. Would be easier to contact when we needed them.
3. Would pay more attention to our specific requirements.
4. Would provide more individualized attention.
5. Would be more willing to listen to our concerns.
6. Would be more approachable.
7. Would be more concerned about our satisfaction.

Expected Collaboration

In comparison with our next best choice, we expected that Bell's people:

1. Would take more of a mutual problem-solving approach.
2. Would have a more helpful attitude.
3. Would be more cooperative.
4. Would disclose important information more openly and honestly.
5. Would be more friendly.
6. Would be fairer and easier to work with.
7. Would be more willing to help with evaluations and decisions.
8. Would be more interested in a longterm relationship.
9. Would be more courteous and considerate.
10. Would be more willing to help us understand complex material.
11. Would be more flexible and adaptable with their solutions.
12. Would be more willing to give and take.
13. Would be more receptive to our suggestions.

Expected Intensity

In comparison with our next best choice, we expected that Bell's people:

1. Would return our calls more quickly.
2. Would respond to our questions more promptly.
3. Would handle paperwork more expediently.
4. Would be in contact more frequently.
5. Would provide more information.
6. Would be more willing to make an extra effort.
7. Would show more initiative.
8. Would be more proactive.
9. Would show a higher degree of commitment.
10. Would show more dedication and persistence.

Expected Reliability

In comparison with our next best choice, we expected that Bell's people:

1. Would be more dependable in fulfilling their promises.
2. Would be more thorough with the identification and completion of details.
3. Would provide more accurate information.
4. Would provide more meticulous and professional documentation.
5. Would more clearly demonstrate their technical expertise.
6. Would be more confidential with restricted company information.
7. Would fulfil their promises more accurately and reliably.
8. Would be more punctual for appointments.

Expectations of Technical Performance

Think about the expectations for technical performance you developed for Bell's system and your next best choice prior to making your choice, and make the following comparisons:

Conformance to Specifications

In comparison with our next best choice, we expected that Bell's system:

1. Would more completely conform to our operational specifications.
2. Would more completely conform to our materials specifications.
3. Would more completely conform to our finish specifications.
4. Would more completely conform to our safety standards.
5. Would more completely conform to our pollution standards.
6. Would more completely conform to all government regulations.

Functionality and Functional Features

In comparison with our next best choice, we expected that Bell's system:

1. Would have clear performance advantages.
2. Would have clear durability and reliability advantages.
3. Would offer more important operating features.
4. Would be higher quality.

Systems Friendliness

In comparison with our next best choice, we expected that Bell's system:

1. Would be easier to install.
2. Would be easier to maintain and service.
3. Would be more compatible with current equipment.
4. Would be more compatible with future equipment and technology.
5. Would be more flexible and adaptable in our operations.
6. Would offer more growth potential.
7. Would be more upgradeable.
8. Would be more resistant to obsolescence.
9. Would be more failsafe.

User Friendliness

In comparison with our next best choice, we expected that Bell's system:

1. Would be easier to learn and operate by our employees.
2. Would require a shorter training period.
3. Would be viewed as more approachable by our employees.
4. Would be viewed as less complex, less strange, by our employees.
5. Would cause less disruption and anxiety for our employees.

Expected Financial Benefits and Costs

Think about the expectations for financial benefits and costs you developed for Bell and your next best choice prior to making your choice, and make the following comparisons:

Total Price

In comparison with our next best choice, we expected that Bell's system:

1. Would have a lower invoice price.
2. Would be less expensive to install.
3. Would require fewer renovations.
4. Would cause shorter operations disruption.
5. Would have a lower overall cost to implement.

Financial Return

In comparison with our next best choice, we expected that Bell's system:

1. Would generate higher operating margins.
2. Would generate a higher return on investment.
3. Would provide a higher net present value.
4. Would provide a shorter payback period.
5. Would have a higher salvage value.

Level of Service by the Selling Teams

Think about your company's relationships with Bell and your next best choice during the time of the bid proposal process itself. Think about the level of service displayed by the sales representatives of the two companies, and make the following comparisons:

Selling Attention

In comparison with our next best choice, Bell's people:

1. Appeared more interested in our problems and needs.
2. Were easier to contact when we needed them.
3. Paid more attention to our specific requirements.
4. Provided more individualized attention.
5. Appeared more willing to listen to our concerns.
6. Were more approachable.
7. Were more concerned about our satisfaction.

Selling Collaboration

In comparison with our next best choice, Bell's people:

1. Took more of a mutual problem-solving approach.
2. Had a more helpful attitude.
3. Were more cooperative.
4. Disclosed important information more openly and honestly.
5. Were more friendly.
6. Were fairer and easier to work with.
7. Were more willing to help with evaluations and decisions.
8. Seemed more interested in a longterm relationship.
9. Were more courteous and considerate.
10. Were more willing to help us understand complex material.
11. Were more flexible and adaptable with their solutions.
12. Were more willing to give and take.
13. Were more receptive to our suggestions.

Selling Intensity

In comparison with our next best choice, Bell's people:

1. Returned our calls more quickly.
2. Responded to our questions more promptly.
3. Handled paperwork more expediently.
4. Were in contact more frequently.
5. Provided more information.
6. Seemed more willing to make an extra effort.
7. Showed more initiative.
8. Were more proactive.
9. Showed a higher degree of commitment.
10. Showed more dedication and persistence.

Selling Reliability

In comparison with our next best choice, Bell's people:

1. Were more dependable in fulfilling their promises.
2. Were more thorough with the identification and completion of details.
3. Provided more accurate information.
4. Provided more meticulous and professional documentation.
5. More clearly demonstrated their technical expertise.
6. Were more confidential with restricted company information.
7. Fulfilled their promises more accurately and reliably.
8. Were more punctual for appointments.

Prior Level of Service

Think about any prior knowledge you may have had about Bell or your next best choice, from prior purchases, general reputation, or word-of-mouth. Think especially about what you knew about their level of service, then make the following comparisons.

Prior Attention

In comparison with our next best choice, Bell's people:

1. Appeared more interested in our problems and needs.
2. Were easier to contact when we needed them.
3. Paid more attention to our specific requirements.
4. Provided more individualized attention.
5. Appeared more willing to listen to our concerns.
6. Were more approachable.
7. Were more concerned about our satisfaction.

Prior Collaboration

In comparison with our next best choice, Bell's people:

1. Took more of a mutual problem-solving approach.
2. Had a more helpful attitude.
3. Were more cooperative.
4. Disclosed important information more openly and honestly.
5. Were more friendly.
6. Were fairer and easier to work with.
7. Were more willing to help with evaluations and decisions.
8. Seemed more interested in a longterm relationship.
9. Were more courteous and considerate.
10. Were more willing to help us understand complex material.
11. Were more flexible and adaptable with their solutions.
12. Were more willing to give and take.
13. Were more receptive to our suggestions.

Prior Intensity

In comparison with our next best choice, Bell's people:

1. Returned our calls more quickly.
2. Responded to our questions more promptly.
3. Handled paperwork more expediently.
4. Were in contact more frequently.
5. Provided more information.
6. Seemed more willing to make an extra effort.
7. Showed more initiative.
8. Were more proactive.
9. Showed a higher degree of commitment.
10. Showed more dedication and persistence.

Prior Reliability:

In comparison with our next best choice, Bell's people:

Appendix A (cont.)

1. Were more dependable in fulfilling their promises.
2. Were more thorough with the identification and completion of details.
3. Provided more accurate information.
4. Provided more meticulous and professional documentation.
5. More clearly demonstrated their technical expertise.
6. Were more confidential with restricted company information.
7. Fulfilled their promises more accurately and reliably.
8. Were more punctual for appointments.

Which source of historical information did you rely on for your answers about prior level of service?

The Most Important Source

Next Most Important Source

(Check one only)

(Check one only)

- ___ Past Personal Experience
- ___ Source Within My Company
- ___ Source Outside My Company
- ___ Magazine Review
- ___ General Reputation
- ___ Other (Specify) _____

- ___ Past Personal Experience
- ___ Source Within My Company
- ___ Source Outside My Company
- ___ Magazine Review
- ___ General Reputation
- ___ Other (Specify) _____

Final General Questions

This last page will ask general questions about the respondent's formal position, final comments, etc., plus information about his/her company's size, industry, etc., for the purpose of being able to do situational analyses. Finally, there will be a box to check if the respondent wishes to receive an executive summary of the study.

APPENDIX B

Initial Questionnaire

April 4, 1991

To: Roger More
Terry Deutscher
Chris Higgins
Don Barclay
John Hlland

From: Dave Large

Re: Pre-Test Questionnaire

Attached is a proposed pre-test version of my questionnaire, to be answered by 15 or 20 test respondents from the perspective of the Winner's bid. A slightly modified version will be answered by 15 or 20 respondents from the perspective of the Second Choice bid. This simulates the condition of sending "real" questionnaires to Bell's winning and losing bid sites.

Notes:

- 1) Questions 42-51 about bid documentation quality are included at the request of Bell's Bid Support Group.
- 2) Questions 108-127 about Customer Satisfaction serve as the questionnaire's disguise, which is intended to encourage all respondents to be brutally frank.
- 3) Questions 128-132 (General Questions) will not be sent out with the pre-test, only with the final version.

Any comments you might have concerning this instrument (however brief) will be welcome prior to April 12.

WINNING AND SATISFYING CUSTOMERS FOR ADVANCED TECHNOLOGY SYSTEMS

A Joint Study by:



School of Business Administration
The University of Western Ontario



National Centre for Management
Research and Development



Northern Telecom Canada Limited



Bell Canada

Research Director:

David W. Large
School of Business Administration
The University of Western Ontario
London, Ontario, Canada N6A 3K7
Phone: (519) 679-2111, ext 5129

GENERAL INFORMATION ABOUT THIS STUDY

The future health of the Canadian economy will depend to a large extent on the ability of Canadian companies to develop and sell advanced technology systems to customers worldwide. In order to be successful, the developers of these systems must first improve their understanding of how to win their customers, and then how to satisfy their customers, better than any other competitor.

Therefore, Western's School of Business, in cooperation with the NCMRD, Northern Telecom and Bell, has launched a major study on how to win and satisfy customers of advanced technology systems. Part of the study consists of sending a detailed questionnaire to a select set of Ontario companies who have recently conducted a bid competition for a private branch exchange (PBX) system.

However, the questionnaire needs to be pre-tested with a set of test respondents who have been involved in a recent large capital purchase. You have been identified as such an individual. Therefore, we'd like you to tell us about which factors may have contributed to your original choice of the Winner versus the Next Best Choice, and your level of satisfaction with the Winner's performance.

It is important that you tell us both the good and bad. In other words, give the Winner praise where praise is due, and criticism where criticism is due. (It would be unusual for the Winner to be better than the Next Best Choice on all factors). Your answers will be completely confidential, known only to the Research Director.

You may have noticed that there is an identification number on the questionnaire. This will ensure that the return of your questionnaire is recorded, which will prevent any follow-up mailings.

GENERAL INSTRUCTIONS FOR OUR PRE-TEST RESPONDENTS

Most of the statements in this questionnaire are comparisons of the Winner versus your Next Best Choice. You can respond to most of the statements simply by circling the appropriate number. Some statements have 5-point response scales which mean:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Most have 7-point response scales which mean:

1. Strongly Disagree
2. Disagree
3. Slightly Disagree
4. Neutral
5. Slightly Agree
6. Agree
7. Strongly Agree

On any one page some of the statements may appear similar, but we are in fact trying to tap small differences which may determine a win or a loss. If your responses to two similar statements turn out to be the same, that's fine. Some statements on subsequent pages may also appear similar, but we are trying to measure how your perceptions may change over time. It is very important that you try to answer every question.

We encourage you to complete this questionnaire without delay, and return it immediately to David Large, the Research Director. Feel completely free to contact David Large if you have any questions or concerns.

Your contribution to this important study is very much appreciated.

THE VENDORS' REPUTATIONS FOR SERVICE RELATIONSHIPS

Move yourself back in time to the point when you selected your short list of vendors for the bid competition. Think about any knowledge you may have had about the Winner's reputation for service relationships, and the reputation of your Next Best Choice, then make the following comparisons.

In comparison with our Next Best Choice, the Winner's people had the reputation for:

	Strongly Disagree	Strongly Agree
1. Being more concerned about customer satisfaction.	1 2 3 4 5 6 7	
2. Being more interested in a longterm relationship.	1 2 3 4 5 6 7	
3. Being less flexible and adaptable with system modifications.	1 2 3 4 5 6 7	
4. Showing less initiative, being less proactive.	1 2 3 4 5 6 7	
5. Showing a lower degree of commitment and dedication.	1 2 3 4 5 6 7	
6. Being more willing to help customers understand complex material.	1 2 3 4 5 6 7	
7. Being less punctual for deadlines and appointments.	1 2 3 4 5 6 7	
8. Being more willing to make an extra effort.	1 2 3 4 5 6 7	
9. Taking more of a mutual problem-solving approach.	1 2 3 4 5 6 7	
10. Fulfilling their promises more reliably.	1 2 3 4 5 6 7	
11. Being less attentive to specific problems and needs.	1 2 3 4 5 6 7	
12. Producing more complete documentation.	1 2 3 4 5 6 7	
13. Being more thorough and meticulous with details.	1 2 3 4 5 6 7	
14. Providing less personal care.	1 2 3 4 5 6 7	
15. Being easier to contact when needed.	1 2 3 4 5 6 7	
16. Providing more useful and accurate information.	1 2 3 4 5 6 7	
17. Being more willing to listen to our suggestions and concerns.	1 2 3 4 5 6 7	
18. Responding to problems and/or requests more promptly.	1 2 3 4 5 6 7	
19. Being in contact more frequently.	1 2 3 4 5 6 7	
20. Being more difficult to work with.	1 2 3 4 5 6 7	
21. What was the most important source of information for your answers about reputation for service relationships:		

Past Personal Experience
 Source Within My Company

Source Outside My Company
 Magazine Reviews

YOUR PRE-AWARD RELATIONSHIPS WITH THE VENDORS

Now think about the period when we were learning about the various systems being offered by the vendors, and trying to set the specifications for the system you wanted. Think especially about the degree of assistance you received from the selling teams from the Winner and your Next Best Choice, and make the following comparisons:

In comparison with our Next Best Choice, the Winner's people:

	Strongly Disagree						Strongly Agree
22. Were more willing to help with the specifications.	1	2	3	4	5	6	7
23. Were easier to contact when needed.	1	2	3	4	5	6	7
24. Provided less personal care.	1	2	3	4	5	6	7
25. Seemed less flexible and adaptable with system modifications.	1	2	3	4	5	6	7
26. Were more willing to listen to our suggestions and concerns.	1	2	3	4	5	6	7
27. Provided more useful and accurate information.	1	2	3	4	5	6	7
28. Produced more complete documentation.	1	2	3	4	5	6	7
29. Were more concerned about our satisfaction.	1	2	3	4	5	6	7
30. Were more willing to help us understand complex material.	1	2	3	4	5	6	7
31. Were more difficult to work with.	1	2	3	4	5	6	7
32. Took more of a mutual problem-solving approach.	1	2	3	4	5	6	7
33. Fulfilled their promises more reliably.	1	2	3	4	5	6	7
34. Were less punctual for deadlines and appointments.	1	2	3	4	5	6	7
35. Showed less initiative, were less proactive.	1	2	3	4	5	6	7
36. Paid less attention to our specific problems and needs.	1	2	3	4	5	6	7
37. Responded to our questions and suggestions more promptly.	1	2	3	4	5	6	7
38. Were more willing to make an extra effort.	1	2	3	4	5	6	7
39. Were more thorough and meticulous with details.	1	2	3	4	5	6	7
40. Showed a lower degree of commitment and dedication.	1	2	3	4	5	6	7
41. Were in contact more frequently.	1	2	3	4	5	6	7

YOUR EVALUATIONS OF THE VENDORS' BIDS

Move yourself again in time to the point where you had received the bid proposal documentation from the competing vendors, and were in the process of making your evaluations and final choice. Please make the following comparisons:

Quality of Bid Proposal Documentation

In comparison with our Next Best Choice, the Winner's documentation:

	Strongly Disagree					Strongly Agree
42. Had a better overall layout.	1	2	3	4	5	
43. Better addressed our needs, better met our expectations.	1	2	3	4	5	
44. Contained more complete information as per our requirements.	1	2	3	4	5	
45. Had poorer management and implementation plans.	1	2	3	4	5	
46. Better conformed to our requested format.	1	2	3	4	5	
47. Was less clearly written, less concise.	1	2	3	4	5	
48. Was more error-free, more attentive to detail.	1	2	3	4	5	
49. Had a more professional appearance.	1	2	3	4	5	
50. Was presented in a less attractive package.	1	2	3	4	5	
51. Was, in general, higher quality and more effective.	1	2	3	4	5	

Evaluations of Promised Technical Performance

In comparison with our Next Best Choice, we concluded that the Winner's system:

	Strongly Disagree						Strongly Agree
52. Would have clear functional advantages.	1	2	3	4	5	6	7
53. Would be more resistant to obsolescence.	1	2	3	4	5	6	7
54. Would be viewed as less complex, less troublesome, by our employees.	1	2	3	4	5	6	7
55. Would be lower quality.	1	2	3	4	5	6	7
56. Would offer more important operating features.	1	2	3	4	5	6	7
57. Would be more flexible and adaptable in our operations.	1	2	3	4	5	6	7
58. Would more poorly meet our startup timetable.	1	2	3	4	5	6	7
59. Would be more difficult to maintain and service.	1	2	3	4	5	6	7
60. Would be easier to install.	1	2	3	4	5	6	7
61. Would be easier to learn and operate by our employees.	1	2	3	4	5	6	7
62. Would more poorly conform to our safety standards.	1	2	3	4	5	6	7

Appendix B (cont.)

63.	Would have clear durability and reliability advantages.	1 2 3 4 5 6 7
64.	Would more completely conform to all regulatory standards.	1 2 3 4 5 6 7
65.	Would cause more disruption and anxiety for our employees.	1 2 3 4 5 6 7
66.	Would be viewed as more useful by our employees.	1 2 3 4 5 6 7
67.	Would more completely conform to our operational specifications.	1 2 3 4 5 6 7
68.	Would be less compatible with future equipment and technology.	1 2 3 4 5 6 7
69.	Would offer less growth capability.	1 2 3 4 5 6 7

Evaluations of Promised Post-Purchase Service Relationships

In comparison with our Next Best Choice, we concluded that the Winner's people:

	Strongly Disagree	Strongly Agree
70.	1 2 3 4 5 6 7	Would attend to repairs and/or maintenance more expediently.
71.	1 2 3 4 5 6 7	Would take more of a mutual problem-solving approach.
72.	1 2 3 4 5 6 7	Would provide less personal care.
73.	1 2 3 4 5 6 7	Would be more difficult to work with.
74.	1 2 3 4 5 6 7	Would pay less attention to our specific problems and needs.
75.	1 2 3 4 5 6 7	Would be more interested in a longterm relationship.
76.	1 2 3 4 5 6 7	Would be less flexible and adaptable with their assistance.
77.	1 2 3 4 5 6 7	Would be more concerned about our satisfaction.
78.	1 2 3 4 5 6 7	Would be more thorough and meticulous with details.
79.	1 2 3 4 5 6 7	Would produce more complete documentation.
80.	1 2 3 4 5 6 7	Would fulfil their promises more reliably.
81.	1 2 3 4 5 6 7	Would provide more effective instructions and training.
82.	1 2 3 4 5 6 7	Would be easier to contact when needed.
83.	1 2 3 4 5 6 7	Would be less willing to make an extra effort.
84.	1 2 3 4 5 6 7	Would be more willing to help us understand complex material.
85.	1 2 3 4 5 6 7	Would be less punctual for deadlines and appointments.
86.	1 2 3 4 5 6 7	Would respond to our questions and/or suggestions more promptly.
87.	1 2 3 4 5 6 7	Would show a lower degree of commitment and dedication.
88.	1 2 3 4 5 6 7	Would be more willing to listen to our suggestions and concerns.
89.	1 2 3 4 5 6 7	Would be in contact more frequently.

Evaluations of Financial Costs and Benefits

90. According to the proposals we received, the Winner's delivery price in comparison to our Next Best Choice would be:

- | | |
|---|---|
| <input type="checkbox"/> More than 15% less expensive. | <input type="checkbox"/> Between 0 and 5% more expensive. |
| <input type="checkbox"/> Between 11 and 15% less expensive. | <input type="checkbox"/> Between 6 and 10% more expensive. |
| <input type="checkbox"/> Between 6 and 10% less expensive. | <input type="checkbox"/> Between 11 and 15% more expensive. |
| <input type="checkbox"/> Between 0 and 5% less expensive. | <input type="checkbox"/> More than 15% more expensive. |

In comparison with our Next Best Choice, we concluded that the Winner's system:

	Strongly Disagree	Strongly Agree
91. Would require more renovations to our present facilities.	1 2 3 4 5 6 7	
92. Would be less expensive to install.	1 2 3 4 5 6 7	
93. Would require more training for our staff.	1 2 3 4 5 6 7	
94. Would cause shorter operating disruptions.	1 2 3 4 5 6 7	
95. Would have a lower overall cost to implement.	1 2 3 4 5 6 7	
96. Would have higher overall operating and maintenance costs.	1 2 3 4 5 6 7	
97. Would have a higher salvage value.	1 2 3 4 5 6 7	
98. Would generate a higher overall return on investment.	1 2 3 4 5 6 7	

Overall Evaluation and Choice

In comparison with our Next Best Choice, we concluded that:

	Strongly Disagree	Strongly Agree
99. The Winner's proposal offered superior technical benefits.	1 2 3 4 5 6 7	
100. The Winner's proposal offered superior user benefits.	1 2 3 4 5 6 7	
101. The Winner's proposal offered superior service benefits.	1 2 3 4 5 6 7	
102. The Winner's proposal seemed to better satisfy our most important needs.	1 2 3 4 5 6 7	
103. All things considered, the Winner's proposal seemed to offer more for the money.	1 2 3 4 5 6 7	
104. We were more confident that the Winner could deliver their promises.	1 2 3 4 5 6 7	
105. We deliberated at length before deciding.	1 2 3 4 5 6 7	
106. Our final choice was difficult to make.	1 2 3 4 5 6 7	
107. At the time, we felt comfortable with our choice.	1 2 3 4 5 6 7	

YOUR SATISFACTION WITH THE WINNER'S PERFORMANCE

Finally, having chosen the Winner's system, think about your level of satisfaction with the Winner's performance.

During Installation and Startup we were Satisfied with the Winner's:

	Strongly Disagree					Strongly Agree
108. Attention to our suggestions.	1	2	3	4	5	
109. Cooperative attitude when dealing with our suggestions.	1	2	3	4	5	
110. Level of effort to make the system operational.	1	2	3	4	5	
111. Installation competence and dependability.	1	2	3	4	5	
112. Training competence and dependability.	1	2	3	4	5	
113. Conformance to our specifications.	1	2	3	4	5	
114. Total installed cost to our company.	1	2	3	4	5	

At Present we are Satisfied with:

115. The Winner's attention any problems or suggestions we have.	1	2	3	4	5	
116. The Winner's cooperative attitude when dealing with our problems or suggestions.	1	2	3	4	5	
117. The Winner's effort to repair and maintain our system.	1	2	3	4	5	
118. The competence and dependability of the Winner's service crew.	1	2	3	4	5	
119. The system's operating performance.	1	2	3	4	5	
120. How well the system has integrated with our existing operations and procedures.	1	2	3	4	5	
121. The system's user friendliness.	1	2	3	4	5	
122. The system's repair and operating costs.	1	2	3	4	5	
123. In general, we are satisfied with our purchase.	1	2	3	4	5	
124. In general, we feel our money has been well spent.	1	2	3	4	5	
125. All things considered, we do not regret our choice.	1	2	3	4	5	
126. We would invite the Winner to participate in future tenders.	1	2	3	4	5	
127. We would recommend the Winner to other divisions or companies.	1	2	3	4	5	

CONCLUDING QUESTIONS OF A MORE GENERAL NATURE

128. About how many people are employed in the Canadian division of your company?

less than 100
 100-999

1,000-4,999
 more than 5,000

129. About how many participated in the PBX purchase? _____

130. What was the most commendable aspect of Bell's selling effort, product, or service?

131. What was the least commendable aspect of Bell's selling effort, product, or service?

132. How could Bell's bid proposal documentation be improved?

THANK-YOU FOR YOUR HELP!

PLEASE RETURN THIS QUESTIONNAIRE IN THE PRE-PAID ENVELOPE

SUPPLEMENTAL QUESTIONS FOR PRE-TEST RESPONDENTS

1. Most statements had 7-point response scales. Were they much more trouble to answer than the 5-point scales?

___ YES ___ NO

2. Many statements were worded negatively. Did you find that annoying?

___ YES ___ NO

3. Many statements may have seemed similar from page to page, even though we're trying to measure very different things. Did you find that tedious or annoying?

___ YES ___ NO

4. Do you think that your answers early in the questionnaire had any effect on your later answers?

___ YES ___ NO

5. How much time have you spent on this questionnaire?

___ MINUTES

6. Could this questionnaire be improved by additions, deletions or changes?

APPENDIX C

Pre-Test Questionnaire

**WINNING AND SATISFYING CUSTOMERS
FOR ADVANCED TECHNOLOGY SYSTEMS**

A Joint Study by:



School of Business Administration
The University of Western Ontario



National Centre for Management
Research and Development



Northern Telecom Canada Limited



Bell Canada

Research Director:

David W. Large
School of Business Administration
The University of Western Ontario
London, Ontario, Canada N6A 3K7
Phone: (519) 679-2111, ext 5129

GENERAL INSTRUCTIONS FOR OUR PRE-TEST RESPONDENTS

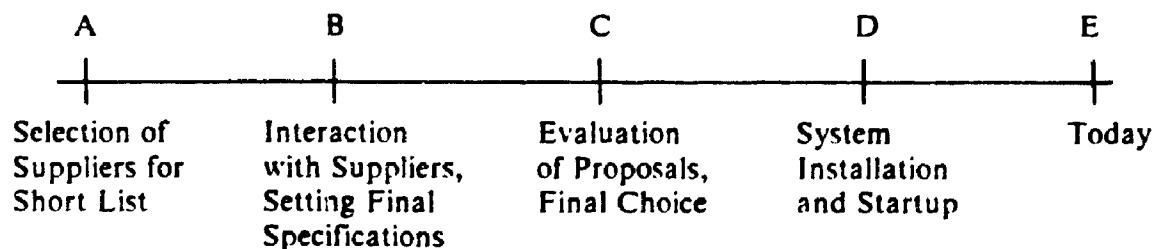
Thank you for being a pre-test respondent in our study about "Winning and Satisfying Customers for Advanced Technology Systems." Your answers to this questionnaire will make a very important contribution. Before beginning the questionnaire, however, please take a few moments to read these brief instructions.

As mentioned in the covering memo, we're asking you to participate because you have been involved in a recent important group purchase decision. (By "group", we mean the total set of individuals in your company who participated in the purchase decision). To begin, please recall the name of the supplier your buying group eventually chose. We'll refer to this company as the Winning Supplier. Now, recall the name of the supplier who was your buying group's next best choice, i.e. the one your group would have picked in the absence of the Winning Supplier. We'll refer to this company as the Losing Supplier.

Most of the statements in this questionnaire require you to rate the Winning Supplier in comparison with the Losing Supplier. It is important that you indicate your best estimate of your group's rating, rather than your own personal rating. It is also important that you record both the good and bad, or in other words, give the Winning Supplier praise where praise is due and criticism where criticism is due. (It would be unusual for the Winning Supplier to be better on all factors). Your answers will remain completely confidential, known only to the Research Director.

Most statements have 7-point response scales varying from 1 (Strongly Disagree) to 7 (Strongly Agree). You can respond to most of the statements simply by circling the appropriate number. Some of the statements may appear similar, but we are in fact trying to tap small differences which may determine a win or a loss. It is very important for the study that you try to answer every question.

An unusual feature of this questionnaire is that we want your responses from different points in time. These different points in time are illustrated in the following scale.



Two helpful reminders. First, please return your completed questionnaire in the enclosed envelope, within the next week or so if at all possible. Second, if you have any questions or concerns about the questionnaire, please don't hesitate to call either myself or June Ferguson. I can be reached at (519) 679-2111 ext. 5129, or you can leave a message at (519) 673-4742. June can be reached at (416) 348-7299.

Your contribution to this important study is very much appreciated!

THE SUPPLIERS' PRIOR REPUTATIONS FOR SERVICE RELATIONSHIPS

As the first step in answering the questionnaire, we'd like you to move yourself back in time to the point when your buying group selected the short list of suppliers for the bid competition (Time Point 'A'). Think about any knowledge your group may have had about the Winning Supplier's prior reputation for service relationships, and the prior reputation of your Losing Supplier. (This knowledge may have come from your company's past experience or sources outside your company). Please make the following comparisons.

In comparison with the Losing Supplier, the Winning Supplier's people had the prior reputation for:

	Strongly Disagree	Strongly Agree
1. Being more concerned about customer satisfaction.	1 2 3 4 5 6 7	
2. Being more interested in a long term relationship with the customer.	1 2 3 4 5 6 7	
3. Being more flexible and adaptable with system modifications.	1 2 3 4 5 6 7	
4. Showing more initiative, being more proactive.	1 2 3 4 5 6 7	
5. Showing a higher degree of commitment and dedication.	1 2 3 4 5 6 7	
6. Being more willing to help customers understand complex material.	1 2 3 4 5 6 7	
7. Being more punctual for deadlines and appointments.	1 2 3 4 5 6 7	
8. Being more willing to make an extra effort.	1 2 3 4 5 6 7	
9. Taking more of a mutual problem-solving approach.	1 2 3 4 5 6 7	
10. Fulfilling their promises more reliably.	1 2 3 4 5 6 7	
11. Being more attentive to specific problems and needs.	1 2 3 4 5 6 7	
12. Producing more complete documentation.	1 2 3 4 5 6 7	
13. Being more thorough and meticulous with details.	1 2 3 4 5 6 7	
14. Providing more personal care.	1 2 3 4 5 6 7	
15. Being easier to contact when needed.	1 2 3 4 5 6 7	
16. Providing more useful, accurate and honest information.	1 2 3 4 5 6 7	
17. Being more willing to listen to suggestions and concerns.	1 2 3 4 5 6 7	
18. Responding to problems and/or requests more promptly.	1 2 3 4 5 6 7	
19. Being in contact more frequently.	1 2 3 4 5 6 7	
20. Being easier to work with, less domineering.	1 2 3 4 5 6 7	

YOUR PRE-AWARD RELATIONSHIPS WITH THE SUPPLIERS

Next, we'd like you to move forward in time to the period when your group was learning about the various systems being offered by the suppliers, and trying to set the specifications for the system you wanted (Time Point 'B'). Think especially about the degree of assistance your group received from the Winning Supplier and the Losing Supplier, and make the following comparisons:

In comparison with the Losing Supplier, the Winning Supplier's people:

	Strongly Disagree					Strongly Agree
21. Were more willing to help with the specifications.	1	2	3	4	5	6 7
22. Were easier to contact when needed.	1	2	3	4	5	6 7
23. Provided more personal care.	1	2	3	4	5	6 7
24. Seemed more flexible and adaptable with system modifications.	1	2	3	4	5	6 7
25. Were more willing to listen to our suggestions and concerns.	1	2	3	4	5	6 7
26. Provided more useful, accurate and honest information.	1	2	3	4	5	6 7
27. Produced more complete documentation.	1	2	3	4	5	6 7
28. Were more concerned about our satisfaction.	1	2	3	4	5	6 7
29. Were more willing to help us understand complex material.	1	2	3	4	5	6 7
30. Were easier to work with, less domineering.	1	2	3	4	5	6 7
31. Took more of a mutual problem-solving approach.	1	2	3	4	5	6 7
32. Fulfilled their promises more reliably.	1	2	3	4	5	6 7
33. Were more punctual for deadlines and appointments.	1	2	3	4	5	6 7
34. Showed more initiative, were more proactive.	1	2	3	4	5	6 7
35. Paid more attention to our specific problems and needs.	1	2	3	4	5	6 7
36. Responded to our questions and suggestions more promptly.	1	2	3	4	5	6 7
37. Were more willing to make an extra effort.	1	2	3	4	5	6 7
38. Were more thorough and meticulous with details.	1	2	3	4	5	6 7
39. Showed a higher degree of commitment and dedication.	1	2	3	4	5	6 7
40. Were in contact more frequently.	1	2	3	4	5	6 7

YOUR EVALUATIONS OF THE SUPPLIERS' BIDS

Now, please move yourself forward again in time to the point where your group had received the bid proposal documents from the competing suppliers, and was in the process of making a group evaluation and final choice (Time Point 'C'). Please make the following comparisons:

QUALITY OF BID PROPOSAL DOCUMENTS

In comparison with the Losing Supplier, the Winning Supplier's documents:

	Strongly Disagree	Strongly Agree
41. Had a better overall layout.	1 2 3 4 5 6 7	
42. Better addressed our key needs, our key concerns.	1 2 3 4 5 6 7	
43. Contained more complete information as per our requirements.	1 2 3 4 5 6 7	
44. Had better management and implementation plans.	1 2 3 4 5 6 7	
45. Better conformed to our requested format.	1 2 3 4 5 6 7	
46. Were more clearly written.	1 2 3 4 5 6 7	
47. Were more concise.	1 2 3 4 5 6 7	
48. Were more error-free.	1 2 3 4 5 6 7	
49. Were more attentive to detail.	1 2 3 4 5 6 7	
50. Had a more professional appearance.	1 2 3 4 5 6 7	
51. Were presented in a more attractive package.	1 2 3 4 5 6 7	
52. Were, in general, higher quality.	1 2 3 4 5 6 7	
53. Were, in general, more effective.	1 2 3 4 5 6 7	

EVALUATIONS OF PROMISED TECHNICAL PERFORMANCE

In comparison with the Losing Supplier, our group concluded that the Winning Supplier's system:

	Strongly Disagree	Strongly Agree
54. Would have clear functional advantages.	1 2 3 4 5 6 7	
55. Would be more resistant to obsolescence.	1 2 3 4 5 6 7	
56. Would be viewed as less complex, less troublesome, by our employees.	1 2 3 4 5 6 7	
57. Would be higher quality.	1 2 3 4 5 6 7	
58. Would offer more important operating features.	1 2 3 4 5 6 7	
59. Would be more flexible and adaptable in our operations.	1 2 3 4 5 6 7	
60. Would better meet our startup timetable.	1 2 3 4 5 6 7	
61. Would be easier to maintain and service.	1 2 3 4 5 6 7	
62. Would be easier to install.	1 2 3 4 5 6 7	
63. Would be easier to learn and operate by our employees.	1 2 3 4 5 6 7	
64. Would better conform to our safety standards.	1 2 3 4 5 6 7	
65. Would have clear durability and reliability advantages.	1 2 3 4 5 6 7	
66. Would more completely conform to all regulatory standards.	1 2 3 4 5 6 7	
67. Would cause less disruption and anxiety for our employees.	1 2 3 4 5 6 7	
68. Would be viewed as more useful by our employees.	1 2 3 4 5 6 7	
69. Would more completely conform to our operational specifications.	1 2 3 4 5 6 7	
70. Would be more compatible with future equipment and technology.	1 2 3 4 5 6 7	
71. Would offer more growth capability.	1 2 3 4 5 6 7	

Thanks for hanging in this far. You're over halfway finished!

EVALUATIONS OF PROMISED POST-PURCHASE SERVICE

In comparison with the Losing Supplier, our group concluded that the Winning Supplier's people:

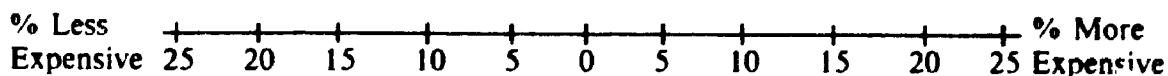
	Strongly Disagree	Strongly Agree
72. Would attend to repairs and/or maintenance more expediently.	1 2 3 4 5 6 7	
73. Would take more of a mutual problem-solving approach.	1 2 3 4 5 6 7	
74. Would provide more personal care.	1 2 3 4 5 6 7	
75. Would be easier to work with, less domineering.	1 2 3 4 5 6 7	
76. Would pay more attention to our specific problems and needs.	1 2 3 4 5 6 7	
77. Would be more interested in a long term relationship with us.	1 2 3 4 5 6 7	
78. Would be more flexible and adaptable with their assistance.	1 2 3 4 5 6 7	
79. Would be more concerned about our satisfaction.	1 2 3 4 5 6 7	
80. Would be more thorough and meticulous with details.	1 2 3 4 5 6 7	
81. Would produce more complete documentation.	1 2 3 4 5 6 7	
82. Would fulfil their promises more reliably.	1 2 3 4 5 6 7	
83. Would provide more effective instructions and training.	1 2 3 4 5 6 7	
84. Would be easier to contact when needed.	1 2 3 4 5 6 7	
85. Would be more willing to make an extra effort.	1 2 3 4 5 6 7	
86. Would be more willing to help us understand complex material.	1 2 3 4 5 6 7	
87. Would be more punctual for deadlines and appointments.	1 2 3 4 5 6 7	

Appendix C (cont.)

	Strongly Disagree	Strongly Agree
88. Would respond to our questions and/or suggestions more promptly.	1 2 3 4 5 6 7	
89. Would show a higher degree of commitment and dedication.	1 2 3 4 5 6 7	
90. Would be more willing to listen to our suggestions and concerns.	1 2 3 4 5 6 7	
91. Would be in contact with us more frequently.	1 2 3 4 5 6 7	

EVALUATIONS OF FINANCIAL COSTS AND BENEFITS

92. In comparison with the Losing Supplier, the Winning Supplier's quoted delivery price was (slash scale):



In comparison with the Losing Supplier, our group concluded that the Winning Supplier's system:

	Strongly Disagree	Strongly Agree
93. Would require more renovations to our present facilities.	1 2 3 4 5 6 7	
94. Would be less expensive to install.	1 2 3 4 5 6 7	
95. Would require more training for our staff.	1 2 3 4 5 6 7	
96. Would cause a shorter operating disruption.	1 2 3 4 5 6 7	
97. Would have a lower overall cost to implement.	1 2 3 4 5 6 7	

Appendix C (cont.)

	Strongly Disagree	Strongly Agree
98. Would have lower overall operating and maintenance costs.	1 2 3 4 5 6 7	
99. Would have a higher salvage value.	1 2 3 4 5 6 7	
100. Would generate a higher overall return on investment.	1 2 3 4 5 6 7	

OVERALL EVALUATION

All things considered, in comparison with the Losing Supplier, our group concluded that the Winning Supplier:

	Strongly Disagree	Strongly Agree
101. Offered superior technical benefits.	1 2 3 4 5 6 7	
102. Offered superior user benefits.	1 2 3 4 5 6 7	
103. Offered superior service benefits.	1 2 3 4 5 6 7	
104. Offered more political advantages.	1 2 3 4 5 6 7	
105. Seemed to better satisfy our most important needs.	1 2 3 4 5 6 7	
106. Seemed to offer more for the money.	1 2 3 4 5 6 7	
107. Gave us more confidence about their ability to deliver.	1 2 3 4 5 6 7	

DIFFICULTY OF CHOICE

108. We deliberated at length before deciding.	1 2 3 4 5 6 7
109. Our final choice was easy to make.	1 2 3 4 5 6 7
110. At the time, we felt comfortable with our choice.	1 2 3 4 5 6 7

YOUR SATISFACTION WITH THE WINNING SUPPLIER'S PERFORMANCE

For one last time, we'd like you to move forward in time, and tell us about your level of satisfaction with the Winner's performance in light of your expectations.

DURING INSTALLATION AND STARTUP (Time Point 'D')

Our company was satisfied with the Winner's:

	Strongly Disagree	Strongly Agree
111. Attention to our suggestions.	1 2 3 4 5 6 7	
112. Cooperative attitude when dealing with our suggestions.	1 2 3 4 5 6 7	
113. Level of effort to make the system operational.	1 2 3 4 5 6 7	
114. Installation competence and dependability.	1 2 3 4 5 6 7	
115. Training competence and dependability.	1 2 3 4 5 6 7	
116. Conformance to our specifications.	1 2 3 4 5 6 7	
117. Total installed cost to our company.	1 2 3 4 5 6 7	

AT PRESENT (Time Point 'E')

Our company is currently satisfied with:

118. The Winner's attention to our problems or suggestions.	1 2 3 4 5 6 7
119. The Winner's cooperative attitude when dealing with our problems or suggestions.	1 2 3 4 5 6 7
120. The Winner's effort to repair and maintain our system.	1 2 3 4 5 6 7
121. The competence and dependability of the Winner's service crew.	1 2 3 4 5 6 7
122. The system's operating performance.	1 2 3 4 5 6 7
123. How well the system has integrated with our existing operations and procedures.	1 2 3 4 5 6 7
124. The system's user friendliness.	1 2 3 4 5 6 7
125. The system's repair and operating costs.	1 2 3 4 5 6 7
126. In general, we are satisfied with our purchase.	1 2 3 4 5 6 7
127. In general, we feel our money has been well spent.	1 2 3 4 5 6 7
128. All things considered, we do not regret our choice.	1 2 3 4 5 6 7
129. We would invite the Winning Supplier to participate in future tenders.	1 2 3 4 5 6 7
130. We would recommend the Winning Supplier to other divisions or companies.	1 2 3 4 5 6 7

SUPPLEMENTAL QUESTIONS FOR PRE-TEST RESPONDENTS

1. Did you find many questions, especially the earlier ones, too difficult to answer?

___ YES ___ NO

2. Many statements may have seemed similar from page to page, even though we're trying to measure very different things. Did you find that tedious or annoying?

___ YES ___ NO

3. Do you think that your answers early in the questionnaire had any effect on your later answers to similar questions?

___ YES ___ NO

4. How much time have you spent on this questionnaire?

___ MINUTES

5. What type of product was involved in the purchase you've described in this questionnaire?

6. What was the approximate value of the purchase, to the nearest ten thousand dollars?

7. Could this questionnaire be improved by additions, deletions or changes?

APPENDIX D

Pre-Test Cover Memo from Bell Manager

Tony Mosey
General Manager —
Business Sales & Service
(Ontario)

Bell Canada
393 University Avenue
Floor 7
Toronto, Ontario M5G 1W9
Tel: (416) 348-7000
Envoy 100: R.T. MOSEY
PMSS: RTMOSEY

Bell

1991 04 09

To: Joint Venture Pre-Test Participants

From: Terry Mosey

Subject: Joint Venture between BSS Ontario, Northern Telecom, and
University of Western Ontario

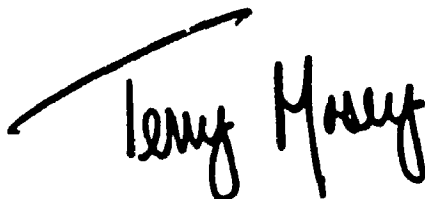
We, in Bell Canada, have been offered an unusual opportunity that will assist us in better understanding our customers, their buying habits and their perceptions of us as a distributor of advanced technologies (PBX).

The Proposal Management group, BSS Ontario, will be participants in a joint venture with The University of Western Ontario School of Business Administration, The National Centre for Management Research and Development, and Northern Telecom. This project will be conducted by David Large, doctoral candidate in Marketing at Western's School of Business, to complete the requirements for his Ph.D. dissertation.

Specifically, Mr. Large's dissertation will focus on the topic of "Winning Bids for Advanced Technology Systems". He is proposing that the Customer's assessment of value and choice may be influenced by the selling team's behaviour, in addition to technical, financial and service considerations. This research will be conducted during the II and III quarter 1991, with final results available in September 1991.

To lend our support to this project I am asking that you volunteer to "pre-test" Mr. Large's questionnaire. You will receive the questionnaire shortly, and you will be contacted directly by Mr. Large who can address any of your questions or concerns.

For further information about this project, please call me, or June Ferguson at 348-7299.



APPENDIX E

Pre-Test Cover Memo from N.T. Manager



MEMORANDUM

April 12, 1991

To: J. Alvi 9764 Belleville
D. Carr 9720 Belleville
K. McDougald 9741 Islington
M. Wood 9731 Belleville
D. Hawken 0068 Islington
S. Downey L314 Islington
G. Payne L378 Islington
C. Hawkins L311 Ottawa
K. Simon L373 Islington
B. Webber L371 Islington

cc: L Reist 1005 Islington

From: I. Michelson L370 Islington

Subject: Joint Market Research between Northern Telecom/
Bell Canada and University of Western Ontario

We will be participating in a joint market research venture with Bell Canada BSS, The University of Western Ontario School of Business Administration and the National Centre for Management Research and Development. The research will focus on factors influencing buyer behaviour for "Advanced Technology Systems".

The project will be conducted by David Large, doctoral candidate in Marketing at Western's School of Business, as part of his PHD dissertation requirements. Specifically he will be focusing on "Winning Bids for Advanced Technology Systems". He will be analyzing whether Customers assessment of value and choice is influenced by the selling teams behaviour, in addition to technical, financial and service considerations. The research will be conducted during the II and III Quarters 1991, with results presented to us in September.

Approximately 120 customers who issued tenders during the previous 18 months will be contacted. As part of the project, the questionnaire needs to be pre-tested by knowledgeable "experts". As such, I would ask you to volunteer to "pre-test" Mr. Large's questionnaire.

-2-

You will receive the questionnaire shortly and then be contacted directly by Mr. Large, who can address any of your questions.

For any further information about the project please call me at 331-3948.

Regards,

A handwritten signature in black ink, appearing to be "J. Large", written in a cursive style.

APPENDIX F

Pre-Test Cover Memo from Researcher

THE UNIVERSITY OF WESTERN ONTARIO
SCHOOL OF BUSINESS ADMINISTRATION

MEMORANDUM

TO: Bell and Northern Telecom Pre-Test Volunteers

FROM: David Large, Joint Venture Research Director

DATE: April 1991

SUBJECT: PRE-TEST OF JOINT VENTURE QUESTIONNAIRE

By now I hope you've received an introductory memo about a joint venture study involving Bell, Northern Telecom and the University of Western Ontario (U.W.O.). By sending detailed questionnaires to about 200 PBX customers who have recently accepted or rejected a Bell PBX bid proposal, the study partners are trying to generate an in-depth analysis of wins vs. losses. This study should help Bell (hence N.T.) to achieve even higher success rates in future bid competitions.

As explained in the introductory memo, the questionnaire first needs to be "pre-tested" by a set of individuals who have recently participated in an important purchase decision following a competitive bidding process. A pre-test may expose poor presentation, bad wording, confusing questions, missing questions, etc., all of which have the potential to ruin a study.

I sincerely appreciate that you've volunteered to be a pre-test respondent. When you can spare about an hour, please think about a recent important purchase decision, then read the General Instructions on the first page of the questionnaire, answer all the questions as best you can, jot down any comments on the last page, and return the questionnaire to me in the enclosed envelope, within the next week if at all possible.

If you have any questions or concerns about the study or this questionnaire, please don't hesitate to call either myself, or June Ferguson in Bell's Proposal Management Group. I can be reached at (519) 679-2111 ext. 5129, or you can leave a message at (519) 673-4742. June can be reached at (416) 348-7299.

Again, thanks for your help.

APPENDIX G

Final Questionnaire (Version 1 - Bell Wins)

**WINNING AND SATISFYING CUSTOMERS
FOR ADVANCED TECHNOLOGY SYSTEMS**

A Joint Study by:



School of Business Administration
The University of Western Ontario



National Centre for Management
Research and Development



Northern Telecom Canada Limited



Bell Canada

Research Director:

David W. Large
School of Business Administration
The University of Western Ontario
London, Ontario, Canada N6A 3K7
Phone: (519) 679-2111, ext 5129

GENERAL INSTRUCTIONS FOR OUR RESPONDENTS

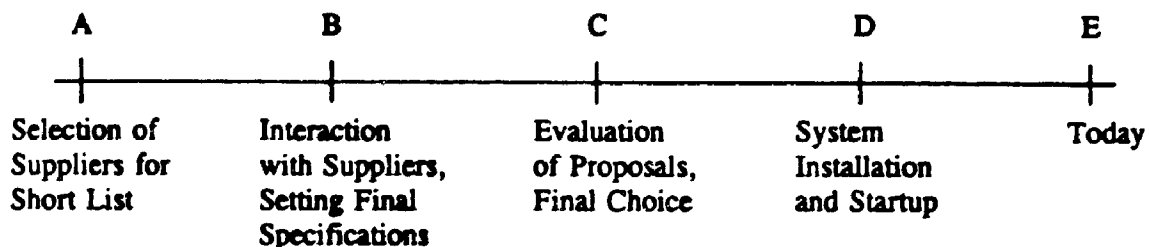
Thank you for volunteering to be a respondent in our study about "Winning and Satisfying Customers for Advanced Technology Systems." Your answers to this questionnaire will make a very important contribution. Before beginning, however, please take a few moments to read these brief instructions.

As mentioned in the covering memo, we're asking you to participate because you have been involved in a recent group decision to accept a bid proposal from Bell. (By "group", we mean the total set of individuals in your organization who participated in the purchase decision). To begin, please recall the name of the supplier who was your buying group's next best choice, i.e. the one your group would have picked in the absence of Bell. We'll refer to this company as the Losing Supplier.

Most of the statements in this questionnaire require you to rate Bell in comparison with the Losing Supplier. It is important that you indicate your best estimate of your group's rating, rather than your own personal rating. It is also important that you record both the good and bad, or in other words, give Bell praise where praise is due and criticism where criticism is due. (It would be unusual for Bell to be better on all factors). Your answers will remain completely confidential, known only to the Research Director.

Most statements have 7-point response scales varying from 1 (Strongly Disagree) to 7 (Strongly Agree). You can respond to most of the statements simply by circling the appropriate number. Some of the statements may appear similar, but we are in fact trying to tap small differences which may determine a win or a loss. It is very important for the study that you try to answer every question.

An unusual feature of this questionnaire is that we want your responses from different points in time. These different points in time are illustrated in the following scale.



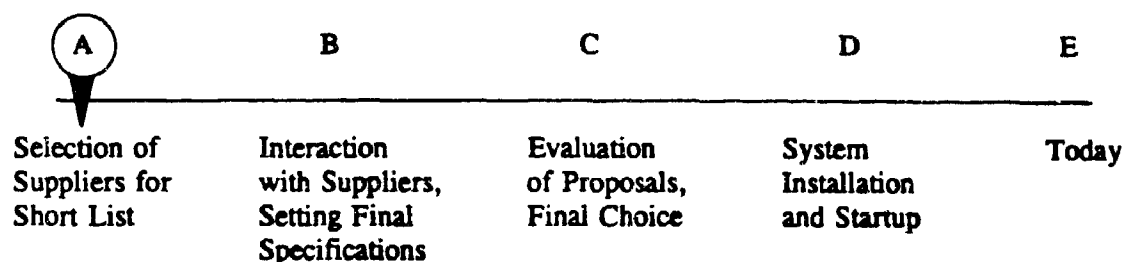
Two helpful reminders. First, please return your completed questionnaire in the enclosed envelope, within the next week or so if at all possible. Second, if you have any questions or concerns about the questionnaire, please don't hesitate to call. I can be reached at (519) 679-2111 ext. 5129, or you can leave a message at (519) 673-4742.

Your contribution to this important study is very much appreciated.

THE SUPPLIERS' PRIOR REPUTATIONS FOR SERVICE RELATIONSHIPS

As the first step in answering the questionnaire, we'd like you to move yourself back in time to the point when your buying group selected the short list of suppliers for the bid competition (Time Point 'A'). Think about any knowledge your group may have had about Bell's prior reputation for service relationships, and the prior reputation of your Losing Supplier. (This knowledge may have come from your company's past experience or sources outside your company). Please make the following comparisons.

You are here



In comparison with the Losing Supplier, Bell's people had the prior reputation for:

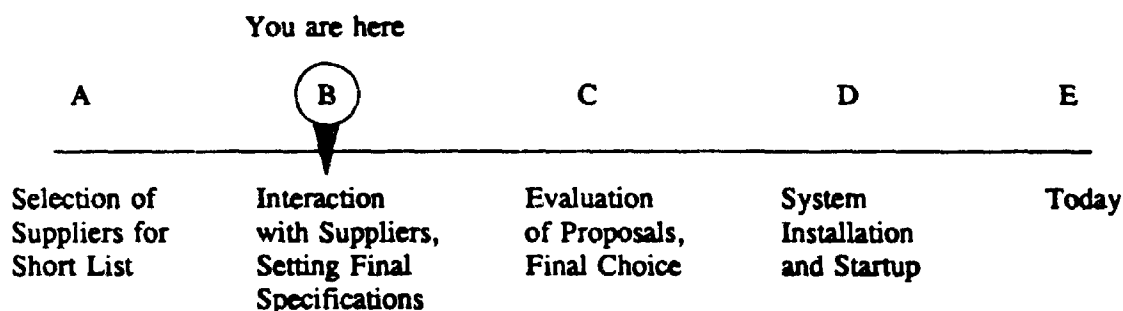
	Strongly Disagree	Strongly Agree
1. Being more concerned about customer satisfaction.	1 2 3 4 5 6 7	
2. Being more interested in a long term relationship with the customer.	1 2 3 4 5 6 7	
3. Being more flexible and adaptable with system modifications.	1 2 3 4 5 6 7	
4. Showing more initiative, being more proactive.	1 2 3 4 5 6 7	
5. Showing a higher degree of commitment and dedication.	1 2 3 4 5 6 7	
6. Being more willing to help customers understand complex material.	1 2 3 4 5 6 7	
7. Being more punctual for deadlines and appointments.	1 2 3 4 5 6 7	
8. Being more willing to make an extra effort.	1 2 3 4 5 6 7	

You are here

	A	B	C	D	E
	Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today
				Strongly Disagree	Strongly Agree
9.	Taking more of a mutual problem-solving approach.			1	2 3 4 5 6 7
10.	Fulfilling their promises more reliably.			1	2 3 4 5 6 7
11.	Being more attentive to specific problems and needs.			1	2 3 4 5 6 7
12.	Producing more complete documentation.			1	2 3 4 5 6 7
13.	Being more thorough and meticulous with details.			1	2 3 4 5 6 7
14.	Providing more personal care.			1	2 3 4 5 6 7
15.	Being easier to contact when needed.			1	2 3 4 5 6 7
16.	Providing more accurate and honest information.			1	2 3 4 5 6 7
17.	Being more willing to listen to our problems and/or requests.			1	2 3 4 5 6 7
18.	Responding to problems and/or requests more promptly.			1	2 3 4 5 6 7
19.	Being in contact more frequently.			1	2 3 4 5 6 7
20.	Being easier to work with, more cooperative.			1	2 3 4 5 6 7

YOUR PRE-AWARD RELATIONSHIPS WITH THE SUPPLIERS

Next, we'd like you to move forward in time to the period when your group was learning about the various systems being offered by the suppliers, and trying to set the specifications for the system you wanted (Time Point 'B'). Think especially about the degree of assistance your group received from Bell and the Losing Supplier, and make the following comparisons:



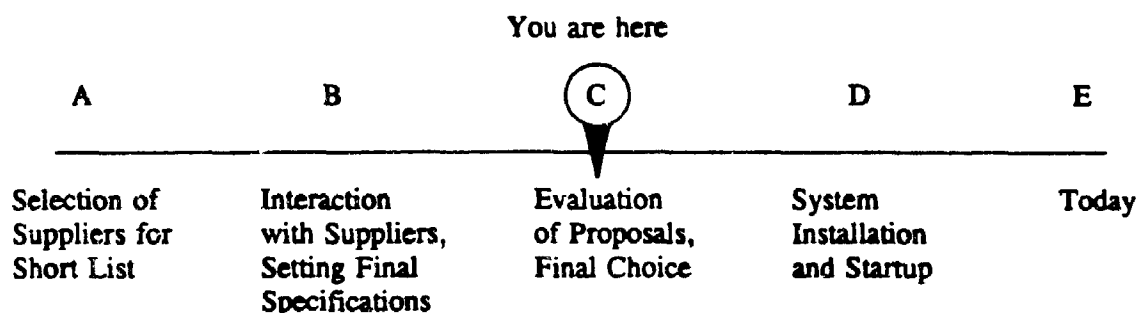
In comparison with the Losing Supplier, Bell's people:

	Strongly Disagree	Strongly Agree
21. Were more willing to help with the specifications.	1 2 3 4 5 6 7	
22. Were easier to contact when needed.	1 2 3 4 5 6 7	
23. Provided more personal care.	1 2 3 4 5 6 7	
24. Seemed more flexible and adaptable with system modifications.	1 2 3 4 5 6 7	
25. Were more willing to listen to our questions and concerns.	1 2 3 4 5 6 7	
26. Provided more accurate and honest information.	1 2 3 4 5 6 7	
27. Produced more complete documentation.	1 2 3 4 5 6 7	
28. Were more concerned about our satisfaction.	1 2 3 4 5 6 7	

		You are here					
		A	B	C	D	E	
		Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today	
						Strongly Disagree	Strongly Agree
29.	Were more willing to help us understand complex material.					1 2 3 4 5 6 7	
30.	Were easier to work with, more cooperative.					1 2 3 4 5 6 7	
31.	Took more of a mutual problem-solving approach.					1 2 3 4 5 6 7	
32.	Fulfilled their promises more reliably.					1 2 3 4 5 6 7	
33.	Were more punctual for deadlines and appointments.					1 2 3 4 5 6 7	
34.	Showed more initiative, were more proactive.					1 2 3 4 5 6 7	
35.	Paid more attention to our specific problems and needs.					1 2 3 4 5 6 7	
36.	Responded to our questions and suggestions more promptly.					1 2 3 4 5 6 7	
37.	Were more willing to make an extra effort.					1 2 3 4 5 6 7	
38.	Were more thorough and meticulous with details.					1 2 3 4 5 6 7	
39.	Showed a higher degree of commitment and dedication.					1 2 3 4 5 6 7	
40.	Were in contact more frequently.					1 2 3 4 5 6 7	

YOUR EVALUATIONS OF THE SUPPLIERS' BIDS

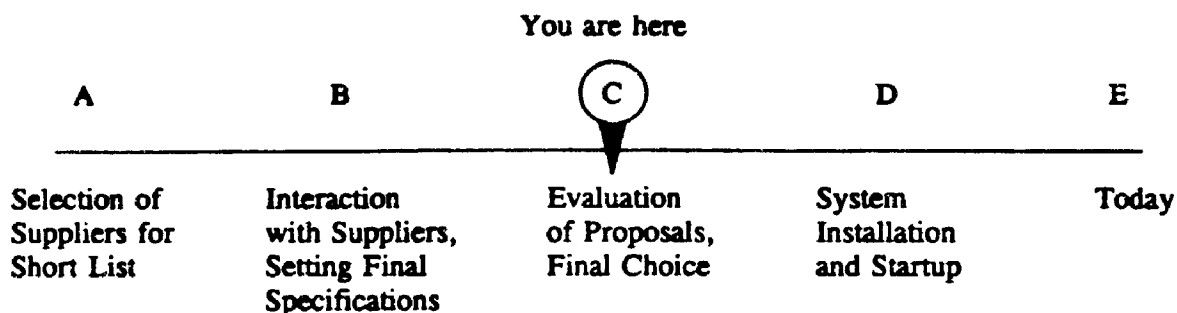
Now, please move yourself forward again in time to the point where your group had received the bid proposal documents from the competing suppliers, and was in the process of making a group evaluation and final choice (Time Point 'C'). Please make the following comparisons:



QUALITY OF BID PROPOSAL DOCUMENTS

In comparison with the Losing Supplier, Bell's documents:

	Strongly Disagree					Strongly Agree
41. Had a better overall layout.	1	2	3	4	5	6 7
42. Better addressed our key needs, our key concerns.	1	2	3	4	5	6 7
43. Contained more complete information as per our requirements.	1	2	3	4	5	6 7
44. Had better management and implementation plans.	1	2	3	4	5	6 7
45. Better conformed to our requested format.	1	2	3	4	5	6 7
46. Were more clearly written.	1	2	3	4	5	6 7
47. Were more concise.	1	2	3	4	5	6 7
48. Were more error-free.	1	2	3	4	5	6 7
49. Were more attentive to detail.	1	2	3	4	5	6 7
50. Were presented in a more professional package.	1	2	3	4	5	6 7
51. Were, in general, higher quality.	1	2	3	4	5	6 7



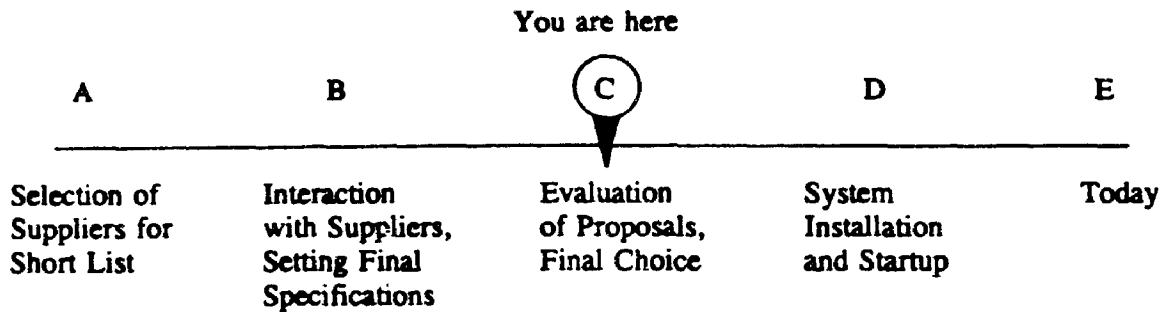
EVALUATIONS OF PROMISED TECHNICAL PERFORMANCE

In comparison with the Losing Supplier, our group concluded that Bell's system:

	Strongly Disagree	Strongly Agree
52. Would have clear functional advantages.	1 2 3 4 5 6 7	
53. Would be more resistant to obsolescence.	1 2 3 4 5 6 7	
54. Would be viewed as less complex, less troublesome, by our employees.	1 2 3 4 5 6 7	
55. Would be higher quality.	1 2 3 4 5 6 7	
56. Would offer more important operating features.	1 2 3 4 5 6 7	
57. Would be more flexible and adaptable in our operations.	1 2 3 4 5 6 7	
58. Would better meet our startup timetable.	1 2 3 4 5 6 7	
59. Would be easier to maintain and service.	1 2 3 4 5 6 7	
60. Would be easier to install.	1 2 3 4 5 6 7	

		You are here					
		A	B	C	D	E	
		Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today	
						Strongly Disagree	Strongly Agree
61.	Would be easier to learn and operate by our employees.					1	2 3 4 5 6 7
62.	Would better conform to our safety standards.					1	2 3 4 5 6 7
63.	Would have clear durability and reliability advantages.					1	2 3 4 5 6 7
64.	Would more completely conform to all regulatory standards.					1	2 3 4 5 6 7
65.	Would cause less disruption and anxiety for our employees.					1	2 3 4 5 6 7
66.	Would be viewed as more useful by our employees.					1	2 3 4 5 6 7
67.	Would more completely conform to our operational specifications.					1	2 3 4 5 6 7
68.	Would be more compatible with future equipment and technology.					1	2 3 4 5 6 7
69.	Would offer more growth capability.					1	2 3 4 5 6 7

Thanks for hanging in this far. You're over halfway finished!

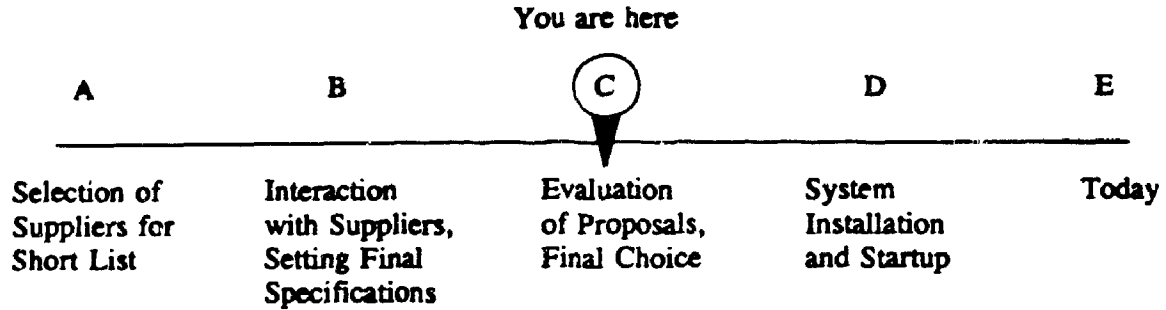
EVALUATIONS OF PROMISED POST-PURCHASE SERVICE

In comparison with the Losing Supplier, our group concluded that Bell's people:

		Strongly Disagree	Strongly Agree
70.	Would attend to repairs and/or maintenance more expediently.	1 2 3 4 5 6 7	
71.	Would take more of a mutual problem-solving approach.	1 2 3 4 5 6 7	
72.	Would provide more personal care.	1 2 3 4 5 6 7	
73.	Would be easier to work with, more cooperative.	1 2 3 4 5 6 7	
74.	Would pay more attention to our specific problems and needs.	1 2 3 4 5 6 7	
75.	Would be more interested in a long term relationship with us.	1 2 3 4 5 6 7	
76.	Would be more flexible and adaptable with their assistance.	1 2 3 4 5 6 7	
77.	Would be more concerned about our satisfaction.	1 2 3 4 5 6 7	
78.	Would be more thorough and meticulous with details.	1 2 3 4 5 6 7	

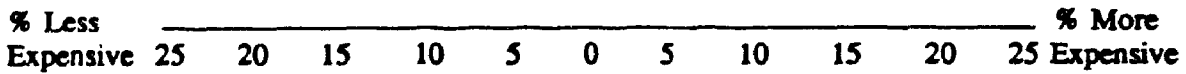
You are here

	A	B	C	D	E
	Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today
				Strongly Disagree	Strongly Agree
79.	Would produce more complete documentation.			1 2 3 4 5 6 7	
80.	Would fulfil their promises more reliably.			1 2 3 4 5 6 7	
81.	Would provide more effective instructions and training.			1 2 3 4 5 6 7	
82.	Would be easier to contact when needed.			1 2 3 4 5 6 7	
83.	Would be more willing to make an extra effort.			1 2 3 4 5 6 7	
84.	Would be more willing to help us understand complex material.			1 2 3 4 5 6 7	
85.	Would be more punctual for deadlines and appointments.			1 2 3 4 5 6 7	
86.	Would respond to our questions and/or suggestions more promptly.			1 2 3 4 5 6 7	
87.	Would show a higher degree of commitment and dedication.			1 2 3 4 5 6 7	
88.	Would be more willing to listen to our suggestions and concerns.			1 2 3 4 5 6 7	
89.	Would be in contact with us more frequently.			1 2 3 4 5 6 7	



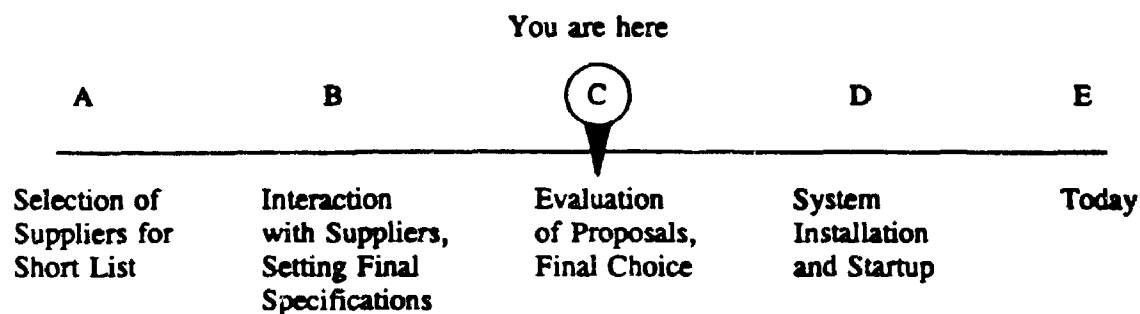
EVALUATIONS OF FINANCIAL COSTS

90. In comparison with the Losing Supplier, Bell's quoted delivery price was (slash scale):



In comparison with the Losing Supplier, our group concluded that Bell's system:

	Strongly Disagree		Strongly Agree
91. Would require fewer renovations to our present facilities.	1	2 3 4 5 6 7	
92. Would require less training for our staff.	1	2 3 4 5 6 7	
93. Would be operational more quickly.	1	2 3 4 5 6 7	
94. Would have a lower overall cost to implement.	1	2 3 4 5 6 7	



OVERALL EVALUATION

All things considered, in comparison with the Losing Supplier, our group concluded that Bell:

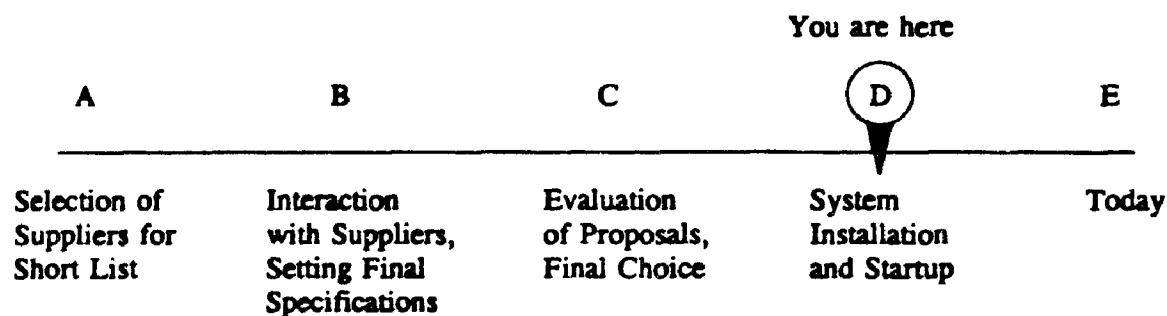
		Strongly Disagree		Strongly Agree
95. Offered superior technical benefits.	1	2	3	4 5 6 7
96. Offered superior user benefits.	1	2	3	4 5 6 7
97. Offered superior service benefits.	1	2	3	4 5 6 7
98. Seemed to better satisfy our most important needs.	1	2	3	4 5 6 7
99. Would have a shorter payback period.	1	2	3	4 5 6 7
100. Would have lower overall operating and maintenance costs.	1	2	3	4 5 6 7
101. Would generate a higher overall return on investment.	1	2	3	4 5 6 7
102. Seemed to offer more for the money.	1	2	3	4 5 6 7
103. Gave us more confidence about their ability to deliver.	1	2	3	4 5 6 7

DIFFICULTY OF CHOICE

104. We deliberated at length before deciding.	1	2	3	4 5 6 7
105. Our final choice was easy to make.	1	2	3	4 5 6 7
106. At the time, we felt comfortable with our choice.	1	2	3	4 5 6 7

YOUR SATISFACTION WITH BELL'S PERFORMANCE

Now we'd like you to move forward once more in time to the installation period (Time Point 'D'), and tell us about your level of satisfaction with Bell's performance in light of your expectations.

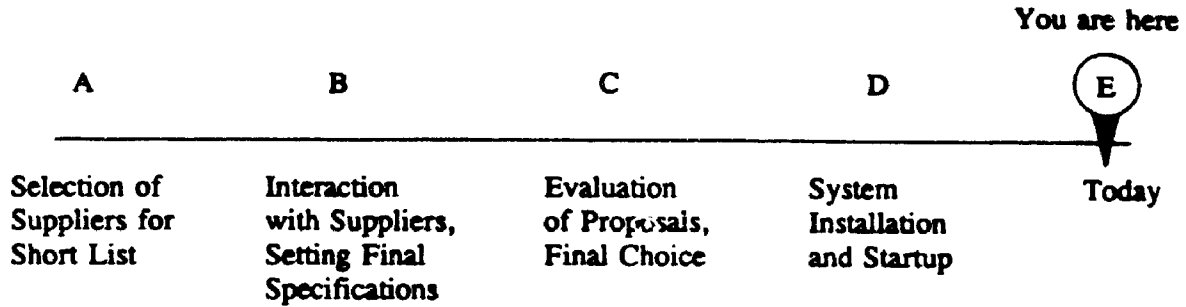


DURING INSTALLATION AND STARTUP

Our company was satisfied with Bell's:

	Strongly Disagree					Strongly Agree
107. Attention to our suggestions.	1	2	3	4	5	6 7
108. Cooperative attitude when dealing with our suggestions.	1	2	3	4	5	6 7
109. Level of effort to make the system operational.	1	2	3	4	5	6 7
110. Installation competence and dependability.	1	2	3	4	5	6 7
111. Training competence and dependability.	1	2	3	4	5	6 7
112. Conformance to our specifications.	1	2	3	4	5	6 7
113. Total installed cost to our company.	1	2	3	4	5	6 7

For one last time we'd like you to move forward in time to the present (Time Point 'E') and tell us about your current level of satisfaction with Bell's performance.



AT PRESENT

Our company is currently satisfied with:

	Strongly Disagree	Strongly Agree
114. Bell's attention to our problems or suggestions.	1 2 3 4 5 6 7	
115. Bell's cooperative attitude when dealing with our problems or suggestions.	1 2 3 4 5 6 7	
116. Bell's effort to repair and maintain our system.	1 2 3 4 5 6 7	
117. The competence and dependability of Bell's service crew.	1 2 3 4 5 6 7	
118. The system's operating performance.	1 2 3 4 5 6 7	
119. The system's user friendliness.	1 2 3 4 5 6 7	
120. The system's repair and operating costs.	1 2 3 4 5 6 7	
121. How well Bell handles invoicing procedures.	1 2 3 4 5 6 7	
122. In general, we feel our money has been well spent.	1 2 3 4 5 6 7	
123. All things considered, we do not regret our choice.	1 2 3 4 5 6 7	
124. We would invite Bell to participate in future tenders.	1 2 3 4 5 6 7	
125. We would recommend Bell to other divisions or companies.	1 2 3 4 5 6 7	

WRAP-UP QUESTIONS

These last few questions will help the analysis go beyond the numbers. If you need more space to answer 128-130, feel free to write on the back of the questionnaire.

126. About how many people are employed in the Canadian division of your company?

fewer than 100
 100-999

1,000-4,999
 more than 5,000

127. About how many people participated in the purchase decision? _____

128. What was the most commendable aspect of Bell's selling effort, product, or service?

129. What was the least commendable aspect of Bell's selling effort, product, or service?

130. How could Bell's bid proposal documentation be improved?

THANK-YOU FOR YOUR HELP!
PLEASE RETURN THIS QUESTIONNAIRE IN THE PRE-PAID ENVELOPE

APPENDIX H

Final Questionnaire (Version 2 - Bell Losses)

**WINNING AND SATISFYING CUSTOMERS
FOR ADVANCED TECHNOLOGY SYSTEMS**

A Joint Study by:



School of Business Administration
The University of Western Ontario



National Centre for Management
Research and Development



Northern Telecom Canada Limited



Bell Canada

Research Director:

David W. Large
School of Business Administration
The University of Western Ontario
London, Ontario, Canada N6A 3K7
Phone: (519) 679-2111, ext 5129

GENERAL INSTRUCTIONS FOR OUR RESPONDENTS

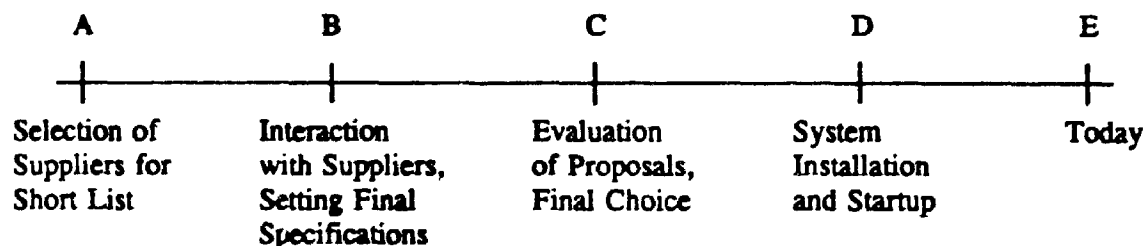
Thank you for volunteering to be a respondent in our study about "Winning and Satisfying Customers for Advanced Technology Systems." Your answers to this questionnaire will make a very important contribution. Before beginning, however, please take a few moments to read these brief instructions.

As mentioned in the covering memo, we're asking you to participate because you have been involved in a recent group decision to reject a bid proposal from Bell. (By "group", we mean the total set of individuals in your organization who participated in the purchase decision). To begin, please recall the name of the supplier who was your buying group's first choice. We'll refer to this company as the Winning Supplier.

Most of the statements in this questionnaire require you to rate Bell in comparison with the Winning Supplier. It is important that you indicate your best estimate of your group's rating, rather than your own personal rating. It is also important that you record both the good and bad, or in other words, give Bell praise where praise is due and criticism where criticism is due. (It would be unusual for Bell to be worse on all factors). Your answers will remain completely confidential, known only to the Research Director.

Most statements have 7-point response scales varying from 1 (Strongly Disagree) to 7 (Strongly Agree). You can respond to most of the statements simply by circling the appropriate number. Some of the statements may appear similar, but we are in fact trying to tap small differences which may determine a win or a loss. It is very important for the study that you try to answer every question.

An unusual feature of this questionnaire is that we want your responses from different points in time. These different points in time are illustrated in the following scale.



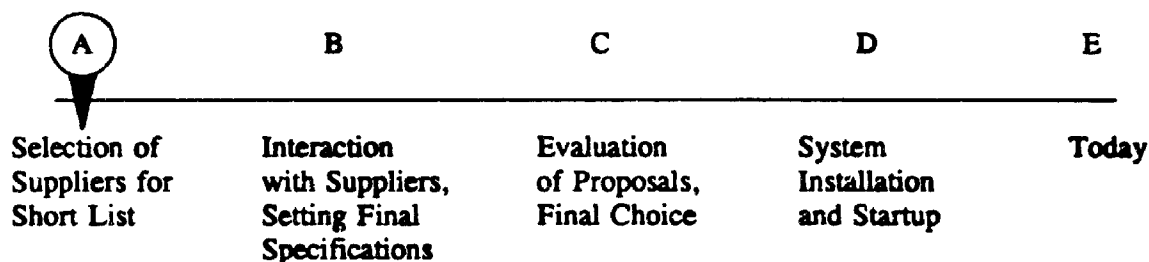
Two helpful reminders. First, please return your completed questionnaire in the enclosed envelope, within the next week or so if at all possible. Second, if you have any questions or concerns about the questionnaire, please don't hesitate to call. I can be reached at (519) 679-2111 ext. 5129, or you can leave a message at (519) 673-4742.

Your contribution to this important study is very much appreciated.

THE SUPPLIERS' PRIOR REPUTATIONS FOR SERVICE RELATIONSHIPS

As the first step in answering the questionnaire, we'd like you to move yourself back in time to the point when your buying group selected the short list of suppliers for the bid competition (Time Point 'A'). Think about any knowledge your group may have had about Bell's prior reputation for service relationships, and the prior reputation of your Winning Supplier. (This knowledge may have come from your company's past experience or sources outside your company). Please make the following comparisons.

You are here



In comparison with the Winning Supplier, Bell's people had the prior reputation for:

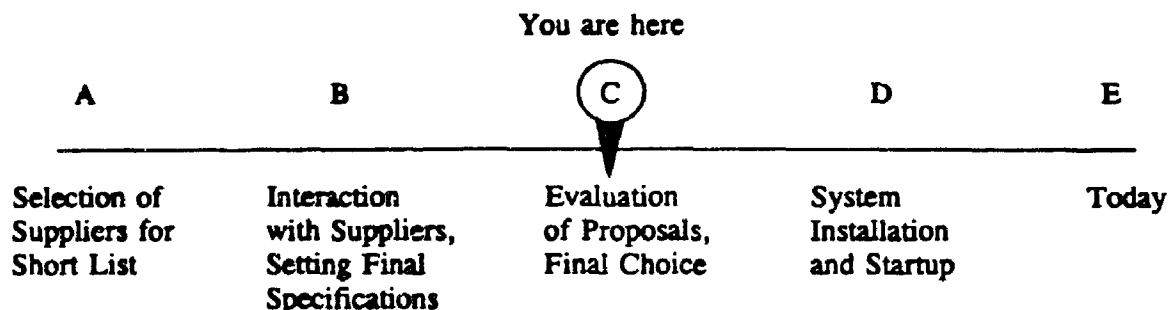
	Strongly Disagree	Strongly Agree
1. Being more concerned about customer satisfaction.	1 2 3 4 5 6 7	
2. Being more interested in a long term relationship with the customer.	1 2 3 4 5 6 7	
3. Being more flexible and adaptable with system modifications.	1 2 3 4 5 6 7	
4. Showing more initiative, being more proactive.	1 2 3 4 5 6 7	
5. Showing a higher degree of commitment and dedication.	1 2 3 4 5 6 7	
6. Being more willing to help customers understand complex material.	1 2 3 4 5 6 7	
7. Being more punctual for deadlines and appointments.	1 2 3 4 5 6 7	
8. Being more willing to make an extra effort.	1 2 3 4 5 6 7	

You are here



	A	B	C	D	E					
	Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today					
				Strongly Disagree	Strongly Agree					
9.	Taking more of a mutual problem-solving approach.			1	2	3	4	5	6	7
10.	Fulfilling their promises more reliably.			1	2	3	4	5	6	7
11.	Being more attentive to specific problems and needs.			1	2	3	4	5	6	7
12.	Producing more complete documentation.			1	2	3	4	5	6	7
13.	Being more thorough and meticulous with details.			1	2	3	4	5	6	7
14.	Providing more personal care.			1	2	3	4	5	6	7
15.	Being easier to contact when needed.			1	2	3	4	5	6	7
16.	Providing more accurate and honest information.			1	2	3	4	5	6	7
17.	Being more willing to listen to our problems and/or requests.			1	2	3	4	5	6	7
18.	Responding to problems and/or requests more promptly.			1	2	3	4	5	6	7
19.	Being in contact more frequently.			1	2	3	4	5	6	7
20.	Being easier to work with, more cooperative.			1	2	3	4	5	6	7

		You are here					
		A	B	C	D	E	
		Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today	
						Strongly Disagree	Strongly Agree
29.	Were more willing to help us understand complex material.					1 2 3 4 5 6 7	
30.	Were easier to work with, more cooperative.					1 2 3 4 5 6 7	
31.	Took more of a mutual problem-solving approach.					1 2 3 4 5 6 7	
32.	Fulfilled their promises more reliably.					1 2 3 4 5 6 7	
33.	Were more punctual for deadlines and appointments.					1 2 3 4 5 6 7	
34.	Showed more initiative, were more proactive.					1 2 3 4 5 6 7	
35.	Paid more attention to our specific problems and needs.					1 2 3 4 5 6 7	
36.	Responded to our questions and suggestions more promptly.					1 2 3 4 5 6 7	
37.	Were more willing to make an extra effort.					1 2 3 4 5 6 7	
38.	Were more thorough and meticulous with details.					1 2 3 4 5 6 7	
39.	Showed a higher degree of commitment and dedication.					1 2 3 4 5 6 7	
40.	Were in contact more frequently.					1 2 3 4 5 6 7	




EVALUATIONS OF PROMISED TECHNICAL PERFORMANCE

In comparison with the Winning Supplier, our group concluded that Bell's system:

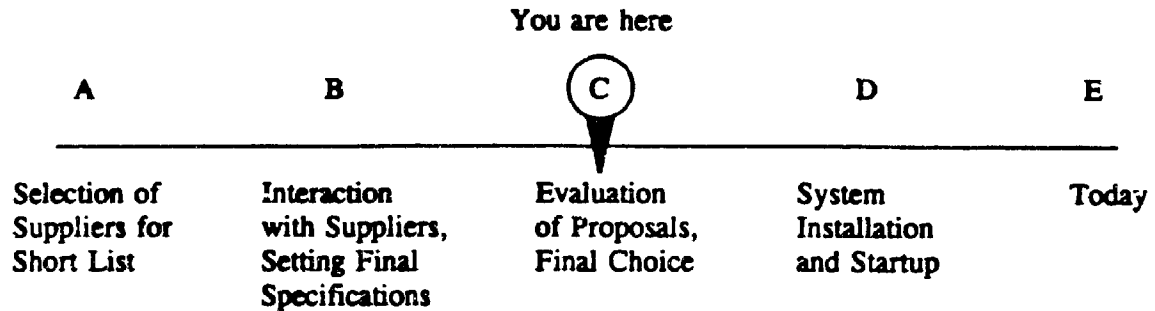
		Strongly Disagree	Strongly Agree
52. Would have clear functional advantages.	1	2	3 4 5 6 7
53. Would be more resistant to obsolescence.	1	2	3 4 5 6 7
54. Would be viewed as less complex, less troublesome, by our employees.	1	2	3 4 5 6 7
55. Would be higher quality.	1	2	3 4 5 6 7
56. Would offer more important operating features.	1	2	3 4 5 6 7
57. Would be more flexible and adaptable in our operations.	1	2	3 4 5 6 7
58. Would better meet our startup timetable.	1	2	3 4 5 6 7
59. Would be easier to maintain and service.	1	2	3 4 5 6 7
60. Would be easier to install.	1	2	3 4 5 6 7

You are here

	A	B	C	D	E
	Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today
					
				Strongly Disagree	Strongly Agree
61.	Would be easier to learn and operate by our employees.			1	2 3 4 5 6 7
62.	Would better conform to our safety standards.			1	2 3 4 5 6 7
63.	Would have clear durability and reliability advantages.			1	2 3 4 5 6 7
64.	Would more completely conform to all regulatory standards.			1	2 3 4 5 6 7
65.	Would cause less disruption and anxiety for our employees.			1	2 3 4 5 6 7
66.	Would be viewed as more useful by our employees.			1	2 3 4 5 6 7
67.	Would more completely conform to our operational specifications.			1	2 3 4 5 6 7
68.	Would be more compatible with future equipment and technology.			1	2 3 4 5 6 7
69.	Would offer more growth capability.			1	2 3 4 5 6 7

Thanks for hanging in this far. You're over halfway finished!

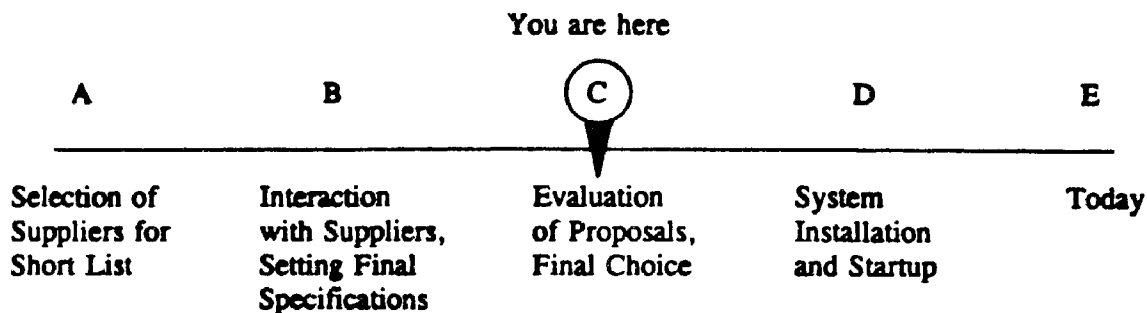
EVALUATIONS OF PROMISED POST-PURCHASE SERVICE



In comparison with the Winning Supplier, our group concluded that Bell's people:

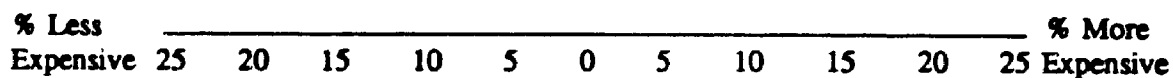
	Strongly Disagree	Strongly Agree
70. Would attend to repairs and/or maintenance more expediently.	1 2 3 4 5 6 7	
71. Would take more of a mutual problem-solving approach.	1 2 3 4 5 6 7	
72. Would provide more personal care.	1 2 3 4 5 6 7	
73. Would be easier to work with, more cooperative.	1 2 3 4 5 6 7	
74. Would pay more attention to our specific problems and needs.	1 2 3 4 5 6 7	
75. Would be more interested in a long term relationship with us.	1 2 3 4 5 6 7	
76. Would be more flexible and adaptable with their assistance.	1 2 3 4 5 6 7	
77. Would be more concerned about our satisfaction.	1 2 3 4 5 6 7	
78. Would be more thorough and meticulous with details.	1 2 3 4 5 6 7	

		You are here				
		A	B	C	D	E
		Selection of Suppliers for Short List	Interaction with Suppliers, Setting Final Specifications	Evaluation of Proposals, Final Choice	System Installation and Startup	Today
					Strongly Disagree	Strongly Agree
79.	Would produce more complete documentation.				1 2 3 4 5 6 7	
80.	Would fulfil their promises more reliably.				1 2 3 4 5 6 7	
81.	Would provide more effective instructions and training.				1 2 3 4 5 6 7	
82.	Would be easier to contact when needed.				1 2 3 4 5 6 7	
83.	Would be more willing to make an extra effort.				1 2 3 4 5 6 7	
84.	Would be more willing to help us understand complex material.				1 2 3 4 5 6 7	
85.	Would be more punctual for deadlines and appointments.				1 2 3 4 5 6 7	
86.	Would respond to our questions and/or suggestions more promptly.				1 2 3 4 5 6 7	
87.	Would show a higher degree of commitment and dedication.				1 2 3 4 5 6 7	
88.	Would be more willing to listen to our suggestions and concerns.				1 2 3 4 5 6 7	
89.	Would be in contact with us more frequently.				1 2 3 4 5 6 7	



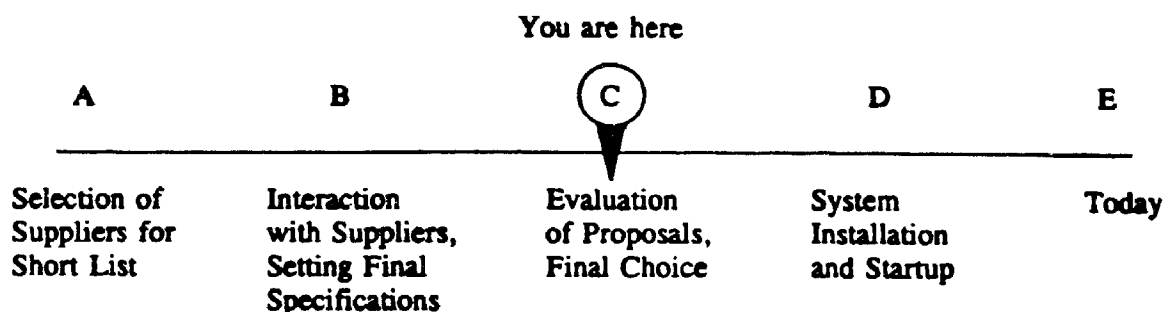
EVALUATIONS OF FINANCIAL COSTS

90. In comparison with the Winning Supplier, Bell's quoted delivery price was (slash scale):



In comparison with the Winning Supplier, our group concluded that Bell's system:

	Strongly Disagree		Strongly Agree
91. Would require fewer renovations to our present facilities.	1	2 3 4 5 6 7	
92. Would require less training for our staff.	1	2 3 4 5 6 7	
93. Would be operational more quickly.	1	2 3 4 5 6 7	
94. Would have a lower overall cost to implement.	1	2 3 4 5 6 7	



OVERALL EVALUATION

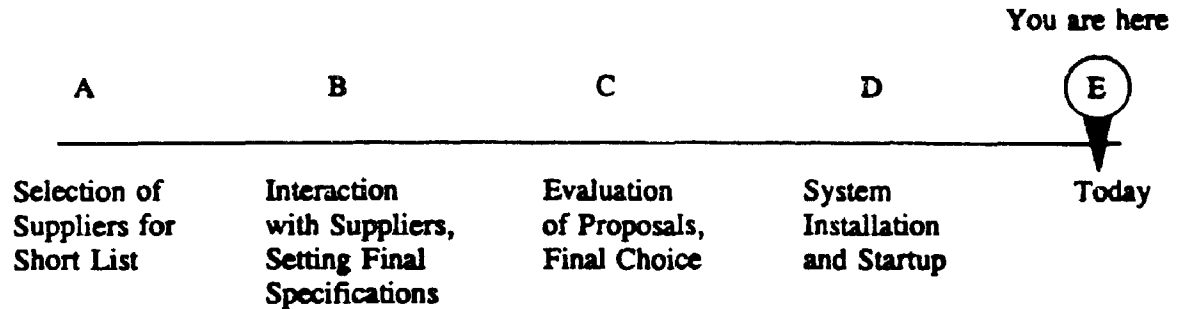
All things considered, in comparison with the Winning Supplier, our group concluded that Bell:

	Strongly Disagree		Strongly Agree
95. Offered superior technical benefits.	1	2 3 4 5 6 7	
96. Offered superior user benefits.	1	2 3 4 5 6 7	
97. Offered superior service benefits.	1	2 3 4 5 6 7	
98. Seemed to better satisfy our most important needs.	1	2 3 4 5 6 7	
99. Would have a shorter payback period.	1	2 3 4 5 6 7	
100. Would have lower overall operating and maintenance costs.	1	2 3 4 5 6 7	
101. Would generate a higher overall return on investment.	1	2 3 4 5 6 7	
102. Seemed to offer more for the money.	1	2 3 4 5 6 7	
103. Gave us more confidence about their ability to deliver.	1	2 3 4 5 6 7	

DIFFICULTY OF CHOICE

104. We deliberated at length before deciding.	1		2 3 4 5 6 7
105. Our final choice was easy to make.	1		2 3 4 5 6 7
106. At the time, we felt comfortable with our choice.	1		2 3 4 5 6 7

For one last time we'd like you to move forward in time to the present (Time Point 'E') and tell us about your current level of satisfaction with the Winning Supplier's performance.



AT PRESENT

Our company is currently satisfied with:

	Strongly Disagree	Strongly Agree
114. The Winner's attention to our problems or suggestions.	1 2 3 4 5 6 7	
115. The Winner's cooperative attitude when dealing with our problems or suggestions.	1 2 3 4 5 6 7	
116. The Winner's effort to repair and maintain our system.	1 2 3 4 5 6 7	
117. The competence and dependability of the Winner's service crew.	1 2 3 4 5 6 7	
118. The system's operating performance.	1 2 3 4 5 6 7	
119. The system's user friendliness.	1 2 3 4 5 6 7	
120. The system's repair and operating costs.	1 2 3 4 5 6 7	
121. How well the Winner handles invoicing procedures.	1 2 3 4 5 6 7	
122. In general, we feel our money has been well spent.	1 2 3 4 5 6 7	
123. All things considered, we do not regret our choice.	1 2 3 4 5 6 7	
124. We would invite the Winner to participate in future tenders.	1 2 3 4 5 6 7	
125. We would recommend the Winner to other divisions or companies.	1 2 3 4 5 6 7	

WRAP-UP QUESTIONS

These last few questions will help the analysis go beyond the numbers. If you need more space to answer 128-130, feel free to write on the back of the questionnaire.

126. About how many people are employed in the Canadian division of your company?

fewer than 100
 100-999

1,000-4,999
 more than 5,000

127. About how many people participated in the purchase decision? _____

128. What was the most commendable aspect of Bell's selling effort, product, or service?

129. What was the least commendable aspect of Bell's selling effort, product, or service?

130. How could Bell's bid proposal documentation be improved?

**THANK-YOU FOR YOUR HELP!
PLEASE RETURN THIS QUESTIONNAIRE IN THE PRE-PAID ENVELOPE**

APPENDIX I

Sample Cover Memo from Bell Manager

Terry Mosey
General Manager —
Business Sales & Service
(Ontario)

Bell Canada
393 University Avenue
Floor 7
Toronto, Ontario M5G 1W9
Tel: (416) 348-7000
Envoy 100: R.T. MOSEY
PMSS: RTMOSEY

Bell

1991 06 26

Mr. P. Biswas
Information Systems
Paul Revere Life Insurance Co.
440 Elizabeth Street, P.O. Box 50444
Burlington, Ontario
L7R 4C1

Dear Mr. P. Biswas

**Re: Request for your participation in a joint venture study about
"Winning and Satisfying Customers of Advanced Technology Systems"**

Over the last three months, Bell Canada and Northern Telecom have been assisting the development of a study being conducted by the University of Western Ontario's School of Business. The purpose of the study is to develop a detailed understanding of how to win and satisfy customers of advanced technology systems in the telecommunications environment. We feel this study is important because the health of our companies and the health of the Canadian economy will depend to a great extent on our success in the continued development of advanced technologies.

We have helped Western's study by assisting in the development of a questionnaire, and by supplying a selected list of customers to whom we've submitted bid proposals in the last two years.

We would be very grateful if you would also contribute to the successful completion of this study by participating as a questionnaire respondent. According to our records, you were our principal contact for a recent bid, and thus you are one of the small set of ideal respondents. Please be assured that the total extent of your participation would be about 30 to 45 minutes, and that your answers would remain strictly the property of Western's Research Director.

As a result of this study, we hope that you will notice an even higher level of service from Bell in the future. Further, you will also receive an executive summary of the study, which your own company may find useful in its marketing pursuits. Finally, as a small gesture of appreciation, each respondent will receive a personalized Certificate of Participation suitable for framing.

Western's Research Director, David Large, will be contacting you by telephone in the very near future. He will answer any questions you may have about the study, and will be looking forward to your consent to participate in this worthy endeavour.

With best regards,



Terry Mosey

APPENDIX J

Sample Cover Memo from Researcher



The UNIVERSITY of WESTERN ONTARIO

School of Business Administration

July 17, 1991

Mr. Prody Biswas
Information Systems
Paul Revere Life Insurance Co.
440 Elizabeth Street
P.O. Box 5044
Burlington, Ontario L7R 4C1

Dear Prody:

Re: Questionnaire enclosed for my dissertation study
about "Winning and Satisfying Customers of
Advanced Technology Systems"

Topic: Why Bell lost their bid for a Meridian Option 21,
submitted to you on or about 91 02 01

Please accept my sincere thanks for agreeing to participate as a questionnaire respondent in this study. Because the number of participants in this survey is relatively small, your contribution is very important. Attached are:

- 1) a questionnaire with instructions;
- 2) a stamped pre-addressed return envelope;
- 3) a personalized certificate of participation.

Let me emphasize that you should be as honest as possible with your answers, and rest assured that your answers will be held in the strictest confidence. Neither Bell nor any of the participants will see anything but aggregated results. The identification tag on the questionnaire simply allows me to record who has responded, so an executive summary can be sent to the participant.

I expect the questionnaire should take about 30-45 minutes to complete. You may find some of the early sections of questions similar to each other, but please be patient - I'm trying to gauge how your perceptions may have varied over time, and the time scale at the top of each page is meant to help you keep your bearings.

/ cont.

-2-

Please complete the questionnaire at your earliest convenience, preferably by the first week of August. It can be returned in the self-addressed envelope. Should you have any questions at all about the study or the questionnaire, I can be reached at (519) 673-4742 before July 30, or (613) 564-6846 after August 1. An executive summary of the study will be mailed to you in late August or early September.

With best regards,



David Large,
Research Director.

APPENDIX K

Certificate of Participation

With sincere thanks to:

Respondent's Name

*for participating in our joint venture study:
"Winning and Satisfying Customers of
Advanced Technology Systems"*



School of Business Administration
The University of Western Ontario



National Centre for Management
Research and Development



Northern Telecom Canada Limited

1991



Bell Canada

APPENDIX L

Cover Memo from Researcher to CMSLUA



The UNIVERSITY of WESTERN ONTARIO

School of Business Administration

August 26, 1991

Ms. Gail Misener
President, CMSLUA
Telesat Canada
1601 Telesat Court
Gloucester, Ontario
K1B 5P4

Dear Gail:

- Re: 1. Introduction to my PhD Dissertation Study
2. Request for your CMSLUA Chapter's Participation

Thanks for sending me the list of CMSLUA's chapter heads, and for your offer to help complete my dissertation research. This memo will more formally introduce my study, and will explain how your members can participate. Any member who chooses to participate will receive a personalized certificate of participation and an Executive Summary of the study.

My study, which is the final requirement for my degree in Marketing, is entitled "Winning and Satisfying Customers of Advanced Technology Systems". Using the results of survey questionnaires, I will do a detailed analysis of how customers make purchase decisions in a bid situation. The results should be of some help to our technology manufacturing sector, especially in the new reality of free trade. Intentionally, I have defined a narrow setting for my study: i.e. only recent Ontario PBX customers; only customers who have conducted a bid process; and only bids where Bell has been involved. This tight setting allows me to focus on certain key issues.

I am requesting help from CMSLUA's Ontario chapters because the number of questionnaire respondents that I've enlisted using Bell's records is about 20 short of the 120 or so I need for a valid analysis. Therefore, I'm hoping that I can find the necessary 20 or more among your members. You can help by sending the following package to each or some of your own chapter's members:

- | | |
|---------------------------------------|-----------------|
| 1. An introductory cover memo | (copy attached) |
| 2. A Participation Qualification Page | (copy attached) |
| 3. A "Bell Won" questionnaire | (copy attached) |
| 4. A "Bell Lost" questionnaire | (copy attached) |

----- and Donald W. Barclay (1983), "Jackknifing: A Supplement to Lohmoller's LVPLS Program", Ann Arbor MI: Graduate School of Business Administration, The University of Michigan.

----- and Fred L. Bookstein (1982), "Two Structural Equation Models: LISREL and PLS Applied to Consumer Exit-Voice Theory", Journal of Marketing Research, Vol 19 (November), 440-452.

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PARTICIPATION QUALIFICATION PAGE

All CMSLUA Ontario Members: Please fill out this page and return it to me (fax, mail or courier), together with a completed questionnaire if qualified.

1. Did your company purchase its most recent SL-1 after January 1, 1989?

YES

NO → **STOP** (you're off the hook!)

2. Date of Purchase? _____

3. Did you conduct a bid process prior to your purchase decision?

YES

NO → **STOP**

4. Did your company employ an outside consultant to assist your purchase decision?

YES

NO

5. Did Bell Canada submit a bid?

YES

NO → **STOP**

6. Did Bell Canada win the bid?

YES → Please request the most knowledgeable person about the bid to complete the "Bell Won" questionnaire.

NO → Please request the most knowledgeable person about the bid to complete the "Bell Lost" questionnaire.

7. Respondent's Name and Mailing Address (Optional. Every respondent who is identified receives a personalized certificate of participation and a copy of the Executive Summary of the study).

Respondent's Name: _____

Company Name: _____

Company Address: _____

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