

*Subject*

DCI/ICS 81-2234

11 December 1981

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MEMORANDUM FOR: [redacted]  
Director, Intelligence Community Staff

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VIA: [redacted]  
Director, Office of Assessment and Evaluation

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FROM: [redacted]  
Office of Assessment and Evaluation

SUBJECT: Intelligence User Survey

*John:*

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1. Attached is a paper prepared by [redacted] in close coordination with [redacted]. As you are aware, it was not possible for us on this staff to impose a rigorous methodology for analyzing the data on the User Survey prior to the submission of the questionnaires to respondents for the following reasons:

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a. The questionnaire itself represented an amalgam of disparate interests of the IC Staff (PAO and PGS), DIA, NSA, and NFAC. Although the Office of Medical Services "experts" on such questionnaires attempted to ensure some form of rigor which would enable analysts to evaluate the meaning of the data acquired, their efforts were only partially successful.

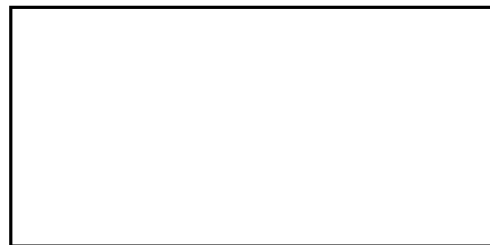
b. Although the Survey was sponsored by you as D/ICS and by John McMahon as D/NFAC (wearing his Community hat), the form of the questionnaire and the manner in which the project was implemented was skewed by the virtual veto power of [redacted] in his role as Chairman of the Interagency Community on Intelligence production. Understandably, [redacted] wished to do nothing to antagonize members of his Community Working Group, which represents one of the few attempts of NFAC to exercise a Community role.

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SUBJECT: Intelligence User Survey

2. It is now time for us to prepare for you a report summarizing our initial findings based on a preliminary analysis of the data obtained both from the questionnaires and the interviews. Once this has been done, we would hope to subject the data to far more rigorous analysis along the lines indicated in the attachment. If you approve of this method and approach, we would hope to have the initial report for you by the end of January. We would also welcome your thoughts on the model we have constructed as a guide to further analysis. This is provided in the attachment.



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Attachment

SUBJECT: Intelligence User Survey

Distribution: DCI/ICS 81-2234

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Proposed Approach to Evaluating Consumer  
Survey Questionnaire Data

Background

A survey addressing the interests and preferences, intelligence usage, and derived satisfactions of Washington-level policy consumers has been underway for several months under the sponsorship of the Interagency Working Group on Intelligence Production. Collection of data in questionnaire form is complete. Follow-on interviews of select respondents are now being conducted. Computerized questionnaire data, in their entirety, have been provided to the IC Staff to support whatever evaluation purposes may be deemed worthwhile. Simply put, the questionnaire asked Carter Administration incumbents about:

- What they wanted.
- What they got, and how they got it.
- How much of it they used.
- How they liked it.

Objectives of the Analysis

To structure, assess, and understand the consumer survey so that we can:

- Estimate the value of intelligence information to the consumer.
- Find ways to make intelligence more useful.

Analytical Concept

Establishment of a comprehensive, sustained product evaluation function, possibly within the re-organized Intelligence Community Staff, has been under consideration by Community management for some time. Since any such activity might benefit from the existence of a logical analytical infrastructure upon which to proceed, this paper proposes a systematic, in-depth approach to interpreting the Survey data. Our approach is aimed at defining and describing the filtering process through which intelligence outputs progress toward the ultimate payoff: application by a consumer against an issue he faces, with results beneficial to U.S. national interests (See Attachment 1).

Data extracted from the survey questionnaires will be used to estimate values and frequencies at different nodes in the intelligence utilization process. Fuller appreciation of this process, and how intelligence is flowing through it, ought to suggest promising areas for modifying procedures or resource allocations so as to increase the proportion of useful outputs.

Since the survey is essentially a market poll, the proposed analysis will seek-out and present statistical highlights in a "polling report" vein. Our initial efforts will be of this sort, and should find a ready audience among the functional managers directly concerned with intelligence production activities.

### Analytic Sequence

It is proposed that IC Staff analysis proceed along the following lines:

#### Phase I: Concept Development and Exploratory Data Analysis

- Examine data for general patterns, realizing that more sophisticated analysis will follow. Simplify descriptions without concern for uncertainty or variability.
- Summarize responses to questions deemed of particular interest.
- Develop the appropriate statistical methods and data extraction tools to circumvent methodological difficulties (See Attachment 2).

#### Phase II: Refinement of the Model (an iterative process)

- Determine which aspects of the model are addressed by data from the questionnaire, and what data is missing.
- Examine, one-by-one the hypothesis implicit in the model. Prune back the model if data do not support hypotheses (See Attachment 3).

#### Phase III: Quantification of the Model

- Associate specific questions in the questionnaire with nodes in the model.
- Verify the "closeness" of questions with appropriate statistical tools, making adjustments as necessary.

- For each point in the model, estimate frequencies, values, proportions and levels of significance as required.
- Describe activity levels through the utilization process; explain routing, conduct sensitivity analysis to identify chokepoints and opportunities for increasing the utility of intelligence.

Phase IV: Prepare Final Report

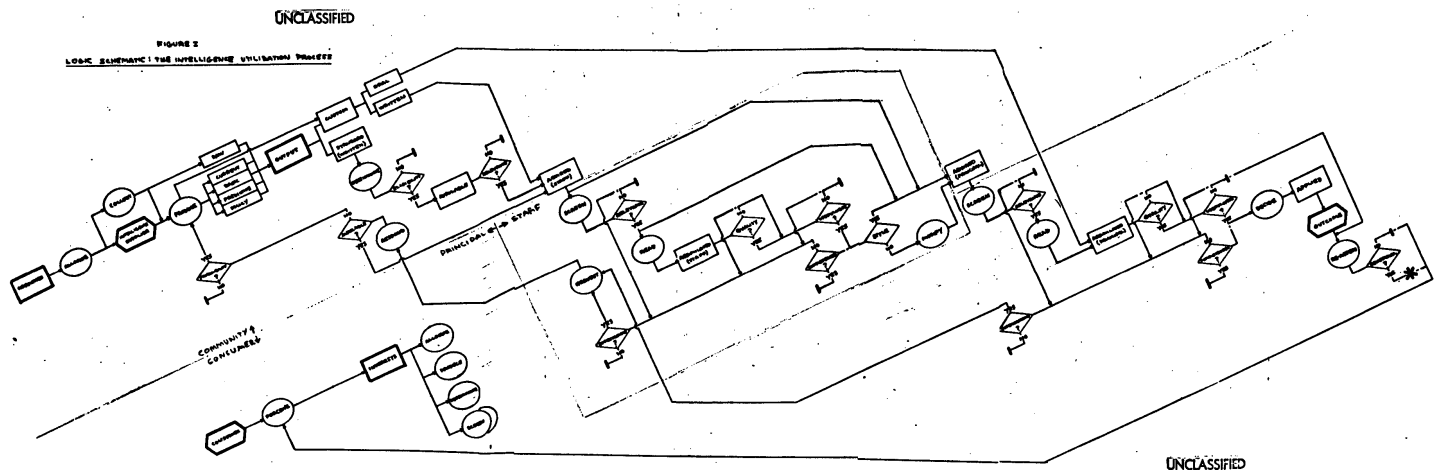
- Dovetail statistical results with textual and verbal responses.
- Present inferences drawn from Survey data.
- Recommend resource reallocations and procedural changes that offer the best opportunity to maximize the utility of the intelligence product to consumers.
- Recommend directions for further study (those points in the model for which data is inconclusive or non-existent).

Attachment 1. Prototype Model of the Utilization Process

This attachment offers for critical review initial returns from an OA&E effort to develop a logical model of the process by which consumers utilize the outputs of the Intelligence Community. Confronted with the problem of interpreting data collected via the Consumer Survey Questionnaire, one cannot avoid the impression that here is a wealth of fact and opinion pertinent to the "bottom line" of the intelligence business, which ought to be of utmost interest to all levels of Community management if only the bits and pieces can be put together in some coherent fashion. What we have is a bunch of empirical observations in search of theoretical structure. The analysis which follows endeavors to prototype such a structure, without which the Survey "results" can constitute little more than titillating tidbits of statistical fact, left to drift aimlessly in a contextual void (poetic, huh!).

Figure I depicts a detailed model of the intelligence utilization process. RESOURCES are transformed by intelligence SUPPLIERS into OUTPUT, which can be characterized according to FOCUS (i.e., geographical and topical concern), KIND (i.e., raw intelligence, in-depth analysis, etc.), and FORM (i.e., formal publication, especially prepared briefing, etc.). These outputs are in demand by certain CONSUMERS who have individual INTERESTS AND PREFERENCES which can also be characterized by focus, kind and form. A consumer demands intelligence outputs, and is willing to expend time and effort in their consumption, in the expectation that they will promote beneficial OUTCOMES to issues of importance he faces. For this to happen, suppliers must make the right output AVAILABLE to the consumer, who must then proceed to ACQUIRE, ASSIMILATE and APPLY that output. An output's journey from the dock of an intelligence supplier to beneficial application by a consumer against an important issue is clearly long and tortuous. Numerous opportunities exist for each output to go astray, or "leak-out" of the system, short of its final destination.

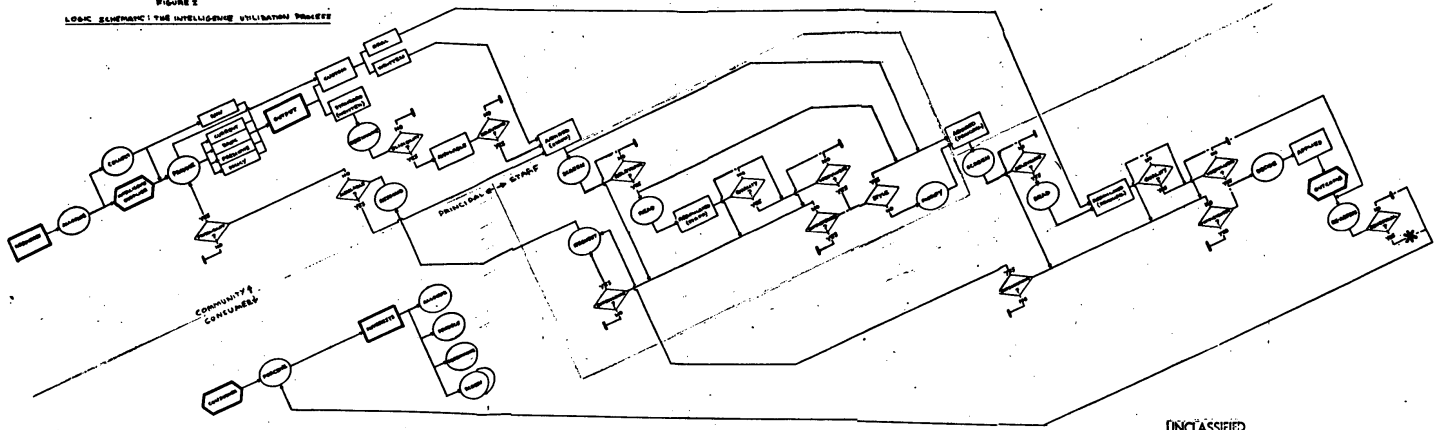
Within the logic of the model, the efficiency with which the Community performs is represented in the proportion of output which completes the passage to beneficial application. Only these survivors contribute directly to the credit side of the Community's ledger. All other output represents only costs, which take the form of consumers' time and effort as well as resources put into the intelligence production process. Any action which increases the probability that a given output will move in the right direction across any one of the many decision "switches" depicted in the model will, if nothing else changes, serve to





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FIGURE 2  
LOGIC SCHEMATIC OF THE INTELLIGENCE UTILIZATION PROCESS

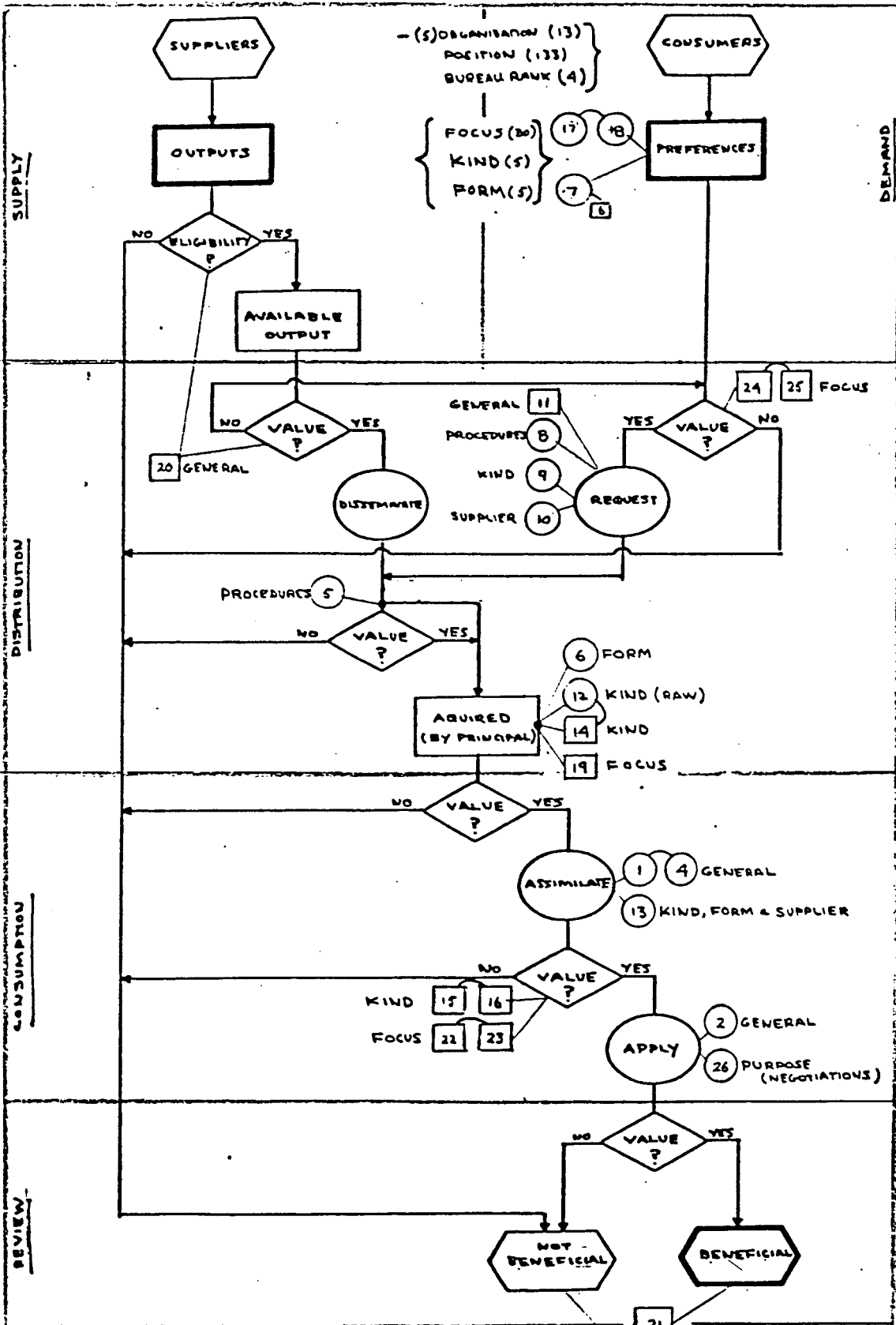


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increase performance efficiency. Since most of these decisions are made in the consumption sector, either by consuming principals themselves, or their staff, it is necessary for suppliers to discover the criteria upon which these decisions are based.

Intuition suggests a consumer would consider at least three sequential aspects of an intelligence output in deciding whether or not to proceed to the next step in the utilization process: RELEVANCE (i.e., how closely its focus, kind and form matches his interests and preferences); INTRINSIC MERIT (i.e., his perception of the competence, or credibility, of its content); and COMPLETENESS (i.e., how thoroughly it covers his interest in the matter at hand). All of this, of course, presumes that the consumer perceives a NEED for information or analysis about something, and harbors some EXPECTATIONS that intelligence will contribute toward that need's gratification.

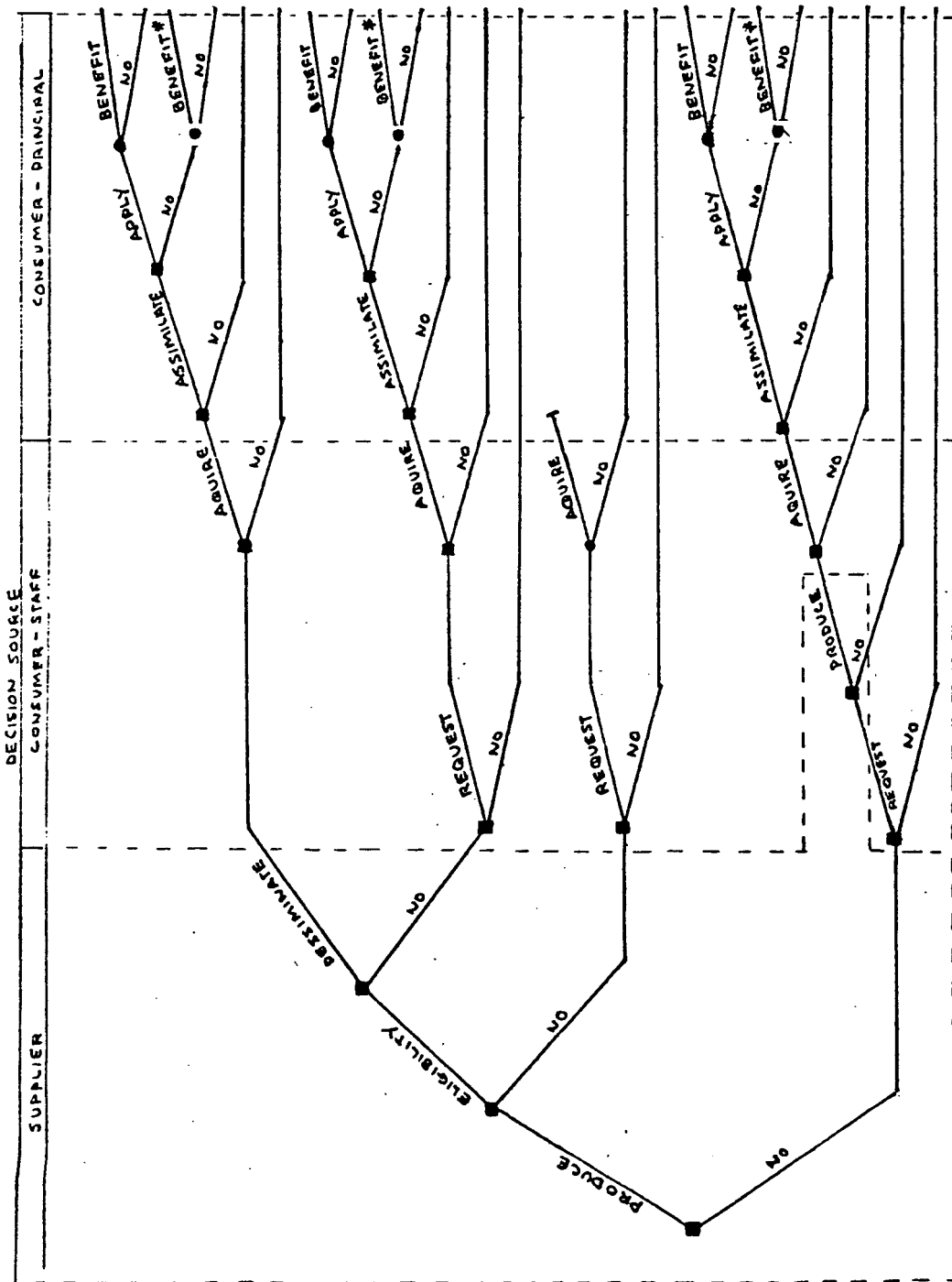
An abridged version of the utilization process is shown in Figure II, with the twenty-six questions asked in the Survey Questionnaire superimposed to indicate that phase of the process to which each question applies. Two essentially different kinds of questions are identified: those which call upon the consumer for purely descriptive estimates (e.g., How often did...), and those which ask for an evaluation (e.g., How satisfied were you with...). The plan is to check these "common sense" results against question associations derived independently via various statistical techniques, making whatever refinements to the model appear to be warranted. Figure II depicts the abridged model in a simple yes-no probability (or decision) tree format. Each decision point (denoted by a "■") is further modeled as a four-part sequence, as indicated in Figure IV. Data collected via the Consumer Survey will be assessed in the context of the mathematical expressions associated with these diagrams (still to be worked out).



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FIGURE III

SIMPLE (ONE OUTPUT, ONE CONSUMER & ONE ISSUE) COST-BENEFIT PROBABILITY TREE



PROB. ABILITY	COSTS		BENEFITS (CONSUMER)	EXPECTED VALUE
	SUPPLIER	CONSUMER		
	P+D	A	S	-
	P+D	A	(F)	-
	P+D	A	0	-
	P+D	A	0	-
	P+D	0	0	-
	P+D	0	0	-
	P+D	R+A	S	-
	P+D	R+A	(F)	-
	P+D	R+A	0	-
	P+D	R+A	0	-
	P+D	R	0	-
	P+D	R	0	-
	P	0	0	-
20	P	R	0	-

	P	R	0	-
	P	0	0	-
	P'D'	R+A	S	-
	P'D'	R+A	(F)	-
	P'D'	R+A	0	-
	P'D'	R+A	0	-
	P'D'	R	0	-
	P'D'	R	0	-
	0	R	0	-
	0	0	0	0

- P: COSTS TO PRODUCE STANDARD OUTPUT
- P': COSTS TO PRODUCE SPECIAL OUTPUT
- D: COSTS TO DISTRIBUTE STANDARD OUTPUT
- D': COSTS TO DISTRIBUTE SPECIAL OUTPUT
- A: COSTS TO ASSIMILATE OUTPUT
- R: COSTS TO REQUEST OUTPUT
- S: BENEFITS REALIZED WITH POSITIVE OUTCOME
- (F): COSTS INCURRED WITH NEGATIVE OUTCOME

\* HYPOTHETICAL

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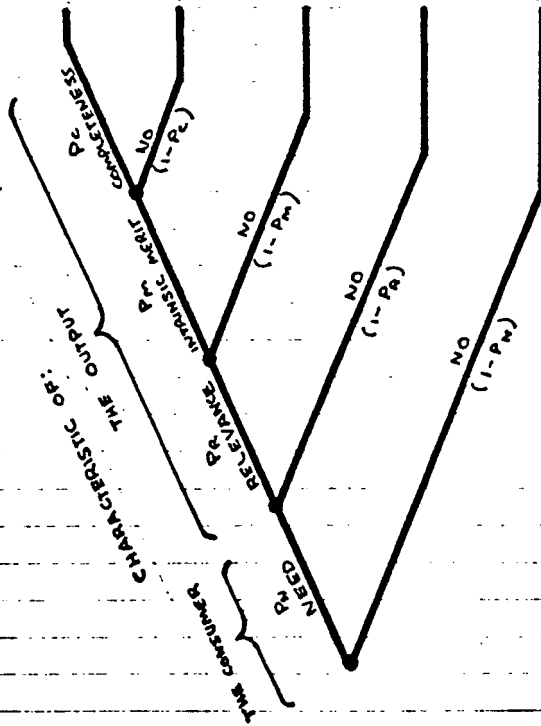
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FIGURE IV

DECISION CRITERIA

(ACTION: REQUEST INTELLIGENCE)

PROBABILITY GIVEN SITUATION HAS OCCURRED	PROBABILITY GIVEN SITUATION OCCURS	
	REQUEST	DON'T REQUEST
0	$P_M \cdot P_R \cdot P_M \cdot P_C$	$P_M \cdot P_R \cdot P_M \cdot P_C$
$P_E + \Delta P_E$	$P_M \cdot P_R \cdot P_M \cdot (1 - P_C)$	$P_M \cdot P_R \cdot P_M \cdot (1 - P_C)$
$P_M \cdot \Delta P_E$	$P_M \cdot P_R \cdot (1 - P_M)$	$P_M \cdot P_R \cdot (1 - P_M)$
$P_E$	$P_M \cdot (1 - P_R)$	$P_M \cdot (1 - P_R)$
0	$(1 - P_M)$	$(1 - P_M)$



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## Attachment 2. Methodological Difficulties

In the questionnaire phase of the Consumer Survey, over 130 individuals representing 13 organizations and 4 levels of responsibility have responded to over 150 queries concerning the frequency, quantity, quality and usefulness of intelligence output. The raw responses exceed 20,000. Since the volume of data is so large, we must place a great deal of effort on selecting statistically sound methods that will allow us to reduce and summarize the data while permitting us to draw valid inferences. This task is made more difficult because the survey was not designed with a clear line of analysis in mind.

Three areas particularly hamper present efforts at interpretation:

- Lack of a clear experimental design: A sound experimental design, even with masses of data this large, goes a long way toward making it simple to analyze the data. Any biases or interactions can be identified, accounted for, summarized, and tested for significance. An experimental design tied to a specific analytical approach is essential to reduce error and to negate the effect of extraneous variables. The Consumer Survey appears to have given only cursory consideration to such fundamentals as the choice and range of the response variables, minimizing distortions from extraneous variables, and the make-up of the consumer population. Nonparametric\* cluster analysis and resistant\*\* classification analysis offer some hope for making reasonable assumptions and associations, but drawing inferences will require the utmost caution. We are not in control of the data any more than cattle drivers are in control of a stampede. It is difficult to tell what direction the cattle are heading, and estimates of the time of delivery and of the profits upon shipment are specious.
- Missing data: Most consumers did not answer every question. In fact, there are more than 4500 missing data points--about 20% of the data. A comparison between two questions can be considered fair only if the groups of consumers responding to each question are similar to each other and representative of

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\*Nonparametric (or robust) techniques are relatively insensitive to data distribution.

\*\*Resistant measures are those which are relatively insensitive to large variations in small portions of the data.

the larger population. Similarly, the comparison of two consumers' views must be adjusted to account for unrepresentativeness in the sample of questions. Missing data greatly decreases the likelihood that fair comparisons can be made without some form of adjustment. Tukey's algorithms for direct and indirect standardization, developed for use in poorly controlled studies, are good methods for comparing responses in two or more disproportionate categories.

- Inequitable scales: Once data has been standardized and legitimately extracted from the questionnaire, it may still be difficult to compare or summarize the data. Rating scales for many of the questions are inherently incompatible. One question partitions the frequency domain into "Daily", "Weekly", and "Monthly"; another into "Frequently", "Occasionally", "Rarely"; a third into "Excessive", "Sufficient", "Insufficient". Robust and resistant measures that adjust for the effect of broad categories may allow for order-of-magnitude comparisons.

Each of these problems will complicate our analysis, and the synergistic effect of all three could invalidate classical correction techniques. The degree to which these complications will affect our understanding of the survey and the subsequent evaluation of the intelligence product is not yet clear though there is a reasonable prospect for extracting useful data. Furthermore, the nonparametric and the resistant methods outlined here assure that if we can move ahead, it will be in a generally correct direction if at the expense of some precision and sensitivity.

Attachment 3: Refinement of the Model

The ICS approach to analyzing the Consumer Survey data will combine a clear theoretical framework with cautious, step by step, refinement of the framework.

Ideally, before an experiment or survey is conducted, with two issues should be dealt with somewhat rigorously:

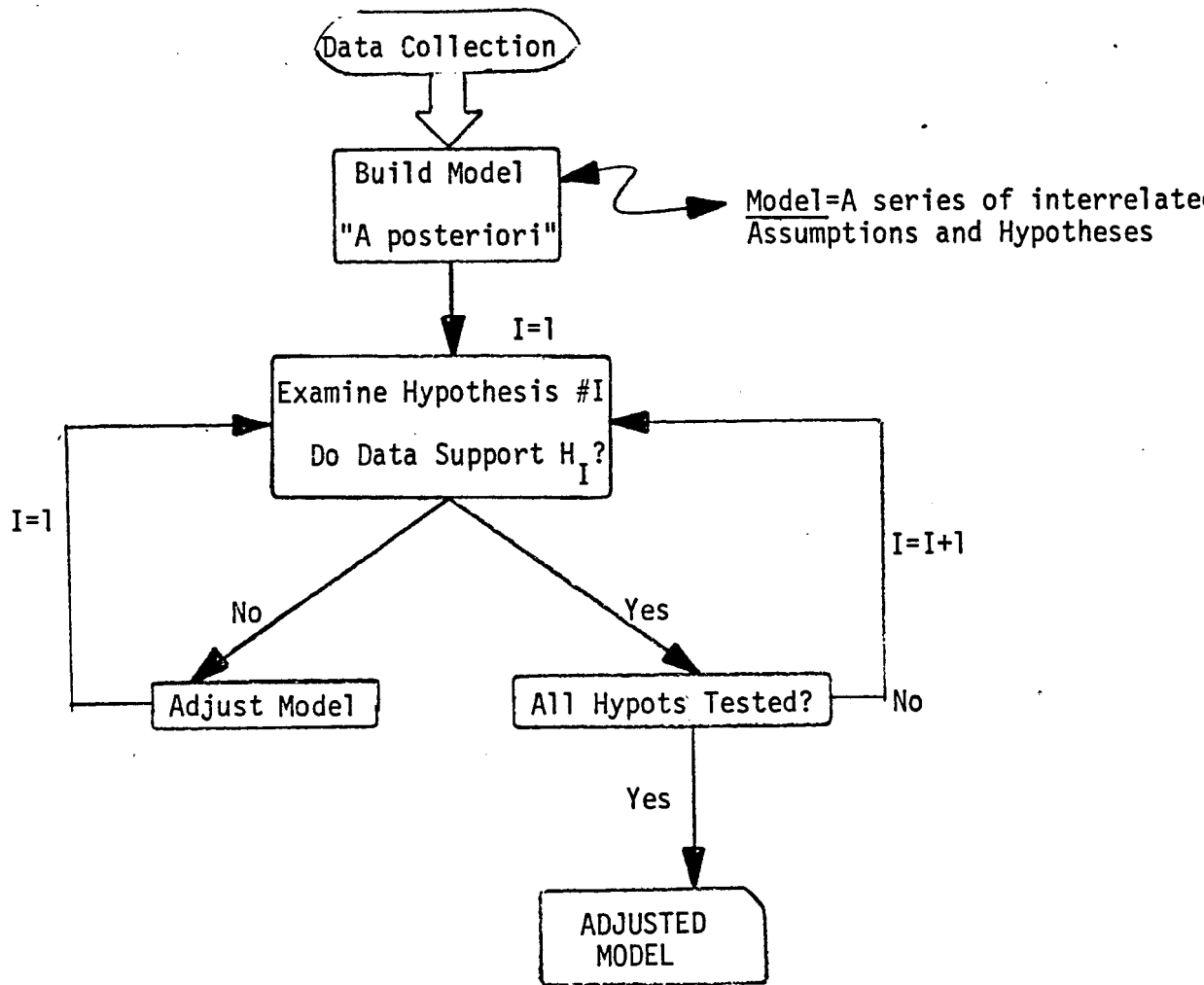
the model - the series of interrelated hypotheses and assumptions, which will be proved or disproved based upon the experimental data; and,

the experimental design - the structure that allows us to tie the data collection to the hypotheses in our model.

Since these issues were not integrated into the consumer survey a priori, we must impose them externally and a posteriori. While a posteriori designs do not invalidate analyses they can make them more controversial.

Our analytical approach must therefore use the model and exploratory statistics to support each other. The attached flow diagram outlines an interactive procedure we might follow. The model will set forth an hypothesis. Data exploration will yield indications of both the truth of our hypothesis and of the direction confirmation analysis ought to take. If confirmatory analysis supports our hypothesis we proceed to the next hypothesis. If however, our hypothesis should prove false, we should make the appropriate adjustments to our model, then retest all hypotheses. Only when we have run through all hypotheses without rejection can we expect to fully understand the survey data and feel confident about inferences we draw from it.





Flow Diagram. Suggested Analytical Procedure to Evaluate Consumer Survey Data.